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## From TPP to University: Transforming Technology Transfer

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# From TPP to University: Transforming Technology Transfer

*Hamid Piroozi\**

## ABSTRACT

A national policy on patent ownership of government-funded inventions can transform technology transfer from universities to the hands of the public. However, without more, the university technology transfer enterprise can become stagnant. While many look for a blockbuster technology that can bring tens to hundreds of millions of dollars into the university system, those innovations are needles in a haystack. In this article, a new approach is presented where the goal is not to succeed by working with just a few prolific innovators, but to reach out to the entire university and provide an infrastructure that, at a minimum, improves the satisfaction of the university stakeholders and explodes the university's innovation ecosystem.

## I. INTRODUCTION

In many countries, universities can hold title to inventions funded in full or in part by government funds. For example, in Vietnam, the government decree No. 103/2006/ND-CP<sup>1</sup> provides that when an invention, industrial design, or layout design is created on the basis of full financial, material, and technical investments by the State, the right to the invention or design belongs to the State. The organization or state agency assigned by the State to act as the investor represents the State in exercising that right to registration.<sup>2</sup> That investor can be a state-owned university.<sup>3</sup>

Similarly, in the United States prior to 1980, the U.S. government held titles to inventions that were funded by a U.S. agency.<sup>4</sup> At that time, the U.S. government held some 28,000 patents, and only a small percentage were actually commercialized (i.e., licensed to private entities for furtherance of the technology).<sup>5</sup> The Bayh-Dole Act provided the option of ownership of inventions to the universities that received money from the U.S. government in

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1. See Decree No. 103/2006/ND-CP Detailing and Guiding the Implementation of a Number of Articles of the Law on Intellectual Property Regarding Industrial Property, WIPO (Sept. 22, 2006), <http://www.wipo.int/edocs/lexdocs/laws/en/vn/vn008en.pdf>.
2. *Id.*
3. *Id.*
4. WENDY H. SCHACHT, CONG. RESEARCH SERV., 7-5700, THE BAYH-DOLE ACT: SELECTED ISSUES IN PATENT POLICY AND THE COMMERCIALIZATION OF TECHNOLOGY 2 (2012).
5. *Innovation's Golden Goose*, ECONOMIST (Dec. 12, 2002), <http://www.economist.com/node/1476653>.

exchange for efforts toward commercializing government-funded research.<sup>6</sup> Consequently, since the enactment of the Bayh-Dole Act, there has been an explosion of technology transfer offices (TTO) across the United States within or associated with universities.<sup>7</sup> However, with the exception of a few TTOs, most remain a drain on university resources. A Brookings report summarized this information in 2012, and found that eighty-seven percent of TTOs were in the red (spent more than they brought in).<sup>8</sup> In 2012, that number decreased to eighty-four percent.<sup>9</sup> Most of the cost of these offices was associated with patent protection.<sup>10</sup> But why patents?

While copyrights and trade secrets can provide a platform for intellectual property protection, to succeed in a controversy, each party must show an alleged infringer or violator took or misappropriated information from the holder (e.g., for copyrights one needs to show that the alleged infringer copied the copyrighted material, and for trade secret one needs to show that the alleged wrongdoer misappropriated the secret—therefore, arriving at the intellectual property without copying or misappropriating is not a violation).<sup>11</sup> However, a patent does not require misappropriation.<sup>12</sup> “Whoever without authority makes, uses, offers to sell, or sells any patented invention within the United States or imports into the United States any patented invention during the term of the patent . . . infringes the patent,” regardless of whether they arrived at the invention without copying or misappropriating in some way.<sup>13</sup>

Given the importance of patents, from a quantitative perspective, the high cost of patent protection is the greatest expense for TTOs, seriously limiting what TTOs can do.<sup>14</sup> From a qualitative perspective, these offices

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6. *Bayh-Dole Act*, RICE UNIV., <https://ott.rice.edu/Content.aspx?id=177> (last visited Jan. 24, 2018).
  7. Peter M. Fleischut & Scott Haas, *University Technology Transfer Offices: A Status Report*, BIOTECHNOLOGY HEALTHCARE (Feb. 2005), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3564362/>.
  8. See Walter D. Valdivia, *University Start-Ups: Critical for Improving Technology Transfer*, BROOKINGS (Nov. 20, 2013), <https://www.brookings.edu/research/university-start-ups-critical-for-improving-technology-transfer/>.
  9. *Id.*
  10. *Id.*
  11. See generally *Patents or Trade Secrets?*, WIPO, [http://www.wipo.int/sme/en/ip\\_business/trade\\_secrets/patent\\_trade.htm](http://www.wipo.int/sme/en/ip_business/trade_secrets/patent_trade.htm) (last visited Jan. 24, 2018).
  12. *Id.*
  13. 35 U.S.C. § 271 (2012).
  14. See *OTC Metrics*, PURDUE RES. FOUND., <https://www.prf.org/otc/about/otc-metrics/index.html> (last visited Jan. 24, 2018) (showing that in the 2012 fiscal year, there was \$4.86 million of royalty income with \$6.86 million in total patent costs of which \$4.55 million was unreimbursed).

are, at best, viewed as facilitators, but most of the time are roadblocks to protecting important inventions due to serious lack of funds. In many instances, if the innovator is not able to come to his or her TTO with a licensee in hand who is willing to pay for patent protection, they are simply turned away.<sup>15</sup> This lack of funds creates a chilling effect on innovation. Therefore, there is a need for a new approach that allows TTOs to not only become self-sufficient, but to create an engine of innovation by providing an ecosystem that welcomes innovators.

## II. MISSION STATEMENT

As with all complex endeavors, establishing a mission statement for TTOs that supports universities' missions of discovery, dissemination of knowledge, and engagement is important.<sup>16</sup> The mission statement provides a constant reminder of what is fundamental and keeps hard-working individuals in the TTO grounded to its mission. The TTO's mission statement should convey the ultimate goal: it is not about a return on investment, but rather to get as many technologies from the labs of the university to the hands of the public.<sup>17</sup> While return on investment is important for sustainability and returning some portion of the royalties earned from commercializing technologies to the inventors and the university, by implementing a wide range of innovative steps described below the return will materialize without having it as a pillar of the mission statement.

## III. IN-HOUSE IP PRACTICE

As discussed above, one of the highest expenses for a TTO is the cost of patent protection.<sup>18</sup> In the United States, a typical patent will cost from \$10,000 on the low end of the spectrum to \$50,000 on the mid to high end of the spectrum, averaging about \$30,000.<sup>19</sup> Of that, a small fraction is attributed to government fees.<sup>20</sup> Costs associated with only a few patents per year easily justify an in-house practitioner that can prepare and prosecute a higher

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15. *License a Pending Patent Application, Not So Easy*, INTELLECTUAL PROP. EXPERT GRP., <http://www.ipeg.com/license-a-pending-patent-application-not-so-easy/> (last visited Jan. 24, 2018).

16. *See, e.g., Mission*, PURDUE UNIV., [http://www.purdue.edu/strategic\\_plan/2001-2006/pages/westlafayette/wl\\_mission.html](http://www.purdue.edu/strategic_plan/2001-2006/pages/westlafayette/wl_mission.html) (last visited Jan. 24, 2018) (where discovery, learning, and engagement are the three pillars of the mission).

17. *See generally* PURDUE RES. FOUND., <https://www.prfr.org/otc/about/index.html> (last visited Jan. 24, 2018).

18. *See* Valdivia, *supra* note 8.

19. *See* Gene Quinn, *The Cost of Obtaining a Patent in the US*, IP WATCHDOG (Apr. 4, 2015), <http://www.ipwatchdog.com/2015/04/04/the-cost-of-obtaining-a-patent-in-the-us/id=56485/>.

20. *See id.*

number of patent cases compared to outside counsel.<sup>21</sup> A sampling of cost savings can be seen by reviewing overall patent costs between fiscal years 2012 and 2015 of \$6.86 million to \$2.94 million, respectively.<sup>22</sup> By reducing costs and recirculating a portion of the royalties associated with licensing technologies, it is possible that the TTOs can become self-sufficient in a short period of time.

In addition to the cost savings, an in-house practitioner improves the relationship between the TTO and the university innovators and stakeholders. By saying yes to more invention disclosures, relationships will improve organically. Soon, the role of TTO professionals will change from being facilitators (i.e., contracting outside counsel and overseeing the drafting and prosecution of patent applications) to collaborators where the TTO professionals are invited into the labs during inception phases of new inventions.

#### IV. EFFECTIVE LICENSING SYSTEM

Given the early-stage nature of university-based technologies, commercialization of these technologies requires further development. In many cases the only pathway for furthering these technologies is licensing to outside companies.<sup>23</sup> However, getting the word out about technologies available for licensing is not simple. Such an endeavor requires deep industry networking and a solid marketing apparatus.

While a system to record industry contacts information is useful, most relationships are developed between the TTO professionals and the industry contacts over a long time. As a result, when a TTO professional leaves his or her office to pursue a different position, the knowledge and contacts typically go with that professional. It is therefore incumbent upon the TTO's management to offer career advancement and growth opportunities creating an environment where the professionals desire to stay and develop long careers.

Marketing of early-stage technologies is a tough nut to crack. There are various software systems that provide information about inventions available for licensing based on classifications. However, most are inherently difficult

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21. Randi Isaacs et al., *Overcoming Challenges in Transferring Technology in Academia and Beyond*, THE INTELL. PROP. STRATEGIST (Oct. 2015), <https://us.eversheds-sutherland.com/portalresource/lookup/poid/Z1tOl9NPluKPtDNIqLMRV56Pab6TfzcRXncKbDtRr9tObDdEnWJDn03!/fileUpload.name=/081101504%20Sutherland.pdf>.

22. See *OTC Metrics*, *supra* note 14.

23. See *Licensing*, UNIV. OF MICH., <http://techtransfer.umich.edu/for-industry/licensing/> (last visited Jan. 24, 2018) (noting the importance of licensure for the furtherance of technology creation).

to use since keyword searching even within classifications often produces incorrect results or results missing the mark.<sup>24</sup>

To avoid these pitfalls, a combination of robust networking and personal assistance is the way to go for those who are interested in university technologies. For example, a contact may be interested in a particular area, and is interested in existing technologies in that area. A knowledgeable marketing professional within the TTO who is familiar with the available technologies and who can provide pinpoint accurate results creates a pleasant experience resulting in repeat business.

Additionally, a marketing department that continually places information including videos, articles, blogs, and other forms of communication on worldwide accessible platforms will receive attention, and in time will become a go-to resource for those who seek university technologies.

## V. ECOSYSTEM FOR STARTUPS

While some technologies may be appropriate for third-party licensing, many that are valuable may die on the vine because of a lack of interest or lack of visibility by third-party entities. In some cases, the innovators are willing and able to create startups. However, without a robust startup-friendly ecosystem, those who are willing to put in the effort are not willing to take the plunge.

The needed ecosystem includes assistance with mentoring and education, grant writing, patent protection costs, funding to move up the technology readiness level ladder, legal services for corporate formation, navigating immigration issues, access to CEOs and CFOs, and generally an environment that is eager to assist these brave inventors and founders. An educational system that assists with mentoring is critical, whether the mentoring is through formal training or by assigning an entrepreneur in residence (individuals who have already helped start and manage other startups) to the inventor and founder. The mentoring also includes ideation by exploring potential markets and identifying customers and financial models, which helps inventors and founders identify answers to the ever-important question of what the value proposition of their idea is. The goal of the ideation process is to determine if there is value in the idea and whether it makes sense to move forward developing the idea.

One immediate roadblock is the patent protection costs associated with protecting ideas that form the basis of a startup. By providing a deferred cost structure (deferred until a major transaction event, e.g., a buyout, has occurred), where the founders are not responsible for the deferred costs if the startup was to fail, eliminates that initial burden. The founders can then con-

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24. See Ran Raider, *A Patent Search Strategy: Keyword Semantics and Classification Search*, PAT. & TRADEMARK RES. CTR. ASS'N (2014), <http://ptrca.org/newsletters/2014/raider> (describing the difficulties inherent in such searches).

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centrate on developing the startup rather than worry about how to pay for those fees at a time when funds are particularly hard to come by.

Beyond patent costs, funding the startup is also critical. Help with funding can include writing grants to small business funding agencies for undiluted funds, taking part in crowd funding, seeking out friends and family, or locating angel or venture capital investment funds. The university can also seek out government funds made available as direct competitive funding, matching, or both.

A startup guide can be uniquely useful as it can provide an important and valuable source of information all in one place. Most universities dedicated to the startup cause have a version of a startup guide.<sup>25</sup>

A research park can also be extremely valuable with facilities for both wet and dry labs as well as office space and administrative services. Such an offering provides a one-stop shop for startup founders when time and resources are in short supply.

## VI. CONCLUSION

Successful university-based technology transfer requires a myriad of interventions including a national policy that encourages innovation by providing infrastructure, title to universities which are best suited for commercializing those technologies, and an ecosystem that encourages creativity and innovation. A successful ecosystem includes a self-sufficient TTO, an educational and mentoring organization dedicated to assisting startups, and a research park that can provide a one-stop shop for the founders of startups.

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25. See COLO. ST. UNIV., *STARTUP GUIDE* (2014), <http://csuventures.org/wp-content/uploads/2014/02/startupguide.pdf>; INNOVATIONS, COMMERCIALIZATION AND STARTUP GUIDE, PURDUE RES. FOUND., (2d ed.), <https://www.prf.org/otc/documents/Start-Up%20Guide%20-%20June%202016%20Update%20Web.pdf>.