Innovation Definition: Lean & Lean Startup Mindset

**Table of Contents**

[Overview](#_a59n6p48ce15)

[Why Lean and Lean Startup?](#_3g8elr727fj6)

[How Lean & Lean Startup are Applied](#_8a3qngoe0a3l)

[Benefits of Lean & Lean Startup](#_2q2jcchf684a)

[Benefits of Using this Mindset](#_gv7xa75i6dq1)

[How to Implement Lean & Lean Startup](#_bmu0waciebbv)

[History of Lean Startup](#_bv5zltzi4t6y)

[How to Deploy Lean & Lean Startup](#_97kfvxdsg6iv)

[Reducing friction costs and embracing failure](#_u7e8umptzjms)

[Capacity building for effective implementation](#_35c3mqc4djnm)

[Openness and adaptiveness to new ways of thinking](#_rwwp3l2yi1fn)

[Strategic and creative thinking to integrate quick iteration with planning and budget cycles](#_rh2f04xhbajk)

[How to Apply Lean & Lean Startup Practices](#_r7r3jdfs7p1s)

[Four Steps to Lean](#_hwgvbzxwdoee)

[Step 1: Break down your grand vision into component parts, and sketch out your hypothesis.](#_kff2mlj7ggxw)

[Step 2: Test the problem (Customer discovery)](#_ac45hjt1lwoj)

[Step 3: Test the solution with a pilot (Agile development)](#_9lmufq9pgcom)

[Step 4: Verify or pivot](#_b1d81ie0f5ws)

[Future States](#_m61qu5hhddnt)

[Related Policies](#_g1k4cln6529x)

[Additional Resources](#_bpy305wdt793)

[Resources for Lean development and contracting](#_l7885mxu4v4c)

[Other Lean Resources, recommended by NSF I-Corps:](#_iiczjyveyspd)

# Overview

The use of “Lean Startup” processes is one particular methodology that can be adapted and applied to bring tangible impact a broad array of missions and agency-specific contexts. Pioneered by educator and serial entrepreneur Steve Blank, “Lean” is a conceptual framework for innovation, both as a matter of process improvement and of culture change. It’s a set of tools and a language for improving the effectiveness and efficiency of problem-solving that can be successfully applied to corporations and the government alike.

The idea of a “blueprint for innovation” might sound paradoxical at first. But those most familiar with Lean Startup have called it the “**scientific method for evidence-based innovation**” because of its structured, testable principles. [Andrea Kates] It has an established track record in producing improved outcomes in both the private and public sector. And philosophically, the concepts are deeply aligned with the drive to infuse evidence-based decisionmaking into government and the tiered approach of piloting, testing, and scaling up promising solutions. [LINK to EBP content here]]

## Why Lean and Lean Startup?

A startup is not just a place filled with twenty-somethings in Silicon Valley, observes Eric Ries, the author of the seminal book “[The Lean Startup](http://theleanstartup.com/book).” Rather, a startup is any“*human institution* designed to *deliver a new product or service* under conditions of *extreme uncertainty***.**” The concept has little to do with the size of an organization and its sector or industry. [[Startup Lessons Learned](http://www.slideshare.net/startuplessonslearned/2009-09-08-the-lean-startup-gov-20-summit-edition/14-Product_Development_at_Lean_Startupbr)] The term “startup” is instead a shorthand descriptor for a way of way of working that uses hypothesis-driven, incremental steps with “build, measure, learn” feedback loops to continually create improvements. [[crosslink OODA content below]]

Lean methodologies are smaller tactical pieces to the larger challenge of realizing the creation of spaces and structures that permit innovation in agencies and departments. An organization can cover all its prerequisites for effective change – proper team structure, strong personnel, clear mission strategy, and a culture conducive to change – yet these are only raw materials, analogous to kindling, wood, and flint. Where does the spark for transformative innovation come from? Lean can provide the structure for “converting the raw materials of innovation into real-world breakthrough success.” (Eric Ries, p. 27)

While the public sector is by no means a startup company, adopting effective Lean techniques can:

* Break the status quo and overcome obstacles with effective change management processes
* Build an entrepreneurial mindset and agency culture that’s responsive to stakeholders by design
* Generate new ideas for improvement and build capacity for translating ideas into action

## How Lean & Lean Startup are Applied

At their core, Lean methods are about applying a collaborative, team-based approach to accelerate finding solutions to problems. The mindset stresses the importance of challenging assumptions and reacting quickly to new information, using hypothesis development and testing as part of “customer discovery.” With its emphasis on the end-user, it has considerable overlap with human centered-design principles. [[LINK to HCD content]] Lean seeks a problem, then builds and iterates a solution. These principles can be applied to a very broad range of use cases; it’s not just for launching a business. Lean can be brought to bear in a range from activities, including program creation and management, procurement, and grantmaking. [LINK to further elaboration in D3]

The approach offers a way for agencies and departments to deeply understand the problems and needs of their beneficiaries and stakeholders. Only by understanding all the stakeholders, deployment issues, costs, resources, and ultimate mission value, can agencies then rapidly iterate solutions while searching for “product-market fit” (a solution that’s best aligned to the needs of stakeholders). Dean Chang notes, “You have to figure out your customer segment and value proposition. That core principle translates everywhere. That works at HHS, that works at NSF, and I-Corps -- it translates everywhere, even if sometimes you need to change up the vocabulary a little bit.”

# Benefits of Lean & Lean Startup

Any agency is capable of reaping the benefits of startup methods and culture in its own work. A startup culture is a valuable asset for Federal agencies to develop – not for the sake of following hyped trends, but because certain methods and ways of working help all levels of the civil service to be better problem-solvers and to be more nimble and effective in pursuing their mission. In recent years some notable ‘startup’ agencies spun up, including [18F](https://18f.gsa.gov/), [United States Digital Service](https://www.usds.gov/), and the [Consumer Financial Protection Bureau](http://www.consumerfinance.gov/). Their early results demonstrate the value of incorporating some of the best private sector thinking on innovation into their public sector missions -- and their takeaways are applicable to a much broader range of agencies.

## Benefits of Using this Mindset

Lean Startup thinking is a broadly and deeply useful framework for Federal work, regardless of an agency or department’s mission focus. “Despite the methodology’s name, in the long term some of its biggest payoffs may be gained by the *large* [entities] that embrace it,” observed Steve Blank [[Harvard Business Review 2013](https://hbr.org/2013/05/why-the-lean-start-up-changes-everything/ar/1)]. By prototyping approaches that are responsive to stakeholder needs and incorporating feedback from user experiences, agencies can “fail fast” when experimenting with new programs and scale-up only the strongest and most effective ideas. **[**[**NTSC 2012 memo**](https://www.whitehouse.gov/sites/default/files/microsites/ostp/openinnovatortoolkit_nstcmemo.pdf)**]** Entrepreneurial thinking is a directly relevant skillset for program managers; “Entrepreneurship is a kind of management,” notes Ries.

Lean’s theory of change has also been validated in the marketplace, and investors (e.g., Venture Capital and Angel firms) are beginning to adopt this framework to evaluate the Investment Readiness Level of a business, akin to the way the Technology Readiness Level framework is used to evaluate the maturity of a developing technology. [Interview with Marc Wynne]

# How to Implement Lean & Lean Startup

Because Lean Startup represents a framework for bring ordering to innovative problem-solving, the principles are applicable to a very broad range of use cases for agencies. It is a useful tool for the development of new programs, but its insights also have relevance for areas like procurement and grantmaking:

* **Procurement:** Lean Startup principles complement agile development methods, which are increasingly encouraged in the use of technology contracts and IT services. Agencies and officers who approach their work with a Lean mindset will find a natural fit with the best practices recommended in the [TechFAR Handbook](https://playbook.cio.gov/techfar/) and [Digital Services Playbook](https://playbook.cio.gov/), both of which encourage agencies to build agile development methods into their contracting and digital services. [[Phase II: Crosslink Innovative Contracting content]]
* **Grantmaking:** Lean thinking also complements the recent push towards diffusing evidence-based grantmaking approaches. [LINK TO V2/EBP content] Simply put, one of the core tenets is the notion of feedback on what's working and not working. Traditionally, many grant programs lack fully developed feedback loops. Several grantmaking agencies have begun evaluating how to encourage grantees to adopt Lean principles and practices through their grant process; one example is the Office of Adolescent Health within HHS, where grantees in the [Teen Pregnancy Prevention program](http://www.hhs.gov/ash/oah/oah-initiatives/teen_pregnancy/about/) have been asked to run their own ‘accelerator models’ that incorporate Lean Startup principles. Tiered grantmaking programs are structurally aligned with the idea of incorporating stakeholder feedback and iteration loops to respond to information about what’s working.

# History of Lean Startup

Steve Blank had been a practitioner for more than 20 years as a successful, serial entrepreneur when he came to reflect that everything he’d ever been told about startups was wrong. Silicon Valley had told him that startups were mini-versions of large companies, and they should follow standard business plans with five year forecasts – but he knew from his own experience that this was wrong. “We didn’t have a language, let alone a methodology, that really focused on the start-search-and-execute process,” he notes. In his time teaching, Blank also saw that business school students were missing a crucial element between the classroom theory and real-world practice. Specifically, he observed an unmet need for a framework and a language that prioritized customer interaction. It has since become an often-repeated truism that “No business plan survives first contact with customers.” (In other words, business strategies only succeed if they address what customers’ needs and wants.) [Steve Blank interview]

“Lean” was invented to fill the gap between old theory and current practice. Lean “was evangelizing very simple concepts in a conceptual framework that did not exist,” Blank notes. The three components of Lean represents the fusion of contributions from several thought leaders:

1. Business Model Design, from [Alexander Osterwalder](http://alexosterwalder.com/): *What are all the hypotheses we have?*
2. Customer Development, from [Steve Blank](https://steveblank.com/): *A formal methodology to validate the hypotheses*
3. Build-Measure-Learn, from [Eric Ries](http://www.startuplessonslearned.com/2009/04/validated-learning-about-customers.html): *Incremental and iterative engineering processes to develop solutions*

While Lean originated in the business world, some key insights are equally applicable to the public sector: No amount of careful and thoughtful advance planning can substitute for actual engagement with and feedback from a program’s stakeholders.

# How to Deploy Lean & Lean Startup

Key ingredients for deploying Lean methodologies include:

* [Reducing the organizational friction costs in experimentation](#_u7e8umptzjms)
* [Capacity building for effective implementation](#_35c3mqc4djnm)
* Openness and adaptiveness to new ways of thinking
* Strategic and creative thinking to integrate quick iteration with planning and budget cycles

## Reducing friction costs and embracing failure

Perhaps the most essential ingredient for achieving Silicon Valley results with Lean is also the toughest: Inculcating a willingness to accept and learn from failure. This is a natural tension to navigate, since for many programs, failure is not an acceptable outcome. The challenge for program managers and leadership alike is committing to processes of validated learning. This includes deliberately creating smaller-scale experiments before full deployment, when failure still means a learning opportunity to course-correct and not a fatal consequence.

## Capacity building for effective implementation

Incorporating Lean requires building up capacity – or providing the tools, training, and also an authorizing space for experimentation. It’s not enough to have high-level buy-in for agile or Lean practices, for example, without providing contracting officers with extensive support and training on what agile or Lean contracting actually means in practice.

## Openness and adaptiveness to new ways of thinking

## Strategic and creative thinking to integrate quick iteration with planning and budget cycles

# How to Apply Lean & Lean Startup Practices

Lean emphasizes rapid experimentation driven by customer insight. Its counterintuitive practices – like front-loading feedback into the discovery process – actually have the result of shortening planning cycles. As a formal method, the Lean Startup method consists of three parts:

1. The [Model Canvas](http://www.businessmodelgeneration.com/canvas/bmc) – to frame hypotheses
2. [Customer Development](http://www.amazon.com/gp/product/0984999302/ref=as_li_tf_tl?ie=UTF8&camp=1789&creative=9325&creativeASIN=0984999302&linkCode=as2&tag=wwwsteveblank-20) – to test those hypotheses in front of customers
3. Iteratively build [Minimum Viable Prototypes to maximize learning](https://steveblank.com/2015/05/06/build-measure-learn-throw-things-against-the-wall-and-see-if-they-work/) (Build, Measure, Learn)

For the public sector, the [Mission Model Canvas](https://steveblank.com/2016/02/23/the-mission-model-canvas-an-adapted-business-model-canvas-for-mission-driven-organizations/) (a variant of the [Business Model Canvas](http://www.businessmodelgeneration.com/canvas/bmc)) provides a structured process for developing a deeper understanding of the problem at hand, the challenges of deploying a solution, and the potential responses that could be used effectively. Generating ideas through the mission model canvas is the first step in the four stage-customer development process:

1. State the hypothesis and draw the mission model canvas
2. Test the problem
3. Test the solution
4. Verify or pivot

## Four Steps to Lean

* Step 1: Break down your grand vision into component parts, and sketch out your hypothesis.
* Step 2: Test the problem
* Step 3: Test the solution
* Step 4: Verify or pivot
* (Step 5: Iterate the loop as necessary)

Watch Steve Blank’s [2 minute video overview](https://videos.files.wordpress.com/6f5VMvrR/what-is-customer-discovery_dvd.mp4) of these four steps.

### Step 1: Break down your grand vision into component parts, and sketch out your hypothesis.

Use the [Mission Model canvas](https://steveblank.com/2016/02/23/the-mission-model-canvas-an-adapted-business-model-canvas-for-mission-driven-organizations/). It’s an adaptation of the business model canvas for mission-driven agencies. (Read more on the history of how the mission model canvas evolved from the well-known business model canvas, or [listen](https://soundcloud.com/clearshore/the-mission-model-canvas-an-adapted-business-model-canvas-for-mission-driven-organizations) to a 10-minute podcast on how to understand each box.)

### Step 2: Test the problem (Customer discovery)

Customer relationships can be understood as beneficiaries. How does your team get buy-in from all the beneficiaries? This includes not just recipients, but also colleagues in legal, policy, procurement, etc, whose support you may need in terms of funding, mandates, user requests, and so on. Long-term support and maintenance also has to be bought into by the sponsoring organizations. Using the customer discovery process helps to identify the most critical stakeholders to get buy-in from. ([Acumen’s 10 tips for customer discovery in the social impact sector](http://plusacumen.org/blog/10-tips-for-customer-discovery-in-the-social-impact-sector/) also has concrete tips applicable to Federal customer discovery work.)

### Step 3: Test the solution with a pilot (Agile development)

First, establish what constitutes a successful deployment for your program or operating context. Next, run an experiment, likely a small scale pilot (think “minimum viable product “).

### Step 4: Verify or pivot

Step back and evaluate feedback received on the pilot. Do you people agree that you’re solving a high value problem? Do you understand the mission model adequately to move into execution and implementation? Decide whether support exists for further iteration on the piloted approach or if course correction is necessary.

# Future States

TBD

# Related Policies

[OMB, 2010 guidance on social media outreach](https://www.whitehouse.gov/sites/default/files/omb/assets/inforeg/SocialMediaGuidance_04072010.pdf) (Relevant for customer/stakeholder discovery by agencies)

# Additional Resources

* [Why the Lean Startup Changes Everything](https://hbr.org/2013/05/why-the-lean-start-up-changes-everything/ar/1) – Harvard Business Review, May 2013
* [The Inventure Cycle](http://www.inc.com/steve-blank/the-inventure-cycle.html)
* [Startup Lessons Learned: Slide Deck from Eric Ries on Lean Gov 2.0](http://www.slideshare.net/startuplessonslearned/2009-09-08-the-lean-startup-gov-20-summit-edition)
* Steve Blank’s [Tools and Blogs for Entrepreneurs](http://steveblank.com/tools-and-blogs-for-entrepreneurs/).
* [Stanford University’s Entrepreneurship Corner](http://ecorner.stanford.edu/index.html) offers 2000 free videos and podcasts, featuring entrepreneurship and innovation thought leaders

## Resources for Lean development and contracting

* [Digital Services Playbook](http://playbook.cio.gov/) offers private sector best practices to help agencies successfully deliver digital services.
* [TechFAR Playbook](https://playbook.cio.gov/techfar/) highlights flexibilities in the Federal Acquisition Regulation (FAR) that can offers guidance on working with contractors in an iterative, customer-driven software development process,

[The Value of Strategic Partnerships](https://www.youtube.com/watch?v=6NJMxyCh-2o)

“Strong strategic partnerships can be the difference between those technologies that only achieve success in the lab and those that actually break into the marketplace. Two ARPA-E awardees—AutoGrid and APEI—have forged strategic partnerships that have positioned their technologies to achieve major success in the market. This video features remarks from ARPA-E Technology-to-Market Advisor Josh Gould and interviews with technologists at AutoGrid and APEI, who each tell the story of how their company leveraged relationships with strategic partners to broaden their customer base and bring their technology to life.”

## Other Lean Resources, recommended by NSF I-Corps:

[Blank, Steven](http://www.nsf.gov/cgi-bin/good-bye?http://steveblank.com/). *The Four Steps to the Epiphany*. 2005.

Steve Blank's book provides step-by-step strategy for any new company or product, including organizing sales, marketing, and product development.

[Blank, Steven and Bob Dorf](http://www.nsf.gov/cgi-bin/good-bye?http://steveblank.com). *The Startup Owner's Manual*. 2012.

This books takes companies through each stage of the customer development process.

[Constable, Giff](http://www.nsf.gov/cgi-bin/good-bye?http://giffconstable.com/2011/07/12-tips-for-customer-development-interviews-revised/). *12 Tips for Customer Development Interviews (revised)*. 2011.

Learn how to conduct meaningful interviews and interpret what you hear.

[Kim, W. Chan and Renee Mauborgne](http://www.nsf.gov/cgi-bin/good-bye?http://www.blueoceanstrategy.com/). *The Blue Ocean Strategy*. 2005.

The Blue Ocean Strategy and book teach companies how to create and capture untapped markets.

[Livingston, Jessica](http://www.nsf.gov/cgi-bin/good-bye?http://www.foundersatwork.com/). *Founders at Work: Stories of Startups' Early Days*. 2007.

Through interviews with founders of famous technology companies, this book demonstrates what makes a startup successful.

[National Research Council](http://www.nsf.gov/cgi-bin/good-bye?http://www.nap.edu/catalog.php?record_id=12174). *Assessing the Impacts of Changes in the Information Technology R&D Ecosystem: Retaining Leadership in an Increasingly Global Environment*. 2009.

Chapter 1 offers a useful description of the innovation ecosystem for the information technology sector.

[Osterwalder, Alex, and Yves Pigneur](http://www.nsf.gov/cgi-bin/good-bye?http://www.businessmodelgeneration.com/). *Business Model Generation*. 2010.

This handbook teaches businesses how to create, examine, refine, and implement successful business models.

[Pincus, Mark](http://www.nsf.gov/cgi-bin/good-bye?http://ecorner.stanford.edu/authorMaterialInfo.html?mid=2313). *Quick and Frequent Product Testing and Assessment*. 2009.

Mark Pincus discusses the rapid product testing and assessment his company uses to gauge consumer interest and to test and improve multiple products simultaneously.