

WHITHER INNOVATION?: WHY OPEN SYSTEMS ARCHITECTURE MAY DELIVER ON THE FALSE PROMISE OF PUBLIC-PRIVATE PARTNERSHIPS

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Every man acquainted with publick business must allow that it cannot be carried on, for a variety of reasons, with that economy which prevails in private affairs.
—Major General Philip Schuyler¹

ABSTRACT

In several strategy documents, the Department of Defense has suggested that it may experiment with public-private partnerships (P3s) as catalysts for innovation. This policy is misguided. P3s may prove especially disappointing if they are merely a neologism for a continuation of the same old policies that facilitate sole-source contracts whose lifecycles span decades. Open systems architecture, by contrast, has the potential to disrupt the defense industry and to facilitate the sort of competition that safeguards the public fisc, delivers better value, and stimulates innovation.

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1. ERNA RISCH, SUPPLYING WASHINGTON’S ARMY 166 (1981) (complaining in a letter written to Congress in August 1776 about his challenges in supplying the Continental Army in his role as commissary to the northern department).

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INTRODUCTION

Bogged down by low-tech adversaries in Afghanistan, Iraq, and beyond for two decades,² the U.S. military now seeks to upgrade its weapons technology in what former Defense Secretary Chuck Hagel first called a “Third Offset” strategy.³ Like its predecessors,⁴ the aim of the Third Offset is to

2. See, e.g., KATYA DROZDOVA, *LOW-TECH THREATS IN THE HI-TECH AGE: SUBVERSIVE IDEOLOGIES, TECHNOLOGIES & TIMES* (forthcoming [date unknown]), https://cisac.fsi.stanford.edu/sites/default/files/evnts/media//Drozдова_BookSynopsis_Spy_Terrorist_Low-Tech_Threats_Hi-Tech_Age.pdf (describing the challenges of fighting technologically primitive adversaries who have mastered asymmetrical warfare); Spencer Ackerman, *US Military Tactics Falling Behind Those of Adversaries, Pentagon Official Warns*, *GUARDIAN* (Apr. 8, 2015, 2:00 PM), <https://www.theguardian.com/us-news/2015/apr/08/us-military-tactics-falling-behind-those-of-adversaries-pentagon-official-warns> (arguing that the U.S. military is accustomed to lopsided technological superiority when fighting insurgencies but is now unprepared for warfare with peers); Sydney J. Freedberg, Jr., *The End of Advantage: Enemies May Catch Up with U.S. Technology—Or Surpass It*, *BREAKING DEF.* (Dec. 21, 2012, 6:00 AM), <http://breakingdefense.com/2012/12/the-end-of-advantage-enemies-may-catch-up-with-us-technology/> (writing that defense experts warn that “advantages America has counted on since the end of the Cold War are at least going to diminish”).

3. See Chuck Hagel, Sec’y of Def., *Keynote Address Delivered at Defense Innovation Days Before the Southeastern New England Defense Industry Alliance* (Sept. 3, 2014), <http://www.defense.gov/News/Speeches/Speech-View/Article/605602> (observing that the “groundbreaking technological change” that the Third Offset will depend on, “such as robotics, advanced computing, miniaturization, and 3D printing,” will come from the private sector rather than the Department of Defense (DoD) research efforts).

equip the warfighter with enduring technological superiority.⁵ The Department of Defense (DoD) sought \$3.6 billion for 2017 and envisioned spending \$18 billion overall on the Third Offset.⁶ The challenge is finding the alchemical formula to transmute that bullion into war-winning technology.⁷ Whither innovation?

Technology is the handmaiden of martial success.⁸ Ours is an age of rapid technological growth, making this axiom doubly true.⁹ Staying ahead

4. The first offset was the Eisenhower Administration's strategy to compensate for Soviet manpower and geographical advantages with the numerical superiority of the U.S. nuclear arsenal. See Bob Work, Deputy Sec'y of Def., *The Third U.S. Offset Strategy and Its Implications for Partners and Allies* (Jan. 28, 2015), <https://www.defense.gov/News/Speeches/Speech-View/Article/606641/the-third-us-offset-strategy-and-its-implications-for-partners-and-allies/>. The second came in the 1970s when the Soviets achieved nuclear parity. This effort concentrated on technologies developed by the Defense Advanced Research Projects Agency (DARPA), and culminated in the development of the battle network and precision-guided weapons that have been the key to U.S. defense strategy since the Gulf War. *Id.*

5. See Mackenzie Eaglen, *What Is the Third Offset Strategy?*, REALCLEARDEF. (Feb. 15, 2016), http://www.realcleardefense.com/articles/2016/02/16/what_is_the_third_offset_strategy_109034.html (noting that the DoD has been secretive about just what the Third Offset entails and reporting that it encompasses six areas: "anti-access and area-denial, guided munitions, undersea warfare, cyber and electronic warfare, human-machine teaming, and wargaming and development of new operating concepts"); Mark Pomerleau, *DoD's Third Offset Strategy: What Man and Machine Can Do Together*, DEF. SYSTEMS (May 4, 2016), <https://defensesystems.com/articles/2016/05/04/dod-work-on-third-offset-strategy.aspx> (quoting Deputy Secretary of Defense Robert Work, who said that the Third Offset "hypothesizes that advances in artificial intelligence and autonomy—autonomous systems—is going to lead to a new era of human-machine collaboration in combating teaming").

6. See, e.g., Aaron Mehta, *Defense Department Budget: \$18B Over FYDP for Third Offset*, DEF. NEWS (Feb. 9, 2016, 6:38 PM), <http://www.defensenews.com/story/defense/policy-budget/budget/2016/02/09/third-offset-fy17-budget-pentagon-budget/80072048/>.

7. See, e.g., THOMAS L. MCNAUGHER, *NEW WEAPONS OLD POLITICS: AMERICA'S MILITARY PROCUREMENT MUDDLE 3* (1989) (quoting Thomas J. Peters, *The Mythology of Innovation, or a Skunkworks Tale*, STAN. MAG., Summer 1983, at 3, 14 (remarking that most inventions come "from the wrong industry at the wrong time for the wrong reason")); Joshua Pavluk & August Cole, *From Strategy to Execution: Accelerating the Third Offset*, WAR ON THE ROCKS (June 9, 2016), <http://warontherocks.com/2016/06/from-strategy-to-execution-accelerating-the-third-offset/> (describing the challenges for a procurement system that is notoriously slow and risk-averse to keep pace with the rapidly developing technologies that the DoD hopes to acquire).

8. See, e.g., MAX BOOT, *WAR MADE NEW: TECHNOLOGY, WARFARE, AND THE COURSE OF HISTORY: 1500 TO TODAY 9–11* (2006) (arguing that although military technology does not determine fate, "[t]he tools of war do matter").

9. See, e.g., PETER SINGER, *WIRED FOR WAR: THE ROBOTICS REVOLUTION IN THE TWENTY-FIRST CENTURY 102–05* (2009) (describing the exponential technological growth in

of one's adversaries requires constant innovation.¹⁰ For two-and-a-half centuries, the U.S. military has been in the business of procuring immature, even non-existent, technology and pushing the limit of the state of the art.¹¹

the past decades and the possibility of a singularity, "a state in which things become so radically different that the old rules break down and we know virtually nothing").

10. See STEPHEN PETER ROSEN, *WINNING THE NEXT WAR* 57–60 (1994) (describing the need for peacetime innovation, especially in an age of rapid technological growth); William P. Rogerson, *Economic Incentives and the Defense Procurement Process*, J. ECON. PERSP., Fall 1994, at 65, 66 ("A defining characteristic of weapons procurement is the constant pursuit of improved performance and capabilities through technological advance."). However, other factors, such as size, also matter. See, e.g., Charles Morrison, *Technological Superiority No Longer Sufficient for U.S. Military Dominance*, AM. ENTERPRISE INSTITUTE (Aug. 5, 2014, 7:54 AM), <http://www.aei.org/publication/technological-superiority-no-longer-sufficient-for-us-military-dominance/> (observing that "if the US military keeps shrinking, no amount of innovation or advanced technology will make up for real losses in combat power").

11. See JAMES F. NAGLE, *HISTORY OF GOVERNMENT CONTRACTING* 73 (2d ed. 1999) (describing an insatiable demand for guns and munitions during the Revolutionary war that "sowed the seeds of an American arms industry."); *id.* at 108–14 (noting the government's role in the development of standardization in machine tooling and interchangeable parts following the War of 1812); *id.* at 175–76, 184–87 (describing the Civil War as the "first true war of industrial mobilization" and the ensuing technological changes in the broader economy); *id.* at 224–25 (recounting the Navy's requirements for "products more sophisticated than those produced in industry" when building up the fleet in the 1880s); *id.* at 289–94, 338 (explaining that World War I rapidly propelled the aerospace industry forward because "a single advance in fighter performance could bring one side or the other virtual domination of the skies" (quoting BERNARD BRODIE, *STRATEGY IN THE MISSILE AGE* 80 (1959)) and that "fighter aircraft advanced so rapidly that models became obsolete only months after their heralded arrival."); *id.* at 380–87 (describing mobilization efforts in preparation for World War II aiming for "more and better" ships, submarines, tanks, and aircraft); *id.* at 431–41 (recounting the private sector's production of materiel that was "mind-boggling" both in terms of quantity and quality in response to mobilization efforts); *id.* at 452–70 (describing the rise of a specialized defense industry following the Korean War that would deliver on the military's requirements for advanced aircraft, a space program, and a nuclear navy). Nagle's epilogue concludes:

As Alvin Toffler has observed . . . government was the great accelerator. Because of its coercive power, its voracious appetite for supplies and services, and its tax revenues, it was able to accomplish things that private enterprise could not afford to undertake. Government was able to speed up the industrialization process by creating the need for the vast quantities of goods If government had not become involved, industrialization would have come much more slowly, if indeed it would have come at all.

Id. at 519–20. *But see id.* at 184, 255–57 (describing the military's "myopic conservatism" that sometimes failed to recognize the value of innovations such as the Colt revolver and the Wright brothers' flying machine).

Buying new and untested weapons is expensive¹² and, frequently, disappointing.¹³ The DoD has yet to find an innovation investment strategy that reliably delivers useable technology.¹⁴

A recent cover story in *The Economist* warned that the DoD “is fast losing the edge in military technology that inspired confidence in its allies and fear in its foes.”¹⁵ This illustrates that the need to expedite technological development has become acute. Experts debate the best strategy for regaining the technological advantage that the DoD held during the Cold War.¹⁶ These range from more investment in federally-funded research and development centers¹⁷ to the encouragement of joint ventures among incumbent contractors and research universities,¹⁸ and from leveraging the brainpower on tap at the Defense Advanced Research Projects Agency¹⁹ to tapping into

12. Consider the cost overruns in the delivery of the F-35 Joint Strike Fighter: already 50 percent over budget, the Pentagon asked Congress for another \$500 million to support a program that will eventually cost \$1.5 trillion. See Paul Szoldra, *The Pentagon Wants a Half-Billion More Dollars for the F-35*, BUS. INSIDER (Nov. 2, 2016, 5:50 PM), <http://www.businessinsider.com/pentagon-500-million-f35-2016-11>.

13. See Vernon J. Edwards, *Postscript: A Map of Government in Our Time*, 29 NASH & CIBINIC REP. ¶ 33 (2015), at 95, 95 (observing that “[i]nnovation is messy and risky” and that the military sometimes has low tolerance for risk).

14. See U.S. DEP’T DEF., QUADRENNIAL DEFENSE REVIEW 59 (2014) [hereinafter QDR] (observing that “[s]uccessful innovation, particularly for an organization as large and complex as the U.S. military, is difficult”); Renaud Bellais & Josselin Droff, *Innovation, Technology, and Defence Procurement: Reform or Paradigmatic Shift?*, in KEVIN BURGESS & PETER ANTILL, EMERGING STUDIES IN DEFENSE ACQUISITIONS AND MILITARY PROCUREMENT 205, 205 (2017) (observing that the DoD is still looking for the “silver bullet”).

15. See *The Next War*, ECONOMIST (Jan. 27, 2018), <https://www.economist.com/news/leaders/21735586-how-shifts-technology-and-geopolitics-are-renewing-threat-growing-danger>.

16. Compare QDR, *supra* note 14, at 61 (reassuring the reader that despite growing challenges, “[o]ur technological advantages still outpace other state adversaries”), with WILLIAM J. PERRY & JOHN P. ABIZAID, ENSURING A STRONG U.S. DEFENSE FOR THE FUTURE: THE NATIONAL DEFENSE PANEL REVIEW OF THE 2014 QUADRENNIAL DEFENSE REVIEW 21 (2014) (warning that the “erosion of America’s military-technological advantage is accelerating faster than many defense planners assume”).

17. S. Rep. No. 114-263, at 184 (2016) (finding that Federally Funded Research and Development Centers (FFRDCs) “are developing cutting-edge technology that could be used . . . in support of” the Third Offset strategy).

18. See, e.g., MIT, *Lockheed Martin Launch Long-Term Research Collaboration*, ROBOTICS@MIT, <https://robotics.mit.edu/mit-lockheed-martin-launch-long-term-research-collaboration> (last visited May 13, 2018) (describing one such academic and incumbent defense contractor hybrid that is working on autonomy and robotics formed in 2013).

19. See, e.g., Sydney J. Freedberg, Jr., *Faster Than Thought: DARPA, Artificial Intelligence &*

Silicon Valley's technological nous.²⁰ Some would argue that a rewrite of the Federal Acquisition Regulation (FAR) is necessary.²¹ Others contend that the FAR already makes adequate provisions for procuring innovation but that such provisions are underutilized.²² This list is hardly exhaustive.²³ Nor does this Article attempt to settle the wider debate. It addresses a narrower question. It juxtaposes two competing policy options receiving fa-

the Third Offset Strategy, BREAKING DEF. (Feb. 11, 2016, 4:00 AM), <http://breakingdefense.com/2016/02/faster-than-thought-darpa-artificial-intelligence-the-third-offset-strategy/> (describing DARPA's initiative to "rethink complex military systems" in support of the Third Offset strategy).

20. See, e.g., Dan Lamothe, *Pentagon Chief Overhauls Silicon Valley Office, Will Open Similar Unit in Boston*, WASH. POST (May 11, 2016), <https://www.washingtonpost.com/news/checkpoint/wp/2016/05/11/pentagon-chief-overhauls-silicon-valley-office-will-open-similar-unit-in-boston/> (describing the Defense Innovation Experimental Unit and the new defense innovation advisory board led by Google's Eric Schmidt, which are designed to build relationships with leading technology companies).

21. Dan Verton, *Can the Federal Acquisition Process Support Innovation?*, FEDSCOOP (Aug. 27, 2014), <https://www.fedcoop.com/really-needs-done-acquisition-reform/> (reporting that "there is growing concern that the government cannot truly support innovation without a dramatic simplification" of the federal acquisition rules).

22. See Linell A. Letendre, *Google . . . It Ain't Ford: Why the United States Needs a Better Approach to Leveraging the Robotics Industry*, 77 A.F. L. REV. 51 (2017) (exploring various existing authorities that the President could use to compel technology leaders to cooperate with the DoD to develop new military technologies, and suggesting new possibilities for compelling their cooperation); Lt. Col. Dan Ward, *Reform the FAR? Maybe You Should Try Reading It First*, BLOOMBERG GOV'T (Feb. 10, 2016), <http://about.bgov.com/blog/reform-the-far-maybe-you-should-try-reading-it-first/> (explaining that "the FAR does not merely permit federal agencies to reduce administrative burden and embrace simplicity, thrift, speed, flexibility, agility, and innovation," but that it "insists on it," and arguing that "ignorance of the FAR is a greater barrier to innovation and effectiveness than is the FAR itself").

23. See, e.g., Steven L. Schooner & Nathaniel E. Castellano, *Reinvigorating Innovation: Lessons Learned from the Wright Brothers*, CONT. MGMT., April 2016, at 46, 49–53 (using the examples of the Wright brothers' innovations to illustrate several sound principles for acquiring innovation: the use of prizes, the virtues of prototyping, that outsiders often deliver solutions that elude incumbents, that small businesses are more agile and innovative than their larger peers, that risk aversion undermines innovation, and that this is often an international effort). In addition to the literature on pursuing innovation in the federal procurement, the private sector is also fixated on innovation. See, e.g., RYAN BABINEAUX & JOHN KRUMMHOLZ, *FAIL FAST, FAIL OFTEN: HOW LOSING CAN HELP YOU WIN* 99–121 (2013) (describing successful innovators' willingness to fail and to learn from their mistakes); *Disrupting Mr. Disrupter*, ECONOMIST (Nov. 26, 2015), <http://www.economist.com/news/business/21679179-clay-christensen-should-not-be-given-last-word-disruptive-innovation-disrupting-mr-disrupter> (describing Harvard Business School's Clay Christensen's pioneering work on disruptive innovation twenty years ago and the business consulting industry that has sprung up in its wake).

avorable treatment and considers which of these is more likely to succeed.

The first of these two policy options is public-private partnerships (P3s). This Article was first contemplated in response to a question posed by The Air Force Judge Advocate General's School's 2016 National Security Law Writing Competition concerning P3s:

Since its inception, the Air Force has been on the forefront in developing and incorporating cutting-edge technologies to enhance its mission effectiveness, from aircraft to spacecraft to capabilities in cyberspace. However, in an era of constrained resources, the Air Force has had to explore other avenues by which it can *retain its technological superiority while also managing costs. One attractive methodology for accomplishing these goals is the public-private partnership*, which brings public agencies and private entities together to combine resources to achieve common goals and objectives. In fact, the Air Force Future Operating Concept released in September 2015 contemplates that such partnerships with academic and commercial entities will be essential for the Air Force to operate effectively in the future.²⁴

The question presented rests on the premise that P3s are compatible with and even stimulate innovation. Wider enthusiasm for P3s relies on similar assumptions. This Article questions such assumptions. Specifically, it argues that despite their success in some contexts, P3s are ill-suited for the pursuit of technological innovation.

The second policy option is open systems architecture (OSA). OSA requires that weapon systems be composed of severable components “that can be competed separately and acquired from independent vendors.”²⁵ This introduces competition from the beginning of the acquisition process and discourages vendor lock from stifling innovation or driving up costs. This Article posits that innovation is best served when the public sector harnesses market forces yet resists the lure of business relationships that are closer than arm's length. The question is not whether to do business with the private sector, but how. What legal relationship best suits these goals? This Article maintains that OSA may strike the right balance, at least in comparison with P3s.²⁶

24. *The Judge Advocate General's School 2016 National Security Law Writing Competition—Deadline for Submissions: 15 April 2016*, CAREER DEV. OFF. BLOG (Oct. 15, 2015), <https://cdo.law.miami.edu/?p=7447> (emphasis added) (announcing a writing competition from the United States Air Force).

25. *Modular Open Systems Approach*, OFF. OF THE DEPUTY ASSISTANT SECRETARY OF DEF. FOR SYS. ENGINEERING, http://www.acq.osd.mil/se/initiatives/init_mosa.html (last visited May 13, 2018).

26. This Article does not, however, consider other alternatives to P3s. It limits itself to a comparison of P3s and open systems architecture (OSA). Another promising option for cultivating business relationships with startups and thereby tapping their vast potential for innovation is the Small Business Administration's Mentor-Protégé Program. As its name implies, this program pairs large incumbents with smaller firms new to the government con-

Choosing the best innovation policy for the DoD is no trivial matter. Enormous savings would accrue from the right policies; corresponding waste would result from the wrong ones. This is hardly the first attempt to identify a better way forward; more than one hundred studies have been conducted.²⁷ “If even a tenth of the savings promised from all these reform efforts had been realized, we could maintain today’s military for free.”²⁸ When billions are at stake, even small differences matter.

I. BACKGROUND

The DoD’s innovation once outpaced the private sector and public arsenals produced much of the military’s arms.²⁹ The tables have turned. The DoD has relied on private sector arms manufacturers since the Second World War.³⁰ The Korean War gave rise to specialized contractors who

tracts industry. See ROBERT JAY DILGER & KATE M. MANUEL, CONG. RESEARCH SERV., R41722, SMALL BUSINESS MENTOR-PROTEGE PROGRAMS 11 (2012) (recounting the history of the program since its inception in 1991); *Mentor-Protégé Program*, SMALL BUS. ADMIN., <https://www.sba.gov/contracting/government-contracting-programs/8a-business-development-program/mentor-protege-program> (last visited May 7, 2018);

27. Daniel Gouré, *Twenty-Five Years of Acquisition Reform with Little to Show for All the Effort*, LEXINGTON INST. (Oct. 31, 2013), <http://www.lexingtoninstitute.org/twenty-five-years-of-acquisition-reform-with-little-to-show-for-all-the-effort/>.

28. *Id.*

29. The U.S. government built the atom bomb and put a man on the moon, but government’s capacity to innovate can be overstated. If subsidies reliably stimulated genius, the Soviet Union would have produced unrivaled art, music, and literature. It did not. See JEAN-FRANÇOIS REVEL, ANTI-AMERICANISM 106 (Diarmid Cammel trans., 2004). U.S. and Soviet weapons squared off during the Gulf War, and the results proved the free market built better weapons than central planners. See BOOT, *supra* note 8, at 349–50 (recounting that the Soviet Union collapsed immediately after the Gulf War “in part because its leaders found themselves unable to keep up with American advances in commercial and military technology”). However, that the U.S. government has successfully innovated in the past probably has less to do with better central planning and more to do with the profound differences between free market and socialist economic systems. Joseph Schumpeter’s “creative destruction” fuels private-sector innovation. When properly structured, government contracts tap into such market forces. See NAGLE, *supra* note 11, at 442–43 (recounting the government’s reliance on “scientists and engineers in universities and private industry” during World War II).

30. William B. Burnett & William E. Kovacic, *Reform of United States Weapons Acquisition Policy: Competition, Teaming Agreements, and Dual-Sourcing*, 6 YALE J. ON REG. 249, 259 (1989) (explaining that during World War II, following “decades of relying chiefly on a mix of public arsenals and ad hoc private efforts to produce weapons, the United States turned decisively to private companies to meet most of its armaments needs” and that “[s]oon after the War, Congress and DoD decided that, with limited exceptions, privately-owned firms with substantial, permanent defense-related facilities would design and produce weapon systems

still dominate the industry.³¹ In recent years, experts have come to believe that commercial developments will drive next-generation military technology.³²

Whether to outsource defense production to the private sector was decided generations ago. When considering how to stimulate innovation, vexing questions about the nature of government's business relationships reemerge. Answering these questions requires attention to the economics of defense markets, the history of weapons acquisitions, and the contemporary pursuit of deeper partnerships with private industry.

A. *The Defense Market's Imperfections*

Defense is an imperfect market. A normal market is characterized by many buyers and sellers each lacking power to set prices ("market power"); high price elasticity (meaning supply and demand are responsive to minor price changes); spot markets that regularly test prices; fungible products; multiple capable competitors; and easy entry and exit.³³ Defense contrasts with each of these. Buyers and sellers exercise reciprocal market power; production is inelastic; competition is rare as contracts are often long-term

in peacetime").

31. See NAGLE, *supra* note 11, at 452–57 (explaining that the Korean War gave rise to a military-industrial complex and that a specialized industry was necessary because warfare had "enter[ed] the age of complicated specialization and complex weapons systems").

32. In the foreword to a recent book on technological innovation in the defense industry, Judge William Lynn and Admiral James Stavridis write:

Google's recent acquisition of Boston Dynamics, a DARPA-funded organization that develops some of the world's most innovative robots, served the Pentagon with an unsettling notice: the center of gravity in cutting edge, military applicable research is shifting abruptly away from the defense establishment to relatively new commercial firms with loads of cash to invest.

Hon. William J. Lynn III & Admiral James Stavridis, *Foreword* to BEN FITZGERALD & KELLEY SAYLER, *CREATIVE DISRUPTION TECHNOLOGY, STRATEGY, AND THE FUTURE OF THE GLOBAL DEFENSE INDUSTRY* 5 (2014); see also Work, *supra* note 4 (explaining that a "big difference" between the Third Offset and its predecessors is that the previous efforts were largely carried out in military labs, whereas "robotics, autonomous operating guidance and control systems, visualization, biotechnology, miniaturization, advanced computing and big data, and additive manufacturing like 3D printing . . . are being driven by the commercial sector"); QDR, *supra* note 14, at 6 (writing that "pace of technological and scientific innovation in the private sector . . . has the potential not only to revolutionize entire industries but also to enable new ways of providing for U.S. security in the future").

33. See JEFFREY P. BIALOS ET AL., *FORTRESSES AND ICEBERGS: THE EVOLUTION OF THE TRANSATLANTIC DEFENSE MARKET AND THE IMPLICATIONS FOR U.S. NATIONAL SECURITY POLICY* 52 (2009) (providing a table that contrasts perfect markets versus defense markets).

and sole source; only a few firms dominate; and barriers to entry are high.³⁴ Three characteristics are particularly relevant.

First, defense markets are oligopsonies.³⁵ An oligopsony denotes a market where the sellers exercise undue market power, meaning that sellers can set or at least influence prices.³⁶ Such market conditions arise because governments have a monopoly on the legal use of force,³⁷ because export control laws limit foreign arms sales,³⁸ and because defense wares are typically bespoke and cannot be purchased off the shelf.³⁹ Oligopsonies give rise to several pathologies. Governments behave paternalistically to protect domestic defense suppliers, thereby rendering competition meaningless.⁴⁰ Their market power can be used to influence more than just price.⁴¹ And the exercise of oligopsonistic power may, in turn, lead to the creation of oligopolies.⁴²

34. *Id.*

35. William P. Rogerson, *supra* note 10, at 65, 67 (“Government is the only possible buyer of most weapons.”).

36. See JULIE PARSON, AN ILLUSTRATED DICTIONARY OF ECONOMICS 167 (2006) (defining oligopsony); *Economics A–Z, Terms Beginning with M*, ECONOMIST, <http://www.economist.com/economics-a-to-z/m#node-21529762> (last visited May 7, 2018) (defining monopsony).

37. See Moritz Weiss, *Integrating the Acquisition of Leviathan’s Swords? The Emerging Regulation of Defence Procurement Within the EU*, in BEYOND THE REGULATORY POLITY: THE EUROPEAN INTEGRATION OF CORE STATE POWERS 27, 27 (Philipp Genschel & Markus Jachtenfuchs eds., 2013) (citing MAX WEBER, *ECONOMY AND SOCIETY: AN OUTLINE OF INTERPRETIVE SOCIOLOGY* 54–55 (1978)).

38. See, e.g., Rogerson, *supra* note 10, at 67 n.3 (“Government strictly regulates foreign sales, so it can be viewed as exercising control over these sales as well.”).

39. See, e.g., LUKE R.A. BUTLER, *TRANSATLANTIC DEFENCE PROCUREMENT: EU AND US DEFENCE PROCUREMENT REGULATION IN THE TRANSATLANTIC DEFENCE MARKET* 48 (2017) (explaining that in the defense market the state “is typically the exclusive customer requiring bespoke solutions based on specifically defined needs”).

40. See, e.g., MARTIN TRYBUS, *BUYING DEFENCE AND SECURITY IN EUROPE: THE EU DEFENCE AND SECURITY PROCUREMENT DIRECTIVE IN CONTEXT* 32 (2014) (observing that oligopsonies lead states to assume “responsibility for the industrial capability, employment, technical know-how, and research and development” for domestic arms producers).

41. TODD SANDLER & KEITH HARTLEY, *THE POLITICAL ECONOMY OF NATO, PAST, PRESENT, AND INTO THE 21ST CENTURY* 121 (1999) (noting that this market power can be used “to determine all the major features of national defense industries, namely, industry size, structure, ownership, location, conduct, and performance”).

42. See, e.g., Jonah Goldberg, *Democrats and Businessmen, Sitting in a Tree . . . Big Corporations Love Free Enterprise, as Long as it Isn’t too Free*, NAT’L REV., Apr. 2009, at 32 (observing that “what big government likes about big business is that it’s easier to deal with”); Nicholas Lemann, *Notorious Big*, NEW YORKER, Mar. 2016, at 72 (reporting that the “century-old dream of big government as the perfect gladiatorial opponent of big business has often failed

Because defense contractors are few, barriers to entry high, and contracts are long-term and few in number, suppliers exercise reciprocal market power.⁴³ Economists call an environment where this supply-side market power prevails a monopoly (one supplier) or oligopoly (several). Such conditions yield familiar results: “higher prices, inefficiency, monopoly profits, and reduced incentives to innovate.”⁴⁴ Perhaps less familiar is what economists awkwardly call a bilateral monopoly,⁴⁵ where oligopsonistic buyers and oligopolistic sellers do business.⁴⁶ Defense is such a market.⁴⁷ If competition scholars differ on some of the details, they agree that under a bilateral monopoly, prices are at least as high as the prices under a traditional monopoly, if not higher.⁴⁸ Experts have noted the same inefficiencies for bilateral monopolies in defense.⁴⁹

in the real world of American politics”).

43. See, e.g., Martin Trybus, *European Defence Procurement: Towards a Comprehensive Approach*, 4 EUR. PUB. L. 111, 117 (1998) (explaining that the “flip side” of the defense market’s oligopsonistic character is that the major defense contractors constitute oligopolies).

44. SANDLER & HARTLEY, *supra* note 41, at 164 (1999); see also Charles H. Anderton, *Economics of Arms Trade*, in HANDBOOK OF DEFENSE ECONOMICS: DEFENSE IN A GLOBALIZED WORLD 542 (Keith Hartley & Todd Sandler eds., 1995) (explaining that oligopolies create the “potential for collusion and strategic behavior” whereby firms seek to “raise profits through explicit or tacit collusion” and to deter competition).

45. See A.L. Bowley, *Bilateral Monopoly*, 38 ECON. J. 651 (1928) (offering the first analysis of bilateral monopolies and coining the eponymous term).

46. See, e.g., James N. Morgan, *Bilateral Monopoly and the Competitive Output*, 63 Q.J. ECON. 371, 371 (1949) (defining bilateral monopolies).

47. Professional healthcare, sports, and defense are frequent subjects in the literature on dual monopolies. See, e.g., Walter Adams & James W. Brock, *Monopoly, Monopsony, and Vertical Integration in Collusion: Antitrust Policy and Professional Sports*, 42 ANTITRUST BULL. 721, 721–22 (1997) (describing natural bilateral monopolies or cartels that form between management and labor); Roger D. Blair et al., *Hospital Mergers and Economic Efficiency*, 91 WASH. L. REV. 1 (2016) (describing bilateral monopolies in healthcare); William E. Kovacic & Dennis E. Smallwood, *Competition Policy, Rivalries, and Defense Industry Consolidation*, J. ECON. PERSP., Fall 1994, at 91, 94 (describing the bilateral monopoly resulting from the natural monopsony conditions coupled with defense industry consolidation).

48. See Richard D. Friedman, *Antitrust Analysis and Bilateral Monopoly*, 1986 WIS. L. REV. 873, 874–75 (1986) (describing the differing predictions of two prominent theories of bilateral monopolies, which anticipate prices that are either the same as or higher than an ordinary supply-side monopoly).

49. See, e.g., BEN MAGAHY ET AL., TRANSPARENCY INT’L-UK, DEFENCE OFFSETS: ADDRESSING THE RISKS OF CORRUPTION AND RAISING TRANSPARENCY 7 (Julia Muravska & Anne-Christine Wegener eds., 2010) (observing that a “dynamic balance exists between governments’ monopsony power and the industry’s high degree of monopoly power”); BUTLER, *supra* note 39, at 81 (explaining that competition is limited because of domestic bilateral monopolies, where “close interaction between contracting authorities and national

Third, innovation is challenging because its nature “cannot be precisely specified in advance.”⁵⁰ Economists call this contractual incompleteness.⁵¹ Such incompleteness gives rise to substantial renegotiations.⁵² And the uncertainty inherent in developing new technology for a limited market creates an incentive for (oligopolistic) contractors to behave opportunistically.⁵³

Given the foregoing conditions, the unadulterated workings of the invisible hand may yield something other than an efficient outcome.⁵⁴ As a rule, the defense market discourages new entrants, stifles competition, and favors

defence companies” prevents foreign firms from gaining a foothold); *see also* DONALD F. KETTL, *SHARING POWER: PUBLIC GOVERNANCE AND PRIVATE MARKETS* 182–83 (1993) (describing a mutual dependence that arises between the federal government and private contractors); MURRAY WEIDENBAUM, *THE MODEM PUBLIC SECTOR: NEW WAYS OF DOING THE GOVERNMENT’S BUSINESS* 33–34 (1969) (arguing that in “government-oriented corporations” such as defense, contractors try to hang onto government work by “creating a tendency for convergence” and thereby become “virtual appendages of the government”). For a summary of the literature applying the economics of incomplete contracts to P3s, see Gordon Rausser & Holly Ameden, *Incomplete Contracts and Public-Private Partnerships*, in *THE ROUTLEDGE COMPANION TO PUBLIC-PRIVATE PARTNERSHIPS* 127 (Piet de Vries & Etienne B. Yahoue eds., 2013).

50. Thomas P. Lyon, *Does Dual Sourcing Lower Procurement Costs?*, 54 *J. INDUS. ECON.* 223, 223 (2006).

51. *See* Keith J. Crocker & Kenneth J. Reynolds, *The Efficiency of Incomplete Contracts: An Empirical Analysis of Air Force Engine Procurement*, 24 *RAND J. ECON.* 126, 145 (1993) (arguing that “parties face a tradeoff between the costs of drafting a more complete document and the losses associated with incomplete agreements,” and that “the degree of contractual incompleteness chosen in practice reflects the relative magnitudes of these economic costs”—namely the level of technological uncertainty versus the risk of opportunistic behavior).

52. *See* Lyon, *supra* note 50, at 223.

53. *See* Crocker & Reynolds, *supra* note 51, at 129–31 (explaining that the “environmental complexity and the likelihood of opportunism” directly bear on defense procurement contracts because of the “recurring investment in relationship-specific assets by a relatively small group of highly specialized” contractors and because contractors may abuse their “position as the sole provider of an indispensable product to generate high profit”). Although the government is also a monopsony or oligopsony, this does not counterbalance industry’s market power. First, government and industry face different incentives, “as the latter is clearly a profit maximizer while the former . . . is not.” *Id.* at 131 n.13. Second, while the government “is constrained from extreme forms of opportunism” because such behavior could affect the contractor’s continued operations and “significantly reduce future sources of supply,” contractors “do not face the prospect of driving the government out of business and, as a consequence, would appear to have the upper hand in most opportunistic settings.” *Id.*

54. *See generally* Steve G. Calabresi & Larissa C. Leibowitz, *Monopolies and the Constitution: A History of Crony Capitalism*, 36 *HARV. J.L. & PUB. POL’Y* 983 (2013) (describing the history of government-conferred monopolies and their economic and social costs).

long-term relationships with incumbents.⁵⁵ Thus, defense is an imperfect market “where mutually beneficial commerce does not function”⁵⁶ and “that economy which prevails in private affairs” does not suffice.⁵⁷ The DoD’s own experience with weapons acquisitions proves no exception.

B. *Historic Problems with DoD Weapon Systems’ Acquisitions*

The United States prides itself in having a public procurement system that is the envy of the world,⁵⁸ and especially a system that derives its strength from full and open competition.⁵⁹ Reality often diverges from aspiration. In 2013, the DoD awarded forty-three percent of its contracts non-competitively.⁶⁰ Even if weapon systems are purchased competitively in the first instance, they frequently evolve into sole-source contracts because of contractors’ proprietary data and unique expertise.⁶¹ Insufficient

55. See KETTL, *supra* note 49, at 183–86 (identifying three symptoms of relationships between the government and contractors: “convergence of interests, eroding boundaries, and more tightly coupled relationships among them”).

56. Piet de Vries, *The Modern Public-Private Demarcation: History and Trends in PPP*, in THE ROUTLEDGE COMPANION TO PUBLIC-PRIVATE PARTNERSHIPS 9, 10 (Piet de Vries & Etienne B. Yahoue eds., 2013) (quoting Adam Smith’s conclusion that defense, public works, education, and criminal justice are “tasks the Sovereign should take care of”) (citing ADAM SMITH, THE INQUIRY INTO THE NATURE AND CAUSES OF THE WEALTH OF NATIONS 459–61 (1904 ed. (1776))).

57. RISCH, *supra* note 1, at 166 (quoting Major General Schuyler, a commissary officer in the Revolutionary War).

58. See *Politicizing Procurement: Will President Obama’s Proposal Curb Free Speech and Hurt Small Business?: Joint Hearing Before the H. Comm. on Small Bus. and H. Comm. on Oversight and Gov’t Reform*, 112th Cong. 100 (2011) (statement of Daniel I. Gordon, Administrator, Office of Federal Procurement Policy, Office of Management and Budget).

59. Competition in Contracting Act, 41 U.S.C. § 253(a) (2012) (mandating in 1984 that “procurement through full and open competition”); see also Lani A. Perlman, Note, *Guarding the Government’s Coffers: The Need for Competition Requirements to Safeguard Federal Government Procurement*, 75 FORDHAM L. REV. 3187, 3191 (2007) (explaining that the federal government “has traditionally relied on competition to safeguard procurement awards against the dangers of both intentionally bad decision makers, such as government buyers colluding with private-industry sellers, and from the dangers of bad decisions, such as contracts that would not be the best bargain for the government”).

60. *Most DoD Sole-Source Class Justifications Are for Weapon Systems, But Do Not Address Future Competition*, 56 GOV’T CONT. 127, 128 (2014).

61. See *id.* (citing U.S. GOV’T ACCOUNTABILITY OFFICE, GAO-14-427, DEFENSE CONTRACTING: DO D’S USE OF CLASS JUSTIFICATIONS FOR SOLE-SOURCE CONTRACTS 5 (2014) (writing that contracts that were “originally . . . competed” eventually “require sole-source contracts because the programs have moved past the stage in their program lifecycle where competition is economically viable”).

data rights lie at the heart of the problem.⁶² “When the government does not have adequate rights in technical data,” explains Samuel Borowski, an intellectual property attorney with the Air Force General Counsel, “an exception for competition exists.”⁶³ “That exception follows the general rules of unfair competition law: when information provides a competitive edge, the law respects the proprietor’s right to keep it secret.”⁶⁴ Because it lacks data rights, the DoD sometimes initially uses competitive sourcing but later finds itself at the mercy of a single supplier for decades.⁶⁵ This predicament is called vendor lock.⁶⁶

High-tech defense procurement is particularly susceptible to vendor lock. This results from the “long-term nature and interdependencies” in “development[,] and production contracts grant a lasting competitive advantage to an original source.”⁶⁷ To take a recent example, a consortium led by Lockheed Martin developed the F-35 Joint Strike Fighter, and Lockheed will thus likely have a lock on production for the foreseeable future.⁶⁸

These problems are not unique to the Air Force.⁶⁹ Acquisition leaders agree that among the DoD’s “most pressing procurement needs” are “more innovation and more competition.”⁷⁰ Policymakers must, therefore, “en-

62. See U.S. GOV’T ACCOUNTABILITY OFFICE, GAO-12-384, DEFENSE CONTRACTING: COMPETITION FOR SERVICES AND RECENT INITIATIVES TO INCREASE COMPETITIVE PROCUREMENTS 16 (2012) (reporting that the “lack of access to proprietary technical data and a heavy reliance on specific contractors for expertise limit, or even preclude the possibility of, competition.”).

63. Samuel Mark Borowski, *The Inchoate Mistake: Demystifying the Defense Department’s Competition Problem*, 45 PUB. CONT. L.J. 183, 205 (2016).

64. *Id.* (citing RESTATEMENT (FIRST) OF TORTS §§ 757, 759 (AM. LAW INST. 1938)). Borowski explains, “This principle is well ensconced[,]” as is the principle that “all parties have a right to compete as long as they do so fairly and in good faith.” *Id.*

65. *Id.* at 184 (writing that “lack of technical data will justify as many as four out [of] every five” non-competitive contracts within the DoD).

66. See VIRGINIA L. WYDLER, GAINING LEVERAGE OVER VENDOR LOCK TO IMPROVE ACQUISITION PERFORMANCE AND COST EFFICIENCIES 3 (2014) (explaining that the term “describes the situation in which customers depend on a single manufacturer or supplier for some product . . . and cannot shift to another vendor without incurring substantial costs or inconvenience,” and that this “can grant the vendor what amounts to monopoly power”).

67. Borowski, *supra* note 63, at 242.

68. See *id.* at 242–43.

69. For example, the *Quadrennial Defense Review* seemingly favors incumbents with its commitment to support the existing defense industrial base at the expense of competition from newcomers. See QDR, *supra* note 14, at 9 (“U.S. innovations in warfighting . . . are built on the continued strength of our defense industrial base, a national asset that the Department of Defense is committed to supporting.”) (emphasis added).

70. Borowski, *supra* note 63, at 183–84.

sure the market remains accessible to others rather than closed to all but the original source.”⁷¹ The DoD has paid dearly for the failure to do so in the past.⁷² It is therefore striking that many would have the DoD use P3s to acquire innovation, as this policy option entails even longer-term contracts that would undermine competition.⁷³

C. Efforts to Build Industry Partnerships

The DoD and the services express high hopes in the use of private sector “partnerships” for defense procurement. It is sometimes unclear what such encomiums to “partnerships” mean. They may refer to P3s or merely to outsourcing in a general sense, among other things. Insofar as is possible, this Section attempts to untangle what partnership signifies in the various DoD strategy documents. This effort is inconclusive, so this Article ultimately proceeds on the assumption that usage of the word “partnership” often refers to P3s and not just to outsourcing or privatization more generally.

In defense and foreign policy circles, partnership is the word of the day.⁷⁴ This refers not only to the private-sector partnerships considered in this Article⁷⁵ but also the salutary impulse to eschew unilateral efforts and leverage

71. *Id.* at 243; *see also* WYDLER, *supra* note 66, at 4 (faulting the DoD for seeing competition “as an activity that occurs only during the initial contracting process, rather than as a dynamic tool for achieving success over the life of a program”).

72. *See, e.g.*, U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-15-342SP, DEFENSE ACQUISITIONS: ASSESSMENT OF SELECTED WEAPON PROGRAMS 11 (2015) (describing the average cost growth of forty-seven percent and average schedule overrun of twenty-seven months in defense procurement); OFFICE UNDER SEC'Y DEF., ANNUAL INDUSTRIAL CAPABILITIES REPORT TO CONGRESS 75 (2009) (explaining that “a series of sole-source relationships” in the vertical life industry has left “few real competitive opportunities among helicopter prime contractors to force technology refresh cycles” and that “[w]ith limited competition, few new platform contracts, and declining government technology investments, industry has been left with little incentive to invest in independent research”).

73. Great hopes are pinned on P3s. Even from a charitable perspective, just how their advocates would suppose that P3s actually deliver innovation is unclear. From the author's perspective, P3s are likely to have the opposite effect. That is because P3s are by definition long-term, often lasting much longer than traditional government contracts. *See infra* notes 140, 213, and 296 and accompanying text. Hitching one's wagon to today's technology leaders is no guarantee that these firms will retain their edge. On the contrary, most innovation comes from more nimble startups.

74. *See generally* QDR, *supra* note 14 (repeating the word “partnership” twenty-nine times and “partner” another ninety-eight).

75. *See id.* at 6 (stating that “the pace of technological and scientific innovation in the private sector . . . has the potential not only to revolutionize entire industries but also to enable new ways of providing for U.S. security in the future”). The DoD's efforts to partner

the United States' vast web of friends and allies abroad.⁷⁶ Overuse of this term creates confusion because its meaning varies widely. For example, security cooperation between two nation-states and the association of two or more persons in a business enterprise may both be called "partnerships," but the superficial similarities of these relationships may be misleading. Care must be taken to understand what "partnership" means in each context.

Take for example the Air Force. "Building partnerships" is among the Air Force's twelve service core functions,⁷⁷ but just what "partnership" means remains unclear.⁷⁸ Strategic planning documents have also sown confusion.⁷⁹ Sometimes this term stands in for joint affairs, referencing the Air Force's relationships with sister services.⁸⁰ Sometimes it describes the

with the private sector track a larger trend in governments around the world. See Roger Wettenhall, *The Rhetoric and Reality of Public-Private Partnerships*, 3 PUB. ORG. REV. 77, 78–81 (2003) (summarizing the popularity of partnerships in Australia, Canada, and beyond and explaining that they are sometimes called a "third way" because they are thought to offer an alternative to contracting and privatization).

76. See QDR, *supra* note 14, at 9 (listing the strength of alliances and partnerships among America's comparative advantages and writing that its strength is unparalleled).

77. See Gen. Mark A. Welsh III, *A Call to the Future: The New Air Force Strategic Framework*, AIR & SPACE POWER J., May–June 2015, at 3, 9 n.7.

78. See *id.* at 8 (distinguishing a "government partner" from several other categories but failing to define what exactly an Air Force partner is). Admittedly, this confusion is not isolated to the failure to properly define a term or a single poorly-drafted strategic planning document. Such muddled thinking is not uncommon in these planning documents. See generally RAPHAEL S. COHEN, AIR FORCE STRATEGIC PLANNING: PAST, PRESENT, AND FUTURE (2017) (examining the value of Air Force strategic planning documents and making recommendations on the way forward).

79. See generally U.S. DEP'T OF AIR FORCE, AIR FORCE FUTURE OPERATING CONCEPT (2015) [hereinafter FUTURE OPERATING CONCEPT] (using "partnership" five times and "partner" another fifty-four times); U.S. DEP'T OF AIR FORCE, USAF STRATEGIC MASTER PLAN (2015) [hereinafter STRATEGIC MASTER PLAN] (using "partnership" eight times and "partner" forty-seven times); U.S. DEP'T OF AIR FORCE, AMERICA'S AIR FORCE: A CALL TO THE FUTURE (2014) [hereinafter CALL TO THE FUTURE] (using "partnership" twelve times and "partner" nine times); *id.* at 4 (calling a motley crew that includes other agencies, the DoD, sister services, Congress, and private industry "teammates" and "partners"). Cf. Robert Farley, *An Air Force Strategy Stuck in the Future*, REALCLEARDEF. (Sept. 9, 2014), https://www.realcleardefense.com/articles/2014/09/02/air_force_sees_the_future_ignores_the_present_107407.html (criticizing the confusion the Air Force causes by lumping together several conceptually incompatible relationships as forms of partnerships).

80. See FUTURE OPERATING CONCEPT, *supra* note 79, at 2, 6, 10, 11, 14, 17; CALL TO THE FUTURE, *supra* note 79, at 13 (observing that "Airmen have fought and died beside our sister service forces" in Afghanistan and Iraq and attained the lasting integration); STRATEGIC MASTER PLAN, *supra* note 79, at 28 (reporting that the Air Force works best in

overlapping domains that the services and other federal government agencies operate in.⁸¹ Sometimes it concerns formal or informal alliances,⁸² and working within the agreements or organizations binding these nations together.⁸³ Sometimes it has to do with the government's relationships with private businesses.⁸⁴ The range of meaning suggests that the DoD and its components are enamored with partnerships⁸⁵ but fail to define just what they are.⁸⁶

Even when the DoD is clearly speaking about *private* partnerships, this may refer to one of several initiatives only loosely related to one another. For example, the 2013 National Defense Authorization Act expanded authority for community partnerships that allow installations to buy goods

collaboration with joint partners “to leverage and synchronize our collective strengths”).

81. See FUTURE OPERATING CONCEPT, *supra* note 79, at 10–11 (describing federal agencies' collaborative effort to confront cybersecurity threats); CALL TO THE FUTURE, *supra* note 79, at 13 (observing that “the integration of air, space, and cyberspace capabilities with those of our joint partners” creates synergies and that “a rapidly changing” security environment “require[s] more creative ‘whole of government’ approaches”); STRATEGIC MASTER PLAN, *supra* note 79, at 28 (stating the need for deeper relationships with “the intelligence community, diplomatic institutions, and developmental agencies”).

82. See FUTURE OPERATING CONCEPT, *supra* note 79, at 10, 14–15; CALL TO THE FUTURE, *supra* note 79, at 13 (emphasizing the importance of “maintaining long-proven alliances”); STRATEGIC MASTER PLAN, *supra* note 79, at 28–29 (explaining the significance of working with foreign militaries).

83. See FUTURE OPERATING CONCEPT, *supra* note 79, at 21 (listing international organizations and nongovernmental organizations as important strategic partners); CALL TO THE FUTURE, *supra* note 79, at 13 (describing the importance of international coalitions); STRATEGIC MASTER PLAN, *supra* note 79, at 28–29.

84. See FUTURE OPERATING CONCEPT, *supra* note 79, at 23, 26–28, 36, 40, 44 (predicting that that the Air Force must “[c]apitalize on industry” and “[d]eepen our relationships” with businesses); CALL TO THE FUTURE, *supra* note 79, at 13 (encouraging a “habitual dialogue” and “[s]trengthen[ing] relationships” with industry); STRATEGIC MASTER PLAN, *supra* note 79, at 28 (recommending “engage[ment] [with] industry partners”).

85. See JIM MATTIS, SUMMARY OF THE 2018 NATIONAL DEFENSE STRATEGY: SHARPENING THE AMERICAN MILITARY'S COMPETITIVE EDGE (2018) [hereinafter NATIONAL DEFENSE STRATEGY (2018)] (employing variations of the word “partner” no fewer than forty times in eleven pages but failing to define the term); PRESIDENT DONALD TRUMP, NATIONAL SECURITY STRATEGY (2017) [hereinafter NATIONAL SECURITY STRATEGY (2017)] (likewise repeating variations of “partner” more than 150 times in fifty-five pages).

86. The confusion about what partnership means in the DoD parallels a similar confusion about the meaning of P3s around the world. Wettenhall, *supra* note 75, at 80 (noting that there is “little precision” in how the term is used). Yet the consensus is that whatever P3s are, they are a “good thing.” *Id.* (describing this view as an article of faith).

and services using existing state and local contract vehicles.⁸⁷ Separately, housing on military installations has been privatized⁸⁸ successfully by some accounts.⁸⁹ Yet the DoD's special interest in partnerships as to innovation lies in a particular type of private partnership.

The partnership in question is the P3. The *National Security Strategy* has touted it on and off for two decades.⁹⁰ The Clinton Administration's 1998 *Strategy* first mentioned P3s,⁹¹ and its 2000 *Strategy* endorsed them again.⁹² Both Obama Administration editions mentioned P3s.⁹³ The 2010 version, in particular, dilated on P3s' potential benefits to national security:

87. See National Defense Authorization Act for Fiscal Year 2013, Pub. L. No. 112-239, 126 Stat. 1632 § 331 (2013). For background on the history of installations collaborating with local communities in this manner and a study of this new initiative, see BETH E. LACHMAN, SUSAN A. RESETAR & FRANK GAMM, *MILITARY INSTALLATION PUBLIC-TO-PUBLIC RELATIONSHIPS* (2016). Communities near installations are, understandably, eager for such partnerships. See, e.g., ASS'N DEF. COMMUNITIES, *ADVANCING PUBLIC-PRIVATE PARTNERSHIPS IN DEFENSE COMMUNITIES: AN ADC POLICY PAPER* (2007), https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=2ahUKEwjz5S_vfTaAhVjdt8KHTQ3C7cQFjAAegQIABAo&url=http%3A%2F%2Fwww.ncdsv.org%2Fimages%2FADC_Advancing-public-private-partnerships-in-defense-communities_2007.pdf&usg=AOvVaw0mrS94CF-MEMoaP2qqlgHF.

88. See David W. Gaffey, *Outsourcing Infrastructure: Expanding the Use of Public-Partnerships in the United States*, 39 PUB. CONT. L.J. 351, 358–59 (2010) (describing the 1996 Military Housing Privatization Initiative as one of America's largest P3 projects to date).

89. Whether one considers privatized housing a success depends on the metric. If success means reducing costs, the venture has undoubtedly succeeded. *Id.* (citing the General Accountability Office's [now Government Accountability Office's] 2002 study indicating that the government paid only \$185 million for what otherwise would have cost \$1.19 billion). But if end-user satisfaction is factored in, anecdotal evidence would suggest that the results are less clear cut.

90. Even if P3s received less attention during George W. Bush's Administration, Republican administrations have proven equally supportive of initiatives to privatize government functions if not more so. See, e.g., Kelsey Hogan, *The Business of Nation-Building: Protecting the Public in Public-Private Partnerships: Strategies for Enduring Adaptability in Concession Contracts*, 2014 COLUM. BUS. L. REV. 420, 429 (2014).

91. See WHITE HOUSE, *A NATIONAL SECURITY STRATEGY FOR A NEW CENTURY* 18 (1998) (recommending \$2 billion for a P3 that would teach children to reject drugs).

92. See WHITE HOUSE, *A NATIONAL SECURITY STRATEGY FOR A GLOBAL AGE* 21 (2000) (reporting \$400 million spent on P3s for antipersonnel mine removal efforts).

93. See WHITE HOUSE, *NATIONAL SECURITY STRATEGY* 18–19 (2010) [hereinafter *NATIONAL SECURITY STRATEGY* (2010)] (describing P3s as a tool to help governments prepare for terrorist attacks and natural disasters); PRESIDENT BARACK OBAMA, *NATIONAL SECURITY STRATEGY* 27 (2015) (reporting that the U.S. government has used P3s in Latin America to support “education, sustainable development, access to electricity, climate resilience, and countering transnational organized crime.”).

Improve Resilience Through Increased Public-Private Partnerships: . . . We must, therefore, strengthen public-private partnerships by developing incentives for government and the private sector to design structures and systems that can withstand disruptions and mitigate associated consequences, ensure redundant systems where necessary to maintain the ability to operate, decentralize critical operations to reduce our vulnerability to single points of disruption, develop and test continuity plans to ensure the ability to restore critical capabilities, and invest in improvements and maintenance of existing infrastructure.⁹⁴

This passage suggests that policymakers maintain that P3s can incentivize the private sector to develop new technology and thereby stimulate innovation.⁹⁵ Similarly, in 2013 then-Deputy Secretary of Defense, Ashton Carter, and the Vice Chairman of the Joint Chiefs, signed a policy memorandum entitled “Public-Private Partnerships Supporting the DoD Mission” underscoring the Obama Administration’s commitment to P3s.⁹⁶

The Obama Administration’s 2010 *National Security Policy* is one of the few official policy statements explicitly connecting P3s and innovation,⁹⁷ but several others leave the door open to that possibility.⁹⁸ Two recent Air

94. NATIONAL SECURITY STRATEGY (2010), *supra* note 93, at 19; *see also id.* at 16 (calling partnerships “critical” to U.S. security at home and abroad).

95. *See* James Stavridis & Evelyn N. Farkas, *The 21st Century Force Multiplier: Public Private Collaboration*, 35 WASH. Q. 7, 7 (2012) (observing that the 2010 *National Security Policy* “calls on the executive branch to work with the private sector, repeatedly referring to public-private partnerships”).

96. *See* Memorandum from Ashton Carter, Deputy Sec’y of Def., & Admiral James A. Winnefeld, Jr., Vice Chairman, Joint Chiefs of Staff, to Sec’ys of the Military Dept’s, Under Sec’ys of Def., Deputy Chief Mgmt. Officer, Combatant Commands, Dir. of Cost Assessment and Program Evaluation, Dir. of Operational Test and Evaluation, DoD Gen. Counsel, DoD Inspector Gen., Assistant Sec’ys of Def., Public-Private Partnerships Supporting the DoD Mission, (Apr. 25, 2013) (directing components to remove impediments to P3s and encouraging their use).

97. *See* U.S. DEP’T OF DEF., PUBLIC-PRIVATE PARTNERING FOR PRODUCT SUPPORT: GUIDEBOOK 12 (2016) (anticipating that P3s would “introduce commercial innovation, technology, and management practices into organic product support processes”); U.S. DEP’T OF STATE, QUADRENNIAL DIPLOMACY AND DEVELOPMENT REVIEW 22 (2010) (promising to build P3s and that these “partnerships will promote innovation and technological change.”). The Obama Administration was even more aggressive in promoting P3s outside of the DoD, in particular with its launch of the Build America Investment Initiative in 2014. *See* Jean Heilman Grier, *PPPs #5: Treasury Papers on PPP Use in U.S.*, PERSPS. ON TRADE (June 14, 2016), <http://trade.djaghe.com/?p=2939> (summarizing the Administration’s P3s promotion efforts and attempts to describe the “conditions under which a [P3] can be a better means of undertaking an infrastructure project than conventional procurement”).

98. *See* QDR, *supra* note 14, at v–viii, 12, 22 (three times mentioning “innovative partnerships,” perhaps alluding to P3s, and four times calling “innovation” “paramount” or “a central line of effort”); NATIONAL DEFENSE STRATEGY, *supra* note 85, at 8 (describing a strat-

Force strategy documents extol P3s' virtues and capacity to stimulate innovation.⁹⁹ Whatever official policy may be, the literature is filled with glowing praise for P3s' potential as engines for innovation,¹⁰⁰ the legislative authority for implementing P3s already exists,¹⁰¹ and success stories are

egy that will employ "new public-private partnerships to work with small companies, startups, and universities" as necessary for developing a "modern, agile, information-advantaged" military); NATIONAL SECURITY STRATEGY (2017), *supra* note 85, at 21 (though not using the term "P3," stating that to innovate the DoD "will establish strategic partnerships with U.S. companies to help align private sector research and development (R&D) resources to priority national security applications").

99. See CALL TO THE FUTURE, *supra* note 79, at 13 (arguing that private sector partnerships are "fertile ground" for innovation and technological development); STRATEGIC MASTER PLAN, *supra* note 79, at 28 ("Industry is our key partner in developing technology and delivering and sustaining systems and platforms for the warfighter."). Even if P3s are not specifically mentioned in these two documents, the sorts of partnerships contemplated resemble P3s more than they do traditional contracts. The "law disfavors perpetual contracts." 17A AM. JUR. 2D *Contracts* § 457 (2018). Partnerships, by contrast, imply a relationship that is longer term and stickier than a contract between a buyer and seller operating at arm's length. In this respect, Air Force "partnerships" with defense contractors would resemble P3s more than traditional contracts, public or private.

100. See, e.g., First Lieutenant Matthew H. Ormsbee, *Silicon Symbiosis: A Blueprint for Public-Private Partnerships in U.S. Air Force Acquisition of New Technology*, 77 A.F. L. REV. 235, 249–50 (2017) (arguing that P3s "are highly suitable for technology development and acquisition"); Sarah E. Light, *The Military-Environmental Complex*, 52 B.C. L. REV. 879 (2014) (describing efforts to use P3s for innovation in conservation research); Alex Ward, *Air Force Has the Strategic Edge: a New Strategy Shows the Service's Enduring Value*, REALCLEARDEF. (Aug. 13, 2014), http://www.realcleardefense.com/articles/2014/08/13/air_forces_new_strategy_the_best_of_its_kind_107365.html (arguing that "since it is now known that technologies will not only change the battlefield but also civilian life, the U.S. government needs to strengthen [P3s] to anticipate, shape, and leverage technological change"); Stavridis & Farkas, *supra* note 95, at 9–13 (advocating greater use of P3s to establish enduring relationships with firms having technological, innovation, and entrepreneurial expertise). Even more has been written about P3s' role in innovation generally than about their role in defense innovation. See, e.g., ALBERT N. LINK, PUBLIC/PRIVATE PARTNERSHIPS: INNOVATION STRATEGIES AND POLICY ALTERNATIVES 24–25 (2006) (describing P3s' role in correcting market failure in research funding); Louis Witters, Revital Marom & Kurt Steinert, *The Role of Public-Private Partnerships in Driving Innovation*, in THE GLOBAL INNOVATION INDEX 2012: STRONGER INNOVATION LINKAGES FOR GLOBAL GROWTH 81, 86 (Soumitra Dutta ed., 2012) (arguing that P3s are indispensable for funding research for immature technologies that the market would not otherwise support).

101. See, e.g., IKE K. CHANG ET AL., USE OF PUBLIC-PRIVATE PARTNERSHIPS TO MEET FUTURE ARMY NEEDS 45–53 (1999) (explaining that more flexible contracts vehicles were created in the 1990s to make P3s possible and that these include Cooperative Research and Development Agreements (CRADAs), Cooperatives Agreements (CAs), and Other Transaction Authorities (OTAs)).

plentiful.¹⁰²

Whether the DoD has committed itself to using P3s specifically for innovation is unclear. Undoubtedly, some high-ranking officials view P3s as the next big thing and a promising avenue for technological development.¹⁰³ Yet the DoD has never said so explicitly.¹⁰⁴ At the same time, it seems using P3s in this way is what the strategy documents reviewed above contemplate.¹⁰⁵ Because of their track record, P3s have become a fashionable poli-

102. See, e.g., Samuel Bendett, *Defense Partnerships: Documenting Trends and Emerging Topics for Action*, DEF. HORIZONS, March 2015, at 1, 11 n.1 (reporting that P3s are “time-proven effective solutions” based on a review of more than 4,000 examples); Vincent J. Napoleon & Diana Vilmenay, *Public-Private Partnerships—Is This a New Concept in Government Contracting?*, NIXON PEABODY (June 12, 2015) <https://www.nixonpeabody.com/en/ideas/articles/2015/06/12/public-private-partnerships-is-this-a-new-concept-in-government-contracting> (reporting that many examples of “successful uses of P3s or some variation thereof for military and defense projects” exist); *School Reform: Pakistan Is Home to the Most Frenetic Education Reforms in the World*, ECONOMIST (Jan. 4, 2018), <https://www.economist.com/news/briefing/21733978-reformers-are-trying-make-up-generations-neglect-pakistan-home-most-frenetic> (describing Pakistan’s rapid advances in education using P3s).

103. For example, the former Supreme Allied Commander Europe, Admiral James Stavridis, coauthored a piece cited above arguing that P3s are underutilized and can foster innovation. See Stavridis & Farkas, *supra* note 95, at 9–13. General Steven W. Wilson, Vice Chief of Staff of the Air Force, also said while heading Air Force Global Strike Command, that he endorsed public-private partnerships to fund research into more fuel-efficient B-52 engines. See Aaron Mehta, *USAF Looking at B-52 Engine Options*, DEF. NEWS (Feb. 12, 2015), <https://www.defensenews.com/home/2015/02/12/usaf-looking-at-b-52-engine-options/>. Likewise, Admiral James A. Winnefeld, Jr., then-Vice Chairman of the Joint Chiefs of Staff, lauded the “innovation and creative thinking” that come from P3s. See Nick Simeone, *Winnefeld: Military’s Public-Private Partnerships Yield Benefits*, U.S. DEP’T OF DEF. (Sept. 29, 2014), <https://www.defense.gov/News/Article/Article/603345/winnefeld-militarys-public-private-partnerships-yield-benefits/>. Further, two more junior Air Force officers recently endorsed P3s as a key policy tool for developing next-generation military technology. See generally Nicholas C. Frommelt, *Better Buying Power and Incentivizing Public-Private Partnerships Through Non-Monetary Incentives*, ARMY LAW, Jan. 2017, at 13–23; Ormsbee, *supra* note 100, at 235.

104. But see Jared Serbu, *DoD Wants New Public-Private Partnerships to Get its Satellites into Space*, FED. NEWS RADIO (Jan. 28, 2016, 5:36 AM), <https://federalnewsradio.com/defense/2016/01/dod-wants-new-public-private-partnerships-get-satellites-space/> (describing plans to stimulate competition and innovation for the production of space launch technology using P3s).

105. See *supra* notes 77–97 and accompanying text (reviewing what Air Force and DoD strategy documents say about P3s and innovation); see also DEF. BUS. BD., REPORT TO THE SECRETARY OF DEFENSE, PUBLIC-PRIVATE COLLABORATION IN THE DEPARTMENT OF DEFENSE (2012) (responding to a tasking from the Vice Chairman of the Joint Chiefs of Staff to prepare a report on how the DoD “could more fully exploit the benefits” of private collaboration and finding that opportunities for further cooperation exist in innovation).

cy tool and have an alluring solution for all manner of problems governments face,¹⁰⁶ including efficiently using public funds to build a better mouse trap.¹⁰⁷ Based on the available evidence, this Article posits that the DoD is either already staking its innovation dollars on P3s or soon may be inclined to do so. The next Section explains why this is a risky wager.

II. PUBLIC-PRIVATE PARTNERSHIPS

Bipartisan agreements are few. Yet a consensus about P3s is emerging.¹⁰⁸ Indeed, P3s' "value in building infrastructure is not theoretical."¹⁰⁹ Although some evidence undermining the irrational exuberance for P3s is presented, the goal is not to debunk P3s. The aim is narrower. After providing some background and reasons for doubting that P3s could remedy all that ails the public sector, this Section argues that whatever their merits elsewhere, P3s are unlikely to stimulate innovation; they would likely have the opposite effect. They would entrench vendor lock with incumbents who are less likely to deliver innovation than more spritely newcomers.

A. Background

Lost amid the enthusiasm for P3s is the fact that they are nothing new.¹¹⁰

106. See, e.g., Wettenhall, *supra* note 75, at 77 (explaining that P3s have become so fashionable that "it is difficult today to open a public sector management journal, look at a prospectus for a public sector management conference or a publisher's list of new books on public sector management, or even scan a policy statement about public sector management from a politician, without seeing a reference to [them]").

107. See, e.g., Witters, Marom & Steinert, *supra* note 100, at 85–86 (calling P3s "critical instruments for innovation," touting their success in healthcare and agriculture innovation, and describing their potential for the information technology sector).

108. See, e.g., Ben Goldman, *Do Brookings and Heritage Agree on Public-Private Partnerships?*, STREETS BLOG USA (Jan. 20, 2012), <https://usa.streetsblog.org/2012/01/20/do-brookings-and-heritage-agree-on-public-private-partnerships/> (observing that although these think tanks come from opposite sides of the spectrum and rarely agree on any subject, there is an emerging consensus regarding P3s). But see Cynthia Mog, *The P3 Wars*, LAW360 (July 13, 2015), <http://www.law360.com/articles/677967/print?section=governmentcontracts> (describing the grassroots opposition to the emerging consensus among academics and policy-makers); Graeme A. Hodge & Carsten Greve, *Public-Private Partnerships: An International Performance Review*, 67 PUB. ADMIN. REV. 545, 549 (2007) (describing the extreme rhetoric on both sides of the P3 debate).

109. Samuel R. Staley, *The Infrastructure Bank We Need*, NAT'L REV., Dec. 31, 2016, at 18, 20 (citing successful P3s in Colombia, Chile, France, Mexico, Germany, Ireland, the Netherlands, Slovakia, Japan, and China).

110. See, e.g., Hodge & Greve, *supra* note 108, at 545, 553 (arguing that "much confu-

“From the perspective of American history,” writes William Novak, P3s are “distinctly old rather than surprisingly new.”¹¹¹ Opinions about their origin vary. Some trace precursors to ancient Rome.¹¹² Others say P3s originated in seventeenth century France¹¹³ or colonial America.¹¹⁴ Whatever their origin,¹¹⁵ it seems that modern P3s took root in the UK,¹¹⁶ spread to Eu-

sion” surrounds “what is new about the partnership forms that are in vogue today,” that “history indicates that there has always been some degree of cooperation,” and that P3s have a “long historical pedigree”); Wettenhall, *supra* note 75, at 80 (criticizing the unfounded popularity of P3s and observing that the “rhetorical power of a new slogan can blind us to the fact that the idea on which it is based is far from new”).

111. William J. Novak, *Public-Private Governance: A Historical Introduction*, in GOVERNMENT BY CONTRACT: OUTSOURCING AND AMERICAN DEMOCRACY 23, 39 (Jodi Freeman & Martha Minow eds., 2009); *see also* David Menefee-Libey et al., *Symposium: Governing the United States in 2020: The Real World of Interdependence of Governments and Corporations: What We Know vs. What We Teach*, 2014 UTAH L. REV. 927, 927 (2014) (reporting that American, Canadian, and British governments have used P3s for centuries whenever “governments have wanted to accomplish important policy purposes . . . but have lacked the means to accomplish those purposes on their own”).

112. John Forrer et al., *Public-Private Partnerships and the Public Accountability Question*, 70 PUB. ADMIN. REV. 475, 475 (2010) (citing “the use of private tax and toll road collectors”); Napoleon & Vilmenay, *supra* note 102 (attributing the origin the reign of Caesar Augustus who granted “concessions to the Salassi tribe and authorized them to raise money (by way of tolls) from travelers crossing the Saint Bernhard Pass”).

113. *See* Darrin Grimsey & Mervyn K. Lewis, *Introduction* to THE ECONOMICS OF PUBLIC PRIVATE PARTNERSHIPS, at xiii (Darrin Grimsey & Mervyn K. Lewis eds., 2005) (arguing that although the literature on P3s is relatively new, “the concept itself is not new;” calling the French the “founder[s]” of modern P3s with the award of a concession contract to construct a canal in 1638).

114. *See, e.g.*, de Vries, *supra* note 56, at 11–19 (describing P3s and the emergence of modern economies in Holland, Britain, and America); Dominique Custos & John Reitz, *Public-Private Partnerships in the USA*, 58 AM.J. COMP. L. 555, 557, 569–70 (2010) (arguing that national roads projects in early nineteenth century America were the “precursors” to P3s and that although “often touted as new,” the “basic ideas . . . are seen in government contracts going back to the founding of the Republic, if not before.”); Forrer et al., *supra* note 112, at 475 (arguing that the Continental Congress’s enlistment of “privateers to harass the British Navy” was an early example of a P3); Chris Brown, *The Back Door to Socialism*, MISES.ORG (Dec. 12, 2008), <https://mises.org/print/9363> (claiming that P3s in America date back to the Water Works Company of Boston in 1652).

115. *See, e.g.*, DAVID HALL, WHY PUBLIC-PRIVATE PARTNERSHIPS DON’T WORK: THE MANY ADVANTAGES OF THE PUBLIC ALTERNATIVE 7 (2015) (equating P3s with concession contracts that “have existed for centuries” whereby private companies invest their money “in return for which the state guaranteed a monopoly”); Katharine Southard, *U.S. Electric Utilities: The First Public-Private Partnerships?*, 39 PUB. CONT. L.J. 395, 400–02 (2010) (arguing that electric companies in the early twentieth century functioned as P3s “before the nomenclature . . . even existed”); *cf.* Calabresi & Leibowitz, *supra* note 54, at 1008–67 (2013) (re-

rope,¹¹⁷ and reemerged in the United States in the 1990s.¹¹⁸ The enthusiasm in the United States took root under the Clinton Administration's reinventing government initiative,¹¹⁹ and has since been rapidly transplanted.¹²⁰ Between 1996 and 2008, use of P3s for public transportation increased ten-fold.¹²¹

Part of the allure is that P3s are said to constitute a new revenue stream.¹²² Private funds supplement public coffers whenever the govern-

counting the history of royally granted monopolies in England since 1624); *id.* at 1009–67 (recounting America's own history of state-granted monopolies).

116. *See, e.g.*, CHRISTOPHER BOVIS, PUBLIC-PRIVATE PARTNERSHIPS IN THE EUROPEAN UNION 76 (2014) (reporting that the UK claims “intellectual paternity” for the modern P3 based on the Blair Administration's Public Finance Initiative); Hogan, *supra* note 90, at 429 (citing JOHN D. DONAHUE, THE PRIVATIZATION DECISION: PUBLIC ENDS, PRIVATE MEANS 4 (1989)) (attributing the modern P3 to Margaret Thatcher's Administration); Antonio Estache & Stéphane Saussier, *Public Private Partnerships and Efficiency: A Short Assessment* 2, IAE PANTHEON SORBONNE DISCUSSION PAPER, July 2014 (explaining that although concession contracts have existed for some time, the modern P3 originated more recently in the UK); David Parker & Keith Hartley, *Transaction Costs, Relational Contracting, and Public Private Partnerships: A Study of UK Defence*, 9 J. PURCHASING & SUPPLY MGMT. 97, 98 (2003) (observing that “the UK has dominated Europe in terms of both the number and value of [P3s]”). *But see Britain's Hard Bargains*, ECONOMIST (Jan. 18, 2018), <https://www.economist.com/news/leaders/21735028-britain-worlds-leading-privatiser-public-services-needs-get-better-it-carillions> (observing that the country that pioneered “contracting out” public services risks becoming a cautionary tale in the wake of the Carillion scandal).

117. *See, e.g.*, de Vries, *supra* note 56, at 21–24 (describing the spread of P3s to Europe and around the world).

118. *See* EDUARDO ENGEL, RONALD D. FISCHER & ALEXANDER GALETOVIC, THE ECONOMICS OF PUBLIC-PRIVATE PARTNERSHIPS: A BASIC GUIDE 7 (2014) (reporting that although the United States lags behind Europe, use of P3s has been growing rapidly in the last two decades). P3s are not entirely new in the United States. P3s in the form of concession contracts have a history in America dating back to colonial times but the practice fell into disuse. For example, Virginia opened the Dulles Greenway tollway in 1995, its first private toll road since 1816. *See* Jay Sharma, *Public-Private Partnership Projects in the United States*, in INTERNATIONAL PUBLIC PROCUREMENT 401, 407–09 (Roberto Hernández García ed., 2009).

119. *See* Custos & Reitz, *supra* note 114, at 565.

120. *See id.* at 562.

121. *See* Etienne B. Yehoue & Piet de Vries, *Introduction* to THE ROUTLEDGE COMPANION TO PUBLIC-PRIVATE PARTNERSHIPS I (Piet de Vries & Etienne B. Yehoue eds., 2013).

122. *See, e.g.*, ENGEL, FISCHER & GALETOVIC, *supra* note 118, at 12–13 (reciting the argument that P3s “allow governments to provide infrastructure without raising taxes” and detailing the problems with this argument); Ron Hodges, *Accountability and Accounting for Public-Private Partnerships*, in THE ROUTLEDGE COMPANION TO PUBLIC-PRIVATE PARTNERSHIPS

ment cannot afford what it wants to buy or build. Governments around the world enter into P3s to shore up funding gaps.¹²³ Critics argue that rather than providing a genuinely new funding source, P3s “conceal public borrowing” and are “an accounting trick, a way around the government’s own constraints on public borrowing.”¹²⁴ Accountants are still grappling with classifying this new form of public debt,¹²⁵ and economists worry that P3s “hide the true value of the government’s future liabilities.”¹²⁶ Because Congress jealously guards the power of the purse and thus prohibits augmentations to the budget, federal agencies’ freedom to employ P3s as a novel funding source is limited.¹²⁷ Thus, this supposed benefit has little relevance to federal procurement and will not be considered further.

No standard definition of P3s exists.¹²⁸ Nor does the federal government

413, 414 (Piet de Vries & Etienne B. Yahoue eds., 2013) (observing that P3s are attractive as they “may enable assets to be brought on stream for the provision of public services without the capital costs being incurred or reported immediately against public borrowings”).

123. See *America’s Crumbling Infrastructure: Bridging the Gap*, *ECONOMIST* (June 27, 2014), <https://www.economist.com/news/united-states/21605932-country-where-everyone-drives-america-has-shoddy-roads-bridging-gap> (describing the recent use of P3s to fund roads); *Local-Government Debt: Looking for Ways to Spend*, *ECONOMIST* (Sept. 12, 2015), <https://www.economist.com/news/china/21664238-buried-debt-government-struggles-lure-investors-local-projects-looking-ways> (describing Chinese efforts to build hospitals and elderly care homes without accruing additional debt by using P3s).

124. HALL, *supra* note 115, at 3, 7. The British Private Finance Initiative (PFI) is instructive. Although P3s are often associated with cash-strapped governments who cannot otherwise fund what they want to buy or build, Britain’s motive was not to borrow for what it could not afford. Instead, it sought to reclassify long-term infrastructure debt as a recurring expenditure to comply with the Maastricht Treaty’s public debt requirements. Perhaps the moral of this story from the birthplace of the modern P3 is that P3s are less innovation than gimmick, just as critics allege. See generally *Government Accounting: Book-Cooking Guide*, *ECONOMIST* (Apr. 7, 2012), <http://www.economist.com/node/21552221#print>; *The Art of Concealment*, *ECONOMIST* (Mar. 17, 2010), <http://www.economist.com/node/15716664/print>.

125. See Hodges, *supra* note 122, at 414 (listing among the two themes that dominate the literature the question of “how [P3] projects should be accounted for”).

126. See Parker & Hartley, *supra* note 116, at 99.

127. See U.S. GEN. ACCOUNTING OFFICE, GAO-06-382SP, PRINCIPLES OF FEDERAL APPROPRIATIONS LAW 6-162 (2004) (“As a general proposition, an agency may not augment its appropriations from outside sources without specific statutory authority.”); cf. GARRETT HATCH & KATE M. MANUEL, CONG. RESEARCH SERV., R43337, PUBLIC-PRIVATE PARTNERSHIPS FOR PURPOSES OF FEDERAL REAL PROPERTY MANAGEMENT 28–29 (2013) [hereinafter HATCH & MANUEL] (advocating that Congress amend the statutes prohibiting executive agencies from keeping the savings that accrue from P3s).

128. See, e.g., HENRIK ANDERSEN, ET AL., PUBLIC-PRIVATE PARTNERSHIPS: AN INTERNATIONAL ANALYSIS FROM A LEGAL AND ECONOMIC PERSPECTIVE 19, 30, 229–35

provide one that applies across the agencies.¹²⁹ Defining P3s “is not an easy task” due in part to the “polysemous nature of the concept,” and in part to the “complexity of the American legal structure,”¹³⁰ which employs P3s in distinct ways at federal, state, and local levels.¹³¹ This problem extends abroad.¹³² P3s encompass an assortment of legal relationships: “service contracts, management contracts, leases, build operate transfer and its variants, and concessions.”¹³³ This wide array has been dubbed a “perniciously broad category.”¹³⁴

The Department of Transportation defines P3s as a “*contractual* agreement formed between public and private sector partners [that] allows more

(Christina D. Tvarno ed., 2010) (explaining that the World Trade Organization, EU, and Chinese law lack a definition); Tobias Indén & Karsten Naundrup Olesen, *Legal Aspects of Public Private Innovation*, 7 EUR. PROCUREMENT & PUB. PRIV. PARTNERSHIP L. REV. 258, 258 (2012) (writing that “[t]here is no legal or authoritative definition”); John Kitsos, *Privatisation and Public Private Partnerships: Defining the Legal Boundaries from an International Perspective*, 10 EUR. PROCUREMENT & PUB. PRIV. PARTNERSHIP L. REV. 17, 23 (2015) (reporting that no “standard definition” exists); Sharma, *supra* note 118, at 401 (stating that there is “no universal definition”). The Organization for Economic Co-operation and Development (OECD) is a prominent international organization, but its definition has not been widely adopted. See ORG. FOR ECON. COOP. & DEV., PUBLIC-PRIVATE PARTNERSHIPS: IN PURSUIT OF RISK SHARING AND VALUE FOR MONEY 17 (2008), <http://dx.doi.org/10.1787/9789264046733-en> (defining P3s as “an agreement between the government and one or more private partners . . . according to which the private partners deliver the service in such a manner that the service delivery objectives of the government are aligned with the profit objectives of the private partners”).

129. See HATCH & MANUEL, *supra* note 127, at 9 (reporting that “federal law is generally silent as to” P3s and “does not define the term”); Custos & Reitz, *supra* note 114, at 557 (explaining that no general legislation has been enacted and that the lack of a general statute results in a fragmented system); Southard, *supra* note 115, at 399 (noting that the United States “lacks a comprehensive legal framework to authorize, control, and guide [P3s]”).

130. Custos & Reitz, *supra* note 114, at 558 (explaining the P3 is “an umbrella concept, which encompasses a wide range of contractual arrangements”); see also Hogan, *supra* note 90, at 425 (saying this term “encompasses a wide array of agreements whereby governments contract with private entities for the provision or delivery of facilities or services”).

131. Custos & Reitz, *supra* note 114, at 557 (explaining that the law of P3s is “fragmented” both because the United States lacks a federal statute and because “not all states have laws on this matter.”).

132. See Wettenhall, *supra* note 75, at 80 (observing that partnership, especially P3s, “has become a dominant slogan,” but also cautioning that “the word covers many things”).

133. Sharma, *supra* note 118, at 401; see also Estache & Saussier, *supra* note 116, at 2 (explaining that P3s cover “a wide diversity of contractual agreements”).

134. JOHN D. DONAHUE & RICHARD J. ZECKHAUSER, COLLABORATIVE GOVERNANCE: PRIVATE ROLES FOR PUBLIC GOALS IN TURBULENT TIMES 256 (2011).

private sector participation than is traditional.”¹³⁵ This captures an aspect of their character lost amid the enthusiasm: calling P3s “partnerships” is a misnomer. They are more accurately a form of government contract rather than a true analogue to the eponymous private-sector business organization where two or more owners share the management, risks, and profits of a concern.¹³⁶

Two defining characteristics distinguish P3s from other public contracts.¹³⁷ First, they typically entail the integration of several phases of a project under a single provider.¹³⁸ When governments enter into P3s, they usually contract with a single private firm to design, construct, finance, operate, and maintain the project in question—a road, school, or hospital.¹³⁹ Economists maintain that such “bundling” can create efficiencies.¹⁴⁰ P3s

135. U.S. DEP’T OF TRANSP., REPORT TO CONGRESS ON PUBLIC-PRIVATE PARTNERSHIPS viii (2004) (emphasis added).

136. See Custos & Reitz, *supra* note 114, at 559–60 (explaining that the P3s is a government contract and that “[d]espite its name, it rarely takes the legal form of a partnership, in which the respective parties are co-owners of a business and share in profits and losses”).

137. See ENGEL, FISCHER & GALETOVIC, *supra* note 118, at 73 (writing that a P3 is “an intertemporal contract between the government and a private firm that bundles” various phases of the project in question); Grimsey & Lewis, *supra* note 113, at xxiv (stating that two recurring themes in the essays assembled in their book are that P3s are bundled contracts and that they are long-term cooperative arrangements); Gaffey, *supra* note 88, at 352–53 (listing bundling and relatively long-term contracts among the general characteristics that define P3s).

138. See Ronald Daniels & Michael Trebilcock, *Private Provision of Public Infrastructure: An Organizational Analysis of the Next Privatization Frontier*, 46 U. TORONTO L.J. 375, 390 (1996) (describing bundling as “[t]he most distinctive feature”); Grimsey & Lewis, *supra* note 113, at xxvi (calling bundling a “defining characteristic”).

139. See ENGEL, FISCHER & GALETOVIC, *supra* note 118, at 1 (writing that P3s “bundle financing, construction, operations, and maintenance within a single firm”); Estache & Saussier, *supra* note 116, at 2 (calling P3s “global contracts . . . with delayed payments”); Daniels & Trebilcock, *supra* note 138, at 390 (explaining that P3s integrate “within a single private sector firm or consortium of all (or most of) the functions of financing, designing, building, operating, and maintaining” the project in question); Gaffey, *supra* note 88, at 353 (observing that P3s are defined by contractors assuming responsibility for “design, completion, implementation, and funding of the project”).

140. See, e.g., ENGEL, FISCHER & GALETOVIC, *supra* note 118, at 80–81 (explaining that the “main reason” for using P3s is that “bundling induces efficient behavior”); Yehoue & de Vries, *supra* note 121, at 1–2 (contrasting traditional government contracts’ failure to bundle with P3s and citing the literature arguing that synergies and efficiencies can arise from bundling) (citing David Martimort & Jerome Pouyet, *To Build or Not to Build: Normative and Positive Theories of Public-Private Partnerships*, 26 INT’L J. INDUS. ORG. 393 (2008)); Rausser & Ameden, *supra* note 49, at 127, 130–31 (explaining that bundling may increase efficiency because the benefits of private-sector investments in such contracts are “internalize[d]”).

are also different in that they entail long-term cooperation.¹⁴¹ Economists sometimes call P3s “intertemporal,” which is another way of saying that P3s are typically long-term.¹⁴²

These two characteristics are interrelated and together contribute to the efficiencies that are thought to arise from P3s.¹⁴³ In fact, some economists argue that P3s are more efficient than traditional contracts precisely because they entail bundling over the long term.¹⁴⁴ Others remain unconvinced and believe further study is necessary to test such claims.¹⁴⁵

Although many different contractual relationships are employed, modern P3s are most often used in two sectors: construction and services.¹⁴⁶ While in the past P3s were used mainly for transport, energy, and water,¹⁴⁷ more recently their use has been extended to other sectors.¹⁴⁸ Such infra-

141. See BOVIS, *supra* note 116, at xiii (observing that although a common definition is lacking, P3s share common characteristics such as the lengthy duration of the contractual relationship); Kathy Sharp et al., *Public Private Partnerships: Evolutions in the U.S. Procurement System and Lessons Learned from the UK and the EU*, INT’L GOV’T CONTRACTOR, Mar. 2005, at 1, 1 (describing “a relatively long-term relationship” between public and private partners as a salient characteristic of P3s).

142. See generally Eduardo Engel, Ronald Fischer & Alexander Galetovic, *The Basic Public Finance of Public-Private Partnerships* (Nat’l Bureau of Econ. Research, Working Paper No. 13284, 2007); Elisabetta Iossa & David Martimort, *The Simple Micro-Economics of Public-Private Partnerships* (Brunel Univ., Working Paper No. 09-03, 2009), <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.554.755&rep=rep1&type=pdf>.

143. See ENGEL, FISCHER & GALETOVIC, *supra* note 118, at 140–41 (mentioning a presumption that P3s may create efficiencies and explaining workings of such efficiencies).

144. See Joaquim Miranda Sarmento, *Do Public-Private Partnerships Create Value for Money for the Public Sector?: The Portuguese Experience*, 2010/1 OECD J. BUDGETING, 2010, at 2–4 (reporting that the economics literature has identified ownership, bundling, and risk transfer as three qualities that together distinguish P3s from standard government procurement); Iossa & Martimort, *supra* note 142, at 42–43 (arguing that bundling and long-term contracts create incentives for contractors to factor in costs); ENGEL, FISCHER & GALETOVIC, *supra* note 118, at 73 (arguing that P3s work because they bundle services over the long run and grant private firms “a large measure of freedom to manage the infrastructure”).

145. See Iossa & Martimort, *supra* note 142, at 42 (writing that “little theoretical and empirical work has been carried” out); ENGEL, FISCHER & GALETOVIC, *supra* note 118, at 147 (reporting that “practice ran ahead of a clear understanding of the economics and politics of” P3s); Hodge & Greve, *supra* note 108, at 549 (observing that despite the rhetoric for and against P3s, “[s]erious evidence on the veracity of these claims and counterclaims is less voluminous”).

146. See Kitsos, *supra* note 128, at 17.

147. See Iossa & Martimort, *supra* note 142, at 2.

148. See *id.* (listing “IT services, accommodation, leisure facilities, prisons, military training, waste management, schools and hospitals” among the new frontiers for P3s).

structure projects work best when requirements are clearly defined.¹⁴⁹ When confined to this sphere, P3s have worked well.¹⁵⁰ Yet mounting evidence suggests that P3s are unsuited to sectors where contract requirements are undefined or perhaps undefinable,¹⁵¹ such as information technology (IT).¹⁵² Contrary to the sometimes tendentious rhetoric,¹⁵³ P3s are not a panacea.¹⁵⁴ Some sectors lie beyond their proper scope.¹⁵⁵

This Article is less concerned with P3s' more general problems than with their misapplication to purchasing innovation. The next Section nonethe-

149. See ENGEL, FISCHER & GALETOVIC, *supra* note 118, at 113, 144 (listing a “well-defined project” as a feature of an optimal contract and explaining that “well-defined performance standards” are necessary for non-concession P3 contracts); ELLEN M. PAWLIKOWSKI, AIR FORCE PROGRAM EXECUTIVE OFFICER FOR SPACE, DEPOT PARTNERING GUIDE 5 (2012) (observing that “[t]he key to a successful partnership is to have clearly defined requirements”); Ted R. Bromund, *Contracting Out in Defense: Lessons from the British Experience for the U.S. and Great Britain*, HERITAGE FOUND., May 2009, at 16 (concluding P3s work for “well-defined and essentially civilian assets, such as housing” but are inappropriate “when the nation has a win-or-lose battlefield stake in the success or failure of the contract for a one-off military asset.”).

150. See, e.g., ENGEL, FISCHER & GALETOVIC, *supra* note 118, at 74–75 (arguing that P3s deliver efficiency gains when used in sectors where quality is contractible); Hodge & Greve, *supra* note 108, at 553 (conceding that some “glowing policy promises . . . have been delivered,” especially when P3s are used in sectors such as transportation).

151. See, e.g., Daniel E. Schoeni, *Long on Rhetoric, Short on Results: Agile Methods and Cyber Acquisitions in the Department of Defense*, 386 SANTA CLARA HIGH TECH. L.J. 385, 399 n.74 (describing the problems associated with defining requirements for emerging technologies) (citing CLAYTON M. CHRISTENSEN, *THE INNOVATOR'S DILEMMA: WHEN NEW TECHNOLOGIES CAUSE GREAT FIRMS TO FAIL* 147–63 (1997)).

152. See Hodge & Greve, *supra* note 108, at 553 (explaining that P3s have proven a poor fit for IT); Iossa & Martimort, *supra* note 142, at 3 (citing the UK's experience with widespread performance failures for specialized IT).

153. See, e.g., Hodge & Greve, *supra* note 108, at 549 (observing that we are “drowning in promises” about P3s); Wettenhall, *supra* note 75, at 80 (reporting that P3s have been become inflated by popular rhetoric).

154. See Claude Ménard, *Is Public-Private Partnership Obsolete?: Assessing the Obstacles and Shortcomings of PPP*, in *THE ROUTLEDGE COMPANION TO PUBLIC-PRIVATE PARTNERSHIPS* 149, 160 (Piet de Vries & Etienne B. Yahoue eds., 2013) (arguing P3s are neither panacea nor magic formula); Hodge & Greve, *supra* note 108, at 552–54 (reviewing “contradictory evidence” as to the success of P3s).

155. See, e.g., ENGEL, FISCHER & GALETOVIC, *supra* note 118, at 3 (saying attempts “to delimit the type of infrastructure for which [P3s] are appropriate and those for which traditional provision or privatization would be a better choice.”); *id.* at 73–76 (distinguishing sectors where P3s work from those where they don't). Even staunch P3 advocates concede that “they are not always appropriate.” Baruch Feigenbaum, *Risks and Rewards of Public-Private Partnerships for Highways*, REASON FOUND., Dec. 2011, at 3–4.

less catalogues some of the general problems.

B. Some Problems with Public-Private Partnerships

The benefits of P3s are well publicized.¹⁵⁶ They are thought to improve efficiency and reduce operating costs, especially for the provision of public services and infrastructure.¹⁵⁷ Although most success stories come from state and local government,¹⁵⁸ the military has enjoyed success with P3s in the form of privatized housing¹⁵⁹ and maintenance depots.¹⁶⁰ Such anecdotal evidence has given rise to the near bipartisan consensus and enthusiasm cited above.¹⁶¹

Risks associated with P3s are discussed far less than benefits.¹⁶² A good example is a study written for the Army two decades ago on the use of P3s to help the military to maintain technical superiority while lowering costs.¹⁶³ Conspicuously absent from this 116-page report is any mention of

156. See Wettenhall, *supra* note 75, at 77–81 (describing the popular rhetoric surrounding P3s); Hodge & Greve, *supra* note 108, at 549 (observing that some commentators dub P3s a “marriage made in heaven” and claim they “provide public sector services more cheaply and quickly, with reduced pressure on government budgets.”).

157. See, e.g., Gaffey, *supra* note 88, at 354–55.

158. See, e.g., Custos & Reitz, *supra* note 114, at 570 (observing that “most important examples of [P3s] in the United States involve contracts on the state and local level”); Feigenbaum, *supra* note 155, at 1 (describing P3s as infrastructure contracts “for the provision of . . . power, water, transportation, education, and health” that are increasingly used by state and local governments); James Panero, *Code of the City*, CITY J., Winter 2015, at 75–79 (describing New York’s groundbreaking efforts to map the genetics of its diverse population using P3s). Though most P3 initiatives have been at the state and local levels, that is not to say that the federal government is indifferent to privatization. The Eisenhower Administration Office of Management and Budget issued Circular A-76 ordering “competitions between public and private sectors to determine who should perform the work,” which remains a requirement for federal agencies. Hogan, *supra* note 90, at 429 (citing U.S. OFFICE OF MGMT. & BUDGET, EXEC. OFFICE OF THE PRESIDENT, OMB CIRCULAR NO. A-76, PERFORMANCE OF COMMERCIAL ACTIVITIES (2003)).

159. See Gaffey, *supra* note 88, at 358–59 (describing \$1 billion savings from the first ten projects under the privatization initiative) (citing James J. McCullough et al., *Feature Comment: The Military Housing Privatization Initiative*, 46 GOV’T CONTRACTOR 1, 3 (2014)).

160. See Dave Floyd & Tom Gorman, *Public-Private Partnerships: The Key to Retaining Government and Industry Capabilities*, DEF. AT&L, Jan. 2013, at 32, 35 (describing how P3s have helped to cut depot maintenance costs).

161. See *supra* notes 108–109 and accompanying text.

162. See HATCH & MANUEL, *supra* note 127, at 6 (observing that “risks and limitations are . . . typically less discussed than the potential benefits of [P3s]”); *id.* at 24 (listing some of the risks that are sometimes unmentioned).

163. See CHANG, ET AL., *supra* note 101, at xiii.

risks, leaving one with the impression that the only obstacle to a brave new world of savings, value, and innovation is insufficient legal authority for P3s.¹⁶⁴ Would that it were so. The risks, costs, and problems associated with P3s are as real as they are ignored. These can be grouped into three main categories.

First, despite hopes that P3s can offer the best of both worlds, they behave more like the public sector than the private enterprises they seek to emulate. P3s' allure lies in the promise of bringing the free market's discipline to bear on the public sector.¹⁶⁵ Experience suggests that when government partners with private business, a "muddled middle ground" results.¹⁶⁶ Instead of a "marriage made in heaven,"¹⁶⁷ P3s display the "full array of government failures."¹⁶⁸ Because the private- and public-sector are

164. *See id.* at 2–6 (listing the benefits of P3s but skipping over the risks); *id.* at 55 (describing legislation that has gradually provided more opportunities for P3s, where the legal authorities had limited their use in the past). The Army is not alone. Another recent study extolls the "well known" benefits of P3s and encourages study of their "lesser known and less quantifiable, intangible benefits" but fails to seriously consider dangers, risks, or costs. *See* Bendett, *supra* note 102, at 8. Again, the main problem with P3s, according to the author, is insufficient authority. *See id.* at 6 (reporting that within the DoD "opinion varies widely" as to the authority for P3s). This is a tendentious view. *See also* Stavridis & Farkas, *supra* note 95, at 14–17 (arguing that the only "challenges" and "obstacles" to the benefits of P3s are "legal and regulatory restrictions," distrust of P3s, and insufficient "institutionalization").

165. Private-sector and public-sector efficiency comparisons are sometimes overstated. *See, e.g.,* Michael J. Trebilcock & Edward M. Iacobucci, *Privatization and Accountability*, 116 HARV. L. REV. 1422, 1422 (2003) (claiming that "flaws in private markets, significant though they may be, pale in comparison to the flaws associated with public provision or even public oversight of private actors.").

166. *See* Ann Hagedorn, *The Perils of Privatization*, AM. PROSPECT (Mar. 3, 2015), <http://prospect.org/article/perils-privatization-0>; *see also* Kellen S. Dwyer, *Dormant Commerce Clause Review of Public-Private Partnerships After United Haulers: A Competitive Bidding Solution*, 18 VA. J. SOC. POL'Y & L. 203, 211–17 (2011) (describing the "muddle" created by "murky" public-private ventures). P3s not only inherit problems familiar to public-sector enterprises. *See Stiglitz and the Progressive Ouroboros*, ECONOMIST (Apr. 11, 2011), https://www.economist.com/blogs/democracyinamerica/2011/04/inequality_and_politics#print (inveighing against the "explosion of public-private 'partnerships' and the inevitable political corruption and economic distortion they produce"). These public-private hybrids create entirely new problems. *See* Grimsey & Lewis, *supra* note 113, at xxvii (writing that the government's special status in a public contract "can pose distinct and quite vexing contractual difficulties") (summarizing Daniels & Trebilcock, *supra* note 138).

167. Hodge & Greve, *supra* note 108, at 549.

168. Fred L. Smith, Jr., *The Problem with Public-Private Partnerships*, COMPETITIVE ENTERPRISE INST. (Nov. 5, 2010), <https://cei.org/blog/problem-public-private-partnerships> (listing among these failures log-rolling, corruption, and weak management). Critics also complain that P3s sometimes serve as subterfuge for sweetheart deals. *See, e.g., Heavy Lifting*

fundamentally different,¹⁶⁹ the virtues of the free market are not easily grafted on.¹⁷⁰ Tempting though privatization may be,¹⁷¹ the government cannot be run on a “business basis.”¹⁷²

The second set of problems is closely related to the first: in terms of risk allocation, P3s “are much closer to public provision than to privatization.”¹⁷³ Chief among the benefits that are attributed to P3s is that they are thought to shift risk from the public sector to private investors.¹⁷⁴ Critics, however, allege “there is no substantive risk transfer.”¹⁷⁵ While not all would agree with this charge,¹⁷⁶ there is some truth to it. P3s often result in

for Boeing: Sweetheart Deal Helps Defense Contractor and Hurts Taxpayers, LIVELEAK.COM (Mar. 19, 2001), <https://www.liveleak.com/view?i=bd81339669528> (reporting that the Air Force sought to enter into a P3 that would enrich Boeing with little public benefit); Hagedorn, *supra* note 166 (recounting problems with Blackwater and warning that “market discipline can be short-circuited by political influence that steers contracts to favored companies despite their poor performance”). Custos and Reitz warn that such “[s]ole-source contractors cannot be said to be under any market discipline.” Custos & Reitz, *supra* note 114, at 572.

169. See, e.g., Keith Hartley, *Problems of Using Partnerships and Similar Private Sector Practice in the Public Sector Environment: The Example of PPPs/PFI*, in SUE ARROWSMITH & MARTIN TRYBUS, *PROCUREMENT: THE CONTINUING REVOLUTION* 187, 188–89 (2003) (contrasting the private sector that is characterized “by competition and rivalry among suppliers, by a capital market which provides a threat of take-over and bankruptcy for poor performance, and by an incentive system based on the profit motive” with public sector where these are absent).

170. See Estache & Saussier, *supra* note 116, at 8–9 (concluding that there are specific hazards for public contracts that are not present for private contracts and questioning whether P3s can remedy these hazards) (citing Pablo T. Spiller, *An Institutional Theory of Public Contracts: Regulatory Implications*, in *REGULATION, DEREGULATION, REREGULATION: INSTITUTIONAL PERSPECTIVES* 45 (Claude Ménard & Michel Ghertman eds., 2009)).

171. See generally Martha Minow, *Public Values in an Era of Privatization: Public and Private Partnerships: Accounting for the New Religion*, 116 *HARV. L. REV.* 1229 (2003).

172. See MURRAY N. ROTHBARD, *MAN, ECONOMY, AND STATE: A TREATISE ON ECONOMIC PRINCIPLES WITH POWER AND MARKET: GOVERNMENT AND THE ECONOMY* 946–52 (2d ed. 2009) (describing the fallacy of government that seeks to operate on a “business basis” when it lacks the incentives to do so); cf. RISCH, *supra* note 1, at 8 (quoting a Revolutionary War commissary officer who similarly contrasted public and private business).

173. Engel, Fischer & Galetovic, *supra* note 142, at 41.

174. See, e.g., ENGEL, FISCHER & GALETOVIC, *supra* note 118, at 3, 11–12, 76–77 (explaining that P3s shift ownership to the concessionaire, and are thereby thought to relieve the public sector from substantial costs and risks, and that this is “one of the main themes”).

175. Sarmiento, *supra* note 144, at 11; see also Bromund, *supra* note 149, at 15–16 (concluding that the UK’s experience demonstrates that “[i]f the government is involved, risks cannot be wholly transferred to the private sector.”).

176. See, e.g., Darrin Grimsey and Mervyn Lewis, *Public Private Partnerships and Public Procurement*, 14 *AGENDA* 171, 177–78 (2007) (arguing that P3s lead contractors to think longer

public bailouts.¹⁷⁷ Further, P3s sometimes “hide the true value of the government’s future liabilities,”¹⁷⁸ governments exceed spending limits without exciting public ire,¹⁷⁹ and waste tax dollars on white elephants.¹⁸⁰ Rather than shifting risk to private investors, P3s may privatize profits and socialize costs.

While the first two categories concerned the public side, the third concerns the perverse incentives P3s create for their private partners. P3s are touted for cost savings, but private partners “have little incentive to conserve costs or purchase efficiently.”¹⁸¹ Worse, private and public interests diverge,¹⁸² creating principal-agent problems¹⁸³ and opportunistic behav-

term because they cannot just walk away after completing the construction of one phase of the project).

177. See ENGEL, FISCHER & GALETOVIC, *supra* note 118, at 19 (reporting that P3s are “bailed out by governments when they run into financial troubles, which happens often”) (citing JOSE A. GOMEZ-IBANEZ & JOHN R. MAYER, *GOING PRIVATE: THE INTERNATIONAL EXPERIENCE WITH TRANSPORT PRIVATIZATION* (1993)); see also Parker & Hartley, *supra* note 116, at 105 (warning that government bailouts can create moral hazards in public contracts).

178. Parker & Hartley, *supra* note 116, at 99.

179. BOVIS, *supra* note 116, at 7; see also Hodge & Greve, *supra* note 108, at 552 (averring that private financing via P3s “has essentially given governments a new capacity to use a ‘mega-credit card’ with which to charge infrastructure deals.”); HALL, *supra* note 115, at 10 (warning that P3s “worsen fiscal problems,” citing Greece, Ireland, and Spain as examples among the “six countries which have made the greatest use of [P3s] in recent years”).

180. See, e.g., Estache & Saussier, *supra* note 116, at 4 (defining optimism bias and citing the example of Spanish P3s that built underutilized airports and train stations that were later closed). Optimism bias is part of a larger concern with *allocative* efficiency, or the socially desirable allocation of resources. See ROBERT BALDWIN & MARTIN CAVE, *UNDERSTANDING REGULATION: THEORY, STRATEGY, AND PRACTICE* 81 (1999) (defining allocative efficiency as a policy choice or regulation that makes at least one consumer better off without making another worse off). But see Jean-Etienne de Bettignies & Thomas W. Ross, *The Economics of Public-Private Partnerships*, 30 CANADIAN PUB. POL’Y 135, 142 (2004) (reciting the argument that public provision yields greater allocative efficiency, while private provision yields greater technical efficiency) (citing Klaus Schmidt, *The Costs and Benefits of Privatization: An Incomplete Contracts Approach*, 12 J.L. ECON. & ORG. 1, 4 (1996)).

181. Southard, *supra* note 115, at 405–06 (citing U.S. electric utilities that were effectively granted monopolies and simply passed their costs on to consumers).

182. See, e.g., Hogan, *supra* note 90, at 432–34 (describing problems associated with the misalignment of interests).

183. Principal-agent problems are a familiar subject in the procurement literature, so it comes as no surprise that such problems arise here. See, e.g., PETER TREPTE, *REGULATING PROCUREMENT: UNDERSTANDING THE ENDS AND MEANS OF PUBLIC PROCUREMENT REGULATION* 70–83 (2004); Christopher R. Yukins, *A Versatile Prism: Assessing Procurement Law Through the Principal-Agent Model*, 40 PUB. CONT. L.J. 63, 85–86 (2010).

ior.¹⁸⁴ It is no wonder that industry lobbies for more P3s.¹⁸⁵

Apart from these three problems, any review of P3s' risks and rewards is subject to one additional qualification: the available evidence is insufficient for a dispassionate assessment.¹⁸⁶ As it stands, we have sparse evidence and a surfeit of rhetoric.¹⁸⁷ It seems that the P3 movement may have as much to do with ideology as with convincing evidence of efficiency or savings.¹⁸⁸

184. See, e.g., Eva I. Hoppe & Patrick W. Schmitz, *Public-Private Partnerships Versus Traditional Procurement: Innovation Incentives and Information Gathering*, 44 RAND J. ECON. 56, 70 (2013) (concluding that P3s encourage dysfunctional relationships and rent-seeking behavior from private partners); Christian Lohmann & Peter G. Rötzel, *Opportunistic Behavior in Renegotiations Between Public-Private Partnerships and Government Institutions: Data on Public-Private Partnerships of the German Armed Forces*, 17 INT'L PUB. MGMT. J. 395, 397 (2014) (explaining that a private partner "tends to behave opportunistically because of the conflict of interest between the government's objective of welfare maximization and the private company's objective of profit maximization") (citing Crocker & Reynolds, *supra* note 51; Schmidt, *supra* note 180). Renegotiation is an especially strong incentive for partners to behave opportunistically, *see id.* at 399, which is a particular concern for the DoD given its historic problems with vendor lock. See *supra* notes 66–68 and accompanying text.

185. See, e.g., AEROSPACE INDUS. ASS'N, ACQUISITION REBALANCING: RECOMMENDATIONS FOR SMART, EFFICIENT & EFFECTIVE DEFENSE PROCUREMENT 19 (2014), http://www.aia-aerospace.org/wp-content/uploads/2016/05/Acquisition_Report_singlepages1.pdf (reporting that defense P3s are currently limited to depot maintenance activities set forth in 10 U.S.C. § 2460 and recommending that Congress amend the statute "to ensure the best use of organic and industry resources in collaborative partnerships to the benefit of the warfighter.").

186. See, e.g., Hodge & Greve, *supra* note 108, at 553–54 (concluding that "insufficient research has been undertaken to be fully informed on outcomes" and that assessments have been made too early in the lifecycle of long-term P3 projects to be reliable); INT'L MONETARY FUND, PUBLIC-PRIVATE PARTNERSHIPS 10–12 (2004), <https://www.imf.org/external/np/fad/2004/pifp/eng/031204.pdf> (warning P3s entail risks that "have not been subject to extensive economic analysis"). Even zealous P3s advocates acknowledge that more research is necessary. See Bendett, *supra* note 102, at 2, 7 (noting that most evidence is anecdotal and recognizing that "more study and rigorous documentation are needed").

187. See, e.g., Wettenhall, *supra* note 75, at 78–80 (cautioning that rhetoric has overtaken logic and evidence in the P3 debate); Mog, *supra* note 108 (describing the passionate rhetoric on both sides of "The P3 Wars"); Hodge & Greve, *supra* note 108, at 548–49 (noting that P3s have "been the subject of much rhetorical assessment and commentary").

188. Compare ENGEL, FISCHER & GALETOVIC, *supra* note 118, at 1 (observing that the privatization movement in the 1970s and 1980s was "driven by both efficiency and ideological considerations"), with Sarmento, *supra* note 144, at 24 (observing that "the literature is less than unanimous about whether public-private partnerships create value for money or not"). See also Sam Perlo-Freeman & Elisabeth Sköns, *The Private Military Industry*, STOCKHOLM INT'L PEACE RES. INST., Sept. 2008, at 1, 17 (concluding that the efficiency of outsourcing military services "can be challenged on a number of grounds"); HALL, *supra* note 115, at 43–44 (citing several studies questioning efficiency); Estache & Saussier, *supra* note

This Section has listed some problems with P3s that fervent advocates sometimes ignore; however, its aim is to demystify rather than to debunk. Whether P3s are an effective policy tool remains an open question and will require further study.¹⁸⁹ Meanwhile, policymakers should be skeptical. Writing in a libertarian magazine in 1981, economist Murray Rothbard fomented against what was “euphemistically called ‘the partnership of government and industry.’”¹⁹⁰ He facetiously advocated the advent of “a corporate spokesman who embraces the government-business partnership with enthusiasm and joy—a kind of Big-Businessman-as-Philosopher. When such a champion emerges, Mr. and Ms. America, keep a sharp eye on your wallets—you are about to be fleeced.”¹⁹¹

Enthusiasm for P3s verges on dogmatic fervor. This Article does not attempt to entirely debunk but merely counsels that some skepticism is in order.¹⁹² As a rule, one should be wary whenever policymakers thoroughly and uniformly agree on anything. P3s are no exception. Whatever their merits elsewhere,¹⁹³ the next Section examines whether P3s are the best vehicle for buying innovation. It concludes that they are not.

C. *Why Public-Private Partnerships Will Not Deliver Innovation*

Having considered general problems with P3s in the last Section, this Section turns to the Article’s core argument: that P3s are incompatible with innovation. This is almost axiomatic in the literature for several reasons,¹⁹⁴

116, at 3 (reporting that research shows that P3s’ efficiency is “less predictable than often assumed”).

189. See Estache & Saussier, *supra* note 116, at 1, 9 (writing that “robust theoretical and empirical research” as to the efficiency of P3s has “only emerged relatively recently” and concluding that more theoretical and empirical investigations “should obviously be developed,” not least because “[g]etting [P3s] wrong is unlikely to be cheap.”).

190. Murray Rothbard, *Felix the Fixer to the Rescue*, INQUIRY (Apr. 27, 1981), <https://archive.lewrockwell.com/rothbard/rothbard97.html>.

191. *Id.*

192. See Parker & Hartley, *supra* note 116, at 104 (observing that rhetoric surrounding P3s may seem persuasive but warning that appearances can be deceiving, and urging “critical scrutiny—carefully distinguishing myths, emotion and special pleading from statements which can be supported with reliable empirical evidence.”).

193. *But cf.* U.S. GOV’T ACCOUNTABILITY OFFICE, GAO-08-44, HIGHWAY PUBLIC-PRIVATE PARTNERSHIPS: MORE RIGOROUS UP-FRONT ANALYSIS COULD SECURE POTENTIAL BENEFITS AND PROTECT THE PUBLIC INTEREST 34–35 (2008) (suggesting that though P3s work for highway construction projects, they may be inapplicable to other sectors); Ménard, *supra* note 154, at 150–51 (reciting the alleged economic benefits of P3s and observing that “each of these presumed advantages have been challenged”).

194. See, e.g., Paul Hare, *PPP and PFI: The Political Economy of Building Public Infrastructure and Delivering Services*, 29 OXFORD REV. ECON. POL’Y 95, 109 (2013) (explaining that P3s

but three of these are especially relevant in the context of military innovation. First, P3s work best where risk is limited and uncertainty is low. Second, P3s are ill-suited when output quality determines success or failure. Third, P3s encourage closer and longer-term relationships with incumbents and thereby reduce the incentive to innovate. Each is considered in turn.

Because technology changes rapidly and is inherently uncertain and high risk,¹⁹⁵ P3s are unsuited to buying innovation.¹⁹⁶ P3s struggle to manage change, uncertainty, and risk because they entail long-term commitments¹⁹⁷ and are thus inflexible.¹⁹⁸ They fare better in low-risk environments where demand is stable and easily forecasted.¹⁹⁹ Few private buyers are willing to assume the risk for uncertain and high-risk government contracts, without which P3s cannot achieve the economies that supposedly distinguish them from traditional government contracts.²⁰⁰ Incentives to innovate are also weak because public-sector managers prefer well-defined projects that can

provide weak incentives for innovation and that the preference instead is for “a well defined ‘product’ with known performance parameters that could be justified to superiors” and auditors); Grimsey & Lewis, *supra* note 176, at 171–81 (reporting that it is “conventional wisdom” that P3s are unsuitable for uncertain and complex sectors such as IT); Smith, *supra* note 168 (arguing P3s have weak incentives to innovate).

195. See, e.g., Schooner & Castellano, *supra* note 23, at 52 (“Innovation entails risk.”); Mariana Mazzucato, *Schumpeter: Startup Myths and Obsessions*, *ECONOMIST* (Feb. 3, 2014, 4:09 PM), <http://www.economist.com/node/21595798/print> (explaining that the private sector is sometimes reluctant to invest in emerging technologies because they entail such “high capital intensity and high technological/market risk”).

196. See Iossa & Martimort, *supra* note 142, at 3 (observing that P3s are “unsuitable for fast-moving sectors”). Defense is a particularly fast-moving sector where the technology is constantly evolving. Bellais & Droff, *supra* note 14, at 209 (explaining that given the competition among rival militaries, defense is “an endless quest for the technology frontier”).

197. See *supra* notes 141–142 and accompanying text (explaining that P3s are by definition long-term).

198. See BOVIS, *supra* note 116, at xiii, 75 (observing that P3s are often criticized for being inflexible); Grimsey & Lewis, *supra* note 176, at 182 (explaining that P3s typically “contain detailed specification of the outputs required and the penalties for not meeting them under long-term contracts that are inflexible”).

199. See, e.g., Iossa & Martimort, *supra* note 142, at 43 (arguing that P3s “are more beneficial . . . when demand for the service is stable and easy to forecast,” contrasting the stable transport and water sectors with IT services and explaining that demand for the latter “evolves quickly over time”); Hoppe & Schmitz, *supra* note 184, at 70 (concluding that P3s struggle with incomplete contracts and uncertain future events).

200. See Elisabetta Iossa & David Martimort, *Risk Allocation and the Costs and Benefits of Public-Private Partnerships*, 43 *RAND J. ECON.* 442, 464 (2012) (predicting that P3s are unlikely “to deliver efficiency gains for highly innovative and complex services where risks are high and it is difficult for the public authority to commit to transfer such high risks to the private sector”).

be justified to supervisors and auditors—and, thus, so do their contractors.²⁰¹

One fast-moving sector that fares especially poorly is IT.²⁰² This is notable given the areas of new technology that the Third Offset seeks to develop: namely, “robotics, advanced computing, miniaturization, and 3D printing.”²⁰³ That each of these is either itself a form of IT or a closely related field suggests that P3s are a poor fit for the DoD’s specific innovation goals.

The second reason P3s are unsuited for innovation is that quality is essential for defense innovation and such requirements are often difficult to define or contract for. This requires some explanation. P3s work well on projects whose “quality standards can be defined, measured, and enforced,” and fare poorly on projects lacking goals or standards that are readily quantifiable.²⁰⁴ While defining objective standards for building bridges or roads may be straightforward, this is difficult or impossible for projects whose “services are complex and goals are ambiguous.”²⁰⁵ Military innovation falls in the latter category,²⁰⁶ especially for the sort of technological leap forward that the Third Offset’s envisions.²⁰⁷ Economists call such contracts “incomplete” because the contract terms are unknown or unquantifiable and thus cannot be bargained for.²⁰⁸ P3s work best where quality is contractable.²⁰⁹ Further, the savings that accrue from P3s’ bundling²¹⁰ often

201. See Hare, *supra* note 194, at 109 (concluding that under this risk-averse framework innovation “was the last thing anyone wanted”).

202. See, e.g., Iossa & Martimort, *supra* note 142, at 3 (reporting that in the UK “performance failures have been widespread” for specialized IT); Grimsey & Lewis, *supra* note 176, at 181 (explaining that IT “projects are subject to such uncertainties and complexities” that they are commonly thought to be unsuitable for P3s); Hodge & Greve, *supra* note 108, at 553 (reporting that P3s have been “discontinued as a viable policy option” for IT).

203. See Hagel, *supra* note 3.

204. ENGEL, FISCHER & GALETOVIC, *supra* note 118, at 142.

205. *Id.* at 142–43 (listing education, health, jails, and IT among such complex services).

206. See Lyon, *supra* note 50, at 223 (observing that the “nature of future innovations” for defense procurement “cannot be precisely specified in advance”).

207. See *supra* notes 33–66 and accompanying text.

208. See Rausser & Ameden, *supra* note 49, at 127 (defining incomplete contracts).

209. See ENGEL, FISCHER & GALETOVIC, *supra* note 118, at 76 (arguing P3s “emerge as the preferred alternative when quality is contractible”); Oliver Hart, *Incomplete Contracts and Public Ownership: Remarks, and an Application to Public-Private Partnerships*, 113 *ECON. J.* C69, C74 (2003) (concluding that P3s work if quality is contractible and can be well-specified); Lohmann & Rötzel, *supra* note 184, at 390 (saying that renegotiations are “often the inevitable result of incomplete contracts” and that they adversely affect P3s); Estache & Saussier, *supra* note 116, at 7 (reporting that empirical evidence suggests that P3 contracts are a poor fit for complex projects).

come at the expense of quality.²¹¹ For defense outputs, quality is often more important than price because not infrequently success or failure on the field of battle turns on quality.²¹²

The third reason why P3s are unsuited to acquiring innovation concerns P3s' longer duration and the related tendency to foster close relationships with incumbents. As discussed above, P3s are by definition long-term contracts.²¹³ Long-term contracts are often more attractive to incumbents²¹⁴ than to inexperienced new entrants.²¹⁵ The latter, however, are more likely technological disruptors and engines of innovation.²¹⁶ Firms selected for

210. See *supra* notes 138–144 and accompanying text.

211. See ENGEL, FISCHER & GALETOVIC, *supra* note 118, at 73 (explaining that bundling reduces costs “but this cost cutting may occur at the expense of service quality and user welfare,” which the authors call “Hart’s trade-off”).

212. See Parker & Hartley, *supra* note 116, at 105–06 (explaining that when contracts are incomplete businesses have an incentive to economize on the quality of output, but cautioning that for defense “quality of output can determine the difference between success and failure in conflict”).

213. See *supra* note 142 and accompanying text; see also Gaffey, *supra* note 88, at 353–54 (including the duration of P3s as an essential feature of their definition); Forrer et al., *supra* note 112, at 478 (reporting that P3s often last 30 years in the UK and that in the United States some have approached a century).

214. Not only are long-term contracts more attractive to incumbent contractors, they often have unique advantages in competing for P3s that are unrelated to the contract’s subject matter. See ENGEL, FISCHER & GALETOVIC, *supra* note 118, at 18–19 (describing P3 renegotiation problems and explaining that P3 source selection favors incumbents with better lobbying skills over firms with greater technical expertise).

215. See, e.g., *id.* at 139 (reporting that private firms sometimes consider P3s unattractive because they fear regulatory takings or similar expropriations); Borowski, *supra* note 63, at 188 (warning that defense contractors’ IP “is a closely protected class of information that secures a competitive advantage” and that the DoD “can scare these suppliers away.”); Nancy O. Dix, Fernand A. Lavalley & Kimberly C. Welch, *Fear and Loathing of Federal Contracting: Are Commercial Companies Really Afraid to Do Business with the Federal Government? Should They Be?*, 33 PUB. CONT. L.J. 5, 12 (2004) (“Companies contemplating doing business with the Government are vitally concerned with the protection of their intellectual property.”); Dan Breznitz & Michael Murphree, *What the U.S. Should Be Doing to Protect Intellectual Property*, HARV. BUS. REV. (Jan. 27, 2016), <https://hbr.org/2016/01/what-the-u-s-should-be-doing-to-protect-intellectual-property> (criticizing the government’s failure to develop an IP strategy for its \$135 billion investment in innovation and to leverage that investment to further business interests).

216. See generally John Freeman & Jerome S. Engel, *Models of Innovation: Startups & Mature Corporations*, 50 CAL. MGMT. REV. 93 (2007) (comparing technological innovation coming from incumbents versus startups). But Steven Kelman cautions “about the existence of a government contracting ecosystem separate from the commercial world,” and finds it distressing that “the top five IT vendors to the federal government . . . are all companies that

P3s are essentially granted a monopoly:²¹⁷ they receive a guaranteed revenue stream²¹⁸ and have little incentive to innovate.²¹⁹ P3s would nudge the DoD toward deeper relationships with incumbents²²⁰ and thereby perpetuate and exacerbate the market's natural imperfections.²²¹ P3s endure longer than traditional government contracts (approaching a century on average in the United States),²²² and employing P3s to buy innovation crowds out newcomers. This is not the way forward.

Finally, it bears mentioning once more that this Article's purpose is not to persuade that P3s are always inefficient or that they have no place in sectors where they have proven a useful policy tool. This Article's aim is narrower. P3s work better in some sectors than in others.²²³ The main thrust is that whatever their merits elsewhere, P3s have no place in purchasing innovation. To emphasize that P3s are an "expensive and inflexible way to engage with the private sector"²²⁴ is not to discount the private sector's indispensable role. This fact signifies only that government must learn to engage differently.

sell only to government." Steven Kelman, *Could "Microconsulting" Disrupt Government Contracting?*, FCW (July 12, 2017, 2:13 PM), <https://fcw.com/blogs/lectern/2017/07/kelman-microconsulting.aspx>.

217. See, e.g., ENGEL, FISCHER & GALETOVIC, *supra* note 118 at 18–19 (explaining that competition is often limited to initial source selection and that consequent bilateral monopoly creates hold-up problems); Hartley, *supra* note 169, at 192 (listing the concern that private partners may "seek to exploit their monopoly power and earn monopoly profits" once long-term contracts are awarded).

218. See Brown, *supra* note 114 (arguing that P3s bestow a government-granted monopoly and, therefore, that private partners have a guaranteed revenue stream).

219. See *id.* (arguing that private partners in P3s lack any incentive to innovate due to their market power).

220. See, e.g., Hodge & Greve, *supra* note 108, at 552 (explaining that P3s suffer from the "lock-in effect" because incumbents benefit from long-term contracts and the government lacks flexibility); Hogan, *supra* note 90, at 433–34 (observing that governments find themselves locked into contracts that often endure for several decades).

221. See BIALOS ET. AL., *supra* note 33, at 51 (describing the market imperfection resulting from long-term programs that are awarded to incumbent defense contractors that are largely insulated from commercial markets); *supra* notes 43–49 and accompanying text (describing the bilateral monopolies associated with long-term defense contracts). *But see* Frommelt, *supra* note 103, at 16–17 (arguing that it is precisely the long-term character of P3s that creates a powerful incentive for industry, citing a study conducted by three other Air Force officers and published by the Defense Acquisition University).

222. See Forrer et al., *supra* note 112, at 478.

223. See Estache & Saussier, *supra* note 116, at 3, 8 (explaining that econometric evidence indicates that P3s' results vary widely depending on the sector they are employed in).

224. BOVIS, *supra* note 116, at xiii (calling this the "principal criticism" of P3s).

III. OPEN SYSTEMS ARCHITECTURE

For more than two decades, policymakers have hoped OSA would disrupt the vendor lock on legacy systems, reduce costs, and spark innovation. Experiments have shown promise and suggest that this policy may still be the DoD's best policy option. It is high time for procurement officials to fully implement the DoD's longstanding OSA policies and reap the competitive forces that these will unleash.

As outlined above, this Article considers a narrow question. It juxtaposes two competing policy options and considers which of these is more likely to deliver technological innovation. To that end, this Section introduces OSA and explains why it proves the better option. There is more to say about OSA,²²⁵ but more than a brief introduction would be an article unto itself.

A. Background

The military-industrial complex ineluctably yields vendor lock. Familiar results ensue. Incumbents exercise market power.²²⁶ Weapons systems are "antiquated before they are fielded, parts are obsolete and unobtainable, support is a nightmare, costs soar, and the program becomes only marginally viable."²²⁷ Yet one commercial best practice presents a "glimmer of hope."²²⁸

Starting with information technology²²⁹ then moving to manufacturing and beyond,²³⁰ OSA has been a prevailing commercial practice for four

225. Given OSA's wide adoption in the private sector and the extent to which it has transformed not only the high-technology industry but also the economy as a whole, it is remarkable how little has been written on this subject from a government procurement perspective. The government contracts and the defense economics literature is nearly silent.

226. See VIRGINIA L. WYDLER, *supra* note 66, at 3 (explaining that vendor lock entails "monopoly power and thus creates the opportunity to earn far greater profits than it could in the absence of such dependence.").

227. REPORT OF THE DEFENSE SCIENCE BOARD TASK FORCE ON OPEN SYSTEMS 7 (1998) [hereinafter DEFENSE SCIENCE BOARD TASK FORCE ON OPEN SYSTEMS] (arguing that rapid technological growth should be a boon but instead creates challenges due to vendor lock).

228. *Id.* at 9.

229. See ALAN R. SIMON & TOM WHEELER, OPEN SYSTEMS HANDBOOK 16 (2d ed. 1995) (arguing that the advent of the personal computer in 1975 laid the foundation for open systems); *id.* at 45 (recounting the introduction of OSA in the 1980s).

230. See *id.* at 5 (describing General Motors' pioneering application of open systems to manufacturing); see also U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-14-617R, DEFENSE ACQUISITIONS: REVIEW OF PRIVATE INDUSTRY AND DEPARTMENT OF DEFENSE OPEN SYSTEMS EXPERIENCES 8 (2014) [hereinafter GAO-14-617R] (reporting that the oil and gas

decades.²³¹ The DoD eventually followed suit. In 1994, the Undersecretary of Defense for Acquisition and Technology first directed its use for weapon systems' electronic components.²³² Six years later, DoD directives mandated that "a modular, open systems approach be employed, where feasible."²³³ In 2008, the DoD directed program managers to employ OSA.²³⁴ The last three iterations of the Better Buying Power initiative in 2010, 2012, and 2015²³⁵ have "renewed emphasis" on OSA.²³⁶ In 1998, the Defense Science Board recommended that OSA become an acquisition cornerstone, enabling the DoD to keep pace with new technology.²³⁷ It has in theory, if not yet in practice.

What exactly is a modular open systems architecture? Each part of this compound noun requires attention. *Modular* refers to goods that are discrete, self-contained units.²³⁸ *Open* goods are standardized, and their standards are public, allowing third-party vendors to supply or modify their components.²³⁹ *Architecture* refers to a system's basic organization or struc-

industry has been driving OSA practices for the past decade).

231. See U.S. GEN. ACCOUNTING OFFICE, GAO-03-57, SETTING REQUIREMENTS DIFFERENTLY COULD REDUCE WEAPON SYSTEMS' TOTAL OWNERSHIP COSTS 50 (2003) [hereinafter GAO-03-57] (including OSA on a table listing of prevailing commercial practices); Douglas C. Schmidt, *The Architectural Evolution of DoD Combat Systems*, SEI BLOG (Nov. 25, 2013), https://insights.sei.cmu.edu/sei_blog/2013/11/the-architectural-evolution-of-dod-combat-systems.html (explaining that OSA is derived from established commercial business practices).

232. See U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-13-651, DEFENSE ACQUISITIONS, DOD EFFORTS TO ADOPT OPEN SYSTEMS FOR ITS UNMANNED AIRCRAFT SYSTEMS HAVE PROGRESSED SLOWLY 5 (2013) [hereinafter GAO-13-651].

233. *Id.* (citing DoD Directive 5000.01, E1.1.27, The Defense Acquisition System, (D.O.D. 2003) (this directive was first promulgated in 2000 and subsequently amended in 2003).

234. DoD Instruction 5000.02, Encl. 12, para. 8, Operation of the Defense Acquisition System, (D.O.D 2008).

235. See Memorandum from Frank Kendall, Implementation Directive for Better Buying Power 3.0 – Achieving Dominant Capabilities Through Tech. Excellence & Innovation 9 (April 9, 2015) (stating that this ongoing initiative is "closely tied . . . with modular open systems").

236. GAO-13-651, *supra* note 232, at 6.

237. See DEFENSE SCIENCE BOARD TASK FORCE ON OPEN SYSTEMS, *supra* note 227, at 1; see also REPORT OF THE DEFENSE SCIENCE BOARD TASK FORCE ON DEFENSE INDUSTRIAL STRUCTURE TRANSFORMATION, CREATING AN EFFECTIVE NATIONAL SECURITY INDUSTRIAL BASE FOR THE TWENTY-FIRST CENTURY: AN ACTION PLAN TO ADDRESS THE COMING CRISIS 8 (2008) (listing implementation of OSA among its key recommendations).

238. See DEP'T. OF DEF., DOD OPEN SYSTEMS ARCHITECTURE, CONTRACT GUIDEBOOK FOR PROGRAM MANAGERS 137–38 (2013) [hereinafter OSA GUIDEBOOK].

239. See *id.* at 138.

ture.²⁴⁰ Taken together, this stands for an interoperable and connectible approach²⁴¹ that encourages the “collaborative innovation of numerous participants.”²⁴²

DoD publications list several requirements for successful implementation, but these can be boiled down to three core principles. First, designs must be based on standards with “loose coupling and high cohesion” to allow components to be purchased separately.²⁴³ These standards should be “well defined, widely used, [and] preferably nonproprietary” and preferably ought to be based on industry-recognized standards.²⁴⁴

Second, common standards must facilitate upgrades without impairing the existing system.²⁴⁵ That is, the system must be modular. This architecture “isolate[s] system functions” so that “the overall system [is] easier to develop, maintain, and modify because components can be added, removed, modified, or replaced by consumers.”²⁴⁶ New suppliers may thereby “plug into the existing system through open connections”²⁴⁷ and compete with incumbents.

Third, the necessary data rights must be purchased up front.²⁴⁸ Common standards and modularity will be almost useless during later phases in the lifecycle if the DoD lacks the data rights to enable purchasing upgrades and replacements from third-party vendors.²⁴⁹ Given that weapon systems often have lifespans of several decades, the failure to acquire sufficient technical data at the outset may have long-term consequences.²⁵⁰

240. *See id.* at 129.

241. *See* ANDREW P. SAGE, SYSTEMS ENGINEERING 168 (1992) (defining OSA as “any of several generic approaches the intent of which is to produce open systems that are inherently inoperable and connectible without the need for retrofit or redesign”); SIMON & WHEELER, *supra* note 229, at 3 (saying that OSA provides “portability, scalability, and interoperability through the use of approved standards”).

242. Nikolas Guertin & Thomas Hurt, *DoD Open Systems Architecture Contracts Guidebook for Program Managers*, DEF. AT&L, Sept.–Oct. 2013, at 30, 32.

243. OSA GUIDEBOOK, *supra* note 238, at viii.

244. DEP’T OF DEF. INSPECTOR GEN., AUDIT REPORT, D-200-149, USE OF AN OPEN SYSTEMS APPROACH FOR WEAPON SYSTEMS I (2000).

245. *See id.*

246. GAO-14-617R, *supra* note 230, at 5; *see also* GAO-13-651, *supra* note 232, at 3.

247. GAO-13-651, *supra* note 232, at 3.

248. OSA GUIDEBOOK, *supra* note 238, at viii.

249. *See* GAO-13-651, *supra* note 232, at 3 (saying data rights are “critical to enabling the department opportunities for competition” during the sustainment and modification phases of the procurement lifecycle).

250. *See* U.S. GOV’T ACCOUNTABILITY OFFICE, GAO-14-395, DEFENSE CONTRACTING: EARLY ATTENTION IN THE ACQUISITION PROCESS NEEDED TO ENHANCE COMPETITION 6–7, 18 (2014) [hereinafter GAO-14-395] (reporting that half the DoD’s non-

The *Program Manager's Guidebook* distills these three principles into a single question: “Can one or more qualified third parties add, modify, replace, remove, or provide support for a component of a system, based on open standards and published interfaces for the component of that system?”²⁵¹ If so, then the architecture is modular and open.

Perhaps a negative definition would also be helpful. In the late 1990s, Defense Secretary William Perry championed Commercial Off the Shelf (COTS) purchases.²⁵² The DoD is to buy COTS where possible²⁵³ to reduce costs and ensure access to the latest technology.²⁵⁴ Systems built using OSA often include COTS components.²⁵⁵ But while COTS and OSA are related and complement one another, they are not the same thing. COTS concerns the mandate for the government to purchase commercial items whenever possible; OSA entails designing systems to ensure competition from a wide array of suppliers—both from those producing existing dual-use technologies (that is, COTS) and from those who may advance the state of the art. COTS are always preferable, but DoD requirements are frequently bespoke and thus unavailable commercially.²⁵⁶ OSA constitutes a platform that rewards innovation and encourages industry to answer such requirements. And such incentives are the true mother of invention.

The Government Accountability Office (GAO) has long criticized the pace of the DoD's adoption of OSA.²⁵⁷ Although the DoD first established

competitive contracts result from inadequate data rights); Borowski, *supra* note 63, at 223 (explaining that skimping on data rights “to redirect scarce capital resources to meet short term needs . . . means meeting longer term needs at a fair and reasonable price will be more difficult.”).

251. OSA GUIDEBOOK, *supra* note 238, at viii.

252. See, e.g., William Perry, *Defense Must Open the Commercial Door*, L.A. TIMES (Feb. 23, 1998) (arguing that the DoD “must give up its unique buying practices and employ best commercial practices”).

253. 48 C.F.R. § 11.004(b) (2016) (establishing that federal agencies are to research “commercial” and “nondevelopmental items” to see if they meet government requirements).

254. See DEP'T DEF. & GEN. SERVS. ADMIN. JOINT WORKING GRP. ON IMPROVING CYBERSECURITY AND RESILIENCE THROUGH ACQUISITION, IMPROVING CYBERSECURITY AND RESILIENCE THROUGH ACQUISITION: FINAL REPORT OF THE DEPARTMENT OF DEFENSE AND GENERAL SERVICES ADMINISTRATION 11 (2013).

255. See, e.g., U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-09-520, DEFENSE ACQUISITIONS: OPPORTUNITIES EXIST TO ACHIEVE GREATER COMMONALITY AND EFFICIENCIES AMONG UNMANNED AIRCRAFT SYSTEMS 6, n.4 (2009) [hereinafter, GAO-09-520] (“Open systems allow the use of commercially available and widely accepted standard products from multiple vendors, rather than developing unique components.”).

256. See, e.g., Borowski, *supra* note 63, at 222 (observing that “the needs of defense have no commercial analog”).

257. See generally GAO-13-651, *supra* note 232 (the title of which references the slow pro-

OSA requirements in 1994, the Air Force and the Army have been criticized for a reluctant transition away from proprietary systems.²⁵⁸ The GAO attributes this to cultural barriers that are the “most difficult challenge” for implementing OSA.²⁵⁹ The services’ reluctance probably arises in part from need for specific equipment that cannot be readily purchased through open systems.²⁶⁰ Incumbents are, of course, pleased to continue with the status quo and are not clamoring for reforms that would undercut their business model.²⁶¹ Suffice it to say that despite the favorable anecdotes discussed below, adoption of OSA has been uneven.²⁶²

B. *Why Open Systems Architecture May Deliver Innovation*

This Section addresses this Article’s core argument: namely, that OSA is compatible with and fosters innovation, especially when compared with P3s. It further explains why OSA may be a better policy option for purchasing new technology, considers anecdotal evidence that OSA affords a favorable environment for innovation, and reviews some objections that

gress in implementing OSA); *see also* GAO-03-57, *supra* note 231, at 57 (reporting that “implementation has been limited”). The Defense Science Board’s 1998 report also recognized the DoD’s reluctance to implement OSA. *See* DEFENSE SCIENCE BOARD TASK FORCE ON OPEN SYSTEMS, *supra* note 227, at 7, 9 (describing slow adoption of OSA and warning that “implementation will not be easy”).

258. *See* GAO-13-651, *supra* note 232, at 22–23.

259. GAO-14-617R, Cover Letter, *supra* note 230, at 3 (“The most difficult challenge is overcoming a general cultural preference within the services for acquiring proprietary systems that puts life-cycle decisions in the hands of the contractors that developed and produced those systems.”); *see also id.* at 17 (reporting that in 2013, the General Accountability Office (GAO) made four recommendations to implement OSA and that DoD had complied with none of them); GAO-03-57, *supra* note 231, at 11 (saying the DoD is “culturally and organizationally” unwilling); DEFENSE SCIENCE BOARD TASK FORCE ON OPEN SYSTEMS, *supra* note 227, at 9 (attributing difficulties to impediments that are “institutional, self-inflicted, and entrenched”).

260. *See* GAO-09-520, *supra* note 255, at 18 (criticizing the “service-driven acquisition processes” and the ineffective inter-service collaboration that together “have resulted in service-unique subsystems, payloads, and ground control stations”).

261. GAO-13-651, *supra* note 232, at 19 (reporting that “prime contractors may be resistant to providing open systems”); GAO-14-617R, *supra* note 230, at 16 (explaining that “[p]rime contractors are content not to provide open systems because they are able to achieve greater financial benefits by selling DOD proprietary products, which they alone can integrate, maintain, and upgrade over the life of the program”).

262. *See, e.g.*, Chip Downing, *The Business Side of Open Systems Architecture*, WIND RIVER BLOG NETWORK (Aug. 18, 2014), http://blogs.windriver.com/wind_river_blog/2014/08/the-business-side-of-open-systems-architecture.html (describing business challenges that have prevented faster adoption of OSA).

may be raised.

If OSA is not itself a species of the platform economics that is currently revolutionizing markets,²⁶³ it is certainly akin to this business model. *The Economist* lists several examples: “The largest cab company owns no vehicles (Uber), the biggest hotelier has no property (Airbnb), the most comprehensive retailer holds no inventory (Alibaba), and the most valuable “media” company creates some content but not much (Facebook).”²⁶⁴

In like manner, OSA would have the DoD function as a systems integrator that would purchase the components for its weapon systems from competing commercial suppliers.²⁶⁵ This would relegate incumbent contractors to competition with wider industry and commoditize what was previously a highly specialized niche market.²⁶⁶ Apple and Microsoft invented platforms that transformed their industries, yet they cannot take credit for the outpouring of innovation that followed.²⁶⁷ Innovation accreted from numerous and diverse suppliers, whose names may be forgotten but whose collective and incremental contributions would have been impossible had Apple and Microsoft been left to their own devices.²⁶⁸ “There are important parallels for the DoD.”²⁶⁹

Too few DoD contracts are competitively sourced, and the GAO attributes this long-standing problem to “reliance on original equipment manufacturers” or vendor lock.²⁷⁰ OSA would introduce multiple suppliers,²⁷¹

263. See GEOFFREY G. PARKER, MARSHALL W. VAN ALSTYNE & SANGEET CHOUDRY, *PLATFORM REVOLUTION: HOW NETWORKED MARKETS ARE TRANSFORMING THE ECONOMY AND HOW TO MAKE THEM WORK FOR YOU* 14 (2016) (arguing that “[a]s a result of the rise of the platform almost all the traditional business management practices . . . are in a state of upheaval.”).

264. *A New Way to Work*, *ECONOMIST* (July 15, 2017), at 72.

265. See, e.g., STRATEGIC MASTER PLAN, *supra* note 79, at 28 (describing senior leadership’s vision for the Air Force’s new relationship with defense contractors).

266. See ANDREW MCAFFEE & ERIK BRYNJOLFSSON, *MACHINE, PLATFORM, CROWD: HARNESSING OUR DIGITAL FUTURE* 220 (2017) (explaining that platform economics “enhance competition by reducing barriers to entry” and thereby “often commoditize suppliers, making them more interchangeable to the consumers”).

267. See DEFENSE SCIENCE BOARD TASK FORCE ON OPEN SYSTEMS, *supra* note 227, at 5.

268. See *id.* (explaining that technological development was possible due to “massive economies” of components designed and produced on a vast scale, including servers, microchips, and video cards).

269. *Id.* (also predicting that “major DoD priorities *cannot be achieved* without a massive infusion” of OSA) (emphasis in original); see also GAO-13-651, *supra* note 232 (analogizing the DoD’s use of OSA to the platform economics of the Android operating system that stimulates innovation and keeps prices low by introducing third-party developers).

270. GAO-14-395, *supra* note 250, at 6.

who would disrupt an industry that is too complacent from a steady revenue stream from defense contracts spanning decades.²⁷² This cuts costs during the initial production and throughout a program's lifecycle.²⁷³ OSA affords more than savings; it is an innovation enabler.²⁷⁴ OSA "leverages the collaborative innovation of numerous participants across the enterprise," thus "afford[ing] opportunities for competition and innovation."²⁷⁵ Like private-sector platform economics, broad participation would harness the market's animal spirits. No single incumbent nor a half-dozen of the largest defense contractors taken together could approximate what the wider private sector market can accomplish collectively.

Anecdotal experience bears out this optimism. Though the Army and the Air Force have been laggards,²⁷⁶ the Navy has had considerable success.²⁷⁷ The GAO dedicated an entire report to the procurement of Unmanned Aircraft Systems and the Navy came out ahead again.²⁷⁸ The GAO's most recent report notes that the Air Force has made strides, incorporating OSA into its Joint Surveillance Target Attack Radar System (JSTARS) program.²⁷⁹ By all accounts, OSA has delivered lower costs and

271. *See id.*

272. *See id.* at 7 (reporting that weapon systems often endure forty years or more).

273. *See id.* ("Early decisions made during design dictate operating costs over the entire lifecycle.").

274. *See* Eugene Gholz, *A Business Model for Defense Acquisition Under the Modular Open Systems Approach*, 44 DEF. ACQUISITION REV. J. 216, 220 (2007) (explaining that the private sector provides "continuous innovation . . . enabled by modularity of commercial products."); Rajiv Shah & Jay P. Kesan, *Lost in Translation: Interoperability Issues for Open Standards*, 8 I/S J.L. & POL'Y 119, 120 (2012) (observing that with open systems "it becomes possible for anyone to develop" useful applications); DEFENSE SCIENCE BOARD TASK FORCE ON OPEN SYSTEMS, *supra* note 267, at 64–65 (arguing that OSA lowers barriers to entry and encourages "minority player participation.").

275. DEFENSE ACQUISITION GUIDEBOOK, Ch. 3, § 2.4.1 (2017), <https://www.dau.mil/tools/dag/Pages/DAG-Page-Viewer.aspx?source=https://www.dau.mil/guidebooks/Shared%20Documents%20HTML/Chapter%203%20Systems%20Engineering.aspx>.

276. *See, e.g.*, GAO-13-651, *supra* note 232, at 4–5 (recounting the Air Force's failure to incorporate OSA during early stages for the B-2 and C-130 and the consequent high costs paid for upgrades).

277. *See id.* at 9–10 (describing the Navy's use of OSA for development of a sonar system starting in 1996); *id.* at 10 (recounting similar use of OSA for Virginia-class submarine upgrades).

278. *Compare id.* at 14–16 (describing the Army's and the Air Force's underutilization of OSA), *with id.* at 12–14 (recounting the Navy's successful implementation of OSA).

279. *See* U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-17-222SP, DEFENSE ACQUISITIONS: ASSESSMENT OF SELECTED WEAPON PROGRAMS 160 (2017) [hereinafter GAO-17-222SP].

faster delivery.²⁸⁰

Perhaps several success stories would illustrate how OSA stimulates innovation. The Army Aviation and Missile Research, Development, and Engineering Center provides one such example with its Modular Missile Technologies (MMT) program. MMT incorporates an open platform so that technologists can easily and cheaply tailor missile payloads. In addition to enabling innovation, the Army says that this has reduced lifecycle costs.²⁸¹

The classic example is the Navy's sonar development in the late 1990s. U.S. submarines' sonar noise reduction technology had fallen behind our adversaries' advances. Coupled with post-Cold War spending cuts, this was a serious problem. OSA was the solution.²⁸² The business plan featured a modular design and competition among multiple qualified sources, including "small innovative contractors and other non-traditional players."²⁸³ The results spoke for themselves: within just eighteen months, processing increased seven-fold, operator success increased by a factor of four, false alarms dropped by forty percent, detection times were reduced by twenty-seven minutes; and not least, both short- and long-term costs were dramatically cut.²⁸⁴ Wider competition yielded tangible results.²⁸⁵

C. *Some Lingerin Problems on the Horizon*

This Author would be remiss if he left the reader with the impression that OSA is all silver linings and that nothing can go wrong. Several poten-

280. See, e.g., GAO-13-651, *supra* note 232, at 10 (with respect to the Navy's sonar program, listing a seventeen percent reduction in production costs, a thirteen percent reduction in operating costs, and an eighty percent reduction in development time).

281. See *Modular Missile Technologies*, ARMY AVIATION & MISSILE RES., DEV. & ENGINEERING CTR., SUCCESS STORIES, <https://www.amrdec.army.mil/amrdec/success-mmt.html> (last visited May 13, 2018) (explaining that the secret lies in the care "being taken to make the design principals broadly applicable to other guided munition development efforts regardless of diameter").

282. See MICHAEL BOUDREAU, ACOUSTIC RAPID COTS INSERTION: A CASE STUDY IN MODULAR OPEN SYSTEMS APPROACH FOR SPIRAL DEVELOPMENT, NPS-PM-06-041, ACQUISITION RESEARCH CASE STUDY, NAVAL POSTGRADUATE SCHOOL 1-3 (2006).

283. See *id.* at 8, 16-18 (explaining that a competitive playing field had to be set up to attract innovative contractors and that this included "small innovative contractors" as well as larger incumbents).

284. See *id.* at 30-35.

285. For further examples, see GAO-13-651, *supra* note 232, at 12-14 (describing the Navy's development of an unmanned aircraft); GAO-17-222SP, *supra* note 279, at 160 (describing the Air Force's new Joint Surveillance Target Attack Radar System (JSTARS) program).

tial problems have been identified. First, the DoD is unsure if it has the internal expertise to assume the role of a systems integrator.²⁸⁶ The private sector may provide the best components imaginable, but if all the king's horses and all the king's men cannot effectively integrate them, the DoD must rely on incumbent suppliers. Second, the Defense Science Board's 1998 report cautioned that notwithstanding its promise, OSA may have "drawbacks if not applied judiciously."²⁸⁷ It will work better with some systems than others.²⁸⁸ "There are no silver bullets that can be applied uniformly across all systems."²⁸⁹ Third, open systems may be more vulnerable to cyber attacks than systems that are gold-plated, bespoke, and closed.²⁹⁰ Given the mounting cyber threat, this would be no minor defect. Finally, acquiring the data rights necessary for an OSA will exacerbate existing tensions with industry. Finding the balance between securing the data rights necessary to an open architecture while not discouraging industry participation will be an enduring challenge.²⁹¹

Notwithstanding potential drawbacks, OSA presents a viable alternative to P3s. Whereas P3s entail deeper and longer-term engagements with a few incumbents, OSA pulls in the opposite direction: shorter-term, arms-length relationships with wider industry. These two policies are mutually exclusive. Given that the DoD has been pursuing both policies for some

286. See GAO-13-651, *supra* note 232, at 19, 21 (reporting that it is "unclear whether the services have sufficient technical expertise to implement an open systems approach"); GAO-14-617R, *supra* note 230 at 16 (cautioning that the DoD "does not know if program offices have the systems engineering expertise required for effective implementation"); see also MCAFFEE & BRYNJOLFSSON, *supra* note 266, at 224 (suggesting it is unlikely that platform economics would ever transform the procurement of fighters or submarines in the DoD). That the DoD may be unable to serve as a system integrator may prove immaterial. The Navy simply outsourced that role for the sonar program yet still benefited from OSA. See BOUDREAU, *supra* note 282, at 18, 23, 27 (explaining that Lockheed Martin served as the system integrator).

287. DEFENSE SCIENCE BOARD TASK FORCE ON OPEN SYSTEMS, *supra* note 227, at 38.

288. The available evidence remains inconclusive, but OSA may work better for systems primarily composed of IT, such as the Air Force's Air Operations Center Weapon System, and less well for industrial-age technology.

289. DEFENSE SCIENCE BOARD TASK FORCE ON OPEN SYSTEMS, *supra* note 267, at 38.

290. *Id.* at 42 (warning that the wide use and "lack of genetic diversity" may make open systems "inherently more vulnerable to information warfare attacks").

291. See Borowski, *supra* note 63, at 222 (describing the challenge of striking a balance between the broad access to data rights that the DoD requires and not "discouraging participation from industry"); BOUDREAU, *supra* note 282, at 16 (detailing the Navy's efforts with the sonar development program to honor intellectual property rights while sharing enough design information to create an environment that was open enough for competition to flourish).

time, it is surprising that no one seems to have noticed. This Article contends that OSA marks the path for overcoming the vendor lock and market failure that beset defense procurement. Although the challenges may seem insurmountable, this Article renews the Defense Science Board's plea for the rapid implementation of OSA given that "significant relief [is] so close at hand."²⁹²

CONCLUSION

Surely this Article would be incomplete without repeating the threadbare aphorism that the definition of insanity is "doing the same thing over and over again and expecting different results."²⁹³ The DoD has had close relationships with a few prime contractors for decades—especially since the end of the Cold War and the consolidation of the defense industry. An acquisition strategy that would seek economy, innovation, or value by doubling down and seeking *even closer* relationships would surely disappoint. P3s are pitched as if they offered something new. This neologism merely rebrands what has failed in the past. The public interest would be better served by striking out and trying something genuinely new: competition.²⁹⁴

Too often in DoD acquisitions, competition is once and done. It occurs early in the process, then vendor lock ensures that incumbents have a ready buyer for decades.²⁹⁵ P3s would only exacerbate that problem. By definition they lock in a single supplier for the long term.²⁹⁶ OSA, by contrast, heralds ongoing competition throughout the lifecycle.

By leveraging competition, OSA may deliver on P3s' false promise, create incentives for newcomers to enter the market, and thus stimulate innovation. This is no trivial matter. Innovation constitutes a "central line of

292. DEFENSE SCIENCE BOARD TASK FORCE ON OPEN SYSTEMS, *supra* note 227, at 6.

293. This saying is frequently attributed to Albert Einstein, but whether he coined the phrase is disputed. See Peter Baskerville, *Did Einstein Really Define Insanity as "Doing the Same Thing Over and Over Again and Expecting Different Results"?*, QUORA (May 11, 2017), <http://www.quora.com/Did-Einstein-really-define-insanity-as-doing-the-same-thing-over-and-over-again-and-expecting-different-results> (noting that Benjamin Franklin, Mark Twain, and a Chinese proverb have been suggested as originators).

294. Not only would competition be genuinely new, it would also be consonant with DoD leaders' two "most pressing procurement needs," which are "more innovation and more competition." Borowski, *supra* note 63, at 183–84.

295. See *supra* notes 61–68 and accompanying text.

296. See BOVIS, *supra* note 116, at xiii (saying that a common characteristic of P3s is their lengthy duration); Gaffey, *supra* note 88, at 353–54 (arguing that the lengthy duration of P3s is an essential feature of their definition); Forrer et al., *supra* note 112, at 478 (reporting that in the United States some P3s have lasted nearly a century); Sharp et al., *supra* note 141, at 3 (stating that "a relatively long-term relationship" is an essential feature of P3s).

effort”²⁹⁷ for the DoD and “the military imperative and the leadership opportunity of this generation.”²⁹⁸ It is also “a fleeting opportunity.”²⁹⁹ Should the DoD forego competition in favor of long-term partnerships, it may miss that opportunity. With mounting dangers from our technologically near-peers, that may prove a costly mistake—in more than one sense of the word.³⁰⁰

297. QDR, *supra* note 14, at VI, 22.

298. *Id.* at 64.

299. *Id.*

300. *See id.* at 22 (“Innovation is paramount given the increasingly complex warfighting environment we expect to encounter.”); *see also* Estache & Saussier, *supra* note 116, at 9 (“Getting [P3s] wrong is unlikely to be cheap.”).