Unit 5

Learn StartUp in Software Development

5 hrs.

Concept of lean startup methodology including:

- Minimum viable product
- Rapid prototyping and
- Customer development in technology.

Introduction to Lean Startup Methodology

What is Lean Startup?

A methodology for developing businesses and products by shortening product development cycles and rapidly discovering if a proposed business model is viable.

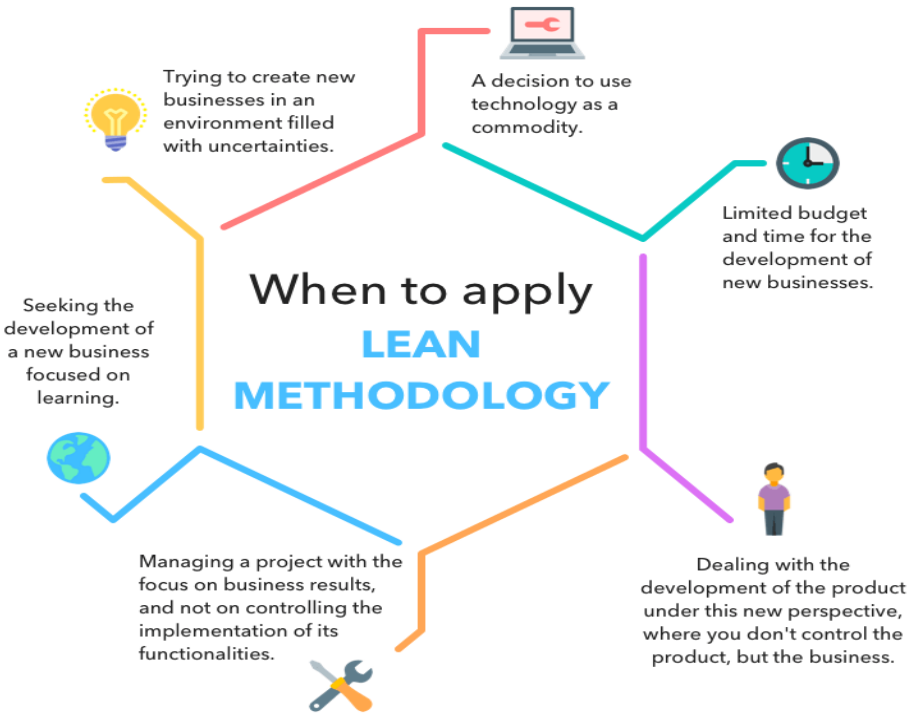
Origin:

- Coined by Eric Ries in *The Lean Startup* (2011).
- Influenced by Steve Blank’s Customer Development process.

Core Focus:

- Validated learning: learning what customers *actually* want through experiments, not assumptions.
- Avoids “build it and they will come” mindset.
- Encourages *building the right product*, not just *building the product right*.

Example: Dropbox famously launched with a simple explainer video before building the full product, using signups to validate interest.


When to apply
LEAN
METHODOLOGY
Trying to create new businesses in an environment filled with uncertainties.
A decision to use technology as a commodity.
Limited budget and time for the development of new businesses.
Seeking the development of a new business focused on learning.
Managing a project with the focus on business results, and not on controlling the implementation of its functionalities.
Dealing with the development of the product under this new perspective, where you don't control the product, but the business.

Core Principles

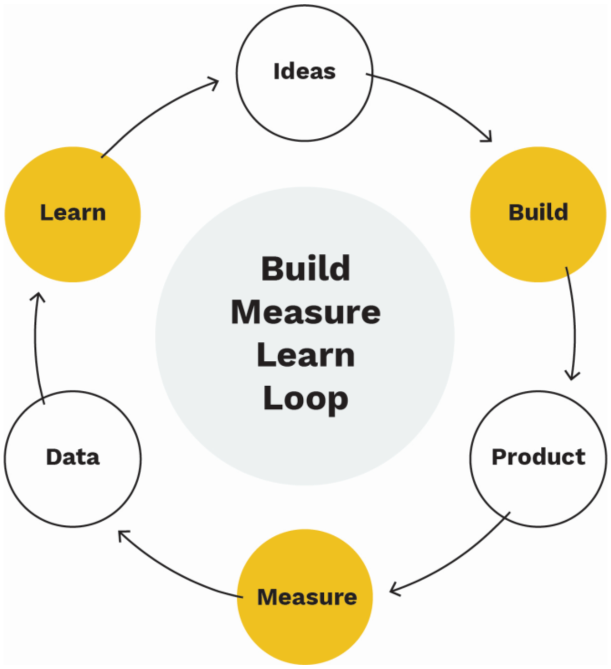
1. Entrepreneurs are everywhere
   - Startups aren’t just in garages; they can exist inside big companies, NGOs, or even government projects.
   - Example: Gmail was developed inside Google as a small team’s “startup” project.
2. Entrepreneurship is management
   - Startups need a different kind of management—focused on uncertainty, experimentation, and adaptability.
   - Unlike traditional corporate management, where processes are stable, startups deal with unknowns.
3. Validated Learning
   - Progress isn’t measured in *features shipped* but in knowledge gained about what works.
   - Example: Zappos founder tested online shoe demand by posting photos of shoes from local stores before building inventory.
4. Build-Measure-Learn Feedback Loop
   - The *core cycle* where teams build a minimum viable product (MVP), measure how it performs, learn from the results, and repeat.
5. Innovation Accounting

  - A system for measuring progress in conditions of uncertainty, using learning milestones instead of revenue milestones at early stages.
  - Example: Tracking customer activation rates instead of just downloads.

Why Lean Startup in Software?

- Iterative & Flexible:
  - Software can be updated, tested, and re-released quickly compared to physical products.
  - Example: Facebook can deploy hundreds of changes per day.
- Lower Cost of Changes:
  - No need for retooling factories or disposing of unsold stock—changes are code-based.
- Ability to Collect Real-time User Feedback:
  - Analytics, A/B testing, and in-app surveys provide instant insights.
  - Example: Netflix tests thumbnails, algorithms, and features live on small audience segments.

The Build-Measure-Learn Loop Diagram



Circular flow representing continuous iteration.

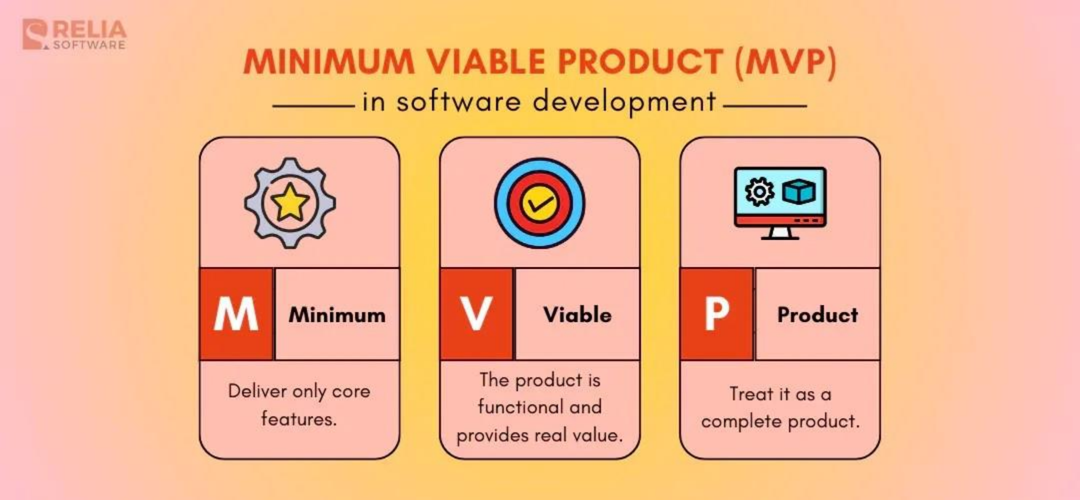
Step Breakdown:

1. Build: Create an MVP (minimum viable product) or experiment.
    - Example: Slack built a simple chat tool for their own gaming team.
2. Measure: Use metrics to test assumptions.
    - Example: Track how many team members actually used the chat tool.
3. Learn: Decide whether to pivot (change direction) or persevere (continue on the same path).
    - Example: Slack pivoted from a game studio to a full communication platform after realizing the chat tool had broader appeal.

Minimum Viable Product (MVP)

1. Definitions:

- MVP stands for Minimum Viable Product.
- It's the most basic, stripped-down version of a product that still delivers its core value to customers.
- The goal is not to create a perfect product—it's to test core business or product assumptions with the least possible time, effort, and cost.


RELIA SOFTWARE
MINIMUM VIABLE PRODUCT (MVP)
in software development
M
Minimum
Deliver only core features.
V
Viable
The product is functional and provides real value.
P
Product
Treat it as a complete product.

2. Purpose of MVP in Software

a) Test assumptions early

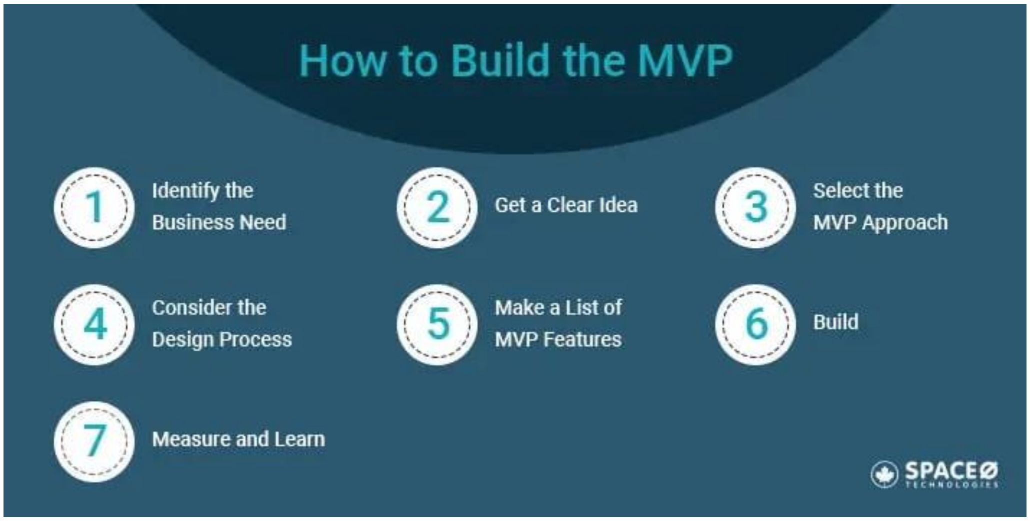
- Before writing thousands of lines of code or investing heavily, MVP helps confirm:
    - Is there a real need for the product?
    - Are people willing to use (or pay for) it?
- If the assumption is wrong, you can pivot before losing resources.
- Example: Before Dropbox was built, they released a short explainer video to see if people were interested. The sign-ups proved demand without building the actual software.

b) Save time and money

- Full development can take months or years; MVP can be done in weeks.
- Avoids building features that nobody needs or values.
- Example: Instead of developing a full fitness app with tracking, social feed, and meal plans, first launch a simple workout timer to see if people engage.

c) Avoid building unnecessary features

- Without validation, teams often add “cool” features that don’t solve core problems.
- MVP focuses on the core function only—nothing extra.
- This keeps the product clean and user-focused.



How to Build the MVP

1 Identify the Business Need

2 Get a Clear Idea

3 Select the MVP Approach

4 Consider the Design Process

5 Make a List of MVP Features

6 Build

7 Measure and Learn

3. Types of MVPs

a) Concierge MVP

- You provide the product or service manually—no automation yet.
- Purpose: Test demand before coding.
- Example: Imagine testing a food delivery app idea by personally taking orders via WhatsApp and delivering food yourself before building the app.

b) Wizard of Oz MVP

- The front-end looks fully automated, but everything behind the scenes is manual.
- Users believe they’re interacting with a finished product.

- Example: Zappos founder took pictures of shoes from local stores and posted them online. When someone ordered, he bought the shoes from the store and shipped them. Looked like an e-commerce platform, but it was manual in the background.

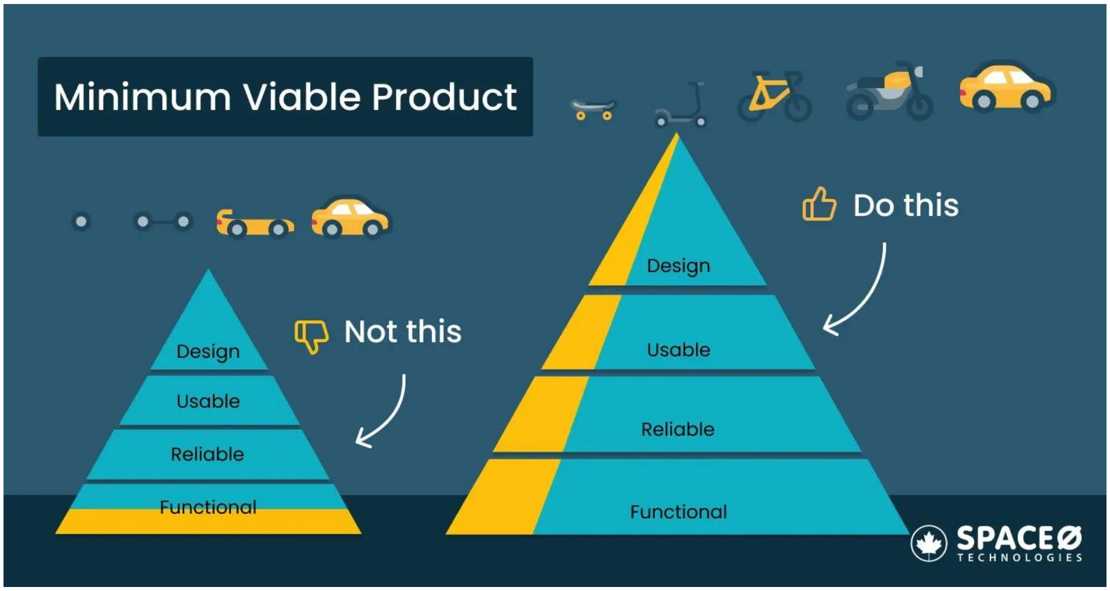
c) Landing Page MVP

- A simple webpage explaining the product, with a call-to-action like "Sign up for updates" or "Join the beta".
- Measures interest without building the product.
- Example: Dropbox's early landing page collected emails from thousands of interested users.

d) Single-Feature MVP

- Instead of building a full platform, launch only the most essential feature to test its usefulness.
- Example: Twitter started only as a microblogging platform where you could post short updates—no hashtags, images, or videos at first.

4. MVP Pyramid



Think of MVP development as climbing a pyramid:

1. Core Function → The product's main value (e.g., Airbnb letting you list or book rooms).
2. Usability → Making it easy and intuitive for people to use (simple UI, clear navigation).

3. Design Polish → Adding visual appeal, branding, and extra refinements.

Rule:
You can launch at Core Function + Basic Usability without waiting for perfect design.

5. Real-World Examples

Airbnb MVP

- Founders wanted to test if people would rent out their homes to strangers.
- What they did: Built a basic website with photos of their apartment during a local conference and offered lodging.
- Learning: People were willing to pay for short-term stays in private homes—proof of concept without a global platform.

Buffer MVP

- Buffer is a social media scheduling tool.
- What they did: Created a simple landing page explaining the product with a "Plans & Pricing" button. Clicking it showed a "Join the beta" form.
- Learning: Sign-ups showed demand before writing the backend software.

Rapid Prototyping in Software Development

Rapid prototyping is the process of quickly creating simplified, interactive models of a product to test ideas, gather feedback, and iterate before committing to full-scale development.

Key Characteristics:

- Speed: Built in hours/days, not months.
- Low Cost: Uses minimal resources.
- Testable: Allows real user interaction.
- Iterative: Continuously refined based on feedback.

2. Why Rapid Prototyping Works in Lean Startup

The Lean Startup methodology emphasizes validated learning over perfection. Rapid prototyping aligns perfectly because:

A. Faster Feedback Loops

- Instead of waiting months for a finished product, startups test assumptions early.
- Example: Dropbox created a simple video demo (non-functional) to validate demand before coding.

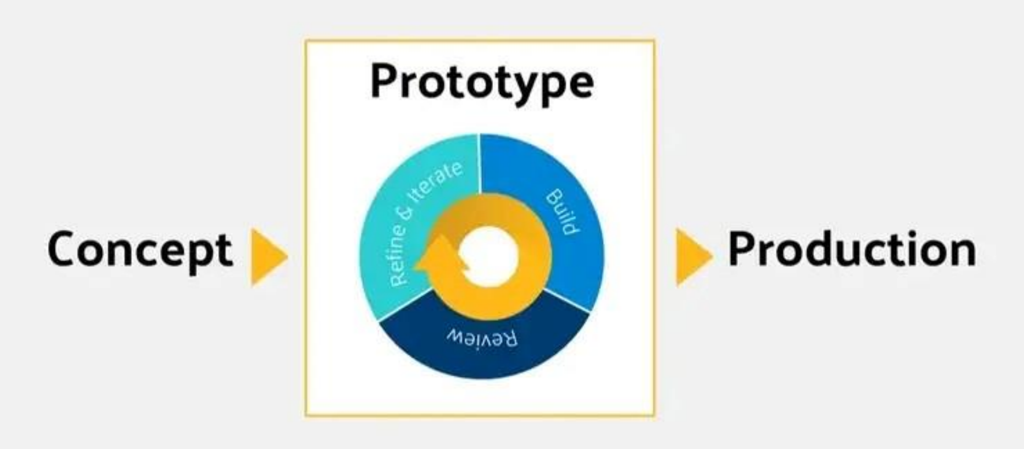
B. Reduces Costly Mistakes

- Identifies flaws before heavy investment.
- Example: Google Glass failed partly because it skipped real-world prototyping, leading to poor market fit.

C. Encourages Experimentation

- Teams pivot quickly based on data, not guesses.
- Example: Slack began as a gaming company but pivoted to messaging after prototyping internal tools.

4. Stages of Rapid Prototyping



Stage 1: Conceptual (Low-Fidelity)

- Goal: Visualize the core idea.
- Examples:
  - Sketches on paper (e.g., Airbnb's first drawings of their booking flow).
  - Wireframes (basic layouts using tools like Balsamiq).

Stage 2: Interactive (Mid-Fidelity)

- Goal: Simulate user interaction.
- Examples:
  - Clickable Figma/Sketch mockups (e.g., Uber's early app flow tested with drivers).
  - InVision prototypes (no coding, just linked screens).

Stage 3: Functional (High-Fidelity)

- Goal: Test a working version with real logic.
- Examples:
  - No-code tools (Bubble, Glide) → A founder builds a fake "Shopify" in a week to test demand.
  - MVP (Minimum Viable Product) → Twitter started as a barebones status-update tool.

4. Tools for Rapid Prototyping

Purpose	Tools
UI Mockups	Figma, Sketch, Adobe XD
Clickable Prototypes	InVision, Marvel, Proto.io
No-Code Apps	Bubble, Glide, Webflow
3D/Physical Products	3D Printing (e.g., Tesla’s early car models)

5. Real-World Examples

A. Instagram’s Pivot

- Original Idea: "Burbn" (a location-based check-in app with photo-sharing).
- Prototyping Insight: Users loved only the photo feature.
- Pivot: Dropped everything else → became Instagram.

B. Zappos’ Fake Door Test

- Hypothesis: "Will people buy shoes online?"
- Prototype: Founder took photos of local store shoes, listed them online, and fulfilled orders manually.
- Result: Validated demand without inventory.

C. Dropbox’s Video Demo

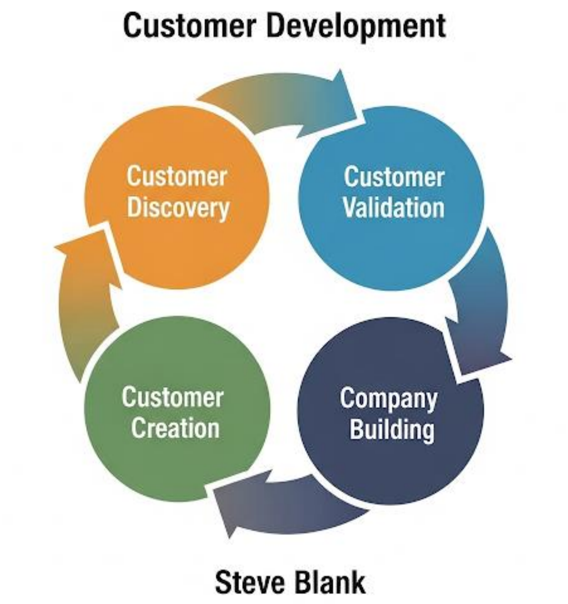
- Problem: Explaining cloud storage was hard.
- Prototype: A fake demo video showing how it would work.
- Result: Sign-ups skyrocketed, proving demand.

Customer Development in Technology

Customer Development is a structured methodology used to identify, validate, and understand customer needs before fully developing a product or solution. Instead of building a product first and then seeking customers (a traditional approach), this method focuses on learning from customers early to reduce the risk of failure.

- Key Idea: "Get out of the building" (Steve Blank) – talk to real users before investing heavily in development.
- Goal: Ensure that the product solves a real problem for a specific customer segment.

2. The Four Steps of Customer Development (Steve Blank)



Step 1: Customer Discovery

- Purpose: Identify who the customers are and what problems they face.
- Methods:
  - Interviews (1-on-1 discussions to uncover pain points).
  - Surveys (quantitative data on user preferences).
  - Observation (watching how users interact with existing solutions).
- Example: *Gmail's Beta Phase*
  - Google released Gmail as an invite-only beta to gather feedback.
  - They tested features like storage capacity, search, and threading before a full launch.

Step 2: Customer Validation

- Purpose: Confirm that customers are willing to pay, sign up, or commit to the solution.
- Methods:
  - Pricing tests (Do users see enough value to pay?).
  - Early sign-ups (Waitlists, pre-orders).
  - Pilot programs (Limited free trials to gauge engagement).
- Example: *Spotify's Freemium Model*
  - Spotify tested free limited accounts before introducing paid subscriptions.
  - This validated that users were willing to upgrade for premium features.

Step 3: Customer Creation

- Purpose: Scale demand by creating a market (beyond early adopters).
- Methods:
  - Marketing campaigns (targeted ads, PR).
  - Referral programs (Dropbox's "invite friends for extra storage").
  - Partnerships (integrating with other platforms).

Step 4: Company Building

- Purpose: Transition from startup to a scalable business.
- Methods:
    - Hiring specialized teams (sales, marketing, support).
    - Process optimization (scaling operations efficiently).
    - Expanding product lines (based on validated customer needs).

Why Customer Development Matters in Technology

- Avoids wasted resources (no building products nobody wants).
- Reduces failure risk by validating assumptions early.
- Helps pivot faster if initial hypotheses are wrong.

Final Thought: Customer Development is not a one-time process—it's iterative. Even after launch, continuous feedback ensures the product evolves with customer needs.

Introduction to Lean Startup in Software Development

1. Concept

The Lean Startup methodology, introduced by Eric Ries, emphasizes validated learning, rapid experimentation, and iterative product releases to reduce waste and increase the chances of success.

In software projects, integrating Lean Startup means focusing on customer feedback early and often, rather than building a full product before testing assumptions.

2. Lean Startup Workflow in Software Development

Step 1: Identify the Problem

Before writing code, clearly define the problem you're solving.

- Example:
  - Problem: Remote teams struggle with communication due to scattered tools (email, chat, files).
  - Solution Hypothesis: A unified messaging platform will improve team productivity.

Step 2: Create a Minimum Viable Product (MVP)

An MVP is the simplest version of your product that allows you to test your hypothesis.

- Example:
  - Instead of building a full-featured chat app, start with basic messaging + file sharing.
  - Tools like landing pages, mockups, or Wizard of Oz prototypes can serve as MVPs.

Step 3: Prototype Rapidly

Use rapid prototyping to quickly test ideas without heavy development.

- Example:
  - Use Figma for UI mockups.
  - Use no-code tools (Bubble, Webflow) for quick functional prototypes.

Step 4: Validate with Real Customers

Get real user feedback before scaling.

- Example:
  - Release MVP to a small group (e.g., beta testers).
  - Measure engagement (e.g., daily active users, message frequency).

Step 5: Iterate Based on Feedback

Refine the product based on what users actually want, not assumptions.

- Example:
  - If users request video calls, prioritize that over other planned features.

3. Pivot or Persevere Decision

After validation, decide:

Pivot (Change Direction)

- When feedback shows the current approach isn't working.
- Example:
    - Slack started as a gaming company (Glitch) but pivoted to team communication after noticing their internal chat tool was more valuable.

Persevere (Keep Improving)

- When feedback confirms you're on the right track.
- Example:
    - Dropbox started with a simple video demo (MVP), validated demand, and then built the full product.

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4. Combining Lean Startup with Agile

- Agile focuses on efficient software delivery (sprints, continuous improvement).
- Lean Startup ensures you're building the right product (customer validation).

How They Work Together:

Lean Startup	Agile
Validates ideas quickly	Delivers working software in sprints
Focuses on customer feedback	Adapts to changing requirements

Lean Startup	Agile
Reduces wasted effort	Ensures high-quality development

Example:

- A startup uses Lean Startup to validate a food delivery app idea with a fake door test (landing page signups).
- Once validated, they use Agile (Scrum) to build features incrementally.