



HACKING FOR XTM

Sprint Pre-Reading



WHY DOES HACKING FOR X EXIST?

The Department of Defense's biggest problem is the speed and variety of security threats it faces. To succeed, the Defense Department needs to be dominant everywhere in every way, whereas our enemies only need to challenge our supremacy in one way in one place. With the proliferation of highly sophisticated commercial off the shelf technologies, the danger posed by these asymmetric threats has never been greater nor their emergence more difficult to recognize.

The problem is compounded by the Department of Defense's legacy systems. Largely a victim of our own success, we've gotten really good at building battleships and the success of our battleship building has caused us to develop a system that is--surprise!--really good at building battleships. This worked when the US was engaged in a 1-v-1 arms race with the USSR, but it creates an insurmountable challenge when playing today's global game of asymmetric threat "whack-a-mole".

Together, these problems place our national security at risk while injecting uncertainty into how best to respond. As risk and uncertainty build up, we see the symptoms emerge in institutional chaos, ambiguity, and unpredictability. New programs (e.g. the Joint Strike Fighter) run years over initial timelines while costs double, or more. Existing programs (e.g. the HMMWV or "Humvee") take years to adapt to emerging threats, or are rendered obsolete. Uncoordinated "innovation" efforts flame out as leadership rotates after 2-3 years.

Far too often, we misunderstand or minimize these symptoms as isolated problems without recognizing their underlying cause. In a climate where it is easier to give more funding to a floundering program than it is to nix it in favor of another approach, this leads to ineffective solutions for the wrong problem. Ultimately this not only costs time and money-- it costs lives of American servicemen and servicewomen.

The Department of Defense must find new ways to address this risk and uncertainty. They need to explore solutions that are both fast and capable of being executed globally. Furthermore, they require solutions that complement the existing structure instead of operating in a vacuum.

There are other ecosystems, outside of the Department of Defense, that have already faced and overcome these challenges. Technology startups have been dealing with high levels of uncertainty for decades. They operate in an environment fundamentally characterized by risk, and founders go to sleep knowing that they may wake to a *TechCrunch* headline that makes their entire business obsolete. To thrive in such an uncertain environment, entrepreneurs had to create a revolutionary new set of tools called the Lean Methodology.

Hacking for X operationalized the Lean Methodology for the mission-driven environment of the Defense Department. We start with problems, not products, and instead of measuring success by profit or revenue, we use mission-inspired metrics to assess our mission achievement. H4X's process builds broad coalitions around the problem, and the vertically integrated design process takes into account everything from user-needs to deployment avenues.

Helping the Department of Defense solve its problems isn't for the faint of heart. You are here because you are early adopters and mavericks, who defy risk and uncertainty. Ultimately, the success of this effort, and our national security, rests with you.

-The H4X Team

TABLE OF CONTENTS

The diagram consists of four vertical lines, each starting from a circular node containing a page number. The nodes are arranged horizontally. The first node (1) is connected to the text 'Why the Lean Start-Up Changes Everything: Steve Blank (Summarized by BMNT)'. The second node (4) is connected to 'The Mission Model Canvas - An Adapted Business Model Canvas for Mission-Driven Organizations: Steve Blank (Summarized by BMNT)'. The third node (7) is connected to 'Don't Build When you Build-Measure-Learn: Benson Garner (Summarized by BMNT)'. The fourth node (8) is connected to 'Notes Page'. The nodes for 1, 4, and 7 are black, while the node for 8 is blue.

1	Why the Lean Start-Up Changes Everything: Steve Blank (Summarized by BMNT)
4	The Mission Model Canvas - An Adapted Business Model Canvas for Mission-Driven Organizations: Steve Blank (Summarized by BMNT)
7	Don't Build When you Build-Measure-Learn: Benson Garner (Summarized by BMNT)
8	Notes Page

WHY THE LEAN START-UP CHANGES EVERYTHING: STEVE BLANK (SUMMARIZED BY BMNT)

<https://hbr.org/2013/05/why-the-lean-start-up-changes-everything>

Starting a new company - or a new idea within an organization - is hard work. At least 75% of such efforts fail, and the number is probably much higher. The Lean Start-Up methodology emerged from decades of trial and error in Silicon Valley, where entrepreneurs tested and improved ways to minimize risk and maximize learning. Lean, as it's known, favors experimentation over planning, feedback over intuition, and iterative design over fancy products. Concepts such as the Minimum Viable Product [MVP] and the Pivot are elements of this methodology. Lean is now widely used in all kinds of organizations, not just startup companies.

Lean is built for dynamic environments where planning is often counterproductive. Uncertainty is the most relevant problem facing any new company or idea because everything is just a guess. Planning, by contrast, assumes that the environment is relatively stable. Large companies plan because it is the best way to execute. That doesn't work for something new because you can only execute when you know what you are supposed to be doing. Startup companies - and innovative ideas within established organizations - are not yet ready to execute. They are searching for a plan, so their goal is to learn as quickly as possible. And that is precisely what Lean does so well.

The Lean process uses three primary tools, all focused on learning: the Business Model Canvas; Customer Discovery; and Agile Development. **The Business Model Canvas (Figure 1)** is a collection of educated guesses about the solution that someone wants to build. He or she then talks to all the people - users, customers, partners - who would actually buy/use/support the solution. These outreach activities are called **Customer Discovery**. Finally, potential solutions are incrementally built using **Agile Development**. This style of product development eliminates wasted time and resources by validating each element of the customer needs as the company grows. The very early stages of this process involve building MVPs to test assumptions.

Many organizations are starting to use Lean because it offers many advantages over the traditional methods that were designed for static environments. Lean focuses on hypothesis-driven testing as a means to rapid learning, which is the ultimate goal when a company (or small group within a large organization) is trying to build something new.

Lean will not guarantee that an effort is successful. There are too many external factors to make such a strong claim. Lean can, however, deliver on a specific promise: it will result in fewer failures when compared against any other method.

There are five other factors to consider when trying to maximize success:

1. **The high cost of getting the first customers and even higher cost of the wrong product**
2. **Long technology development cycles**
3. **Few people with the risk tolerance for founding or working on early-stage efforts**
4. **The funding environment for early-stage efforts**
5. **The lack of expertise for building start-ups outside a few pockets in the U.S**

Numbers 1, 2 & 3 are directly addressed by Lean. Number 4 is being addressed by variety of funding options such as Kickstarter and AngelList. And the explosion of online content surrounding entrepreneurship and innovation is addressing number 5.

Using the concept of Lean provides a framework that helps people differentiate the good advice from the bad. Academic institutions, government organizations, and large companies are all finding ways to incorporate Lean into their strategy and operations. To survive in an environment of high uncertainty and continual disruption, organizations will need to find ways of experimenting and adapting. Lean provides the tools to learn rapidly before transitioning to execution.

<p>KEY PARTNERS</p> <p>Who are our Key Partners? Who are our key suppliers? Which Key Resources are we acquiring from partners? Which Key Activities do Key Partners perform?</p>	<p>KEY ACTIVITIES</p> <p>What Key Activities do our Value Propositions require? Our Distribution Channels? Our Customer Relationships? Our Revenue Streams?</p>	<p>VALUE PROPOSITIONS</p> <p>What value do we deliver to the customer? Which one of our customer's problems are we helping to solve? What bundles of products and services are we offering to each Customer Segment? Which customer needs are we satisfying?</p>	<p>CUSTOMER RELATIONSHIPS</p> <p>What type of relationship does each of our Customer Segments expect us to establish and maintain with them? Which ones have we established? How are they integrated with the rest of our business model? How costly are they?</p>	<p>CUSTOMER SEGMENTS</p> <p>For whom are we creating value? Who are our most important customers?</p>
	<p>KEY RESOURCES</p> <p>What Key Resources do our Value Propositions require? Our Distribution Channels? Our Customer Relationships? Our Revenue Streams?</p>		<p>CHANNELS</p> <p>Through which Channels do our Customer Segments want to be reached? How are we reaching them now? How are our Channels integrated? Which ones work best? Which ones are most cost-efficient? How are we integrating them with customer routines?</p>	
<p>COST STRUCTURE</p> <p>What are the most important costs inherent in our business model? Which Key Resources are most expensive? Which Key Activities are most expensive?</p>			<p>REVENUE STREAMS</p> <p>For what value are our customers really willing to pay? For what do they currently pay? How are they currently paying? How would they prefer to pay? How much does each Revenue Stream contribute to overall revenues?</p>	

Figure 1: Business Model Canvas

THE MISSION MODEL CANVAS - AN ADAPTED BUSINESS MODEL CANVAS FOR MISSION-DRIVEN ORGANIZATIONS: STEVE BLANK (SUMMARIZED BY BMNT)

<https://steveblank.com/2016/02/23/the-mission-model-canvas-an-adapted-business-model-canvas-for-mission-driven-organizations/>

The Business Model Canvas (BMC) is a tool for companies to find a repeatable and scalable business model by learning as quickly as possible. The BMC does this by framing hypotheses and letting you keep track of them as you talk to potential users, customers, and partners. This is very useful for anyone operating in an environment of high uncertainty. But the BMC was built for startups looking to grow into large companies. How can this same concept be adapted specifically to organizations whose goal is mission achievement, not profit? The BMC must evolve into the Mission Model Canvas, or MMC (Figure 2).

First the **Customer Segments** must change to **Beneficiaries**. These are specific individuals who have a problem you are trying to solve. In the case of national security, this isn't just the warfighter. There are other key players involved. It may be contracting officers or program managers who are responsible for development, procurement, sustainment, or other important activities. There are multiple layers, from the tactical to the operational and sometimes strategic.

The **Value Proposition** box stays the same. This summarizes what you think you are doing for the beneficiary. You are creating gains, reducing pains, and/or helping them do a job. You want to describe this in language of the beneficiaries (benefits) not like a list of features.

Next, **Distribution Channel** becomes **Deployment**. This box deals with the requirements to deploy a product or service so that it reaches the beneficiaries. In this box you are considering things such as "What is a successful deployment of [your idea]?" and "What will it take to get [our idea] into the hands of everyone who has this problem?"

Customer Relationships changes to **Buy-in/Support**. You will need to establish and maintain relationships with a lot of people. Sometimes you will simply require that someone use your solution. Other times you may need to incentivize them. Your goal right now is to build a tightknit group of the right people to support initial deployment, but not to make the group so big that unnecessary people are involved. That slows down your testing and learning.

Finally **Revenue Streams** changes to **Mission Achievement Factors**. You will need to think about your solution in terms of the value you are creating for the sum of the beneficiaries. Consider the question “What metrics would I point to when someone asks me if we’re successful?”

All of the sections of the Mission Model Canvas are meant to help you take advantage of the canvas as a tool for rapidly validating problems and testing MVPs. The MMC is specifically built for mission-driven organizations, as opposed to profit-driven organizations.

<p>KEY PARTNERS</p> <ul style="list-style-type: none"> - Which of these activities can you outsource to other people? - Who are those people? - What will they contribute to the solution? - What activities will they perform? 	<p>KEY ACTIVITIES</p> <ul style="list-style-type: none"> - What are the unique activities that will enable your solution to deliver the value propositions to beneficiaries? - What activities are necessary to complete Deployment and Buy-in & Support? 	<p>VALUE PROPOSITIONS</p> <ul style="list-style-type: none"> - For each beneficiary, what gain does your solution provide or what pain does your solution solve? - What problem does each beneficiary have that you are trying to solve? - What products or services are you offering to each beneficiary? <p><i>This should be in the same words that your beneficiaries use to describe their problem or desired benefits. Even if you have the right concept, it is likely that your beneficiaries will not recognize it unless you use the right language. Your word choice will improve as you talk with more of your beneficiaries.</i></p>	<p>BUY-IN & SUPPORT</p> <ul style="list-style-type: none"> - For each beneficiary, how will you ensure they support the program? 	<p>BENEFICIARIES</p> <ul style="list-style-type: none"> - For whom are you creating value? - Who are the most important people who will receive benefit from this program? - What is their title or function? <p><i>Try to be as specific as possible. You need to be able to approach these people with questions to test your hypotheses. You cannot approach an agency or a unit and have a real conversation about their problems, but you can approach a specific person or specific role.</i></p>
<p>MISSION BUDGET/COST</p> <ul style="list-style-type: none"> - What are the costs required in delivering the value proposition? - Which costs or budget items are most expensive? 		<p>MISSION ACHIEVEMENT/IMPACT FACTORS</p> <ul style="list-style-type: none"> - For each beneficiary and each value proposition, how do you know that you have succeeded? 		

Figure 2: Mission Model Canvas

DON'T BUILD WHEN YOU BUILD-MEASURE-LEARN: BENSON GARNER (SUMMARIZED BY BMNT)

<http://blog.strategyzer.com/posts/2015/5/7/dont-build-when-you-build-measure-learn>

Entrepreneurs often start building early versions of their products and services too early. They tend to ignore the value of rapid learning during the search phase of building their business. Most people want to jump directly into the execution phase of running their business. Instead of executing at the early stage, however, we should take advantage of Minimum Viable Products (MVPs). They are the best way to stay focused on learning.

An MVP is a representation of a Value Proposition, like the ones in a BMC or MMC. It is designed to test the validity of a hypothesis. An MVP is not a limited version of the final product or service that you want to build. The goal of an MVP is maximum learning with minimal effort. MVPs are meant to be created before you spend any time, money, or other resources on building a physical product or service.

Some of examples of MVPs that you can show to Customers/Beneficiaries are:

- **A spreadsheet specifying details that you imagine to be parts of a Value Proposition**
- **A brochure you mock up with features you think beneficiaries will like**
- **A storyboard demonstrating how your Value Proposition solves a real problem**
- **A landing page outlining the core benefits and elements of your Value Proposition**
- **A video showcasing the elements of your Value Proposition and explaining how it works**

You can create functioning prototypes in later stages of experimentation. Right now the goal is to include only the most basic elements of your Value Proposition in a way that is “real enough” for your Customers/Beneficiaries to react to.

The first step to building MVPs is figuring out what you want to test. These hypotheses should already be captured in your Mission Model Canvas. For each hypothesis you should figure out how to “measure” what you want to learn, and how to get the most accurate data from the test. Remember that building the right MVP is critical to getting the right data, which then leads to the right insights on the hypothesis you’re testing.

