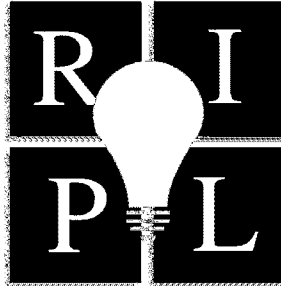


THE JOHN MARSHALL REVIEW OF INTELLECTUAL PROPERTY LAW



YESTERDAY'S TECHNOLOGY, TOMORROW: HOW THE GOVERNMENT'S
TREATMENT OF INTELLECTUAL PROPERTY PREVENTS SOLDIERS FROM
RECEIVING THE BEST TOOLS TO COMPLETE THEIR MISSION

DANIEL LARSON

ABSTRACT

The Department of Defense is currently entrenched in a procurement system that does not respect the intellectual property of its contractors. This, in turn, has led to research and development firms' increasing reluctance to contract with the Department of Defense. As a result of this reluctance, the United States has increasingly relied upon weapons systems that, in many cases, have not significantly evolved since the Vietnam War. In order to revive the United States' flagging military technology sector Congress should look to 28 U.S.C. § 1498 and provisions of the Bayh-Dole Act in order to encourage the private sector's creation of defense-oriented innovations. The proposed changes would merely extend a modicum of protection to Department of Defense contractors, something that they don't currently have. The goal of this proposal is to encourage innovation in our laboratories in order to ensure victory on the battlefield and the safe return of American soldiers from overseas.

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DANIEL LARSON*

The value of an idea lies in the using of it.

Thomas Edison¹

INTRODUCTION

The bullet passed through Lance Cpl. Juan Valdez-Castillo as his Marine patrol moved down a muddy urban lane. It was a single shot. The lance corporal fell against a wall, tried to stand and fell again. . . .

. . . .

[His Sergeant] grabbed the corporal by a strap and dragged him across a muddy road to a line of tall reeds He put down his weapon, shouted orders and cut open the lance corporal's uniform, exposing a bubbling wound.²

This scenario has played out hundreds of times since the Afghani and Iraqi wars began.³ American soldiers depend upon body armor to protect them from attacks.⁴ Specifically, the U.S. military uses Interceptor Body Armor for protection against

* J.D. Candidate, May 2008, The John Marshall Law School; B.A. English Literature, University of Northern Iowa, December, 2003. I would like to thank my parents, for their love and support (and occasional nagging) as well as Colleen Elizabeth O'Connor for her willingness to go on late night McDonalds runs and for the late night pep talks. I'd also like to thank all of the Cadets and Cadre from the University of Illinois at Chicago's Fire Battalion for their patience and understanding while I was writing the article. Additionally, I would like to thank Karen Simon, Jordan Finfer, Matt May, Steve Pachol, Steve Schuetz and Tim Cho for their invaluable editorial assistance and support. Finally, I'd like to thank Brian Benko for all of his insightful suggestions, constructive criticism and citation tutorials.

** Available at www.jmripl.com.

¹ Howard M. Bremer, Presentation to National Association of State Universities and Land Grant Colleges: The First Two Decades of the Bayh-Dole Act as Public Policy (Nov. 11, 2001), http://www.nasulgc.org/COTT/Bayh-Dohl/Bremer_speech.htm (last visited July 14, 2007) (on file with author).

² C.J. Chivers, *Sniper Attacks Adding to Peril of U.S. Troops*, N.Y. TIMES, Nov. 4, 2006, at A1.

³ See Iraq Coalition Casualties, <http://www.icasualties.org/oif/> (last visited Nov. 9, 2007).

⁴ See Matthew Cox, *Enter the Interceptor: Light Infantry Gets Even Lighter With New Armor*, ARMY TIMES, July 2006, http://www.pointblankarmor.com/news/articles/armytimes_article.html (last visited Nov. 9, 2007).

small-arms fire.⁵ However, the protection afforded by such body armor is often inadequate and leaves soldiers susceptible to harm.⁶

Much of the technology the United States depends on in battle, such as Interceptor Body Armor, is no longer cutting edge.⁷ America's laser guided bombs differ only slightly from technology used in the Vietnam War.⁸ Meanwhile, our stealth technology is now over thirty years old.⁹ The lack of modernization has been the target of speculation since 1991, when the Semiconductor Industry Association reported that Nintendo games had a better processor than the latest generation military equipment at the time.¹⁰ More alarming is that the situation is not improving. America's newest fielded technology, the Land Warrior system,¹¹ utilizes a 400 megahertz processor that "[w]ould have been bleeding edge—in 1999."¹² This means that soldiers are being sent to war relying on technology that may be less advanced than the chipsets used in current mobile phones.¹³

Many countries are now either as advanced, or significantly more advanced, than the United States in nine of twenty critical military technologies identified by the Department of Defense ("DoD").¹⁴ A thriving international arms market supplied

⁵ See Interceptor Body Armor, <http://www.globalsecurity.org/military/systems/ground/interceptor.htm> (last visited Nov. 9, 2007). Interceptor body-armor consists of an Outer Tactical Vest ("OTV") and a number of small arms protective inserts ("SAPI plates"). *Id.* An OTV consists of a Kevlar weave able to stop 9 mm rounds. *Id.* SAPI plates consist of a boron carbide ceramic, with a spectra shield backing, able to stop a 7.62 mm round fired from a weapon with a muzzle velocity of 2,750 feet per second. *Id.*

⁶ See Ann Scott Tyson, *Body-Armor Gaps Are Shown to Endanger Troops*, WASH. POST, Jan. 7, 2006, at A05 (reporting better protection to the chest, back, sides, and shoulder areas could have prevented up to eighty percent of fatalities); see also Michael Moss, *Struggle for Iraq: Troop Shields: Pentagon Study Links Fatalities to Body Armor*, N.Y. TIMES, Jan. 7, 2006, at A1 (stating forty-two percent of the Marine casualties dying from isolated torso injuries could have been prevented with improved protection in the areas surrounding the plated areas of the vest, an additional twenty-three percent might have been saved with side plates extending below the arms, and fifteen percent may have benefited from shoulder plates); Interview by Margaret Warner with Roger Charles, Lieutenant Colonel (Ret.), United States Marine Corps, during NewsHour with Jim Lehrer, in Washington D.C. (Jan. 11, 2006), http://www.pbs.org/newshour/bb/middle_east/jan-june06/armor_1-11.html (stating SAPI plates often "[turn into] a bunch of gravel" after a one round impact).

⁷ See Colonel Jeanne C. Sutton, *Marrying Commercial and Military Technologies: A New Strategy for Maintaining Technological Supremacy*, 1 ACQUISITION REV. Q. 219, 220 (Summer 1994) (stating that many of the systems depended on by the military are outdated).

⁸ *Id.*

⁹ *Id.*

¹⁰ *Id.* at 224.

¹¹ See David Coburn, *Land Warrior System: Inside the Pentagon's New High-Tech Gear*, POPULAR MECHANICS, May, 2007, at 40, available at http://www.popularmechanics.com/technology/military_law/4215725.html (stating the land warrior system includes an eyepiece that acts as a full color computer screen, a boom mike, a laser rangefinder, thermal sight, night vision, digital camera, GPS unit, and a multiband radio). These various sub-systems are intended to keep the soldier "wired" into the Army's greater network. *Id.*

¹² Noah Shachtman, *The Army's New Land Warrior Gear: Why Soldiers Don't Like It*, POPULAR MECHANICS, May, 2007, at 74, available at http://www.popularmechanics.com/technology/military_law/4215715.html.

¹³ See Ryan Block, *iPhone processor found: 620MHz ARM CPU*, ENGADGET.COM, Jul. 1, 2007, <http://www.engadget.com/2007/07/01/iphone-processor-found-620mhz-arm/> (noting that the Apple iPhone appears to come equipped with a 620-MHz processor).

¹⁴ See Sutton, *supra* note 7, at 220 (noting that Sweden, Israel, and France have developed weapon technologies on par with or technologically superior to those produced by the United States).

by these countries further exacerbates this reality.¹⁵ This means potential adversaries of the United States can purchase weapons that may be more advanced than those currently used by the United States.¹⁶ In order to prevent defeat on the battlefield, we must identify and resolve the cause of flagging U.S. military technology.

The protection provided by the patent system is the major impetus for the creation of new technology and inventions in America.¹⁷ However, the lack of new and innovative technologies for American troops evinces an underlying problem with respect to patent legislation.¹⁸ The current system discourages the private sector from creating defense-oriented innovations.¹⁹ This situation is due to judicial interpretation of 28 U.S.C. § 1498²⁰ and clauses in 35 U.S.C. § 200 ("Bayh-Dole Act") that penalize inventors for failing to observe technical formalities.²¹

¹⁵ See *id.* (stating potential adversaries may be able to purchase arms on the international arms black market that are superior to those provided to U.S. troops).

¹⁶ See *id.* at 223 (noting that General Custer was defeated at the Battle of Little Big Horn by Native Americans who, despite having no industrial capacity themselves, were able to obtain better weaponry than General Custer's soldiers).

¹⁷ Greg Blonder, *Cutting Through the Patent Thicket*, BUSINESSWEEK ONLINE, Dec. 20, 2005, http://www.businessweek.com/technology/content/dec2005/tc20051220_827695.htm (stating "[t]he patent system was designed to encourage the free flow of ideas, in exchange for a temporary monopoly."); Bruce A. Lehman, Assistant Sec'y of Commerce and Comm'r of Patents and Trademarks, Public Hearing on Use of the Patent System to Protect Software-Related Inventions (Feb. 10, 1994), <http://www.uspto.gov/web/offices/com/hearings/software/arlington/vahrng.pdf>. "Our intellectual property systems were established over 200 years ago to promote and protect innovation in all fields of technology. If these systems are functioning properly, they will provide an appropriate level of protection and encourage innovation." *Id.*

¹⁸ April L. Butler, Note, *Stealing Thunder From Government Contractors: Thwarting the Intent of the Bayh-Dole Act* in *Campbell Plastics v. Brownlee*, 31 U. DAYTON L. REV. 477, 495 (2006) ("Three-fourths of the country's top 75 information technology companies will not do research with the Government, citing the difficulty in contracting with the Government and treatment of intellectual property in R&D contracts." (quoting *Toward Greater Public-Private Collaboration in Research and Development: How the Treatment of Intellectual Property Rights is Minimizing Innovation in the Federal Gov.: Hearing Before the Subcomm. on Technology and Procurement Policy of the H. Comm. on Gov. Reform*, 107th Cong. 2 (July 17, 2001))) (statement of Rep. Tom Davis).

¹⁹ *Id.*

²⁰ 28 U.S.C. § 1498 (2006). Section 1498(a) reads, in part:

Whenever an invention described in and covered by a patent of the United States is used or manufactured by or for the United States without license of the owner thereof or lawful right to use or manufacture the same, the owner's remedy shall be by action against the United States in the United States Court of Federal Claims for the recovery of his reasonable and entire compensation for such use and manufacture.

Id. § 1498(a). See Butler, *supra* note 18, at 495. See also Daniel R. Cahoy, *An Incrementalist Approach to Patent Reform Policy*, 9 N.Y.U. J. LEGIS. & PUB. POL'Y 587, 626 (2005) [hereinafter Cahoy, *Incrementalist*]. The value of a patent right relates almost solely to the ability to profit. *Id.* Therefore, the ability to collect compensation for infringement (damages) is of the utmost importance. *Id.* Failure to provide for adequate damages can reduce the incentive to pursue a patent. *Id.*

²¹ See 35 U.S.C. § 202(c)(1) (2006) (stating that inventions made under federal contracts are to be disclosed within a reasonable time or the government will receive title in the subject invention); 48 C.F.R. 52.227-11(c)(1) (stating a reasonable time is two months); U.S. DEP'T OF DEFENSE, DEFENSE FEDERAL ACQUISITION REG. SUPP. 252.227-7039 (2006) (stating the DoD requires interim

This comment addresses the U.S. government's failure to attract inventors to develop protection for soldiers. Section I of this comment discusses the role of contractors in meeting the needs of the military. This section also provides an overview of the U.S. patent system and the relevant history of both § 1498 and the Bayh-Dole Act. Section II analyzes how legislation affects the dissemination of new products and technologies to the battlefield. Section III proposes amending § 1498 to better compensate patent holders, and amending the Bayh-Dole Act to reflect a greater respect for contractors' intellectual property rights when dealing with the government. Finally, section IV concludes that there needs to be a fundamental change in current patent legislation in order to adequately support U.S. troops.

I. BACKGROUND: PROCUREMENT OF SUPPLIES, EQUIPMENT, AND TECHNOLOGY

This section outlines how the DoD acquires necessary supplies, equipment, and technology. Subsection A explains the different duties of contractors who provide supplies for the government and contractors who perform research for the government. Subsection B overviews the U.S. patent system and § 1498. Finally, subsection C describes the Bayh-Dole Act.

A. Government Contractors

1. Contractors Both In and Out of the Science and Technology Community

The DoD relies on contractors to furnish the military with necessary supplies and equipment, which as a whole, range from individual rations to body armor and M-16 rifles.²² As of 2005, there were over 45,000 contractors that provided goods and services to the DoD, with each contract valued at over \$25,000.²³ The sheer number of contractors that the DoD requires to feed, transport, and arm the military indicates their vital importance to the military's ability to function.²⁴ However, while

reports every twelve months and a final report three months following the completion of the project, with a failure to disclose resulting in the government taking title).

²² *Cf.* Wornick Co., Military Feeding Systems, <http://www.wornick.com/military> (last visited Nov. 9, 2007) (stating the Wornick company is a major supplier of the military's Meals Ready to Eat ("MREs")); U.S. Army, Army Fact File—M-16 Rifle, <http://www.army.mil/factfiles/equipment/individual/m16.html> (last visited Nov. 9, 2007) (stating that Colt Manufacturing and Fabrique Nationale Manufacturing Inc. produce the military's assault rifles); BAE Systems, Mobility and Protection Systems, Individual Equipment Systems, <http://adg.armorholdings.com/default.aspx?pid=70> (last visited Nov. 9, 2007) (stating BAE Systems' Mobility & Protection Systems division supplies the military with "[b]ody armor, vests, hydration systems, assault packs, helmets . . . and other protective products").

²³ *See* Office of the General Counsel, Department of Defense, Fiscal Year 2005 DoD Contractors, www.dod.mil/dodgc/defense_ethics/resource_library/FY05_Contractors.pdf.

²⁴ *See id.*

these types of contractors are important, even more important are contractors who belong to the science and technology (“S&T”) community.²⁵

The DoD relies on members of the S&T community for innovations that the DoD can incorporate into its weapon and defense systems.²⁶ The United States military depends on these systems to ensure victory on the battlefield.²⁷ However, these systems often lack the innovations promised to soldiers and are past due and over budget.²⁸

2. Failure to Secure Innovations on Time and Within Budget

Numerous explanations are given for the failure to provide innovative defense-oriented products on time and within budget. For instance, the DoD attributes the slow development of DoD inventions to its lack of a “strong influence at the corporate level to guide . . . technology investments.”²⁹ If the DoD cannot persuade corporations to create necessary technologies, innovative defense-oriented products will not reach soldiers who are at risk on the battlefield.³⁰

Meanwhile, the Government Accountability Office (“GAO”) attributes the slow development of defense-oriented inventions to the DoD’s failure to implement gated reviews (“reviews”).³¹ The goal of these reviews is to provide a framework for the development of an invention prior to its inclusion in a DoD product.³² The GAO states that the DoD’s failure to implement these reviews results in immature technology being included in products,³³ thus causing cost overruns, schedule delays, and performance shortfalls of military equipment.³⁴

²⁵ See GOV’T ACCOUNTABILITY OFFICE, PUBL’N NO. GAO-06-883, BEST PRACTICES: STRONGER PRACTICES NEEDED TO IMPROVE DOD TECHNOLOGY TRANSITION PROCESSES 1 (2006) [hereinafter BEST PRACTICES] (“[T]he DoD relies on the technological superiority of its weapon systems and armed forces to protect U.S. interests at home and abroad . . .”); see also Lawrence B. Ebert, *On Patent Quality and Reform*, 88 J. PAT. & TRADEMARK OFF. SOC’Y 1068, 1072–74 (stating the importance of having a technological advantage over adversaries in war). “On the third day of the Gettysburg battle, two units of Federal cavalry . . . armed with Spencer rifles, pushed back a superior force by virtue of having the technological superiority of repeating rifles against single shot weapons.” *Id.*

²⁶ See BEST PRACTICES, *supra* note 25, at 7 (stating the DoD relies on the S&T community to conduct the basic, applied, and advanced research before acquiring the technology to a product).

²⁷ See *supra* text accompanying note 25.

²⁸ GOV’T ACCOUNTABILITY OFFICE, PUBL’N NO. GAO-06-257T, DOD ACQUISITION OUTCOMES: A CASE FOR CHANGE 1 (2005) [hereinafter CASE FOR CHANGE] (stating that while U.S. weapons are the best in the world, the time it takes to field them and the cost it takes to develop them are usually off by twenty to fifty percent). “When costs and schedules increase, quantities are cut, and the value for the warfighter—as well as the value of the investment dollar—is reduced.” *Id.*

²⁹ BEST PRACTICES, *supra* note 25, at 3.

³⁰ *Id.* at 3–4.

³¹ *Id.* at 25; see also CASE FOR CHANGE, *supra* note 28, at 6–7 (noting that DoD policy provides for a framework that makes developers ask themselves at key decision points whether technology is developed enough to move onto the next stage of development, but the policy is rarely enforced, leading to immature technologies being implemented in defense products).

³² BEST PRACTICES, *supra* note 25, at 9 (noting that reviews ensure a technology’s relevance and feasibility prior to being included in an end product).

³³ *Id.* at 7.

³⁴ See *id.* at 1.

Finally, the failure of the DoD to secure innovative systems on time and within budget has been attributed to the government's policy regarding intellectual property.³⁵ Currently, this policy, coupled with the government's failure to adequately compensate inventors for a "taking" of their invention, leads members of the S&T community to be less willing to contract with the government.³⁶ Consequently, there is less competition for contracts, which results in higher prices³⁷ and fewer innovative products reaching soldiers.³⁸

B. The Patent System, § 1498, and the Bayh-Dole Act

This subsection reviews the rights of patent holders in the United States under current legislation. Subpart 1 provides an overview of the U.S. patent system. Subpart 2 explains § 1498 and its progenitors. Finally, subpart 3 discusses the policy behind Bayh-Dole and its implementation in practice.

1. The U.S. Patent System

The U.S. Constitution authorizes Congress to establish a federal system of patents in order to "promote the Progress of Science and useful Arts."³⁹ Patents encourage inventors to create useful devices for the public.⁴⁰ Additionally, the patent system encourages other inventors to "design around" existing patents, leading to further innovations that benefit the public.⁴¹

During the term of the patent, the patent owner may enjoin any entity,⁴² other than the U.S. government,⁴³ from making, using, or selling the patented invention.⁴⁴

³⁵ See Butler, *supra* note 18, at 495–96.

³⁶ See *supra* text accompanying note 18.

³⁷ See 48 C.F.R. 16.104(a) (2006) (noting effective price competition will normally result in realistic pricing). "Competition is the keystone policy of Federal acquisition." Effective Competition in Government Procurement, <http://fedpubseminars.com/seminar/govproc.html> (last visited Nov. 9, 2007).

³⁸ See CASE FOR CHANGE, *supra* note 28, at 1.

³⁹ U.S. CONST. art. I, § 8, cl. 8.

⁴⁰ 35 U.S.C. § 101 (2006). The subject matter may be "any new and useful process, machine, manufacture, or composition of matter . . ." *Id.* See also 35 U.S.C. § 103(a) (requiring that the invention not be obvious to a person "having ordinary skill in the art to which [the] subject matter pertains.").

⁴¹ Daniel R. Cahoy, *Treating the Legal Side Effects of Cipro®: A Reevaluation of Compensation Rules for Government Takings of Patent Rights*, 40 AM. BUS. L.J. 125, 131–32 (2002) [hereinafter Cahoy, *Cipro*] (stating that one of the benefits of the patent system is that it provides an opportunity for other inventors to "design around" another person's patent, resulting in more innovation (citing *Read Corp. v. Portec, Inc.*, 970 F.2d 816, 828 (Fed. Cir. 1992))).

⁴² See *eBay Inc. v. MercExchange, L.L.C.*, 126 S. Ct. 1837, 1839–41 (2006) (holding a plaintiff seeking a permanent injunction under the Patent Act must demonstrate: (1) irreparable injury; (2) remedies available at law are inadequate to compensate for that injury; (3) considering the balance of hardships between plaintiff and defendant, a remedy in equity is warranted; and (4) the public interest would not be disserved by a permanent injunction).

⁴³ See 28 U.S.C. § 1498(a) (2006); see also *Hughes Aircraft Co. v. United States*, 534 F.2d 889, 901 (Ct. Cl. 1976) (stating the purpose of § 1498 is to "cloak with immunity from injunction" types of activity determined to be necessary to achieve U.S. goals or interests).

Additionally, a patent-holder may collect damages resulting from infringement of her patent.⁴⁵ These damages can either take the form of a reasonable royalty⁴⁶ or a calculation of lost profits.⁴⁷ In exchange for this protection, the patent holder agrees to fully disclose her invention.⁴⁸

2. Patent Holder Rights Against the Government

Patent litigation involving the government falls under a different legal theory than lawsuits between private parties.⁴⁹ Title 28 of U.S.C. § 1338 governs patent litigation between private parties.⁵⁰ In contrast, a patent holder seeking damages from the government is constrained by the tenets of 28 U.S.C. § 1498.⁵¹

a. The Act of 1910

When Congress passed the Act of 1910, the government waived its sovereign immunity in patent infringement litigation.⁵² This waiver was in recognition of the injustice levied upon inventors who, prior to the Act of 1910, had no recourse in the case of governmental infringement.⁵³ However the Act of 1910 failed to limit a

⁴⁴ 35 U.S.C. § 154(a)(1) (2006).

⁴⁵ 35 U.S.C. § 284 (stating the injured party shall be awarded damages adequate to compensate for the infringement, "but in no event less than a reasonable royalty . . .").

⁴⁶ *Georgia-Pacific Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970), *aff'd*, 446 F.2d 295 (2d Cir. 1971), *cert. denied*, 404 U.S. 870 (1971) (stating a reasonable royalty is the hypothetical amount that a licensor (the patentee) and a licensee (the infringer) would have agreed upon if both had been reasonably and voluntarily trying to reach an agreement).

⁴⁷ JOHN GLADSTONE MILLS III, DONALD C. REILEY III & ROBERT C. HIGHLEY, *PATENT LAW FUNDAMENTALS* § 20:56 (2d ed. 2007) (stating that patent owners may either recover lost profits or a reasonable royalty). For a patent owner to recover lost profits she must prove (1) a causal relationship between the infringement and her loss of profits, and (2) a reasonable probability that she would have made the infringing sales that the infringer made. *Id.*

⁴⁸ See 35 U.S.C. § 112 ("The specification shall contain a written description of the invention, and of the manner and process of making and using it . . . as to enable any person skilled in the art to which it pertains . . . to make and use the same . . ."); see also Cahoy, *Incrementalist*, *supra* note 20, at 598 (stating "[i]t has been long recognized that the award of government property rights can serve as an innovation support mechanism by bringing information to the public.>").

⁴⁹ See *Leesona Corp. v. United States*, 599 F.2d 958, 964 (Ct. Cl. 1979) (stating claims brought under § 1498 are not analogous to suits between private parties).

⁵⁰ See 28 U.S.C. § 1338 (2006).

⁵¹ 28 U.S.C. § 1498; David M. Schlitz & Richard J. McGrath, *Patent Infringement Claims Against the United States Government*, 9 FED. CIR. B.J. 351, 353-54 (2000) (noting patent infringement cases between private parties are brought under 28 U.S.C. § 1338 and sound in tort, whereas actions brought under 28 U.S.C. § 1498 against the government are based upon an eminent domain theory).

⁵² See Act of June 25th, 1910, ch. 423, 36 Stat. 851 (current version at 28 U.S.C. § 1498).

⁵³ See *Crozier v. Fried Krupp Aktiengesellschaft*, 224 U.S. 290, 304 (1912) (stating prior to the Act of 1910 the power to sue the United States for the taking of a patent did not exist, unless it was established that there was a breach of contract between the patent holder and the United States); see also Fla. Prepaid Postsecondary Educ. Expense Bd. v. Coll. Savings Bank, 527 U.S. 627, 663 (1999) (5-4 decision) (Stevens, J., dissenting) (providing a brief history of the circumstances surrounding the legislation waiving sovereign immunity).

plaintiff's ability to enjoin an infringing government contractor.⁵⁴ Thus, a litigant could enjoin the United States from procuring wartime materials from suppliers.⁵⁵ Any interruption in the supply chain can potentially result in an entire Army defeat on the battlefield.⁵⁶ Realizing this, the Government amended the Act of 1910 with The Naval Appropriations Act of 1918 ("Act of 1918").⁵⁷

b. Emergence of § 1498

The Act of 1918 relieved contractors "[f]rom liability . . . for the infringement of patents in manufacturing anything for the government."⁵⁸ The act limited the compensation a patent holder could receive from the government to a "reasonable and entire" amount.⁵⁹ In 1948, the Act of 1918 was codified in § 1498.⁶⁰ Under the current law, § 1498 bars any equitable relief, and limits recovery to "reasonable and entire compensation."⁶¹ However, the statute fails to provide a method for calculating damages when the government exercises eminent domain over a patent.⁶²

⁵⁴ See *Fla. Prepaid Postsecondary Educ. Expense Bd.*, 527 U.S. at 663.

⁵⁵ See Richard T. Ruzich, *Government Patent and Copyright Infringement Overseas Under 28 U.S.C. § 1498 (In the Shadow of the Rim Decisions)*, 15 FED. CIR. B.J. 401, 405 (2006) (explaining the ramifications of the Act of 1910 and the potential effect of the legislation on the American war effort).

⁵⁶ See GOV'T ACCOUNTABILITY OFFICE, PUBL'N NO. GAO-07-234, DOD'S HIGH RISK AREAS: PROGRESS MADE IMPLEMENTING SUPPLY CHAIN MANAGEMENT RECOMMENDATIONS, BUT FULL EXTENT OF IMPROVEMENT UNKNOWN 1 (2007) (stating the supply chain dictates the "readiness and operational capabilities" of the U.S. military); see generally MJR John A. Tokar, *Logistics and the Defeat of Gentleman Johnny*, ARMY LOGISTICIAN, July–Aug. 2000, at 46 (noting that British supply problems played a large role in their defeat at the hands of American rebels).

⁵⁷ Act of July 1, 1918, ch. 114, 40 Stat. 704 (current version at 28 U.S.C. § 1498). See also *Richmond Screw Anchor Co. v. United States*, 275 U.S. 331, 342 (1928) ("[The War Department is] confronted with a difficult situation as the result of a recent decision by the Supreme Court affecting the government's rights as to the manufacture and use of patented inventions, and it seems necessary that amendment be made of the Act of June 25, 1910." (quoting letter dated April 20, 1918, from the Acting Secretary of the Navy)).

⁵⁸ *Richmond Screw Anchor Co.*, 275 U.S. at 343; see also *id.* at 345 (stating the intention of Congress in enacting the new legislation was to stimulate contractors to manufacture supplies for the war effort); *id.* at 342–43 (stating that prior to the enactment of the Naval Appropriations Act, contractors were reluctant to contract with the government for fear of expensive litigation).

⁵⁹ *Id.*

⁶⁰ Act of July 1, 1918, ch. 114, 40 Stat. 704 (current version at 28 U.S.C. § 1498). See also *Zoltek Corp. v. United States*, 58 Fed. Cl. 688, 700–01 n.22 (Fed. Cl. 2003). Under § 1498, the unauthorized use of a patent by the government constitutes a "taking" of the patent under the government's powers of eminent domain and not the manifestation of a compulsory license in the patent. *Zoltek Corp.*, 58 Fed. Cl. at 696–701.

⁶¹ 28 U.S.C. § 1498(a). See also David R. Lipson, *We're Not Under Title 35 Anymore: Patent Litigation Against the United States Under 28 U.S.C. § 1498*, 33 PUB. CONT. L.J. 243, 249 (2003) (stating that a patentee may not obtain injunctive relief against the government or its contractors under 28 U.S.C. § 1498, which strips patentees of their "most powerful and oft-used weapon").

⁶² Cahoy, *Cipro*, *supra* note 41, at 146 ("Title 28 U.S.C. § 1498 contains no directions or limitations as to the grant of damages other than its mandate of 'reasonableness' and 'entirety' . . .").

Instead, courts have relied on basic equitable principles of fairness⁶³ and technical concepts of property law to calculate damages in those instances.⁶⁴

In appraising a patent holder's damages, the courts use one of three methods of valuation.⁶⁵ Generally, however, all formulations fall into two distinct categories:⁶⁶ (1) a reasonable royalty⁶⁷ or (2) lost profits.⁶⁸

i. Reasonable Royalty

A "reasonable royalty" is the bare minimum a patent-holder may recover from an infringer.⁶⁹ In order to ensure the patentee will recover more than a nominal amount of damages, a reasonable royalty sets a threshold that awards cannot fall below.⁷⁰ However, neither the legislature nor the courts provide a baseline percentage that constitutes a "reasonable royalty."⁷¹ Instead, in the absence of an "established royalty," courts base awards upon conjecture and supposition when deciding the amount of the "reasonable royalty."⁷² As a result, courts usually calculate damages using a hypothetical negotiation between the patent holder and the government.⁷³ This method, while flexible, results in wide discrepancies in the

⁶³ *Textronix, Inc. v. United States*, 552 F.2d 343, 347 (Ct. Cl. 1977).

⁶⁴ 35 U.S.C. § 261 (2006) (mandating patents "shall have the attributes of personal property."); *see Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983) (stating patents are a form of property, and a patentee's exclusion of others from the use of a patent is the essence of property law).

⁶⁵ *Decca, Ltd. v. United States*, 640 F.2d 1156, 1167 (Ct. Cl. 1980) (stating the court uses either (1) a determination of a reasonable royalty, (2) the award of lost profits, or (3) a percentage of the amount saved by the government by the use of the patented invention). *But see id.* at 1172 (stating savings to the government are usually only used when the court would encounter "great difficulty" in calculating a reasonable royalty).

⁶⁶ *Cahoy, Cipro, supra* note 41, at 152–53 (stating the award of lost profits or a reasonable royalty are two distinct categories that are mutually exclusive). Courts initially search for an established royalty rate, if such a rate exists, it is the exclusive measure of damages. *Id.* at 157. If an established royalty rate cannot be found, the courts entertain the possibility of lost profits. *Id.* Finally, if lost profits are unavailable to the plaintiff, the court will apportion damages according to a reasonable royalty. *Id.* at 157.

⁶⁷ *Id.* at 153 (stating that a reasonable royalty for the use of the patented invention is the baseline award that a patent owner is entitled to).

⁶⁸ *See Gargoyles, Inc. v. United States*, 113 F.3d 1572, 1576 (Fed. Cir. 1997) (dictum) (stating lost profits should be recoverable in at least some infringement actions against the government).

⁶⁹ *See* 35 U.S.C. § 284.

⁷⁰ *See* 28 U.S.C. § 1498 (2006) (guaranteeing reasonable and entire compensation).

⁷¹ *Id.* (providing only a general idea of reasonable and entire compensation, without specifying a minimum percentage); *see, e.g., Hughes Aircraft Co. v. United States*, 31 Fed. Cl. 481, 491 (Ct. Cl. 1994) (awarding one percent of the cost of the entire spacecraft as a reasonable royalty); *Penda Corp. v. United States*, 29 Fed. Cl. 533, 586 (Ct. Cl. 1993) (awarding slightly less than ten percent of the sales price of plastic pallets as a reasonable royalty); *Dow Chemical Co. v. United States*, 36 Fed. Cl. 15, 26 (Ct. Cl. 1996) (awarding a fifteen percent royalty).

⁷² *See Cincinnati Car Co. v. N.Y. Rapid Transit Corp.*, 66 F.2d 592, 595 (2d Cir. 1933) (stating "[t]he whole notion of a reasonable royalty is a device in aid of justice, by which that which is really incalculable shall be approximated . . .").

⁷³ *See Tektronix, Inc. v. United States*, 552 F.2d 343, 348–49. A reasonable royalty is the amount that a willing licensor (the patentee), and a willing licensee (the infringer) would have agreed on if both had reasonably and voluntarily tried to reach an agreement prior to infringement

percentage of damages awarded in one case as compared to another.⁷⁴ Regardless, the award of a reasonable royalty remains the prevalent form of damages awarded under § 1498.⁷⁵ This pattern is due to the paucity of cases in which the court finds an established royalty and the difficulty in proving lost profits under current judicial interpretation of § 1498.⁷⁶

ii. Lost Profits

An award of lost profits against the government, while theoretically possible, is rarely attainable.⁷⁷ This is partially due to a fear of overcompensating plaintiffs,⁷⁸ judicially created tests requiring plaintiffs to satisfy many elements,⁷⁹ and other lofty standards that the patent-holder must fulfill.⁸⁰ However, despite these reasons, the U.S. Court of Appeals for the Federal Circuit (“CAFC”) recently indicated a willingness to award lost profits under a more lenient standard.⁸¹ This sudden change in policy denotes recognition by the CAFC that a “reasonable royalty” may not always adequately compensate plaintiffs for an infringement of their patents.⁸²

or litigation. *Georgia-Pacific Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970), *aff'd*, 446 F.2d 295 (2d Cir. 1971), *cert. denied*, 404 U.S. 870 (1971).

⁷⁴ See *supra* text accompanying note 71.

⁷⁵ See Lipson, *supra* note 61, at 257 (stating the clear preference for the reasonable royalty measure of damages under § 1498).

⁷⁶ See *Tektronix, Inc.*, 552 F.2d at 348–49 (requiring “clear and convincing” evidence of the lost profits and stating that lost profits should only be awarded “only after the strictest proof that the patentee would actually have earned and retained those sums in its sales to the Government.”).

⁷⁷ See *Schlitz & McGrath*, *supra* note 51, at 363 (noting that as of 2000, the Government had successfully argued against an award of lost profits for the last sixty-eight years).

⁷⁸ See *Tektronix, Inc.*, 552 F.2d at 349 (Ct. Cl. 1977) (stating an award of lost profits may be so high as to be considered excessive compensation, rather than just compensation); see also Amy L. Landers, *Let the Games Begin: Incentives in the New Economy of Intellectual Property Law*, 46 SANTA CLARA L. REV. 307, 362–63 (2006) (explaining the threat that over-compensation poses to those engaged in producing goods). If awards are too high, and the cost of engaging in the production of certain goods too risky, industry is likely to abandon otherwise beneficial activity. *Id.*

⁷⁹ *Panduit Corp. v. Stahl Bros. Fibre Works Inc.*, 575 F.2d 1152, 1156 (6th Cir. 1978) (stating in order to receive lost profits, the patentee must prove: (1) a demand for the infringed-upon product in the relevant market; (2) an absence of non-infringing alternatives; (3) it had the manufacturing and marketing capability to meet the demand; and (4) the amount of lost profits, due to the infringing products). Failure to meet any of the elements resulted in a refusal of damages for lost profits. *Id.*

⁸⁰ *Tektronix, Inc.*, 552 F.2d at 348 (stating a need for “clear and convincing” evidence that plaintiff would have supplied all of the product the Government bought from third-parties, and requiring that lost profits only be awarded under § 1498 only after the “strictest proof” that the patent holder would have actually earned and retained the profits allegedly lost).

⁸¹ See *Gargoyles, Inc. v. United States*, 113 F.3d 1572, 1576 (Fed. Cir. 1997) (dictum) (questioning the continuing validity of the “clear and convincing” standard, and positing that a “preponderance of evidence” standard might be more appropriate in § 1498 cases). A “preponderance of the evidence” standard would require a plaintiff to prove that “but for the infringement, it would have earned the profits it asserts were lost.” *Schlitz & McGrath*, *supra* note 51, at 363–64.

⁸² See *Schlitz & McGrath*, *supra* note 51, at 363–64 (explaining that a “preponderance of the evidence standard” is much more lenient than the current “clear and convincing” standard).

c. The Bayh-Dole Act

Bayh-Dole has been lauded as “[p]ossibly the most inspired piece of legislation to be enacted in America over the past half century.”⁸³ This reverence is due to its early success in attracting companies to contract with the government by allowing members of the S&T community to take title in their federally funded inventions.⁸⁴

i. The Policy Behind the Bayh-Dole Act

Congress passed Bayh-Dole in 1980 to spur innovation⁸⁵ and entice inventors to patent their discoveries.⁸⁶ At the time, Congress believed the lack of useful inventions was due to the reluctance of contractors willing to do business with the Federal Government.⁸⁷ This belief was reinforced by studies that found the S&T community disliked contracting with the government because: (1) the “title-taking” policy of many government agencies;⁸⁸ and (2) administrative hardship due to a lack of uniform policy among government agencies.⁸⁹

ii. Elimination of the “Title-Taking” Policy

Prior to the enactment of Bayh-Dole, the Government retained title to any invention discovered during federally funded research.⁹⁰ This resulted in only a

⁸³ *Innovation's Golden Goose*, ECONOMIST, Dec. 12, 2002, at 3, available at http://www.economist.com/science/tq/displayStory.cfm?story_id=1476653.

⁸⁴ *Id.*

⁸⁵ 35 U.S.C. § 200 (2006); see generally John H. Raubitschek & Norman J. Latker, *Reasonable Pricing: A New Twist for March-In Rights Under the Bayh-Dole Act*, 22 SANTA CLARA COMPUTER & HIGH TECH. L.J. 149, 149–50 (2005) (stating the rationale behind the drafting of the Bayh-Dole Act).

⁸⁶ See Cahoy, *Incrementalist*, supra note 20, at 598 (stating that patenting an invention is beneficial because it disseminates useful innovations to the public at large).

⁸⁷ See SUBCOMM. ON DOMESTIC AND INT'L SCIENTIFIC PLANNING AND ANALYSIS OF THE HOUSE COMM. ON SCIENCE AND TECH., 94TH CONG., BACKGROUND MATERIALS ON GOVERNMENT PATENT POLICIES: REPORTS OF COMMITTEES, COMMISSIONS, AND MAJOR STUDIES xi (Comm. Print 1976) (citing numerous studies noting contractors' wariness in dealing with the government).

⁸⁸ Gregg S. Sharp, *A Layman's Guide to Intellectual Property in Defense Contracts*, 33 PUB. CONT. L.J. 99, 113 (2003) (explaining the primary and secondary reasons concerning why contractors chose not to conduct R&D work for the Federal Government).

⁸⁹ *Id.*; Rebecca S. Eisenberg, *Public Research and Private Development: Patents and Technology Transfer in Government-Sponsored Research*, 82 VA. L. REV. 1663, 1676–77 (1996) (noting prior to the passage of the Bayh-Dole Act, government agencies were free to choose whatever patent policy best suited their missions). The Atomic Energy Commission, Department of Agriculture, Department of Health, Education, and Welfare, Department of the Interior, and the National Aeronautics and Space Administration (“NASA”) followed a title policy. *Id.* The DoD and National Science Foundation followed a license policy. *Id.*

⁹⁰ See Gary Pulsinelli, *Share and Share Alike: Increasing Access to Government-Funded Inventions Under the Bayh-Dole Act*, 7 MINN. J. L. SCI. & TECH. 393, 398 (2006) (stating that prior to the implementation of Bayh-Dole the majority of government agencies retained full title to inventions developed with federal funding).

small percentage of any of the patents actually being used.⁹¹ Bayh-Dole allows government-financed inventors to take title in their federally funded inventions.⁹² This has resulted in a ten-fold increase in the number of patents applied for by universities and small businesses.⁹³ Limitations exist, however, concerning the inventor's title. These limitations are (1) the government's march-in rights,⁹⁴ and (2) its ability to revoke title in a patent for improper disclosure of a discovery.⁹⁵

iii. The Government's March-In Rights

March-in rights allow the government to "march-in" and take back title to a subject invention if contractors do not implement federally funded patents to develop a product.⁹⁶ This mechanism exists primarily to discourage suppression of technology by companies who license these patents only to prevent competitors from gaining access to the underlying technology, while not actually using the technology themselves.⁹⁷ Through this right, a governmental funding agency can force an inventor to grant a license to another company if the current licensee is not utilizing the patent effectively.⁹⁸ The decision to execute this march-in right rests solely in the discretion of the funding government agency.⁹⁹ As such, many companies fear the potential abuse of march-in rights by governmental agencies.¹⁰⁰ This fear can deter a company from contracting with the government.¹⁰¹ Other provisions of 35 U.S.C. § 203, which specifically limit the government's exercise of its march-in rights, however, alleviate this fear.¹⁰²

Under § 203 the government can only take back title to a subject invention in four circumstances.¹⁰³ If these are not present, the government is barred from

⁹¹ *Id.* at 397 (stating only four percent of the patents issued to the National Institute of Health, NASA or the DoD were ever actually used).

⁹² 35 U.S.C. § 202(a) (2006); *see also* Sharp, *supra* note 88, at 116 (stating when a contractor takes title in her invention, Bayh-Dole requires a grant-back of a "nonexclusive, nontransferable, irrevocable, paid-up license" to the government); Eisenberg, *supra* note 89, at 1669 ("Firms may only be willing to invest in the development of an invention if they hold exclusive rights, either in the form of title or exclusive license, under a patent.").

⁹³ Raubitschek & Latker, *supra* note 85, at 150 (stating Bayh-Dole has created more than 2,200 companies, produced 260,000 new jobs, and contributed more than forty billion dollars annually to the American economy since 1980).

⁹⁴ 35 U.S.C. § 203.

⁹⁵ *See* Campbell Plastics Eng'g & Mfg., Inc. v. Brownlee, 389 F.3d 1243, 1247–50 (Fed. Cir. 2004).

⁹⁶ *See* 35 U.S.C. § 203(a)(1); *see also* Raubitschek & Latker, *supra* note 85, at 155–56.

⁹⁷ Sen. Birch Bayh, Statement to the National Institute of Health 2–5 (May 25, 2004), <http://www.ott.nih.gov/policy/meeting/Senator-Birch-Bayh.pdf> (last visited June 9, 2007).

⁹⁸ *See* 35 U.S.C. § 203(a).

⁹⁹ *Id.*

¹⁰⁰ *See* OFFICE OF THE UNDER SECRETARY OF DEFENSE FOR ACQUISITION, TECHNOLOGY AND RESEARCH, INTELLECTUAL PROPERTY: NAVIGATING THROUGH COMMERCIAL WATERS 4-12 (Version 1.1 2001) [hereinafter NAVIGATING] (noting the potential for liability if a contractor is not able to achieve a return on its investment in a subject invention).

¹⁰¹ *Id.*

¹⁰² *See* 35 U.S.C. § 203(a)(1)–(a)(4).

¹⁰³ *See id.* The government may exercise its march-in rights if it is "necessary": (1) because the contractor has not taken steps to achieve practical application of the invention; (2) to alleviate

marching-in under § 203.¹⁰⁴ This provision, coupled with a lengthy administrative process for determining if marching-in is appropriate,¹⁰⁵ discourages the capricious or routine use of the march-in authority by the government.¹⁰⁶ Because of this, it has been said that the value of the march-in provision lies more in the threat of its use than in its actual use.¹⁰⁷ Regardless, even the mere threat of the government marching-in serves as motivation for contractors to effectively utilize subject inventions.¹⁰⁸

iv. Improper Disclosure

In addition to its march-in rights, the government has the right to claim title to an invention if specific reporting formalities are not properly observed.¹⁰⁹ Contractors have largely dismissed this provision of Bayh-Dole for the last twenty years.¹¹⁰ However, the CAFC recently affirmed the viability of the provision in *Campbell Plastics Engineering & Manufacturing, Inc. v. Brownlee*.¹¹¹ The court's decision in *Campbell Plastics* now poses a major risk to research and development ("R&D") firms that receive federal funding because the government may assert its right to seize a firm's R&D for failure to comply with a procedural technicality. As a result, firms are less inclined to do business with the government.¹¹² Regardless, this provision is currently one of many risks inherent in contracting with the government. On the other hand, Bayh-Dole has concurrently reduced the risk of

health or safety needs not reasonably satisfied by the contractor; (3) to meet requirements for public use; or (4) to enforce the agreement that a substantial amount of the manufacturing of a product be conducted in the United States. *Id.*

¹⁰⁴ *See id.*

¹⁰⁵ NATIONAL INSTITUTE OF HEALTH, NIH OFFICE OF TECHNOLOGY TRANSFER, APPENDIX D: ANALYSIS OF NIH OPTION UNDER CURRENT LAW, <http://ott.od.nih.gov/researchtool/AppendixD.html> (last visited Apr. 14, 2007).

¹⁰⁶ *Id.* (stating the exercise of march-in rights is a "cumbersome mechanism" that should not be used on a routine basis).

¹⁰⁷ *See* Butler, *supra* note 18, at 500 (stating the march-in provision is "largely cosmetic" (quoting *The University and Small Business Patent Procedures Act: Hearing on S. 414 before the Senate Comm. on the Judiciary*, 96th Cong. 160 (1979)) (statement of Admiral Rickover); *see also* Raubitschek & Latker, *supra* note 85, at 157 (stating the government has not exercised its march-in rights since 1980). *Contra* Mary Eberle, *March-In Rights Under the Bayh-Dole Act: Public Access to Federally Funded Research*, 3 MARQ. INTELL. PROP. L. REV. 155, 175 (1999) (stating march-in rights exist to address the possibility that companies may purchase technology, and not use it, to eliminate the possibility of a competitor purchasing the technology and gaining market share).

¹⁰⁸ *See* NAVIGATING, *supra* note 100, at 4-12 (noting that a government taking via the march-in right can have serious financial consequences for a company that has invested time and money into an invention). *But see id.* at 4-13 (noting that the government has not exercised its march-in right to date).

¹⁰⁹ 35 U.S.C. § 202(c)(1) (2006).

¹¹⁰ GOV'T ACCOUNTING OFFICE, PUBL'N NO.GAO/RCED-99-242, TECHNOLOGY TRANSFER: REPORTING REQUIREMENTS FOR FEDERALLY SPONSORED INVENTIONS NEED REVISION, 6 (1999) (stating only 6.1% of grantees properly report their inventions).

¹¹¹ 389 F.3d 1243, 1247-50 (holding that a failure to observe all formalities of invention disclosure results in a forfeiture of title to the invention).

¹¹² *See* discussion *infra* Section II.A.2.b.

contracting with the government by requiring uniformity amongst governmental agencies.¹¹³

v. Uniformity Amongst Government Agencies

Prior to Bayh-Dole, each governmental agency maintained its own respective policy concerning the rights an inventor retained in her invention when using government funds.¹¹⁴ Proponents of Bayh-Dole sought to establish a clear and overriding standard for determining ownership of inventions created with federal research funds. The purpose of a uniform standard was to allow developers to focus on innovative products, rather than on administrative tasks.¹¹⁵ This uniform standard has radically increased R&D productivity of the private sector in the United States.¹¹⁶

II. ANALYSIS

The DoD is currently experiencing a crisis regarding defense-oriented inventions.¹¹⁷ It is unable to field products for the military that meet the needs of its soldiers.¹¹⁸ The following section discusses various reasons posited for why soldiers are not getting the defense-oriented products they need when they need them. Subsection A discusses the DoD's inability to direct the research of the S&T community. Subsection B discusses the effect that implementing reviews during a technology's acquisition has upon lowering cost and increasing efficiency. Subsection C explains how § 1498 can discourage innovation among the S&T community. Lastly, subsection D summarizes the arguments presented throughout the analysis and briefly details their advantages and disadvantages.

¹¹³ See Lorelei Ritchie de Larena, *The Price of Progress: Are Universities Adding to the Cost?*, 43 HOUS. L. REV. 1373, 1378 (2007) (noting the confusion of universities when dealing with the different policies of government agencies prior to the enactment of Bayh-Dole).

¹¹⁴ Eisenberg, *supra* note 89, at 1676–77 (stating that prior to Bayh-Dole all twenty-eight government agencies were allowed to set their own policies concerning whether an inventor retained title in her invention).

¹¹⁵ See Ritchie de Larena, *supra* note 113, at 1378 (noting the strain on resources created by administrative tasks prior to Bayh-Dole).

¹¹⁶ *Id.* at 1412 (noting the success of the Bayh-Dole Act). “There were only twenty-five active technology transfer offices in the United States at the time the Bayh-Dole Act was passed. By the twenty-fifth anniversary, there were 3300.” *Id.* (citations omitted).

¹¹⁷ See GOV'T ACCOUNTABILITY OFFICE, PUBL'N NO. GAO-06-368, DEFENSE ACQUISITIONS: MAJOR WEAPON SYSTEMS CONTINUE TO EXPERIENCE COST AND SCHEDULE PROBLEMS UNDER DoD'S REVISED POLICY 4 (2006) [hereinafter COST AND SCHEDULE PROBLEMS] (stating the DoD's defense-oriented products have consistently delivered performances below expectations and above cost estimates). The cost of developing defense-oriented products often exceeds estimates by approximately thirty to forty percent. *Id.* at 2.

¹¹⁸ See Tyson, *supra* note 6 (noting the shortcomings of Interceptor body armor); see also GOV'T ACCOUNTABILITY OFFICE, PUBL'N NO. GAO-06-391, DEFENSE ACQUISITIONS: ASSESSMENTS OF SELECTED MAJOR WEAPON PROGRAMS 3 (2006) [hereinafter ASSESSMENTS] (stating that due to the DoD's poor acquisition of R&D, the buying power of the DoD is reduced, and soldiers get less than promised).

A. Inability to Direct R&D of the S&T Community

The DoD attributes the scarcity of defense-oriented technology to its inability to specifically direct the R&D efforts of the S&T community.¹¹⁹ To a certain extent, the government no longer controls the intellectual marketplace as it once did.¹²⁰ This, however, is belied by the principles of market economics and purchasing power of the DoD.¹²¹ As such, while the government may no longer have unfettered access to the majority of inventions in the United States,¹²² its considerable assets should still be able to sway the marketplace in favor of goods it desires.¹²³

1. The Free-Market Economy

Many commentators have characterized the United States as a free-market economy.¹²⁴ In a free-market economy, supply and demand determines the growth and direction of industry.¹²⁵ Thus, when firms within an industry determine there is a void in the supply chain, they seek to fill the void with their products.¹²⁶ Firms do

¹¹⁹ See BEST PRACTICES, *supra* note 25, at 3. “So right now we have a situation where the intellectual property—that is, the patents, trademarks . . . etc.—they all represent seed corn, and no farmer wants to give up his seed corn. But, yet, the Government wants access to the processes and results of that property . . .” *Toward Greater Public-Private Collaboration in Research and Development: How the Treatment of Intellectual Property Rights is Minimizing Innovation in the Federal Gov.: Hearing Before the Subcomm. on Technology and Procurement Policy of the H. Comm. on Gov. Reform*, 107th Cong. 4 (July 17, 2001) [hereinafter *Toward Greater Collaboration*] (statement of Jack L. Brock, Managing Director, Government Accounting Office).

¹²⁰ See GOV'T ACCOUNTABILITY OFFICE, PUBL'N NO. GAO-01-980T, INTELLECTUAL PROPERTY: INFORMATION ON THE FEDERAL FRAMEWORK AND DOD'S OTHER TRANSACTION AUTHORITY 2 (2001) [hereinafter INFORMATION ON THE FEDERAL FRAMEWORK] (stating most research is conducted outside of the government's governance, and that the government must now compete with others to obtain its R&D); Cahoy, *Incrementalist*, *supra* note 20, at 594 (noting the decisions private industry makes determines the direction of a “substantial portion” of innovation).

¹²¹ See INFORMATION ON THE FEDERAL FRAMEWORK, *supra* note 120, at 23.

¹²² See *Toward Greater Collaboration*, *supra* note 119, at 20 (stating the government is no longer “[i]n control of the R&D dollars that are invested in [the] economy.”) (statement of Deidre Lee, Director of Defense Procurement for the DoD).

¹²³ See INFORMATION ON THE FEDERAL FRAMEWORK, *supra* note 120, at 23.

¹²⁴ See Colleen R. Stumpf, Comment, *Diverse Economies—Same Problems: The Struggle for Corporate Governance*, 24 PENN. ST. INT'L L. REV. 897, 908 (2006) (stating the world recognizes the United States as “an advanced free-market economy.” (citing *Accounting Problems at WorldCom: Hearing of the H. Comm. on Fin. Services*, 107th Cong. 2 (2002) (statement of Rep. Michael Oxley, Chairman, H. Comm. on Fin. Serv.))). “[T]he United States strongly adheres to free market economy principles . . .” Carole A. Scott, *Money Talks: The Influence of Economic Power on the Employment Laws and Policies in the United States and France*, 7 SAN DIEGO INT'L L.J. 341, 398 (2006). *Cf.* Alan Greenspan, Chairman, Fed. Reserve Board, Address at the Ronald Reagan Library Speech: The Reagan Legacy (April 9, 2003), <http://www.federalreserve.gov/boarddocs/speeches/2003/200304092/default.htm> (stating President Reagan trusted Adam Smith's invisible hand to stimulate the economy).

¹²⁵ See generally HUBERT D. HENDERSON, SUPPLY AND DEMAND 37 (1922), available at <http://www.questia.com/PM.qst?a=o&d=6645700> (providing a synopsis of how supply and demand should function in a economy).

¹²⁶ See Neelie Kroes, Member, European Comm'n in Charge of Competition Policy, Address at the Conference on Innovation and Research in Berlin: State Aid Reform: Risk Capital, Research and Development, and Innovation 2 (April 22, 2005), <http://www.europa.eu/rapid/pressReleasesAction>

so in pursuit of profits and market-share,¹²⁷ but if profits do not exceed the risks associated with the industry, then there will be few industries attempting to fill the void.¹²⁸ As such, those who want industry to produce certain products must ensure that the benefits outweigh the risks. Otherwise, industry may refuse to provide needed products and services.

2. *Purchasing Power of the DoD*

The DoD allocated over seventy-one billion dollars to technology and product development in 2006.¹²⁹ This qualified the DoD as the largest financier of R&D in the federal government.¹³⁰ Yet the DoD claims it cannot direct the efforts of the S&T community.¹³¹ The DoD's claim runs contrary to the tenets of free-market theory. Therefore, there is an underlying problem that the DoD is failing to address.

Assuming that the United States is indeed a free-market economy, the DoD's failure to secure technology for its products indicates one of two situations.¹³² Either the S&T community is not adequately compensated for its inventions, or the risk of contracting with the government is too high.¹³³

Generally, the DoD compensates the S&T community for high-risk R&D using three different contracts:¹³⁴ (1) cost-plus-award-fee ("CPAF");¹³⁵ (2) fixed-price

.do?reference=SPEECH/05/251&format=PDF&aged=1&language=EN&guiLanguage=en (stating "[n]atural pressures in a market create incentives for firms" to create new products and develop new ideas); see also William A. Drennan, *Changing Invention Economics By Encouraging Corporate Inventors to Sell Patents*, 58 U. MIAMI L. REV. 1045, 1062 (2004) (stating that "[i]n regards to consumer demand, if the price of wheat is high, consumers as a group will demand a smaller quantity; if the price is low, consumers will demand more wheat"). There is an inverse relationship between supply and demand. *Id.*

¹²⁷ See ADAM SMITH, AN INQUIRY INTO THE NATURE AND CAUSES OF THE WEALTH OF NATIONS 351 (C.J. Bullock ed., P.F. Collier & Son 1909) (1776). "[E]very man . . . intends only his own security; and by directing that industry in such a manner as its produce may be of greatest value, he intends only his own gain . . ." *Id.*

¹²⁸ Billy Tauzin, President, PhRMA, Address to the American Legislative Exchange Council Annual Dinner in San Francisco: Free Market Health Care Solutions are Best for Patients (Aug. 10, 2006), http://www.phrma.org/about_phrma/straight_talk_from_billy_tauzin/free_market_health_care_solutions_are_best_for_patients/. "[B]usiness[es] will [only] invest money, resources and time where the risks they take and the innovations they make are rewarded." *Id.*

¹²⁹ See BEST PRACTICES, *supra* note 25, at 7 fig.1 (illustrating the government's apportionment of: 13.2 billion dollars to basic research; 13.9 billion dollars to advanced component development; 19.3 billion dollars to system development; 4 billion dollars to testing and evaluation; and, 20.6 billion dollars to operations and support).

¹³⁰ See AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, *DOD Research Plummetts in 2008 Budget, Development Hits New Highs*, in AAAS REPORT XXXII: RESEARCH AND DEVELOPMENT FY 2008 1, 4 (2007), available at <http://www.aaas.org/spp/rd/dod08p.pdf> (stating the DoD's R&D allotment accounts for more than half of the total federal R&D portfolio).

¹³¹ See BEST PRACTICES, *supra* note 25, at 3.

¹³² See *supra* text accompanying note 124.

¹³³ See Tauzin, *supra* note 128 (noting the tension inherent in a free market economy between risk and reward).

¹³⁴ See GOV'T ACCOUNTABILITY OFFICE, PUBL'N NO. GAO-06-66, DEFENSE ACQUISITIONS: DOD HAS PAID BILLIONS IN AWARD AND INCENTIVE FEES REGARDLESS OF ACQUISITION OUTCOMES 11-13 [hereinafter BILLIONS] (2005). Transactions other than those for R&D can also fall under these kinds of contracts. *Id.* at 10.

incentive("FPI");¹³⁶ and 3) cost-plus-incentive-fee ("CPIF").¹³⁷ While these contracts comprise only 4.6% of DoD transactions, they are apportioned 20.6% of the budget.¹³⁸ Of this amount, the government allocates over eight billion dollars to providing incentives and awards to its contractors.¹³⁹

However, despite the government's efforts to entice R&D firms, a GAO study showed that these incentive and award contracts are not effective motivators.¹⁴⁰ Moreover, contractors still feel that contracting with the government is too risky.¹⁴¹ While the government's approach has been to entice the S&T community with monetary awards, it is clear this is not working.¹⁴² Additionally, increasing the monetary awards for government contracts is not a viable option.¹⁴³ Therefore, the government must lower the associated risks.

B. Failure to Execute a Review Process

The GAO has consistently argued¹⁴⁴ that the lack of an effective review process results in inefficient product development, high costs, and delayed schedules¹⁴⁵ in defense-oriented products.¹⁴⁶ In recommending a review process, the GAO cites the review processes of successful businesses as a model the DoD should aspire to

¹³⁵ See 48 C.F.R. 16.305 (2007); see also BILLIONS, *supra* note 134, app. at 46 (stating a CPAF reimburses the inventor for qualified expenses incurred during R&D; alongside a fixed base amount and an award amount intended to provide motivation for excellence). Roughly half of the contracts in the GAO study population were CPAFs. *Id.* at 10.

¹³⁶ See 48 C.F.R. 16.403; see also BILLIONS, *supra* note 134, app. at 47 (stating a FPI provides for a final contract price through the use of a formula based on the final negotiated cost in relation to the total target cost).

¹³⁷ See 48 C.F.R. 16.405-1; see also BILLIONS, *supra* note 134, app. at 46 (stating a CPIF reimburses the cost of research to the contractor in addition to a fee adjusted by a formula based upon the relation of total allowable costs to target costs).

¹³⁸ BILLIONS, *supra* note 134, at 10 fig.1 (stating that 4.9% of the budget is 157 billion dollars). These contracts are awarded in an effort to "[e]ncourage defense contractors to perform in an innovative, efficient, and effective way in areas deemed important." *Id.* at 1.

¹³⁹ *Id.* at 3.

¹⁴⁰ *Id.* (stating that award and incentive-type contracts have generally not been effective motivators for the S&T community, or even traditional supply and service contractors as a whole).

¹⁴¹ See GOVERNMENT ACCOUNTABILITY OFFICE, PUBL'N NO. GAO-06-533SP, HIGHLIGHTS OF A GAO FORUM: MANAGING THE SUPPLIER BASE IN THE 21ST CENTURY 6 (2006) [hereinafter SUPPLIER BASE].

¹⁴² See generally BILLIONS, *supra* note 134, at 3-5.

¹⁴³ See U.S. Nat'l Debt Clock, http://www.brillig.com/debt_clock/ (stating the National Debt is 9,112,950,213,089 dollars) (last visited Nov. 9, 2007).

¹⁴⁴ COST AND SCHEDULE PROBLEMS, *supra* note 117, at 4 (noting that the GAO has criticized the DoD for failure to deliver a plethora of promised defense-oriented products on-time for three decades).

¹⁴⁵ See BEST PRACTICES, *supra* note 25, at 1; see also CASE FOR CHANGE, *supra* note 28, at 2 tbl.1 (noting the reduced buying power of the DoD as a result of ballooning costs to manufacture defense-oriented products and accompanying schedule delays).

¹⁴⁶ BEST PRACTICES, *supra* note 25, at 25 (stating the DoD lacks a "[s]tructured, gated process for managing technology development").

follow.¹⁴⁷ However, while the GAO's recommendations are valid, they fail to address the underlying problems concerning defense acquisitions. Instead, the DoD should confront these underlying problems which include the DoD's actual business practices that result in high overhead and slow progress for all parties involved.

1. Gated Reviews

The review process recommended by the GAO provides three major stages that a new technological invention must proceed through before it can be implemented in a product.¹⁴⁸ These stages consist of "exploring," "developing," and "transitioning" the technology.¹⁴⁹ Before a technology is allowed to progress from one stage to another, it must meet all of the criteria called for in the previous stage.¹⁵⁰ For instance, among other conditions, a technology must prove itself functional in an operating environment during the "transitioning" stage before being implemented in a battlefield ready product.¹⁵¹

Under the current system, this process will most likely decrease the amount of time it takes for defense-oriented products to reach soldiers.¹⁵² However, this process may do little, if anything, to affect the maturity of technology coming into the DoD, or the amount that technology costs. The GAO has stated, "[t]he challenge for DoD . . . lies not only in the 'how to' aspects of technology transition, but also in creating stronger and more uniform incentives that encourage the S&T and acquisition communities to work together to deliver mature technologies to programs . . ." ¹⁵³ Therefore, the DoD should look to its business practices, and not its reviews, to deliver mature technologies at a lower price for its defense-oriented products.¹⁵⁴

¹⁴⁷ *Id.* at 2 (stating the GAO interviewed lab and product line managers at Boeing, IBM, Motorola, and 3M in an effort to identify strategies for ensuring only mature technologies enter product development).

¹⁴⁸ *Id.* at 12 fig. 4.

¹⁴⁹ *Id.*

¹⁵⁰ *Id.* at 12–15.

¹⁵¹ *See id.* at 13–14 (stating technologies should be proven to be acceptable to the product line, able to meet performance requirements, and capable of being produced on a large scale before being implemented in a product).

¹⁵² *See generally id.* at 8 (noting programs that begin with mature technology only average a 4.8% cost growth, but programs that begin with immature technology average nearly 35% cost growth). The GAO has found a link between cost growth and the late delivery of weapons systems. *Id.*

¹⁵³ *Id.* at 4; *see* JACQUES S. GANSLER, *AFFORDING DEFENSE* 245 (MIT Press 1989). ("[A]s in the commercial world, the buyer-seller relationship in the world of defense must . . . be an honest business relationship, with joint interests, in which the buyer gets a good product at a fair cost and the seller makes a decent profit.")

¹⁵⁴ Nancy K. Sumption, *Other Transactions: Meeting the Department of Defense's Objectives*, 28 PUB. CONT. L.J. 365, 375 (1999) (stating top commercial firms are unwilling to work with the government).

2. *The DoD's Business Practices*

In 1994, Secretary of Defense William Perry stated that the “DoD must have unimpeded access to commercial technologies”¹⁵⁵ Yet the DoD only contracts with eight percent of available research-oriented commercial firms.¹⁵⁶ The remaining ninety-two percent claim to have little or no involvement in conducting R&D for the DoD.¹⁵⁷

Firms cite the cost of doing business with the DoD as an overriding factor in deciding whether to deal with them.¹⁵⁸ A 1994 study revealed that the cost of complying with federal regulations amounted to an eighteen percent loss of profit margins for firms.¹⁵⁹ Other studies indicated losses as high as forty percent or more.¹⁶⁰ These figures suggest that the DoD, to attract these firms, should lower the cost associated with doing business with it.¹⁶¹ Otherwise, these expensive regulations may result in the U.S. military failing to succeed on the battlefield due to a lack of technologically advanced defense-oriented products.¹⁶²

One of the most conspicuous cost-drivers in dealing with the government is its requirement of management reviews.¹⁶³ These reviews are intended to provide high-level DoD officials with the ability to oversee a project's progress. However, the amount of effort that is expended in preparing for the reviews wastes time and money.¹⁶⁴ There is a great deal of effort required to prepare regular presentations for superiors that are impressive enough to ensure future funding for a project.¹⁶⁵ The resources expended in what amounts to intergovernmental advertising could be put to better use in actually supervising and overseeing a project, as opposed to

¹⁵⁵ *Id.* at 379.

¹⁵⁶ *Id.* at 378.

¹⁵⁷ *Id.*

¹⁵⁸ See generally DEP'T OF DEFENSE, DOD REGULATORY COST PREMIUM: A QUANTITATIVE ASSESSMENT 1 (1994) [hereinafter QUANTITATIVE ASSESSMENT], available at <http://handle.dtic.mil/100.2/ADA295799>.

¹⁵⁹ See *id.* at 47 (noting this cost of compliance can be reduced by identifying and changing ten key factors in the Federal Regulations that impute tremendous costs with little gain); see Sumption, *supra* note 154, at 372–73 (noting that following World War II, the defense industry became laden with government procurement regulations in an effort to curb waste, corruption and abuse).

¹⁶⁰ QUANTITATIVE ASSESSMENT, *supra* note 158, at 94 (stating the wide disparity between the percentages involve taking different accounting methods into account).

¹⁶¹ See SMITH, *supra* note 127, at 20 (“It is not from the benevolence of the butcher, the brewer, or the baker, that we expect our dinner, but from their regard to their own interest. We address ourselves . . . to their self-love, and never talk to them of our own necessities but of their advantages.”).

¹⁶² Walter B. LaBerge, *Restructuring DoD: Study the High-Tech Commercial World*, 1 ACQUISITION REV. Q. 12, 17 (1994) (“[W]ithout any military-industrial complexes of their own . . . [terrorists] probably can arm themselves better than the Soviets of the olden days. The USSR of yesteryear had to use only the products of its own industrial capacity. [Terrorists] now can buy from them or the rest of the world.”), available at <http://www.dau.mil/pubs/arq/arq94.asp>.

¹⁶³ John T. Dillard, *Toward Centralized Control of Defense Acquisition Programs*, 40 DEFENSE ACQUISITION REV. J. 331, 338 (2005) [hereinafter *Centralized Control*] (stating that a substantial amount of funding “[i]s expended on such items as government agency or support contractor assistance with supporting analyses and documentation, presentation materials, frequent flights to the pentagon, and other associated expenses in preparation for high-level reviews”).

¹⁶⁴ See *id.*

¹⁶⁵ See *supra* text accompanying note 163.

preparing a myriad of presentations and reports.¹⁶⁶ Furthermore, the review system currently in place may be unfit for procuring technology needed to conduct the global war on terrorism.¹⁶⁷ Because the money spent on oversight is a burden on both the S&T community and the DoD, the government should look to change its business practices to be less onerous. An improvement in these business practices may lead to more companies' willingness to contract with the government.¹⁶⁸ Consequently, the additional competition between potential contractors could lead to lower prices and increased innovation.¹⁶⁹

3. *The Potential Effects of the DoD Changing Its Business Practices*

The DoD should change its business practices in order to tap into the potential of the ninety-two percent of firms not currently doing business with it.¹⁷⁰ Such action would likely improve the cost of R&D and the development of defense-oriented products more than the review system contemplated by the GAO.¹⁷¹ Subpart (a) discusses the effect a change in business practices may have on the cost of defense-oriented products. Subpart (b) then contemplates the potential for improved product development if the DoD implements a change in business practices. Both sections are concerned with the negative effect that Acquisition Regulations ("ARs")¹⁷² can have in attracting members of the S&T community to develop products for the DoD.

¹⁶⁶ See *Centralized Control*, *supra* note 163, at 338.

¹⁶⁷ *Id.* at 341 (stating the centralized decision-making process in use by the DoD was consistent with U.S. tactics and needs during the cold war, but that same decision-making process is now "stifling and can restrict innovation").

¹⁶⁸ See generally Colonel Robert P. Birmingham & Edward W. Rogers, *A Ten-Year Review of the Vision for Transforming The Defense Acquisition System*, 1 DEFENSE ACQUISITION REV. J. 36, 41 (2004) [hereinafter *Ten-Year Review*] (stating the DoD must "[reduce] overhead and support structures by bringing the revolution in business affairs to [the] DoD . . ." (quoting WILLIAM COHEN, DEFENSE REFORM INITIATIVE REPORT ii (November, 1997), available at, <http://www.fas.org/man/docs/dri/intro.html>)).

¹⁶⁹ See discussion *infra* Part II.B.3.a.

¹⁷⁰ See Sumption, *supra* note 154, at 378, 412 (stating government procurement regulations have created a situation of "bounded" competition because the government is not contracting with those who can necessarily do the best job; instead, the government is doing business with those companies who have the system in place to adequately deal with the government acquisition regulations).

¹⁷¹ See *Ten-Year Review*, *supra* note 168, at 50 (stating the military is struggling to keep up with technological developments due to a disinterest on the part of commercial developers and the "cumbersome" DoD acquisition regulations).

¹⁷² Both the Federal Acquisition Regulations and Defense Federal Acquisition Regulations Supplement are separate entities and can effect the acquisition of defense-oriented products. See About DFARS and PGI, http://www.acq.osd.mil/dpap/dars/about_dfarspgi.htm (last visited Nov. 15, 2007) (stating "DFARS contains . . . deviations from FAR requirements, and policies/procedures that have a significant effect on the public"). For the sake of simplicity, both DFARS and FARs are referred to jointly as "ARs" for the bulk of this comment. However, a footnote concerning an AR will cite to the exact provision it concerns, whether it is a Federal Acquisition Regulation or a Defense Federal Acquisition Regulation.

a. The Cost of Defense-Oriented Products

Lowering the barriers erected by financially crippling ARs may entice additional members of the S&T community to contract with the government.¹⁷³ This incentive will likely result in an increased amount of competition for R&D contracts,¹⁷⁴ and prices may drop due to this additional competition.¹⁷⁵ The net result would be a significant savings for the government. This would allow the DoD to dedicate more resources to procuring additional defense-oriented products for soldiers.

b. Improved Product Development

Increased interest of research-oriented firms may also result in more efficient product development and greater innovation.¹⁷⁶ This may occur because competition encourages firms to innovate in an effort to draw attention to their products.¹⁷⁷ However, the majority of R&D firms opt not to do business with the United States.¹⁷⁸ It has been suggested that the true loss this represents “[i]s the loss of alternatives, the loss of ideas, and the loss of competitive solutions for DoD programs and needs.”¹⁷⁹ To combat this trend of non-participation, the government should lower the risk factors associated with doing business with it. Such risk-reduction could be accomplished by changing the regulations governing acquisition of inventions for the government. This would be consistent with the intent of Bayh-Dole and would likely result in increased productivity of R&D firms.

C. Section 1498 Discourages Innovation in Defense-Oriented Products

The S&T community has shown itself to be a risk-averse population.¹⁸⁰ The legislature has acknowledged this finding and has admitted that the government's treatment of intellectual property profoundly affects the S&T community's perception

¹⁷³ See Drennan, *supra* note 126, at 1062–63 (noting that favorable market conditions will cause new producers to enter the market).

¹⁷⁴ See SUPPLIER BASE, *supra* note 141, at 5 (stating that as the defense supplier base dwindled, competition was reduced and cost containment became more difficult); see also Sumption, *supra* note 154, at 412 (stating the “bound system” results in pre-positioned contractors who merely comply with the tenets of ARs and implying that if the system were to lower its barriers, competition would result).

¹⁷⁵ See *supra* text accompanying note 37.

¹⁷⁶ GOV'T ACCOUNTABILITY OFFICE, PUBL'N NO. GAO-07-656T, DEFENSE ACQUISITIONS: ANALYSIS OF COSTS FOR THE JOINT STRIKE FIGHTER ENGINE PROGRAM 8 (2007) (stating competition from other contractors encourages companies to achieve steeper production learning curves, produce more reliable products, and invest additional corporate funds into technological improvements to remain competitive).

¹⁷⁷ *Toward Greater Collaboration*, *supra* note 119, at 2. “It is axiomatic that competition increases innovation in an effort to offer more attractive options to the consumer at lower prices.” *Id.*

¹⁷⁸ See Sumption, *supra* note 154, at 379.

¹⁷⁹ *Toward Greater Collaboration*, *supra* note 119, at 40 (statement of Richard W. Carroll, Chairman, Small Bus. Tech. Coal.).

¹⁸⁰ See *supra* Part II.A.2.ii.

of the risks involved in contracting with the government.¹⁸¹ Yet despite this admission, § 1498 has not been amended to allow inventors to recoup the full extent of their losses following a government taking.¹⁸² Instead, history has shown that plaintiffs may only recover a reasonable royalty for the government's infringement.¹⁸³ This judicial interpretation of § 1498¹⁸⁴ has led to a decreased amount of defense-oriented inventions¹⁸⁵ and the wholesale movement of R&D firms away from the DoD.¹⁸⁶ In order to combat these disturbing trends, the government must take action to encourage the S&T community to once again produce technology for the United States.¹⁸⁷ Failure to do this may translate into defeat on the battlefield, and the needless loss of soldiers' lives.

D. The S&T Community Must Be Enticed To Invent for the Government Again

It is apparent that “[t]he drafters of the U.S. Constitution recognized that . . . inventions provide the lifeblood for a strong and thriving nation.”¹⁸⁸ Unfortunately, current legislation undervalues the importance of intellectual property required for supporting American troops in combat. While it is true that the U.S. government has attempted to attract R&D firms with innovative initiatives like the Small Business Innovation Research Program (“SBIRs”)¹⁸⁹ and the Defense Advanced Research Projects Agency (“DARPA”);¹⁹⁰ neither initiative is sufficient to attract the bulk of the S&T sector.¹⁹¹ For instance, while SBIRs allows smaller R&D

¹⁸¹ See *Toward Greater Collaboration*, *supra* note 119, at 2.

¹⁸² See *supra* notes 62, 75 and accompanying text.

¹⁸³ See *supra* text accompanying note 77.

¹⁸⁴ Cf. *supra* notes 79–80 and accompanying text (illustrating the role the judiciary has played in whether lost profits are to be considered in litigation under § 1498).

¹⁸⁵ See ROBERT M. SHERWOOD, *Why a Uniform Intellectual Property System Makes Sense for the World*, in GLOBAL DIMENSIONS OF INTELLECTUAL PROPERTY RIGHTS IN SCIENCE & TECHNOLOGY 68, 77–78 (Mitchel B. Wallerstein et al. eds. 1993) (explaining that resources will not be allocated to research in weak intellectual property systems because the results can be taken by others).

¹⁸⁶ See Butler, *supra* note 18, at 498 (noting that the Army “harmed the interest it was supposed to further” when it took title away from Campbell Plastics).

¹⁸⁷ AIR FORCE ASSOCIATION, THE INDUSTRIAL CONTEXT, <http://www.afa.org/media/reports/future7.asp> (stating the inability of the military to convince the S&T community to produce defense-oriented inventions has led to a “gap in the innovation system for mid and long-term R&D which threatens to dry up the wells of new technology”) (last visited Nov. 9, 2007).

¹⁸⁸ Brief for Information Technology Industry Council, Inc. as Amicus Curiae Supporting Appellant, *State St. Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998) (No. 961327).

¹⁸⁹ See 15 U.S.C. § 638 (2006). “It is the policy of the Congress that assistance be given to small-business concerns to enable them to undertake and to obtain the benefits of research and development . . .” *Id.* § 638(a).

¹⁹⁰ See DEPT OF DEFENSE, Directive 5134.10 (Feb. 17, 1995) (listing DARPA’s responsibilities, functions and relationships within the DoD); see also *DARPA Over the Years*, <http://www.darpa.mil/body/overtheyears.html> (last visited Nov. 9, 2007) (providing a brief history of the agency).

¹⁹¹ See Sumption, *supra* note 154, at 378 (noting ninety-two percent of firms refuse to work with the DoD).

firms access to the government's funds,¹⁹² the program still subjects those firms to harsh punishment for failure to meet reporting requirements.¹⁹³ Meanwhile, although contracting with DARPA poses an attractive alternative for firms unwilling to function within both the traditional DoD acquisition infrastructure and ARs,¹⁹⁴ DARPA's relatively small budget of roughly three billion dollars only permits the agency to assist a limited number of R&D firms.¹⁹⁵ Therefore, since neither SBIRs nor DARPA alone is capable of attracting sufficient interest within the S&T community, the U.S. government must revise its treatment of intellectual property in order to maintain technological superiority.

Various commentators have posited that the dearth of defense-oriented products is due to the loss of the government's ability to sway the S&T community, and a poorly executed review process.¹⁹⁶ However, further analysis reveals that these problems are the superficial manifestations of an underlying problem.

The root of the problem is that the current laws controlling government acquisition of intellectual property have become outdated.¹⁹⁷ These laws were drafted in a time when the majority of R&D in the United States was conducted by, and for, the government.¹⁹⁸ However, this is no longer the case.¹⁹⁹ If the U.S. military expects to continue its dominance in world affairs, these laws must be updated to encourage innovation in the S&T community.²⁰⁰

III. PROPOSAL

The current governmental statutory and regulatory scheme is not conducive to attracting commercial firms to the DoD.²⁰¹ The laws governing acquisition of intellectual property are antiquated.²⁰² Moreover, commercial firms refuse to contract with the DoD, citing overly prescriptive contract terms and unprofitable

¹⁹² See The Small Business Innovation Research and Small Business Technology Transfer Programs, http://grants1.nih.gov/grants/funding/sbirsttr_programs.htm (noting that government agencies with budgets over one hundred million dollars are required to set aside 2.5% of their budget for small businesses). Small businesses are characterized as those having less than five-hundred employees. *Id.*

¹⁹³ See 37 C.F.R. 401.14(d) (2006) (stating the government may take title in a subject invention for the failure of a SBIRs participant to disclose the discovery of a subject invention).

¹⁹⁴ See Sumption, *supra* note 157, at 381 (noting "DARPA's unconventional government structure allows it to act quickly and decisively... and take advantage of opportunities in technology and processes").

¹⁹⁵ DEP'T OF DEFENSE, DEPARTMENT OF DEFENSE FISCAL YEAR 2008/2009 BUDGET ESTIMATES (2007), available at http://www.darpa.mil/body/pdf/fy08_budg_est.pdf (stating the budget for 2008 is projected to be 3,085,617,000 dollars).

¹⁹⁶ See discussion *supra* Part II.B.1.

¹⁹⁷ See *Toward Greater Collaboration*, *supra* note 119, at 4 (statement of Jack L. Brock, Managing Dir. of Acquisition and Sourcing Mgmt., GAO) (stating legislation in regard to intellectual property rights in the United States has grown "static" and "stale").

¹⁹⁸ INFORMATION ON THE FEDERAL FRAMEWORK, *supra* note 120, at 1.

¹⁹⁹ *Id.* (stating most research being conducted now occurs outside of the government's control).

²⁰⁰ See text accompanying *supra* note 25.

²⁰¹ Lieutenant Colonel Michael E. Heberling, *Defense Industrial Base Policy: Revisited*, 1 ACQUISITION REV. Q. 238, 240 (Spring 1994). The primary barriers to attracting the private sector are "regulatory and bureaucratic." *Id.*

²⁰² See *supra* text accompanying note 197.

transactions.²⁰³ In order to reverse this trend, the government must change the way it treats the intellectual property of its contractors.²⁰⁴ To effect such a change, the government must accomplish three things: (1) modify § 1498 to either provide for a minimum percentage awarded to plaintiffs or explicitly provide for a recovery of lost profits; (2) change the ARs to acknowledge the value of commercial vendors' intellectual property; and (3) annul burdensome oversight regulations imposed on contractors. These changes may encourage contractors to once again provide the DoD with innovative solutions to modern problems encountered on the battlefield.²⁰⁵

A. *Modify § 1498*

Current legislation and judicial interpretation of § 1498 limits an inventor's recovery for infringement to a reasonable royalty.²⁰⁶ This, however, does not always adequately reflect the damage inflicted upon an infringed patent-holder, specifically in the case with a government infringement.²⁰⁷ This section proposes modifying § 1498 to ensure the S&T community is properly compensated for its investment in new technology. Subsection 1 proposes a minimum percentage that all patent-holders would receive as an award for the infringement of their patent. Subsection 2 proposes, as an alternative, explicitly authorizing an award of lost profits for infringement in actions against the government. Utilizing either approach will reassure members of the S&T community that they will be fully compensated in a case of governmental infringement.

²⁰³ See Sumption, *supra* text accompanying note 159; see also *Maintaining Technological Supremacy*, *supra* note 7, at 231 (stating Hewlett-Packard will no longer contract with the government, even if a project is "sufficiently intriguing technically" because it is not worth the administrative burden). "The maze of rules deters many companies from bidding on any government R&D projects." *Id.*

²⁰⁴ *Patent Reexamination and Small Business Innovation: Hearing Before the Subcomm. on Courts, the Internet, and Intellectual Property of the H. Comm. On the Judiciary*, 107th Cong. 1 (June 20, 2002). "Just as technology has evolved over time, the patent law must evolve as well. Every generation, we must ask ourselves whether our laws allow for innovation to prosper in light of the reality and trends in research and commerce." *Id.*; see *Toward Greater Collaboration*, *supra* note 119, at 2 (stating seventy-five percent of the nations top information technology companies refuse to contract with the government due to its treatment of intellectual property).

²⁰⁵ Sutton, *supra* note 7, at 235 (stating that synergy between civilian and military sectors can provide significant cost savings to the government and strengthen the S&T base in the United States).

²⁰⁶ 28 U.S.C. § 1498 (2006); Lipson, *supra* note 61, at 257 (stating a reasonable royalty is the preferred award for infringement); see *Tektronix, Inc. v. United States*, 552 F.2d 343, at 348 (noting an award of lost profits may over-compensate a plaintiff).

²⁰⁷ NAVIGATING, *supra* note 100, at 1-2. "Innovation requires substantial financial investment and effort over a long period of time and uses scarce resources." *Id.* Industry relies on its intellectual property in order to recoup the initial costs of research and development. *Id.*

1. Amend § 1498 to Award A Minimum Percentage

Section 1498 provides little or no guidance concerning the appropriate award for damages in the case of infringement by the government.²⁰⁸ Consequently, courts have adopted their own measure for damages without the benefit of an overarching framework or rules.²⁰⁹ These court-manufactured measures lead to unpredictable and inconsistent awards for infringement.²¹⁰ This situation is exacerbated by a reluctance to award anything other than a reasonable royalty for infringement.²¹¹ To mediate the possibly harsh consequences²¹² of an arbitrary royalty amount, § 1498 should specify a minimum fifteen percent royalty to be awarded to patent-holders in the case of governmental infringement.²¹³

a. Fifteen Percent Royalty

The award of a minimum fifteen percent royalty for government infringement of a patent would be neither arbitrary nor unfair.²¹⁴ The government itself states that such an award is an appropriate incentive to reward government employees for their inventions produced “on-the-job.”²¹⁵ Furthermore, awarding this amount “rewards scientific, engineering, and technical employees,” “furthers scientific exchange,” and provides funding “for scientific research and development.”²¹⁶ These prospective results embody the ideal outcome of a successful patent infringement case against the government.

With a guaranteed minimum award, companies would receive the assurance that their efforts will be compensated by a “reasonable and entire” amount. This will alleviate industry fears that DoD-specific research will not be profitable because of a potential government taking.²¹⁷ Also, by lowering the risk associated with producing DoD-specific technology, the government will encourage an increase in the number of

²⁰⁸ See 28 U.S.C. § 1498 (providing an award for damages should provide for “reasonable and entire compensation”).

²⁰⁹ See *Georgia-Pacific Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970), *aff'd*, 446 F.2d 295 (2d Cir. 1971), *cert. denied*, 404 U.S. 870 (1971) (providing for the use of hypothetical negotiations between the patent-holder and infringer, prior to any infringement).

²¹⁰ See *supra* text accompanying note 71.

²¹¹ Lipson, *supra* note 61, at 257.

²¹² *E.g.*, *Hughes Aircraft Co. v. United States*, 31 Fed. Cl. 481, 491 (Ct. Cl. 1994) (awarding one percent of the cost of the entire spacecraft as a reasonable royalty).

²¹³ *Cf.* 15 U.S.C. § 3710c(A)(i) (2006) (stating “at least” fifteen percent of royalties should be dispersed to a government employed inventor for the licensing of their invention by the government).

²¹⁴ *Id.*

²¹⁵ *Id.*

²¹⁶ *Id.* §§ 3710c(B)(i), (ii), (v).

²¹⁷ See *supra* Section II.A.2.b; see also Schlitz & McGrath, *supra* note 49, at 360 (noting that in litigation the government often proposes royalties far below the actual value of the infringed invention); see also *supra* text accompanying note 128; *cf. Toward Greater Collaboration*, *supra* note 119, at 50. “New ideas with the benefit of intellectual property protection . . . [empower companies] to grow strong, challenge the status quo, and change the world.” *Id.* (statement of Richard W. Carrol, Chairman, Small Business Technology Coalition).

R&D firms vying for contracts, thereby reducing costs and providing much-needed innovation.²¹⁸

b. Potential Criticism

The application of a fifteen percent minimum award for a reasonable royalty will likely be seen as overly mechanical in nature.²¹⁹ Additionally, many legal authorities may assert that a fifteen percent minimum is, in fact, over-compensation for patent-holders.²²⁰ As such, due to the problems associated with an “automatic” fifteen percent award, the government could instead award lost profits to plaintiffs. This remedy would afford judges the opportunity to exercise their best judgment in awarding damages.²²¹

2. Amend § 1498 to Explicitly Include Lost Profits

The U.S. Supreme Court has noted that “the award of lost profits has always been premised on the attempt to fully compensate a patent owner for actual monetary losses occurring as a result of infringement.”²²² Awarding lost profits in appropriate circumstances²²³ may reduce the perceived risk of inventing defense-oriented technologies for the government. If this occurred, contractors would be more willing to contract with the government and create innovative defense-oriented technology. Additionally, awarding lost profits to plaintiffs would encourage the government to do business with the patent-holder, as opposed to an infringing

²¹⁸ See *Toward Greater Collaboration*, *supra* note 119, at 2 (stating increased competition forces companies to innovate). *But see* Cahoy, *Incrementalist*, *supra* note 20, at 628 n.169 (“[I]n some economies, stronger patent laws do not necessarily indicate more R&D investment . . .” (citing Walter G. Park & Juan Carlos Ginarte, *Intellectual Property Rights and Economic Growth*, 15 CONTEMP. ECON. POL’Y 51, 60 (1997))).

²¹⁹ Douglas D. McFarland, *Drop the Shoe: A Law of Personal Jurisdiction*, 68 MO. L. REV. 753, 760 n.26 (stating fairness should transcend the mechanical application of law to avoid unjust outcomes (citing DAVID R. COUILLETTE, *THE ANGLO-AMERICAN LEGAL HERITAGE* 184 (1999))); *cf.* Varda Hussain, Note, *Sustaining Judicial Rescues: The Role of Outreach and Capacity-Building Efforts in War Crimes Tribunals*, 45 VA. J. INT’L L. 547, 558 (2005) (“[L]aw entails far more than the mechanical application of static legal technicalities; it involves an evolutionary search for those institutions and processes that will best facilitate authentic stability through justice.” (quoting NEIL KRITZ, *THE RULE OF LAW IN THE POSTCONFLICT PHASE: BUILDING A STABLE PEACE*, IN *MANAGING GLOBAL CHAOS: SOURCES OF AND RESPONSES TO INTERNATIONAL CONFLICT* 587, 588 (Chester A. Crocker et al. eds., 1996))).

²²⁰ See Lipson, *supra* note 61, at 254 (stating remedies considered proper between private litigants are considered to be in excess of the just compensation provided for by the Fifth Amendment, and the reasonable and entire compensation provided for by § 1498 in suits against the government).

²²¹ See *supra* text accompanying note 219.

²²² Cahoy, *Cipro*, *supra* note 41, at 163; *see* Gen. Motors Corp. v. Devex Corp., 461 U.S. 648, 654–55 (1983) (stating Congress intended for patent owners to receive full compensation for “any damages” suffered as a result of infringement).

²²³ *Id.* at 164–65 (stating lost profits are appropriate when the inventor has established a policy to maintain her patent monopoly by not licensing other companies or persons to use the patent, or by granting licenses only under certain restrictive conditions).

competitor.²²⁴ In some cases, the government would otherwise be liable to the patent-holder for infringement and liable to the competing infringing contractor for the cost of goods provided.

Ultimately, the use of lost profits could result in increased good will between the government and the S&T community. This rapport would cause an increase in the number of companies producing technology for the government as a whole.²²⁵ As such, the government should explicitly state the validity of lost profit damages in § 1498 in order to reduce the risk of contracting with the government and to increase competition.

B. Change Acquisition Regulations to Acknowledge the Value of Inventors' Intellectual Property

Current DoD Acquisition Regulations ("ARs") discourage the S&T community from conducting R&D for the government.²²⁶ Current ARs overly favor the government and do not acknowledge the value of intellectual property to inventors.²²⁷ Therefore, the risks of contracting with the government far outweigh the benefits.²²⁸ However, modifying key elements of the ARs can remedy this situation.²²⁹

1. Proposed Changes to Acquisition Regulations

Generally, ARs are considered negotiable terms of government contracts that can be changed to suit the needs of the S&T community.²³⁰ However, the "default position" of many of these ARs often denies adequate protection to intellectual

²²⁴ See *id.* at 168 ("Without a requirement that full compensation be paid, the obvious incentive for the government is to take private property for a short term benefit to society but to the detriment of the patent owner (citing RICHARD A. POSNER, *ECONOMIC ANALYSIS OF LAW* 59-9 (4th ed. 1992))).

²²⁵ See Sunil Kanwar & Robert Evenson, *Does Intellectual Property Protection Spur Technological Change?* (Economic Growth Center, Yale University, Working Paper No. 831, 2001), available at http://www.econ.yale.edu/growth_pdf/cdp831.pdf (concluding there is a strong causal connection between the protection afforded intellectual property and private sector investment in R&D).

²²⁶ SUPPLIER BASE, *supra* note 141, at 7 (stating the challenge of operating under FARs discourages innovative businesses from contracting with the government); see NAVIGATING, *supra* note 100, at 4-5 (stating the government is having difficulty attracting R&D firms to conduct government research due to its use of traditional intellectual property clauses and sometimes overbearing procurement methods).

²²⁷ See SUPPLIER BASE, *supra* note 141, at 8 (noting that inventors are often at a disadvantage when contracting with the government under the current scheme).

²²⁸ *Id.* (stating the existing acquisition system creates an imbalance between risks and rewards for potential government contractors).

²²⁹ LaBerge, *supra* note 162, at 14 (stating businesses must change their strategies depending upon their marketplace position). Strategies employed by actors dominating a marketplace are fundamentally different than strategies used by those who do not. *Id.* The government no longer dominates the R&D sector and as such, it should change its ARs to reflect this fact. See *id.*

²³⁰ See NAVIGATING, *supra* note 100, at 4-6 (stating the only provisions of a government contract that cannot be waived or modified are the Government-purpose license and march-in rights).

property.²³¹ As a result, these regulations often impede contracts between the government and commercial R&D firms.²³²

This section proposes: (1) amending the ARs to provide for a minimum percentage of capital the government must provide before acquiring rights in inventions conceived prior to a government contract;²³³ and (2) annulling clauses in ARs that waive governmental immunity for unauthorized disclosure.²³⁴

a. Inventions Conceived Prior to a Government Contract

Currently, the government enjoys a “nonexclusive, nontransferable, irrevocable, paid-up license” to any subject invention produced under contract.²³⁵ This includes any invention first conceived or reduced to practice during the course of the contract.²³⁶ However, this policy fails to acknowledge the significant investment a company may have already made in a technology prior to contracting with the government.²³⁷ Additionally, this policy is inconsistent with commercial R&D agreements.²³⁸ Under current law, the government will receive an irrevocable license in any product conceived prior to the R&D contract.²³⁹

This policy discourages commercial R&D firms from contracting with the government.²⁴⁰ In order to reassure firms that they are not gambling with their intellectual property, the legislature should establish a percentage of R&D that the government must fund (“watermark”) prior to asserting rights to a pre-conceived invention. This would encourage companies to contract with the government, and expose the government to further innovation in defense-oriented products.²⁴¹

²³¹ Sharp, *supra* note 88, at 126–27 (noting that the Government receives unlimited rights in technical data “unless the contractor takes affirmative steps to limit such rights”); *see Toward Greater Collaboration*, *supra* note 119, at 65 (stating contractors can lose their intellectual property rights if they do not properly understand the ARs governing government contracts).

²³² *See* NAVIGATING, *supra* note 100, at iii (stating companies will not risk jeopardizing their intellectual property in order to comply with Government ARs).

²³³ *See* 48 C.F.R. 52.227-12(a) (2006) (stating the government may take an interest in any subject invention first reduced to practice during the course of the contract).

²³⁴ *See* U.S. DEPT OF DEFENSE, DEFENSE FEDERAL ACQUISITION REG. SUPP. 252.227-7039 (2006) (waiving government immunity in case of unauthorized disclosure of technical data by the government).

²³⁵ 48 C.F.R. 52.227-13(c)(1)(i).

²³⁶ 48 C.F.R. 52.227-13(a).

²³⁷ *See* NAVIGATING, *supra* note 100, at 4-7 (stating that a potentially small contract performed for the government can jeopardize the significant monies invested in an invention due to FARs 52.227-13(a) and 52.227-13(c)(1)(i)).

²³⁸ *Toward Greater Collaboration*, *supra* note 119, at 72 (stating in commercial transactions, the rights to an invention are determined by the person who conceived the invention, not whoever reduced the invention to practice) (statement of Richard N. Kuyath, Counsel, 3M Corp.).

²³⁹ NAVIGATING, *supra* note 100, at 4-7.

²⁴⁰ *Id.*

²⁴¹ *Toward Greater Collaboration*, *supra* note 119, at 70 (noting that of the top twenty-five companies receiving patents in 1998, there were no traditional defense contractors listed, and further stating that the top three commercial U.S. companies gathered a total of over 5,000 patents, whereas the top five defense contractors only received 579 patents) (statement of Richard N. Kuyath).

b. Potential Criticism

Requiring the government to reach a watermark before asserting rights in an invention will likely be subject to much criticism.²⁴² Many members of the public may believe that a watermark will effectively result in the public paying twice for an invention, without a guarantee that the government will receive its license.²⁴³ Additionally, there is a risk that contractors may attempt to stay below the watermark in order to avoid having the government assert its rights in a subject invention, while concurrently receiving the benefits of the additional funding.

While both concerns are legitimate, they must be balanced against the United States' need to remain dominant on the battlefield. Also, any amendments concerning a watermark provision could be limited to a set period of time, after which the watermark provision would automatically expire. This would alleviate fears that the public would be indefinitely subsidizing "greedy" contractors, while also assuaging the fears of risk-averse defense contractors.

c. Modifying and Annuling DFARS 252.227-7013

Current provisions in DFARS 252.227-7013 discourage contractors from entering into R&D for the government.²⁴⁴ This subpart proposes (i) explicitly limiting access to government data to agencies that would actually require such knowledge, and (ii) eliminating provisions that waive government liability for unauthorized disclosure of technical data. These proposed changes may convince the S&T community to contract with the government.

i. Limiting Access Within the Government

Depending upon the amount of funding provided by a governmental agency, the government receives certain rights in contractors' technical data.²⁴⁵ However, these rights are not limited to the contracting agency.²⁴⁶ Instead, any governmental

²⁴² Cf. David Halperin, *The Bayh Dole Act and March-in Rights* 3 (May, 2001) (on file at the National Institute of Health), available at ott.od.nih.gov/policy/meeting/David-Halperin-Attorney-Counselor.pdf (noting the criticism that initially attached to the Bayh-Dole Act because "it seems to require the public to pay twice for the same invention . . .").

²⁴³ Cf. *id.* (stating the public already has to pay for federally funded inventions twice; once when taxes are used to fund R&D, and again via high prices due to a monopoly on the invention and limited supply).

²⁴⁴ NAVIGATING, *supra* note 100, at 4-13-4-15 (stating contractors are reluctant to give the entire government access to their technical data and dislike the government's waiver of liability for unauthorized disclosure of technical data).

²⁴⁵ Sharp, *supra* note 88, at 123-24. The government retains "unlimited rights" if the technical data rights were developed exclusively with government funding. *Id.* The government attains government-purpose rights if there was mixed funding. *Id.* The government retains limited rights if an invention was funded exclusively by the private sector. *Id.*

²⁴⁶ See U.S. DEP'T OF DEFENSE, DEFENSE FEDERAL ACQUISITION REG. SUPP. 252.227-7013(b)(1)-(b)(3) (2006) (stating technical data rights are extended to the government as a whole).

agency has access to technical data received through a contract.²⁴⁷ This concerns contractors who depend upon their technical data to maintain a competitive advantage.²⁴⁸ To encourage the S&T community to contract with the government, the dissemination of these rights should be limited to the agencies reasonably expected to need them. This will lower the risk posed by the widespread dissemination of technical data.²⁴⁹

ii. Eliminating the Waiver of Government Liability

Current ARs also waive the government's liability for the unauthorized disclosure of technical data rights.²⁵⁰ However, as there is no liability for the unauthorized disclosure of technical data rights, the contractors fear the government will not enact appropriate safeguards.²⁵¹ Thus, since the government is in the best position to determine who may gain access to a contractor's technical data rights, it should accept responsibility for the unauthorized disclosure of those rights. This will encourage the S&T community to contract with the government.

C. Annul Burdensome Oversight Regulations

Reviews are necessary to ensure that projects remain goal-oriented, and cost effective.²⁵² However, commercial R&D firms see the current implementation of these reviews as burdensome and costly.²⁵³ In order to lessen the burden associated with these reviews, the government should implement these reviews only when a major milestone occurs in the development process.²⁵⁴ Doing so would bring the review process in accord with the simpler, less burdensome review process promulgated by the DoD in 1996.²⁵⁵ This would bring forth an additional benefit of

²⁴⁷ *Id.*

²⁴⁸ RALPH C. NASH & LEONARD RACWICZ, *TECHNICAL DATA RIGHTS* 27 (5th ed. 2001) (stating technical data rights are often closely held in the commercial sector because their dissemination to competitors could place the contractor's competitive advantage in jeopardy).

²⁴⁹ See generally Ron Nixon, *U.S. Database Exposed Thousands of Social Security Numbers*, N.Y. TIMES, Apr. 21, 2007, at A10 (noting the government accidentally released over 30,000 records containing Social Security numbers through an Internet portal accessible to the general public).

²⁵⁰ U.S. DEP'T OF DEFENSE, DEFENSE FEDERAL ACQUISITION REG. SUPP. 252.227-7013(b)(6) (2006) (stating the government shall be released from liability for the unauthorized disclosure of technical data rights by third parties).

²⁵¹ NAVIGATING, *supra* note 100, at 4-14 (stating contractors do not believe government employees "will adequately protect confidential or proprietary information").

²⁵² See generally *supra* Part II.B.1.; BEST PRACTICES, *supra* note 25.

²⁵³ QUANTITATIVE ASSESSMENT, *supra* note 158, at 94; see *supra* text accompanying note 163; cf. *Centralized Control*, *supra* note 163, at 339 fig.6 (depicting the complexity of the current review process and the over-abundance of meetings required to advance a project).

²⁵⁴ *Centralized Control*, *supra* note 163, at 340 (noting a recommendation made to the government to reduce the number of reviews and milestones).

²⁵⁵ See DEP'T OF DEFENSE, Directive 5000.2-R (March, 1996); see also *Centralized Control*, *supra* note 163, at 336 (noting the 1996 procurement model was "simple" and "streamlined," requiring less reviews and posing less of a burden on contractors than the present model).

providing an incentive for the S&T community to contract with the DoD, while also lowering overhead for all parties involved.²⁵⁶

CONCLUSION

America relies upon its technological superiority when engaging enemies on the battlefield.²⁵⁷ However, an intractable government intellectual property policy has led to decreasing innovation for the DoD from the commercial sector.²⁵⁸ Exacerbating the situation is the approaching obsolescence of many Cold War era weapon systems.²⁵⁹ In order to reverse this trend, the United States should: (1) modify § 1498 to allow for a minimum award, or alternatively, lost profits;²⁶⁰ (2) acknowledge the importance of intellectual property to commercial entities by modifying the ARs and Bayh-Dole to reflect that importance;²⁶¹ and (3) make the acquisition process less burdensome.²⁶²

²⁵⁶ See generally *Centralized Control*, *supra* note 163, at 338.

²⁵⁷ See text accompanying note 25.

²⁵⁸ See discussion *supra* Section II.B.2.

²⁵⁹ See text accompanying note 7.

²⁶⁰ See discussion *supra* Section III.A.1.

²⁶¹ See discussion *supra* Section III.B.1.

²⁶² See discussion *supra* Section III.C.