

# IP Management in the U.S. Federal Government<sup>1</sup>

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<sup>1</sup> This summary is prepared by the United States Patent and Trademark Office in collaboration with the National Institute of Standards and Technology for the World Intellectual Property Organization, January 2020.

## Contents

Introduction .....	4
Legislative and Policy Framework for Federal Technology Transfer .....	5
Federal Technology Transfer Offices: Structure, Functions and Responsibilities.....	7
Federal Management of Intellectual Property: Inventions .....	8
Invention Disclosures and Rights Determinations.....	8
Securing/Preserving Patent Rights.....	9
Technology Valuation and Marketing.....	10
Federal Laboratory Consortium.....	10
Portfolio Management.....	11
Patent Licensing.....	11
Non-exclusive Licenses .....	11
Exclusive Licenses .....	11
Co-Exclusive and Partially Exclusive Licenses .....	12
Conditions on All Licensing .....	12
Conditions and Restrictions on Licensing: Exclusive, Co-Exclusive, or Partially Exclusive Licenses....	12
Termination and Amendment of Licenses.....	13
Negotiation/Royalties .....	13
Cooperative Research and Development Agreements (CRADAs) .....	13
Royalty Payment Distribution .....	14
Managing Conflicts of Interest.....	14
Reporting on Technology Transfer Activities.....	15
Agency Reports .....	15
Federal Reports.....	15
Intellectual Property Policy Education for Federal Employees.....	16
Technical Assistance and Organizational Outreach.....	16
Technical assistance to state and local governments.....	16
Technical assistance to the private sector .....	16
Technical assistance to schools and academia .....	17
Federal Management of Intellectual Property: Trademarks and Copyright.....	17
Current Federal-Wide Technology Transfer Projects .....	18
Lab-to-Market Cross-Agency-Priority Goal .....	18
Return on Investment Initiative .....	18

Additional References..... 20  
Appendix A: Statutes, Executive Orders, and Regulations ..... 21  
Appendix B: Federal Working Groups on Technology Transfer..... 25

## Introduction

The U.S. federal government is a major participant in research and development (R&D) activities, both as a source of funding and as a research partner,<sup>2,3</sup> spending about \$150 billion annually.<sup>4</sup> Many government departments and agencies fund and conduct research, with the Department of Defense (DOD), the Department of Energy (DOE), and the National Aeronautics and Space Administration (NASA) accounting for about 60% of total federal R&D spending in FY 2018. The National Institutes of Health (NIH) accounts for nearly 25%, and the United States Department of Agriculture rounds out the top five at 2%.<sup>5</sup> The federal government is the nation's largest supporter of basic research, funding 45.4% of basic research in 2014.<sup>6</sup> While businesses are the primary funders of applied R&D, the federal government funded 36% of applied research and 16% of development in 2014.<sup>7</sup> Nearly 50% of the R&D conducted by universities is funded by the federal government.<sup>8</sup>

The federal government's R&D budget covers both research conducted by federal agencies or their contractors in government-owned facilities ("intramural" research), and research conducted by universities and other contractors under funding agreements<sup>9</sup> ("extramural" research).<sup>10</sup>

The government has a variety of mechanisms to perform intramural R&D, with different degrees of government involvement and control. Eleven federal agencies have substantial R&D facilities, or "federal laboratories."<sup>11</sup> The term "federal laboratory" is defined by statute to include "any laboratory, any federally funded research and development center, or any center [...] that is owned, leased, or otherwise used by a Federal agency and funded by the Federal Government, whether operated by the Government or by a contractor."<sup>12</sup> Thus, federal laboratories include government-owned, government-operated (GOGO) facilities; government-owned, contractor-operated (GOCO) facilities; and federally

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<sup>2</sup> National Science Foundation, National Science Board, Science & Engineering Indicators 2018 available at <https://nsf.gov/statistics/2018/nsb20181/report/sections/research-and-development-u-s-trends-and-international-comparisons/recent-trends-in-u-s-r-d-performance>.

<sup>3</sup> Intellectual Property Technology Transfer, edited by Anne C. Power, 2<sup>nd</sup> edition, 2014, pp. 1-3 – 1-5.

<sup>4</sup> See e.g., President's Management Agenda, Cross Agency Priority (CAP) Goal 14, "Improve Transfer of Federally-Funded Technologies from Lab-To-Market" citing Analytical Perspectives, Budget of the United States Government, Fiscal Year 2019, Ch. 18., available at <https://www.gpo.gov/fdsys/pkg/BUDGET-2019-PER/pdf/BUDGET-2019-PER.pdf>.

<sup>5</sup> See data compiled by the American Association for the Advancement of Science (AAAS) and by the National Science Foundation, available at <https://www.aaas.org/page/historical-trends-federal-rd> and <https://www.nsf.gov/statistics/2018/nsf18311/>.

<sup>6</sup> Federal Research and Development Funding: FY2018, Congressional Research Service Report, January 25, 2018, available at <https://fas.org/sgp/crs/misc/R44888.pdf> citing CRS analysis of data from the National Science Foundation, *National Patterns of R&D Resources: 2014–15 Data Update*, March 14, 2017.

<sup>7</sup> *Id.*

<sup>8</sup> See <https://www.aaas.org/sites/default/files/2018-11/UniSource1.jpg>.

<sup>9</sup> This includes funding for grants, cooperative agreements, awards, and more. See 35 U.S.C. 201(b) for the definition of "funding agreements."

<sup>10</sup> See <https://www.nsf.gov/statistics/2018/nsf18311/>.

<sup>11</sup> They include Department of Agriculture (USDA), Department of Commerce (DOC), Department of Defense (DoD), Department of Energy (DOE), Department of Health and Human Services (HHS), Department of Homeland Security (DHS), Department of the Interior (DOI), Department of Transportation (DOT), Department of Veterans Affairs (VA), Environmental Protection Agency (EPA), and National Aeronautics and Space Administration (NASA).

<sup>12</sup> See 15 U.S.C. §3703 (4).

funded research and development centers (FFRDC), which are a subset of GOCOs.<sup>13</sup> Each of the 310 or so federal laboratories has a specified mission, which addresses the needs of different users, and pursues the development of different technologies and products. Since the U.S. government is prohibited from competing with private sector enterprises in the marketplace, technology transfer becomes an essential tool in the accomplishment of a laboratory's mission.<sup>14</sup>

The federal R&D investments are critical for U.S. innovation, competitiveness and economic prosperity. Studies show that government investments in R&D generate a significant return to the U.S. economy, with agricultural research, for example, generating about \$20 in economic activity for every dollar spent.<sup>15</sup> The essence of the American innovation framework involves partnering with the private sector to further develop inventions arising from federal investment in science and technology and bring them to the marketplace. Protection of intellectual property rights (IPRs) is essential for attracting the additional private investment and product development resources necessary for early stage research products to be fully commercialized.<sup>16</sup>

This paper provides an overview of the current legislative and policy framework for federal technology transfer and management of intellectual property (IP), particularly with respect to inventions emerging from federal laboratories, as well as government programs and initiatives related to technology transfer.

## Legislative and Policy Framework for Federal Technology Transfer<sup>17</sup>

A primary source of law determining rights in government employee inventions is Executive Order 10096<sup>18</sup> issued by President Truman in 1950 as a result of a Department of Justice study undertaken in 1947 on government patent policy and its effect of American competitiveness.<sup>19</sup> Executive Order 10096 aimed to provide, for the first time, consistent policy treatment to inventions originating from federal research and development efforts. It mandated that all inventions made by federal government employees are required to be disclosed to the federal government, and the federal government shall retain the entire right to the IP.<sup>20</sup> This included inventions made by federal employees during work hours, with the use of government equipment, with the use of information obtained during service to

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<sup>13</sup> See "GOGOS, GOCOS, AND FFRDCS...OH MY!" by Belinda Snyder and Jeffrey W. Thomas.

<sup>14</sup> See e.g., Intellectual Property Technology Transfer at 3-109 – 3-110; Summary Reports on Federal Laboratory Technology Transfer available at <https://www.nist.gov/tpo/federal-laboratory-interagency-technology-transfer-summary-reports>.  
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<sup>15</sup> Alston, J.M. (2010). The Benefits from Agricultural Research and Development, Innovation, and Productivity Growth (Paris: OECD Publishing).

<sup>16</sup> Summary Reports on Federal Laboratory Technology Transfer available at <https://www.nist.gov/tpo/federal-laboratory-interagency-technology-transfer-summary-reports>.

<sup>17</sup> For a more detailed summary of United States laws and Executive Orders related to Technology Transfer, see Appendix A; see also the Federal Laboratory Consortium for Technology Transfer, "The Green Book," which is available at: <https://www.federallabs.org/media/publication-library/federal-technology-transfer-legislation-and-policy>.

<sup>18</sup> 3 C.F.R. 292 (1950); available at <https://www.archives.gov/federal-register/codification/executive-order/10096.html>; Executive Order 10096 is further amended by Executive Order 10930 of Mar. 24, 1961 and implemented in 37 C.F.R. §501.

<sup>19</sup> Cited in Intellectual Property Technology Transfer at 1-54 – 1-55.

<sup>20</sup> Exec. Order No. 10096 at 1(a) and 2; See also 37 C.F.R. §501.6(a)(1)(i)-(iii).

the government, or which share a direct relation to the official duty of the employee.<sup>21</sup> In some situations, where the contribution of the government to an invention is insufficient to justify a requirement to assign the entire right to the invention to the government, or where the government has insufficient interest in the invention, the government will grant ownership of the invention to the employee.<sup>22</sup> However, the federal government will retain the right to execute a non-exclusive, irrevocable, and royalty-free license for all government purposes. This right must be preserved by its inclusion in any patent that may be issued for the invention.<sup>23</sup>

While the patent policy set forth in Executive Order 10096 was essential for the uniform determination of patent rights in the government employee inventions, it did little to promote commercialization of inventions made by federal employees or with federal funding. Prior to 1980, federal agencies generally retained title to all inventions developed with federal funding, whether intramural or extramural, and only non-exclusive licenses were available to the private sector.<sup>24</sup> The government didn't commercialize inventions itself, and non-exclusive licenses failed to attract potential licensees and investors. As a result, fewer than 5% of government funded and owned inventions were commercialized.<sup>25</sup> The low commercialization rate of federally-funded research was an area of major concern for academic and business leaders, as well as for policymakers, because it negatively affected U.S. economic growth and competitiveness. In the 1980s, Congress passed a series of laws that proved critical for stimulating technology transfer activities and providing incentives for the commercialization of federally-funded inventions.

The first major technology transfer law - the Stevenson-Wydler Act, passed in 1980<sup>26</sup> and later amended by the Federal Technology Transfer Act of 1986,<sup>27</sup> established technology transfer as a federal policy and required federal laboratories to set up formal technology transfer programs, among other things. Another key piece of legislation, the Bayh-Dole Act of 1980,<sup>28</sup> created for the first time a uniform patent policy for government-funded research. It allowed universities and small businesses<sup>29</sup> to retain title to their federally-funded inventions and grant exclusive licenses.<sup>30</sup>

Since the passage of these laws, licensing of federally-developed and federally-funded technologies has increased dramatically. Every federal agency that operates or directs one or more federal laboratories or that conducts research and development is required by statute to prepare and submit an annual report of its technology transfer activities.<sup>31</sup> The National Institute of Standards and Technology (NIST) is tasked with compiling and publishing annual reports to the President and the Congress on federal technology

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<sup>21</sup> *Id.* at 1(a).

<sup>22</sup> *Id.* at 1(b).

<sup>23</sup> *Id.*

<sup>24</sup> See e.g., Intellectual Property Technology Transfer at 1-10 – 1-13.

<sup>25</sup> *Id.*

<sup>26</sup> Pub. L. No. 96-480 (codified as amended at 15 U.S.C. §3701 et seq.).

<sup>27</sup> Pub. L. No. 99-502 (codified at 15 U.S.C. §3701 et seq.).

<sup>28</sup> Pub. L. No. 96-517 (codified as amended at 35 U.S.C. §§200-212).

<sup>29</sup> In 1987, the applicability of the Act was extended by Executive Order 12591 to larger, for-profit contractors. This was codified into regulation in 2018 at 37 C.F.R. 401.2(b).

<sup>30</sup> 35 U.S.C. §§202, 207.

<sup>31</sup> 15 U.S.C. § 3710(f).

transfer from government laboratories.<sup>32</sup> NIST also coordinates activities of the Interagency Working Group for Technology Transfer (IAWGTT).<sup>33</sup>

## Federal Technology Transfer Offices: Structure, Functions and Responsibilities

Many federal agencies conduct R&D activities that result in the creation of new technologies. In most cases, these technologies are created to support specific needs of an agency's mission. In other cases, they are corollary to ongoing research. Regardless of how they are created, federal technologies often have significant value that goes beyond the agency's mission. It is the role of an agency's technology transfer office to identify this value and provide the most effective means to transfer it outside of the agency for further development and commercialization.

Federal Technology Transfer Offices (TTOs or T2 offices), also known as Offices of Research and Technology Applications (ORTAs), were established under 15 U.S.C. § 3710(b). Each federal laboratory that employs 200 or more engineers or scientists is required to have at least one full-time TTO position and sufficient funding to support technology transfer functions.<sup>34</sup>

The specific functions of the federal TTO are set forth in the statute, as follows:<sup>35</sup>

- Prepare assessments of selected R&D projects and technologies in the laboratory that may have potential commercial applications;
- Provide and disseminate information to state and local governments and private industry about potentially applicable federally owned or originated technologies, products, processes, and services;
- Cooperate with and assist the Federal Laboratory Consortium for Technology Transfer (FLC), the National Technical Information Service (NTIS), and other organizations that link the R&D resources of the laboratory and the federal government to potential users in state and local governments and private industry;
- Provide technical assistance to state and local government officials; and
- Participate in regional, state, and local programs designed to facilitate or stimulate the transfer of technology for the benefit of the region, state, or local jurisdiction in which the federal laboratory is located.

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<sup>32</sup> The most recent report for Fiscal Year 2015 can be found at [https://www.nist.gov/sites/default/files/documents/2018/02/02/fy2015\\_federal\\_tech\\_transfer\\_report.pdf](https://www.nist.gov/sites/default/files/documents/2018/02/02/fy2015_federal_tech_transfer_report.pdf). When reporting on federal technology transfer, NIST traditionally looks at technologies funded through intramural R&D. (that is, technologies that were created within federal laboratories and transferred out). While there are many success stories on extramural technology transfer, they are not the focus of the Federal Technology Transfer annual report. For technologies developed at universities with federal funding see e.g., AUTM Licensing Activity Surveys available at <https://autm.net/surveys-and-tools/surveys>.

<sup>33</sup> See Appendix B for the list of Federal Working Groups on Technology Transfer.

<sup>34</sup> 15 U.S.C. § 3710(b).

<sup>35</sup> 15 U.S.C. § 3710(c).

A TTO in a federal laboratory functions as the technology transfer facilitator, connecting people inside the laboratory (the developers of technology and other laboratory staff) to those outside the laboratory (the “customers”). The role of the TTO as a laboratory’s technology transfer “nexus” is illustrated on Figure 1.

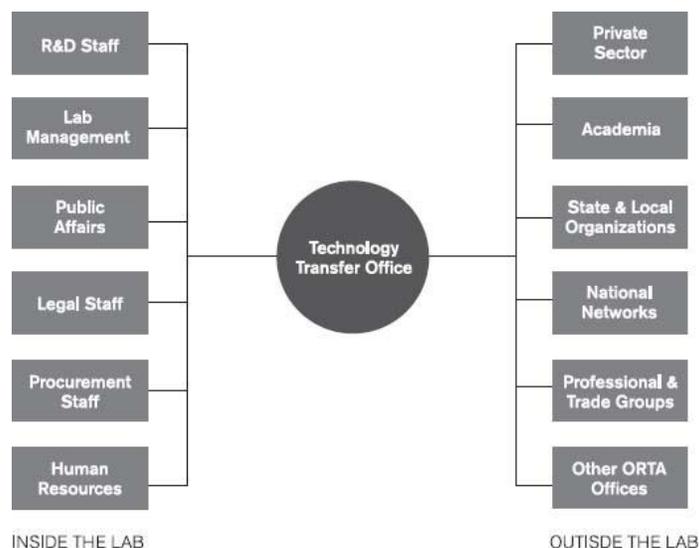


Figure 1. The T2 Office as the Link between Lab and Technology Transfer Customers

Source: Technology Transfer Desk Reference: A Comprehensive Guide to Technology Transfer, Federal Laboratory Consortium for Technology Transfer

## Federal Management of Intellectual Property: Inventions

### Invention Disclosures and Rights Determinations

As discussed earlier, federal regulations require mandatory disclosure to the federal government of all inventions made by federal employees during work hours, with the use of government equipment, with the use of information obtained during service to the government, or which share a direct relation to the official duty of the employee.<sup>36</sup> Many technology transfer offices provide invention disclosure training at both employee orientation and additional events throughout the year. Federal agencies collect invention disclosures from their inventors through paper forms, digital templates, or online portals. In most cases, once invention disclosures are received, a formal rights determination is conducted, and assignments of rights are collected from the inventors, as required. In addition, the technology transfer office is usually responsible for determining whether the invention should be protected by a patent or other means of IP protection.

In cases of joint inventions with a non-federal entity, such as a university, the technology transfer office will work with the other entity or entities to determine who will be responsible for filing patent

<sup>36</sup> 37 C.F.R. §501.6(a)(1)(i)-(iii).

applications. If the federal agency determines that it will not pursue patent protection for the invention, the other entity may be allowed to do so at its own expense.

With respect to the inventions made by universities, small businesses or other entities (“contractors”<sup>37</sup>) that involve federal funding, such inventions must be disclosed to the funding federal agency “within a reasonable time.”<sup>38</sup> The contractors may elect to retain title to such inventions, but need to make a written election and file a patent application within the timeframe set forth in the Bayh-Dole Act.<sup>39</sup> If such disclosure, written election, and/or patent filing are not done within the defined time, the federal government may receive title to such inventions.<sup>40</sup> Even if a non-federal entity receives title to a federally-funded invention, the federal government retains a nonexclusive, nontransferable, irrevocable, paid-up, worldwide license to practice the invention or have it practiced for or on behalf of the United States, referred to as the “government use license.”<sup>41</sup>

When inventions arise from collaborations between the federal government and non-federal entities, including universities and small businesses, those entities are given the opportunity to elect to own an invention co-invented with federal employees, provided they follow the procedure provided for in the Bayh-Dole Act (i.e. disclosure, written election of title and filing of a patent application) as discussed above.<sup>42</sup> Allowing non-federal entities to retain the rights to inventions resulting from collaboration with federal government creates an incentive for these entities to work with government researchers to further the mission of the federal agency by developing and commercializing the resulting inventions.

### Securing/Preserving Patent Rights

Federal agencies may file for patent protection on their technologies; however, the law is flexible on how agencies determine what to patent, as well as which part of an agency is responsible for paying for patent prosecution.<sup>43</sup>

In addition to filing domestically with the United States Patent and Trademark Office (USPTO), the agency must decide, within eight months of the filing date of the U.S. application, if foreign patent applications should also be filed.<sup>44</sup>

Agencies handle patenting decisions in a multitude of ways. Many agencies look at factors such as commercialization potential, patentability, and mission applicability, or use a ranking system when considering which inventions to protect with their limited patent prosecution budget.

Each federal agency and federal laboratory determines its own patent prosecution budget. Agencies receive funding for their technology transfer functions (patenting, licensing, and collaborative agreements) from a variety of sources, such as operating expenses (overhead), a congressional line item, royalty revenue, or another office within the agency.<sup>45</sup>

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<sup>37</sup> Defined in 35 U.S.C. §201(c).

<sup>38</sup> 35 U.S.C. §202(c)(1); 37 C.F.R. §401.

<sup>39</sup> 35 U.S.C. §202(c)(2) and (3).

<sup>40</sup> *Id.*

<sup>41</sup> *Id.* at (c)(4).

<sup>42</sup> 37 C.F.R. §401.10.

<sup>43</sup> 35 U.S.C. §207; 37 C.F.R. 501.9.

<sup>44</sup> *Id.*

<sup>45</sup> N. Gingrich, *Federal Office of Research and Technology Applications Survey Results*. (2018)

## Technology Valuation and Marketing

There are two types of marketing efforts that TTO personnel can pursue: technology “pull,” in which private industry seeks technology from the federal laboratory; and technology “push,” in which the TTO and other federal laboratory representatives actively seek private collaborators to commercialize specific technology.

To support such marketing efforts, federal technology transfer offices are responsible, by statute, for preparing assessments concerning the commercial application of technologies or R&D projects in which the federal laboratory is engaged.<sup>46</sup> Such assessments can be conducted internally or externally. The internal means of assessing the market potential of a specific technology relies on TTO staff members to conduct independent research. The research typically results in a report where the TTO provides guidance on the potential societal and commercial impacts of the technology. When a commercial assessment is conducted externally, the TTO negotiates a contract or agreement with an external research organization to conduct a market analysis. The research organization typically produces a formal report that provides guidance on the potential impact of the technology. The resulting evaluation or assessment then informs the decision maker whether to move forward with a patent filing.

Federal technology transfer offices are also required to provide and disseminate information to state and local governments and private industry about federally owned or originated technologies, products, processes, and services that have potential applications for the work of state or local governments, and private industry.<sup>47</sup>

Federal laboratories publicly disclose information online about federally owned products, technologies, and services. The websites usually contain links to any open source information, services provided, or scientific publications.<sup>48</sup> TTOs often provide more specific information on their websites, including the types of partnerships and agreements available, government programs they support, how to license federally owned technologies, and contact information for TTO staff.

Federal TTOs are required to cooperate with organizations that match federal research and development resources to potential end users.<sup>49</sup> Additionally, the National Technical Information Service (NTIS) serves as a clearinghouse for scientific and technical information produced in federal laboratories.<sup>50</sup> TTO submissions to (and website information gathered for) the NTIS archive contribute to the nearly 3 million scientific and technical items that federal agencies are required to send to NTIS. These items are organized in a bibliographic database and made available to the public.<sup>51</sup>

## Federal Laboratory Consortium

Another repository of federal research and development resources is the Federal Laboratory Consortium (FLC).<sup>52</sup> Formally chartered by the Federal Technology Transfer Act in 1986,<sup>53</sup> the FLC’s mission is “to promote, facilitate, and educate member labs and institutions so they can reach their

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<sup>46</sup> 15 U.S.C. § 3710 (c)(1).

<sup>47</sup> *Id.* at (c)(2).

<sup>48</sup> An example of this can be seen at [www.nist.gov/tpo](http://www.nist.gov/tpo).

<sup>49</sup> 15 U.S.C. § 3710 (c)(3). WIPO FOR OFFICIAL USE ONLY

<sup>50</sup> See 15 U.S.C. § 3710 (d) and <https://classic.ntis.gov/>

<sup>51</sup> See <https://www.ntis.gov/archive-mission.html> and <https://classic.ntis.gov/products/ntis-database/>.

<sup>52</sup> See <https://www.federallabs.org/>

<sup>53</sup> 15 U.S.C. § 3710 (e).

commercialization goals, and create social and economic impacts with new innovative technologies.”<sup>54</sup> Comprised of over 300 federal laboratories, research centers, and their parent agencies, the FLC provides tools, services, and educational resources for the technology transfer community.<sup>55</sup> Many TTOs contribute information to the “FLCBusiness” searchable public database that includes federal technologies available for licensing, as well as funding opportunities, programs, facilities for use, equipment, and other federal resources.<sup>56</sup> By providing this information about the results of federal innovative research and development activities, federal laboratories are able to market their IP and services in a way that attracts industry and academic partners across the national innovation ecosystem.

## Portfolio Management

The management of IP portfolios and resources of a federal laboratory is governed by policies developed by a federal agency, laboratory, or TTO. Technology transfer professionals at federal laboratories use market knowledge gathered from commercial assessments of technology, the technical expertise of resident scientists, and other resources to consider the broader technological and economic importance of the technologies within their IP portfolio.

Federal laboratories and their associated TTOs are responsible for assessing and managing their portfolios of IP, based on the costs associated with retaining IP rights over long periods of time<sup>57</sup> as well as current and future funding appropriations. Portfolio management requires the manager to consider the laboratory’s mission, budget constraints, the technological importance, and the economic implications of the IP under management.

## Patent Licensing

Licensing is one of the primary mechanisms for attracting industry to invest resources into development and commercialization of valuable, cutting-edge technologies developed by the government or with public funding.

Federal agencies can grant the following types of licenses for government-owned inventions:<sup>58</sup>

### Non-exclusive Licenses

Non-exclusive licenses give the licensee the right to use the federally-owned invention, while the federal government is free to license the invention to other parties, provided they meet the licensure requirements set forth by legislation. This type of license may be granted without a public notice of a prospective license.<sup>59</sup>

### Exclusive Licenses

Exclusive licenses grant a licensee the right to use the federally-owned invention within a specific field of use, such as a specific market or geographical location, with the agreement that the federal government does not license the invention to another entity within the same scope.

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<sup>54</sup> See <https://www.federallabs.org/about>

<sup>55</sup> <https://www.federallabs.org/about/history>

<sup>56</sup> <https://www.federallabs.org/flcbusiness> WIPO FOR OFFICIAL USE ONLY

<sup>57</sup> For example, U.S. patent maintenance fees are due at 3.5 years, 7.5 years, and 11.5 years after the date of issue of the patent. See <https://www.uspto.gov/patents-maintaining-patent/maintain-your-patent>.

<sup>58</sup> See 35 U.S.C. §207(a)(2) and 37 C.F.R. §404.

<sup>59</sup> 37 C.F.R. 404.6.

## Co-Exclusive and Partially Exclusive Licenses

Co-exclusive licenses grant exclusivity within a specific field of use, with the exception that the exclusivity does not apply to the licensor. Partially exclusive licenses grant an exclusive right limited to specified fields of use or use in specified geographic locations. The federal government may issue more than one partially exclusive license for an invention that has more than one potential use, or to the same use in different geographical areas.

## Conditions on All Licensing

All prospective licensees are required, at the time of the application, to provide certain information specified in the regulations to the relevant federal agency.<sup>60</sup> Before issuance, the applicant must submit a plan for the development and/or marketing of the invention, including information about the licensee's capability to fulfill the plan. The granted license must require the licensee to carry out the specified plan to bring the invention to practical application within the specified time and continue to make the benefits of the invention reasonably accessible to the public. Licensees must also provide periodic reports of the status of their efforts to utilize the invention as designated in their license agreement.

In addition, a license to use a federally owned invention or sell the resulting product in the United States must consider substantial manufacturing in the United States. Federal agencies may waive or modify this condition when reasonable but unsuccessful attempts have been made to license to potential licensees for domestic production, or if domestic production is not commercially feasible.

Further, the license may grant the licensee the right to enforce the licensed patents without enjoining the U.S. government as a party in the enforcement proceedings. A license may extend to subsidiaries of the licensee, or other parties if provided for in the license, but may not be reassigned or sublicensed without the approval of the licensor, i.e. the federal agency.

Importantly, regardless of the type of license granted, the government retains a nontransferable, irrevocable, and paid-up license that allows for any agency of the federal government to practice or have the invention practiced throughout the world on behalf of the U.S. government ("government use license").

## Conditions and Restrictions on Licensing: Exclusive, Co-Exclusive, or Partially Exclusive Licenses

The following additional requirements apply to exclusive, co-exclusive, and partially exclusive licenses.

Before the grant of an exclusive, co-exclusive, and partially exclusive license, a notice of a prospective license must be published which identifies the invention and the prospective licensee, and provides at least 15 days for any written objections.<sup>61</sup> An exclusive or partially exclusive license to federally-owned inventions may be granted only where: (1) the license provides a reasonable incentive to attract investment capital; (2) the license promotes the invention's use by the public; (3) the license serves the public interest by bringing the invention to practical application; (4) the applicant commits to achieve practical application of the invention within a reasonable timeframe; (5) the license does not prevent or dampen competition or create a violation of the federal antitrust laws; and (6) if the invention is covered by a foreign patent application or patent, the license will enhance the interests of the federal government or U.S. industry in foreign commerce. The preference for the grant of any exclusive or partially exclusive license to federally-owned inventions is given to small businesses, provided there is

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<sup>60</sup> 37 C.F.R. 404.5

<sup>61</sup> 37 C.F.R. 404.7(a)(1)

an equal or greater likelihood to bring the invention to a practical use in a reasonable amount of time as compared with other applicants.

### Termination and Amendment of Licenses

A license executed on a federally-owned invention shall include the right of the federal government to terminate the license for the following reasons: (1) the licensee is not executing its commitment to achieve the practical application of the invention as set forth by the license; (2) termination is necessary to meet requirements for public use of the invention; (3) the licensee has willfully made false statements or omitted a material fact in the license application or any report required by the license agreement; (4) the licensee commits a substantial breach of a covenant or provision included in the license agreement; or (5) the licensee is found by a court to have committed a breach of antitrust laws in connection with its performance of the license agreement. A license may also be modified or terminated upon mutual agreement of the federal agency and the licensee.

### Negotiation/Royalties

In addition to the statutory requirements, federal agencies provide their own internal guidelines for executing licenses of federally owned inventions. These guidelines typically include policies on negotiating the terms of the license agreements such as the duration of the license, the level of exclusivity, reporting requirements, the royalties associated with the application of the federal invention once licensed, as well as other specifications or requirements. Licensing royalties vary greatly across the multitude of agencies and their laboratories. It is important to note that federal agencies typically do not attempt to recoup R&D costs when negotiating a license agreement, as the main purpose of licensing is to bring federally owned inventions to the market for the benefit of the public rather than to generate revenue for the laboratory.

### Cooperative Research and Development Agreements (CRADAs)

Collaborative research is a crucial part of the technology transfer process and is critical to every agency's mission. The statute permits federal agencies to enter into CRADAs with other federal agencies, state and local governments, industrial organizations, such as corporations, partnerships, limited partnerships, and industrial development organizations, public and private foundations, nonprofits (including universities), or other entities.<sup>62</sup>

A CRADA is an agreement between a federal laboratory and a non-federal party (U.S. or foreign) to perform collaborative R&D in any area that is consistent with the federal laboratory's mission. A federal laboratory may provide personnel, services, facilities, and equipment, but no funds, to the joint R&D effort. A non-federal party may provide funds, in addition to personnel, services, facilities, and equipment.<sup>63</sup> A CRADA defines the tasks to be undertaken within an area of collaboration and the allocation of IP rights resulting from such cooperation. The laboratory may grant to a collaborating party patent licenses or assignments, or options thereto, in any invention made under the agreement.<sup>64</sup> The federal government always retains a non-exclusive, paid-up, royalty-free license to practice the invention or have the invention practiced throughout the world by or on behalf of the government ("government use" license).<sup>65</sup>

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<sup>62</sup> 15 U.S.C. §3710a.

<sup>63</sup> *Id.*

<sup>64</sup> *Id.* at (b)(1).

<sup>65</sup> *Id.* at (b)(1)(A).

The 11 federal agencies that are included in the Federal Laboratory Technology Transfer Report<sup>66</sup> utilize CRADAs in various capacities. Most agencies use “traditional” collaborative agreements, while others use non-traditional or other collaborative agreements to facilitate their research. A “traditional CRADA” refers to formal collaborative R&D agreements between a federal laboratory and non-federal partners. Other special CRADA arrangements are used by federal agencies to address special purpose applications, such as material transfer agreements or agreements that facilitate technical assistance activities. Examples of successes resulting from CRADAs can be found within agency-level or the federal-level reports on technology transfer.<sup>67</sup>

### Royalty Payment Distribution

Federal agencies are required to distribute royalty payments according to the current statutory guidelines, as follows: at minimum, each inventor or co-inventor receives the first \$2,000, and thereafter at least 15% of royalty income up to \$150,000 each year. The remaining income is retained by the agency or laboratory.<sup>68</sup>

While agencies are required to follow the minimum guidelines set by the statute, most pay more than 15% of royalty payments to the inventor. For example, some laboratories with limited royalty income may distribute the entire royalty payments to its inventors, provide a flat 25% to its inventors, or pay more than the statute requires on a case-by-case basis, always capping it at the current \$150,000 annual limit per inventor. Overall, each agency has its own internal guidance on royalty distribution.

### Managing Conflicts of Interest

Reducing conflicts of interest between federal employees and the commercialization efforts of the federal government is an important part of the management of the IP created by the federal government. Federal employees are in a position of public trust, and therefore cannot hold financial interests that conflict with the performance of their official duties. Although some restrictions vary by federal agency, most agencies allow employees to become involved with businesses that are unrelated to the performance of their federal work.

Ownership of a business by a federal employee creates the potential for conflicts of interest under the statute, where the employee is likely to participate in his or her official capacity personally or substantially in a particular matter that directly or predictably affects the financial interests of the business.<sup>69</sup> In operating or working for an outside business, federal employees must comply with the provisions of the Standards of Ethical Conduct for Employees of the Executive Branch (Standards of Conduct) on misuse of position.<sup>70</sup> Some agencies have “prohibited interests” statutes and regulations that restrict ownership of a business by a federal employee, or that restrict or prohibit a federal employee from participating in outside employment or other activities. Additionally, federal employees must comply with any prior approval requirements established by their agency regarding participation in outside employment or other activities.<sup>71</sup>

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<sup>66</sup> Copies of this report can be found at: <https://www.nist.gov/tpo/federal-laboratory-interagency-technology-transfer-summary-reports>.

<sup>67</sup> *Id.*

<sup>68</sup> 15 U.S.C. §3710c.

<sup>69</sup> 18 U.S.C. §208.

<sup>70</sup> 5 C.F.R. §2635, Subpart G.

<sup>71</sup> 5 C.F.R. §2635.803.

A federal employee may have a prior financial interest arising from a patent, copyright, trademark, or similar IPRs through the employee's property interest in the IP itself and through the employee's right to royalties from the licensing or commercialization of the property by their former employer. A financial interest in IP may present conflict of interest concerns, particularly if the subject matter of the prior work product relates to the agency's mission or the employee's responsibilities. Accordingly, an employee may not participate personally and substantially in any matter that the employee knows would directly and predictably affect the value of, or income from, the employee's IP unless a waiver is granted by the agency's ethics office. If an employee plans to prepare, file, and prosecute a patent application independently, the employee must be aware of the limitations on representations made on behalf of a legal entity to the government.

## Reporting on Technology Transfer Activities

### Agency Reports

Each federal agency that operates or directs one or more federal laboratories, or obtains or licenses patents on federally developed technology, is required by law to report annually to the Office of Management and Budget (OMB) on the patenting and licensing activities performed by that agency and its federal laboratories.<sup>72</sup>

The following metrics for the preceding fiscal year are currently required by statute:

- The number of patent applications filed;
- The number of patents received;
- The number of fully-executed licenses which received royalty income, categorized by whether they are exclusive, partially-exclusive, or non-exclusive, and the time elapsed from the date on which the license was requested by the licensee in writing to the date the license was executed;
- The total earned royalty income including such statistical information as the total earned royalty income, of the top 1%, 5%, and 20% of the licenses, the range of royalty income, and the median, except where disclosure of such information would reveal the amount of royalty income associated with an individual license or licensee;
- What disposition was made of the royalty income;
- The number of licenses terminated for cause; and
- Any other parameters or discussion that the agency deems relevant or unique to its practice of technology transfer.<sup>73</sup>

### Federal Reports

Once agencies submit their annual reports to OMB, the National Institute of Standards and Technology (NIST) prepares the consolidated annual report for the President, the United States Trade Representative (USTR), and the Congress<sup>74</sup> as discussed above. In addition to the information provided

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<sup>72</sup> 15 U.S.C. §3710(f)(1).

<sup>73</sup> 15 U.S.C. §3710(f)(2).

<sup>74</sup> 15 U.S.C. §3710(f).

by the agencies, the Federal Report must address technology transfer best practices and effective approaches in the licensing and transfer of technology in the context of the agencies' missions, and the progress made toward development of additional useful measures of the outcomes of technology transfer programs of federal agencies.<sup>75</sup>

### Intellectual Property Policy Education for Federal Employees

Educating federal employees is a crucial part of IP management within the research and development enterprise. The United States Patent and Trademark Office (USPTO) provides resources for inventors<sup>76</sup> and offers training programs, including e-modules and webinars, on all aspects of IP protection in the United States.<sup>77</sup> One example of such resource is an IP awareness assessment tool that was developed in collaboration with the NIST's Manufacturing Extension Partnership (NIST MEP).<sup>78</sup>

In addition to the training programs and other resources provided by the USPTO to inventors, each federal agency develops its own internal policies and processes for managing the IP that originates in federal laboratories. Not only do these internal policies provide guidance to federal employees, but they also set forth education and training guidelines and requirements to ensure that federal employees are adequately prepared to manage the IP resources of their agencies. Training federal employees is an ongoing process. Many training and educational programs require periodic participation or completion, and IP management resources are freely available to employees. Agencies also provide legal counsel to their employees on issues concerning IP management.

### Technical Assistance and Organizational Outreach

Federal laboratories make available technical assistance and organizational outreach services to state and local governments, the private sector, and schools and academia. Technical assistance may take the form of problem analysis, providing and interpreting technical information, "hands-on" technical help from laboratory volunteers, and limited projects in the laboratory. Providing such services to potential clients can enhance the image of the federal laboratory and open additional technology transfer opportunities.

#### Technical assistance to state and local governments

One kind of technical outreach involves helping state and local governments to assist businesses and promote economic development in their jurisdictions. The federal TTO may, for example, help evaluate technical aspects of new business proposals or serve as a technical resource.

#### Technical assistance to the private sector

Federal TTOs have the opportunity to promote transfer of federally developed technologies by working with private industry partners. Industry participation and investment in collaborative research activities are increasing as more companies discover the benefits of forming partnerships with federal laboratories. Such partnerships provide companies access to the cutting-edge research, best scientists,

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<sup>75</sup> 15 U.S.C. §3710(g)(2)(b); these reports are available at <https://www.nist.gov/tpo/federal-laboratory-interagency-technology-transfer-summary-reports>.

<sup>76</sup> <https://www.uspto.gov/learning-and-resources/inventors-entrepreneurs-resources>.

<sup>77</sup> <https://www.uspto.gov/learning-and-resources/global-intellectual-property-academy>.

<sup>78</sup> <https://ipassessment.uspto.gov/index.html>.

and state-of-the-art equipment. In return, private companies advance or commercialize technologies and bring them to the market for the benefit of the public.

#### Technical assistance to schools and academia

Technical assistance to schools and academia may include a variety of activities, such as help with a system operation, computer networking, or assistance to teachers and students to improve science and technical education.

## Federal Management of Intellectual Property: Trademarks and Copyright

In addition to patents, a governmental entity can obtain a federal trademark registration. Many government agencies seek to register trademarks at the USPTO in connection with various products and services, including commerce, tourism, and business administration. For example, in recent years, the U.S. Army, Navy, and Air Force have been actively registering and licensing a variety of trademarks.<sup>79</sup> Similarly, the Environmental Protection Agency has obtained certification marks for its ENERGY STAR program, used as a label on products, homes, and buildings that have been verified to meet ENERGY STAR requirements.<sup>80</sup> Federal trademark registration provides the strongest protection for government agencies seeking to protect against unauthorized use of their marks. Among other benefits, it protects against the registration of confusingly similar marks, provides notice to third parties, and allows the government agency to record the trademark with United States Customs and Border Protection, which has the authority to block the import of infringing counterfeits. As part of the management of trademark rights, a government agency should be vigilant in monitoring the USPTO trademark register/database for attempted registrations by licensees or other parties who may not have permission to register marks of the agency, as well as monitoring for appropriate use of the agency's marks in the marketplace.

As to copyrights, a work prepared by an officer or employee of the federal government as part of that person's official duties is generally not entitled to a United States copyright.<sup>81</sup> The policy reasons for this exemption include the principle that taxpayers should have free access to material their tax dollars have employed people to create, and that free and open access to government information benefits the public. Such a work may be entitled to copyright outside the United States, however.<sup>82</sup> In addition to having foreign copyright rights, the United States government may acquire and hold a copyright acquired from others. Some agencies, such as NASA, have developed effective systems to capture, track, review, and release software works to the public. The public can browse a central repository for NASA

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<sup>79</sup> Please note that section 2(b) of the Lanham Act (15 U.S.C. § 1052(b)) prohibits the federal trademark registration of the flag, coat of arms, or any other insignia of the United States, any state, any municipality, or foreign nation.

<sup>80</sup> See <https://www.energystar.gov/>.

<sup>81</sup> See 17 U.S.C. § 105.

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<sup>82</sup> See House Report No. 94-1476, p.59 ("The prohibition on copyright protection for United States Government works is not intended to have any effect on protection of these works abroad. Works of the governments of most other countries are copyrighted. There are no valid policy reasons for denying such protection to United States Government works in foreign countries, or for precluding the Government from making licenses for the use of its works abroad.")

software that contains the agency’s publicly released codes—all of which are available free of charge and can be downloaded from the site via an automated request system.<sup>83</sup>

## Current Federal-Wide Technology Transfer Projects

The following ongoing interagency projects are intended to facilitate federal technology transfer:

### Lab-to-Market Cross-Agency-Priority Goal

The FY 2018 President’s Management Agenda (PMA) outlines Cross-Agency-Priority (CAP) Goals.<sup>84</sup> The 14<sup>th</sup> CAP Goal is “Improve the Transfer of Federally-Funded Technologies from Lab-To-Market (L2M)” to promote economic growth and national security in the United States. There are five specific strategies outlined in the PMA that give directions on areas where improvements across the federal government can make a tangible difference to the U.S. economy. These strategies include: addressing regulatory impediments or administrative barriers within the federal technology transfer enterprise, increasing private sector engagement for technology development and investment, building a more entrepreneurial federal workforce, providing support for more innovative tools and services to facilitate technology transfer, and improving the understanding of global science and technology trends and benchmarks.<sup>85</sup>

The Lab-To-Market CAP Goal is jointly led by NIST and the Office of Science and Technology Policy (OSTP) within the White House. A corresponding White House National Science and Technology Council (NSTC) Lab-to-Market Subcommittee provides high-level guidance, direction, and coordination of implementation efforts. Five interagency working groups contribute to efforts that ensure this CAP goal successfully meets its mandate: the Interagency Working Group for Technology Transfer, the Interagency Working Group for Bayh-Dole, the Federal Laboratory Consortium for Technology Transfer, the SBIR Program Managers Working Group, and the Interagency I-Corps<sup>TM</sup> Community of Practice.<sup>86</sup> Achieving success in this CAP goal requires agency-developed and implemented action plans that improve federal technology transfer and practices by advancing each strategy area to increase the transfer of federally funded innovation from lab to market.<sup>87</sup> A key interim milestone of the Lab-To-Market CAP goal is the Return on Investment (ROI) Initiative described below.

### Return on Investment Initiative

NIST, in coordination with OSTP, launched the Return on Investment (ROI) Initiative<sup>88</sup> in April 2019 with the Unleashing American Innovation Symposium. The event brought together thought leaders from government, industry, academia, and nonprofit organizations to begin a year-long stakeholder engagement process identifying critically needed improvements to federal technology transfer efforts.

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<sup>83</sup> <http://software.nasa.gov>

<sup>84</sup> Available at <https://www.whitehouse.gov/wp-content/uploads/2018/03/Presidents-Management-Agenda.pdf>.

<sup>85</sup> *Id.*

<sup>86</sup> The I-Corps<sup>TM</sup> Community of Practice is in the process of reorganizing as the Interagency Working Group for Entrepreneurial Training, to include both extramural I-Corps<sup>TM</sup> programs as well as intramural entrepreneurship efforts.

<sup>87</sup> [https://www.performance.gov/CAP/action\\_plans/june\\_2019\\_Lab\\_to\\_Market.pdf](https://www.performance.gov/CAP/action_plans/june_2019_Lab_to_Market.pdf)

<sup>88</sup> <https://www.nist.gov/unleashing-american-innovation>

Following the kickoff symposium, NIST conducted an open, inclusive, and collaborative process to identify and assess options for supporting the ROI Initiative's overall goal and objectives, which included a Request for Information (RFI) published in the Federal Register, four public meetings, a summit hosted by NIST, consultations with interagency working groups responsible for technology transfer issues, multiple stakeholder engagement sessions, and extensive consultations with the interagency working groups that support federal technology transfer.

The assessment objectives included:

- reviewing technology transfer policies, practices, and regulations to evaluate which of these should be adapted or changed;
- considering new approaches to improve efficiency, reduce regulatory burdens, and attract private sector investment;
- adopting new models for collaboration and partnerships that support technology development and maturation;
- collecting better metrics and data so that ROI outcomes can be evaluated effectively;
- finding new approaches to motivate an increase in the outcomes of technology transfer from federal laboratories and universities.

The ROI Initiative produced a Final Green Paper<sup>89</sup> in April 2019 which outlined 15 findings summarizing inputs from hundreds of stakeholders. Each of the 15 findings summarizes challenges and potential opportunities for improving the federal technology transfer system. The report has been used to inform NIST and NSTC leadership, as well as contributing to additional milestones in the Lab-to-Market CAP goal.

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<sup>89</sup> Return on Investment Initiative to Advance the President's Management Agenda: NIST Special Publication 1234, April 2019, <https://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1234.pdf>

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AUTM website <https://autm.net/>

## Appendix A: Statutes, Executive Orders, and Regulations

The following are the statutes, executive orders and regulations are most relevant to the federal technology transfer:<sup>90</sup>

### Stevenson-Wydler Technology Innovation Act of 1980 (P.L. 96-480)<sup>91</sup>

The Stevenson-Wydler Act of 1980 is the first major U.S. technology transfer law. The primary focus of the Stevenson-Wydler Act is the dissemination of information from the federal government and getting federal laboratories more involved in the technology transfer process. It requires federal laboratories to have a formal technology transfer program and actively seek opportunities to transfer technology to industry, universities, and state and local governments. It also requires federal laboratories to set aside a percentage of the laboratory budget specifically for technology transfer activities. It was amended by the Federal Technology Transfer Act in 1986 (see below).

### Bayh-Dole Act of 1980 (P.L. 96-517)<sup>92</sup>

The goal of the Bayh-Dole Act is to stimulate the U.S. economy and facilitate technology transfer by stimulating private investments in technology developed with federal funding. The Act creates for the first time a uniform patent policy for government-funded research. It allows nonprofit organizations, such as universities and small businesses, to retain title to their federally funded inventions and grant exclusive licenses. In addition, government owned, government operated (GOGO) laboratories are permitted to grant exclusive patent licenses to commercial organizations. A 1983 presidential memorandum expanded the scope of the Bayh-Dole Act beyond small businesses and nonprofit organizations to cover any private party to a funding agreement.<sup>93</sup>

### Small Business Innovation Development Act of 1982 (P.L. 97-219)<sup>94</sup>

The Small Business Innovation Development Act of 1982 amends the Small Business Act<sup>95</sup> and establishes the Small Business Innovation Research (SBIR) Program, requiring agencies to provide special funds for small business R&D connected to the agencies' missions.

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<sup>90</sup> A comprehensive summary of technology transfer legislation and policy can be found in the Federal Laboratory Consortium's "Federal Technology Transfer Legislation and Policy" publication, also known as "The Green Book" due to its green cover available at <https://secure.federallabs.org/pdf/Green-Book-5th-Edition-Official.pdf>.

<sup>91</sup> Codified in 15 U.S.C. § 3701 et seq.

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<sup>92</sup> Codified in 35 U.S.C. §§200-212; Implementing regulations are contained in 37 C.F.R. Part 401 available at [https://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title37/37cfr401\\_main\\_02.tpl](https://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title37/37cfr401_main_02.tpl), most recently amended in May 2018, see <https://www.nist.gov/tpo/bayh-dole-regulations-federally-funded-inventions>.

<sup>93</sup> President's Memorandum to the Heads of the Executive Departments and Agencies, Government Patent Policy (Feb. 18, 1983) available at <http://www.presidency.ucsb.edu/ws/?pid=40945>; see also Exec. Order No. 12,591, at 1(B)(4), 52 Fed. Reg. 13,414 (Apr. 10, 1987) available at <https://www.archives.gov/federal-register/codification/executive-order/12591.html>

<sup>94</sup> Available at <https://history.nih.gov/research/downloads/PL97-219.pdf>.

<sup>95</sup> 15 U.S.C. §631 et seq.

### Federal Technology Transfer Act of 1986 (P.L. 99-502)<sup>96</sup>

The Federal Technology Transfer Act of 1986 (FTTA) is the second major piece of legislation to focus directly on federal technology transfer. It amends the Stevenson-Wydler Act of 1980. According to FTFA, all federal laboratory scientists and engineers are required to consider technology transfer an individual responsibility, and technology transfer activities are to be considered in employee performance evaluations. FTFA also establishes a charter and funding mechanism for the Federal Laboratory Consortium for Technology Transfer (FLC). In addition, it enables GOGO laboratories to enter into Cooperative Research and Development Agreements (CRADAs) and to negotiate licensing arrangements for patented inventions made at the laboratories. It also requires that government-employed inventors receive a share of royalties from patent licenses.

### Executive Order 12591, Facilitating Access to Science and Technology (1987)<sup>97</sup>

The goal of Executive Order 12591 is to ensure that federal laboratories and agencies assist universities and the private sector by transferring technical knowledge. The order requires agency and laboratory heads to identify and encourage individuals who would act as conduits of information among federal laboratories, universities, and the private sector. It also underscores the government's commitment to technology transfer and urges GOGOs to enter into cooperative agreements to the limits permitted by law. The order also promotes commercialization of federally funded inventions by requiring that, to the extent permitted by law, laboratories grant to contractors the title to patents developed in whole or in part with federal funds, provided that the government is given a royalty-free license for use.

### Omnibus Trade and Competitiveness Act of 1988 (P.L. 100-418)<sup>98</sup>

The Act emphasizes the need for public/private cooperation in realizing the benefits of R&D, establishes centers for transferring manufacturing technology, establishes Industrial Extension Services and an information clearinghouse on state and local technology programs, and extends royalty payment requirements to non-government employees of federal laboratories. It also changed the name of the National Bureau of Standards to the National Institute of Standards and Technology (NIST) and broadened its technology transfer role, including making NIST the FLC's host agency.

### National Competitiveness Technology Transfer Act of 1989 (P.L. 101-189)<sup>99</sup>

The Act provides additional guidelines and coverage for the use of CRADAs, extending to government owned and contractor operated (GOCO) laboratories essentially the same ability to enter into CRADAs that previously had been granted to GOGO laboratories by the Federal Technology Transfer Act of 1986.<sup>100</sup> To protect the commercial nature of the agreements, the Act allows information and innovations that were created through a CRADA, or brought into a CRADA, to be protected from disclosure to third parties.

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<sup>96</sup> 15 U.S.C. § 3701 et seq.

<sup>97</sup> Available at <https://www.archives.gov/federal-register/codification/executive-order/12591.html>.

<sup>98</sup> Available at <https://www.agriculture.senate.gov/imo/media/doc/100-418%20-%20Omnibus%20Trade%20And%20Competitiveness%20Act%20of%201988.pdf>.

<sup>99</sup> Included as Section 3131, *et seq.*, of the DOD Authorization Act for FY 1990.

<sup>100</sup> 15 U.S.C. §3701 et seq.

Small Business Research and Development Enhancement Act of 1992 (P.L. 102-564)<sup>101</sup>

This Act establishes the Small Business Technology Transfer (STTR) Program.

National Technology Transfer and Advancement Act of 1995 (P.L. 104-113)<sup>102</sup>

This Act amends the Stevenson-Wydler Act<sup>103</sup> to make CRADAs more attractive to both federal laboratories and scientists and to private industry. The law provides assurances to U.S. companies that they will be granted sufficient IPRs to justify prompt commercialization of inventions arising from a CRADA with a federal laboratory and gives the collaborating party in a CRADA the right to choose an exclusive or nonexclusive license for a pre-negotiated field of use for an invention resulting from joint research under a CRADA. The CRADA partner may also retain title to an invention made solely by its employees in exchange for granting the government a worldwide license to use the invention. The law also revises the financial rewards for federal scientists who develop marketable technology under a CRADA—increasing the annual limit of payment of royalties to laboratories from \$100,000 per person to \$150,000. In addition, the Act permanently provided the FLC with funding from the agencies.

Technology Transfer Commercialization Act of 2000 (P.L. 106-404)<sup>104</sup>

This Act broadens the CRADA licensing authority to include preexisting government inventions to make CRADAs more attractive to private industry and increase the transfer of federal technology. The Act permits federal laboratories to grant a license for a federally owned invention that was created prior to the signing of a CRADA. In addition, the Act requires an agency to provide a 15-day public notice before granting an exclusive or partially exclusive license, and requires licensees to provide a plan for development and/or marketing of the invention and to make a commitment to achieve a practical application of the invention within a reasonable period of time. However, the Act exempts from these requirements the licensing of any inventions made under a CRADA.

Energy Policy Act of 2005 (P.L. 109-58)<sup>105</sup>

This Act establishes, within the Department of Energy, a technology transfer coordinator as the principal advisor to the secretary on all matters related to technology transfer and commercialization; a technology transfer working group to coordinate technology transfer activities at the DOE labs (with oversight by the technology transfer coordinator); and an energy technology commercialization fund to provide matching funds with private partners to promote energy technologies for commercial purposes.

America COMPETES Act of 2010 (P.L. 110-69)<sup>106</sup>

This Act authorizes programs in multiple agencies focused on the overarching themes of increasing funding for basic research; strengthening teacher capabilities and encouraging student opportunities in science, technology, engineering, and mathematics (STEM) educational programs; enhancing support for higher-risk, higher-reward research; and supporting early-career research programs for young

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<sup>101</sup> Available at <https://www.congress.gov/bill/102nd-congress/senate-bill/2941/text>.

<sup>102</sup> Available at <https://www.nist.gov/standardsgov/national-technology-transfer-and-advancement-act-1995>.

<sup>103</sup> 15 U.S.C. §3701 et seq.

<sup>104</sup> Available at <https://www.gpo.gov/fdsys/pkg/PLAW-106publ404/html/PLAW-106publ404.htm>.

<sup>105</sup> Available at <https://www.energy.gov/sites/prod/files/edg/media/HR6PP%281%29.pdf>.

<sup>106</sup> Available at <https://www.nsf.gov/statistics/about/BILLS-111hr5116enr.pdf>.

investigators. The primary impact on technology transfer includes the elimination of the Department of Commerce Office of Technology Administration, and the associated Under Secretary, which had the principal reporting and analytical responsibilities for technology transfer activities government-wide (these duties were reassigned within Department of Commerce).

America Invents Act (P.L. 112-29)<sup>107</sup>

The America Invents Act (AIA) of 2011 introduces major changes to the United States patent law.<sup>108</sup> The most notable change was changing the patent system from a first-to-invent to a first-inventor-to-file system.

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<sup>107</sup> Available at [https://www.uspto.gov/sites/default/files/aia\\_implementation/20110916-pub-l112-29.pdf](https://www.uspto.gov/sites/default/files/aia_implementation/20110916-pub-l112-29.pdf).

<sup>108</sup> 35 U.S.C. §1 et seq.

## Appendix B: Federal Working Groups on Technology Transfer

Working groups are common throughout the federal government, including in the field of technology transfer. The three main working groups related to technology transfer are:

### The Interagency Working Group for Technology Transfer (IAWGTT)

The IAWGTT was established in 1987 by Executive Order 12591, Section 7, to “convene an interagency task force comprised of the heads of representative agencies and the directors of representative Federal laboratories, or their designees, in order to identify and disseminate creative approaches to technology transfer from Federal laboratories.”<sup>109</sup> NIST has the responsibilities of coordinating the IAWGTT activities, including the Annual Tech Transfer Report to the President and the Congress required by the Executive Order and by 15 U.S.C. §3710(g)(2).

### The Interagency Working Group for Bayh-Dole (IAWGBD)

The IAWGBD is a working group of technology transfer professionals responsible for managing extramural research activities, including the Bayh-Dole policy and iEdison reporting.<sup>110</sup> The Department of Commerce holds the responsibility for implementing regulations related to the Bayh-Dole Act of 1980<sup>111</sup> and co-led the group in conjunction with the National Institutes of Health (NIH), which currently manages the iEdison reporting system for inventions funded by federal agencies. In FY 2020, NIH will transfer responsibility of the iEdison reporting system to NIST.

### The Small Business Innovation Research Project Managers Working Group (SBIR PM WG)

The SBIR PM WG is a working group of project managers responsible for managing SBIR programs within their agencies, established by OSTP in coordination with the Small Business Administration (SBA). The working group participants “make policy recommendations on ways to improve program effectiveness and efficiency” per section 5124 of the National Defense Authorization Act of 2012,<sup>112</sup> which re-authorized the SBIR program.

A fourth working group, the Interagency Working Group for Entrepreneurial Training, is currently in the process of being formed and will be led by the National Science Foundation (NSF). In addition to I-Corps™, the working group will also promote intramural training programs that encourage entrepreneurship among federal researchers and postdoctoral fellows at federal laboratories.

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<sup>109</sup> Available at <http://www.archives.gov/federal-register/codification/executive-order/12591.html>.

<sup>110</sup> See <https://era.nih.gov/iedison/about.htm>.

<sup>111</sup> 35 U.S.C. §202 et seq.

<sup>112</sup> [https://www.sbir.gov/sites/default/files/ndaa\\_publaw.pdf](https://www.sbir.gov/sites/default/files/ndaa_publaw.pdf). WIPO FOR OFFICIAL USE ONLY