

# Chapter 8

## Lean Startup for Academic Entrepreneurship: Building a Scalable Startup Launchpad

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### ABSTRACT

*This chapter describes how the Lean Startup approach has been applied at the George Washington University to enhance the technology transfer function. The nascent Lean Startup approach, as embodied in the National Science Foundation's Innovation Corps (NSF I-Corps™) program, presents an exciting new platform for universities and their Technology Transfer Offices (TTOs) to build scalable launchpads for research-based startup efforts. Traditional university technology transfer techniques have yielded mixed results in commercializing inventions of their researchers. The NSF I-Corps™ program is fostering a new generation of researchers who can better understand and bridge the gap between lab and market. It provides an intensive boot camp that guides researchers through an interview-based customer development process to determine whether there is an appropriate product market fit for their inventions. These Lean Startup-savvy researchers are better able to work with their TTOs, entrepreneurs, and industry to improve the prospects for startup success. Their future research initiatives also benefit from being informed about what commercially relevant problems exist in their areas of expertise.*

### INTRODUCTION

Picking winners from university research for successful technology commercialization is tough. Yet university technology transfer offices (TTOs) are coming under greater pressure to increase their licensing revenue from university inventions, often while coping with shrinking office resources and federal R&D budgets.

DOI: 10.4018/978-1-4666-8487-4.ch008

Commonly cited reasons for these difficulties include:

1. Lack of seed stage venture capital funding.
2. Academic technologies being too early for commercialization.
3. Mismatch between university and industry priorities.
4. Inadequate or improperly incentivized university technology transfer offices.

There is some truth in these explanations; however, the most important catalyst for successful academic entrepreneurship since the Bayh-Dole Act is currently presenting an opportunity for universities to scale up and invigorate their technology commercialization efforts. Embodied by the National Science Foundation Innovation Corps (NSF I-Corps<sup>TM</sup>) program, the application of Lean Startup principles to university research-based startups is revolutionizing the way that some researchers think about making a real world difference with their life's work, and how some innovative TTOs pursue commercialization for their research portfolios. This approach helps to overcome all four of the above-cited reasons for the uneven record of academic entrepreneurship.

This chapter, drawing on the author's 25 years as a student, researcher, practitioner, and educator focused on innovation and entrepreneurship, describes and advocates for a Lean Startup approach that streamlines academic entrepreneurship, enabling a scalable launchpad to quickly weed out invention disclosures that do not have near-term commercial prospects, and accelerate the commercialization efforts of those that do. The Lean Startup for Academic Entrepreneurship approach is about connecting to potential customers first to guide the efforts of academic entrepreneurship, rather than trying to develop a new product or service in isolation from the needs of its future users.

## **BACKGROUND**

U.S. university R&D expenditures were \$65.8 billion in 2012 (National Science Foundation, 2014a). Most experts predict falling future levels of federal funding for R&D. According to the Association of University Technology Managers (AUTM), the main professional organization for university TTOs, there were 705 startups formed at its member universities in 2012, with an average of \$93 million in research expenditure per startup formed. There were 591 new commercial products created the same year, for an average of \$111 million spent per new product created (Association of University Technology Managers, 2014). Of course, there are lags in effect and other important reasons for doing research beside commercialization, but these numbers provide a rough view of the efficiency of academic entrepreneurship for creating innovative new products and services. By most standards, it could hardly be considered efficient.

The traditional approach for academic entrepreneurship was made possible by the 1980 Bayh-Dole Act, which gave US universities ownership of intellectual property (IP) rights developed under federal grants. Perhaps counterintuitively, simple public disclosure of inventions without establishing ownership rights makes commercialization more difficult in many cases, because there is little incentive to make the investment into further development if the benefits cannot be captured. With these ownership rights granted by Bayh-Dole, the ability to capture the benefits of commercialization efforts first became possible on an institutional basis for the universities and their licensees.

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