

# Software Startups

**Prof. Dr. Dirk Riehle**

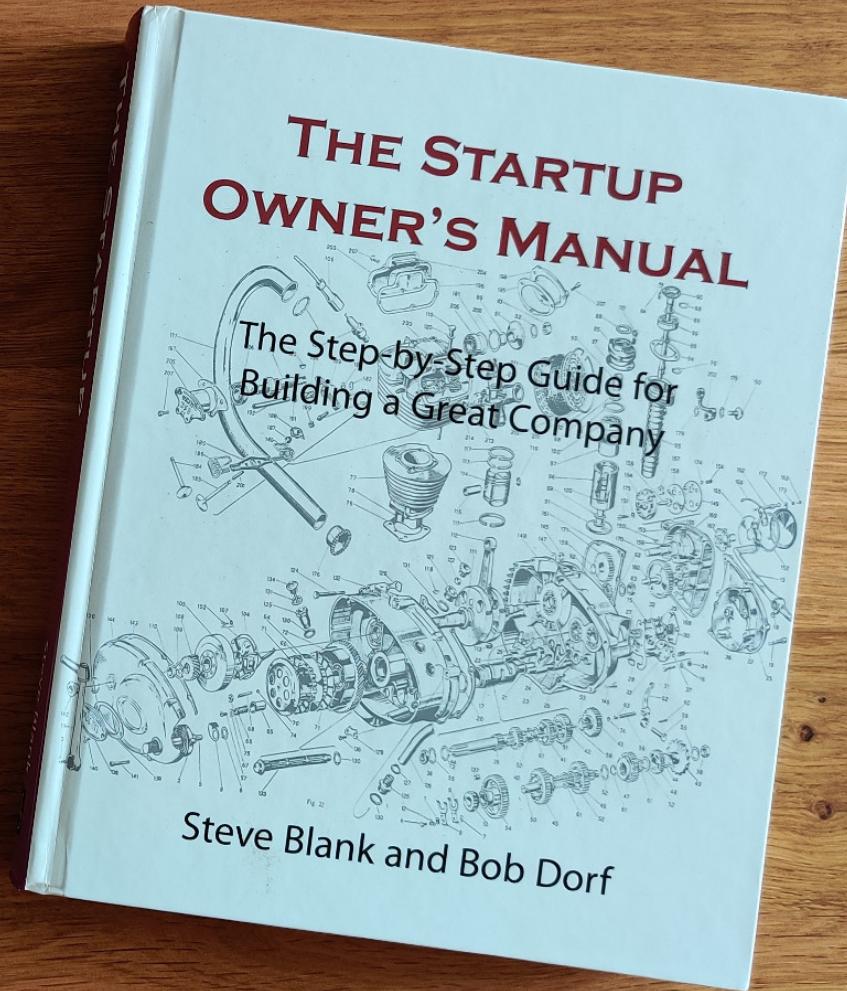
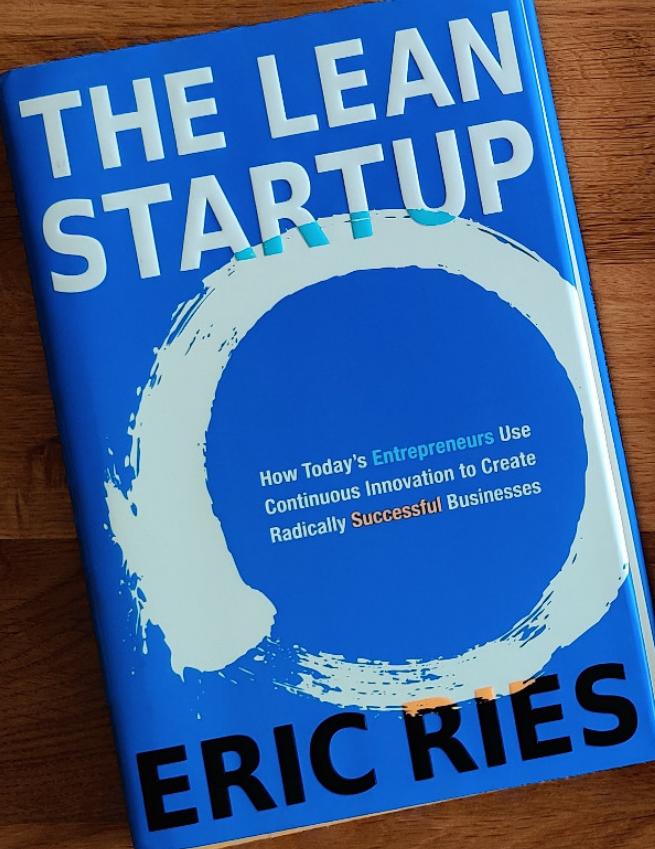
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# Agenda

1. Definition (startup)
2. The search process
3. Problem-solution fit
4. Product-market fit
5. Product-channel fit
6. Startup metrics

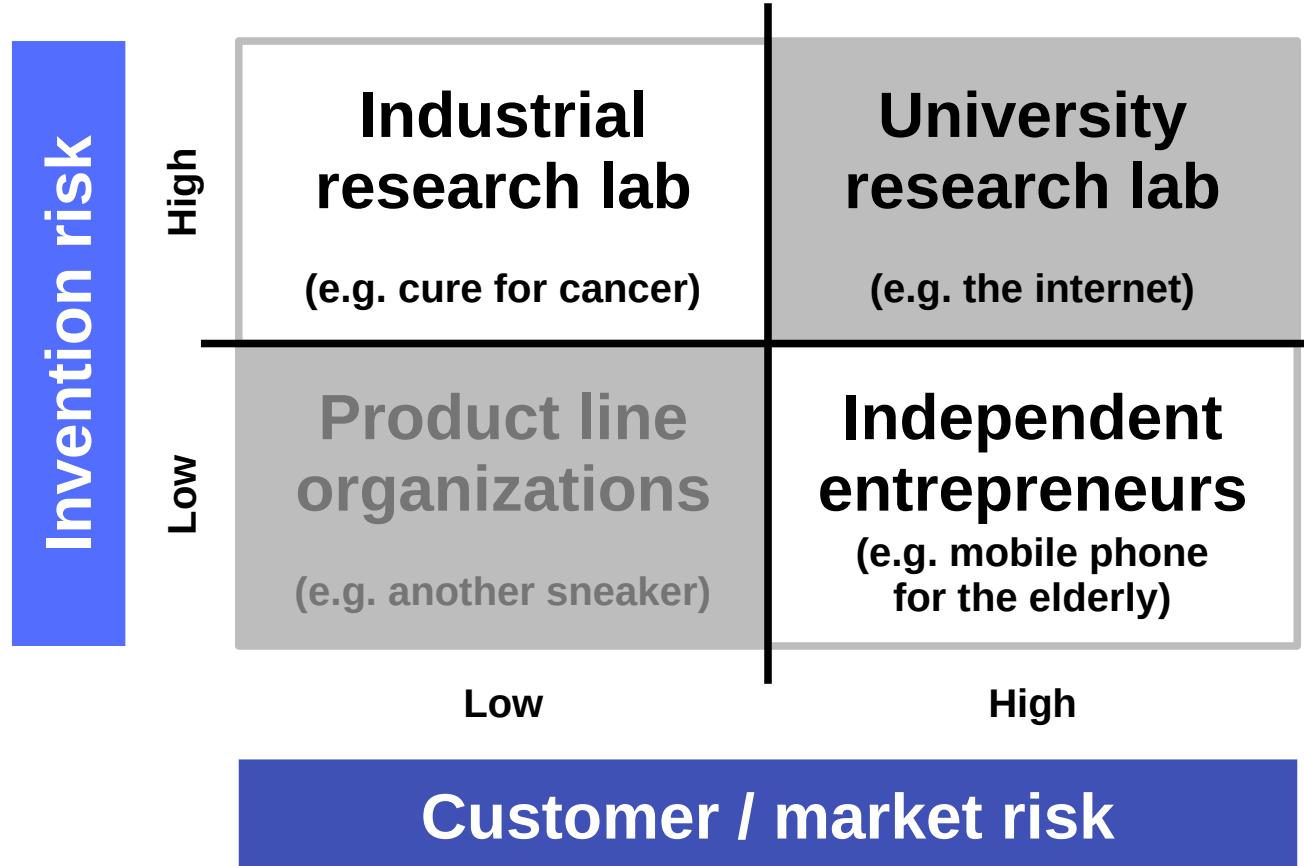


# 1. Startup Definition

# What is a Startup?

- A startup
  - Is an organization in search of a viable business model
  - Is not a small version of a large company

# Sources of Innovation and Their Risk Profiles



## 2. The Search Process

# The Road to Failure

- Because you have this great idea
  - You know what the customer wants or needs
    - You know what features satisfy the customer
  - You don't need to allow for iteration and learning
    - You can set a launch date and work backwards
    - You can already focus on execution and efficiency
  - You can bring in people from established firms
- All everyone needs to do is to execute your plan

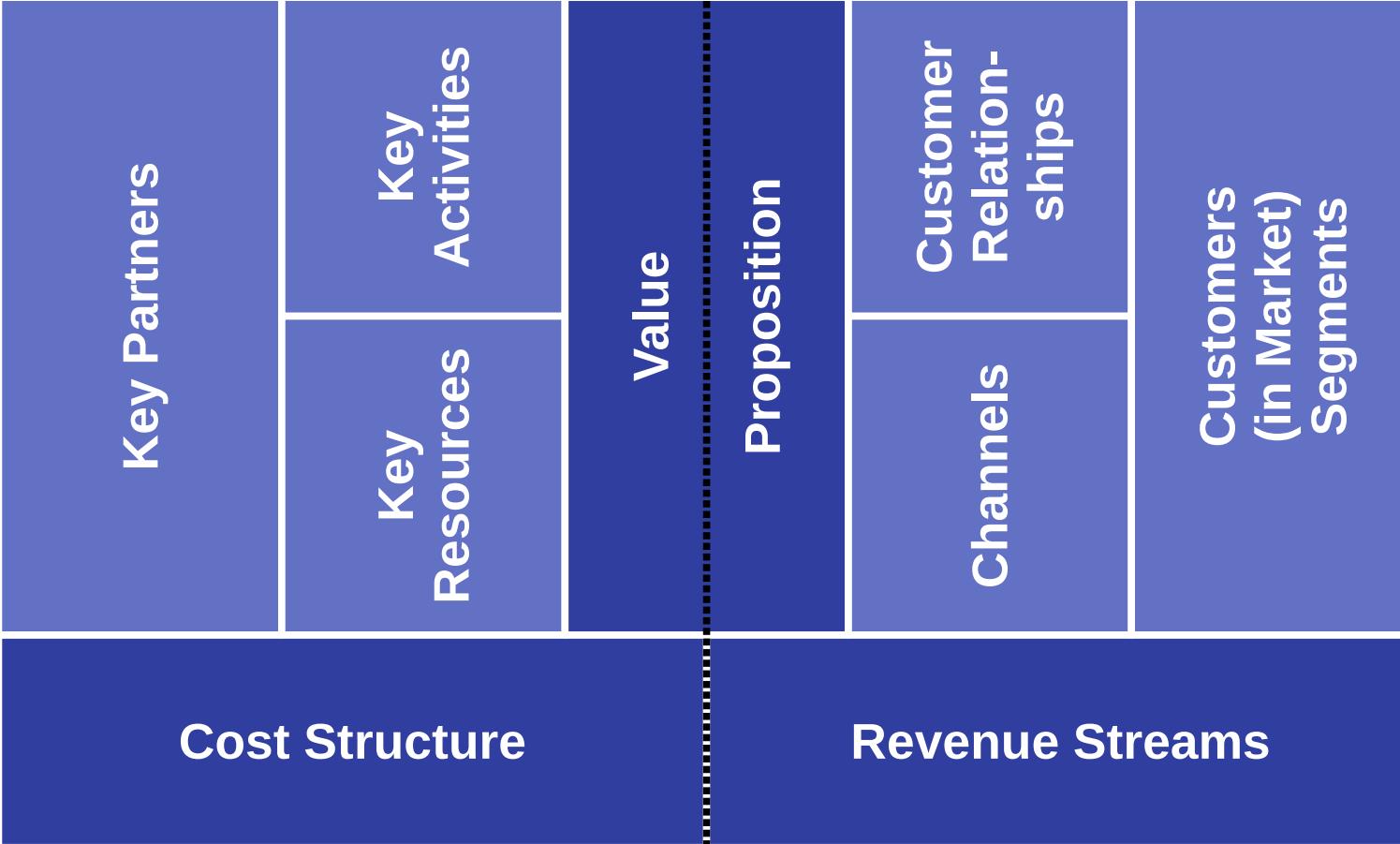
# How to Avoid Failure

- Establish and follow a structured process of incremental “validated learning” where
  - A structured process is a process of incrementally discovering your business model
  - And learning is a process of creating, testing, and evaluating hypotheses
- You therefore start with an idea, but do not assume it is true

**“There are no facts inside your building.”**  
**(Various authors.)**

# The Role of the Business Model Canvas in the Search

Value Creation



Value Capture

# The Three Challenges of the Search Process

- That the business model achieves
  1. Problem-solution fit
  2. Product-market fit
  3. Product-channel fit



# The Three Challenges Defined

- Problem-solution fit (basic fit)
  - Is reached when a value proposition matches a market segment
  - Customers want it, you can provide it, and they will pay for it
- Product-market fit (scale up)
  - Is reached when the product satisfies (“fits”) its market
  - Both # of customers and revenues are growing commensurate with market
- Product-channel fit (scale out)
  - Is reached when products efficiently (growth, throughput) reach their markets
  - Products utilize different channels, are customized for these channels

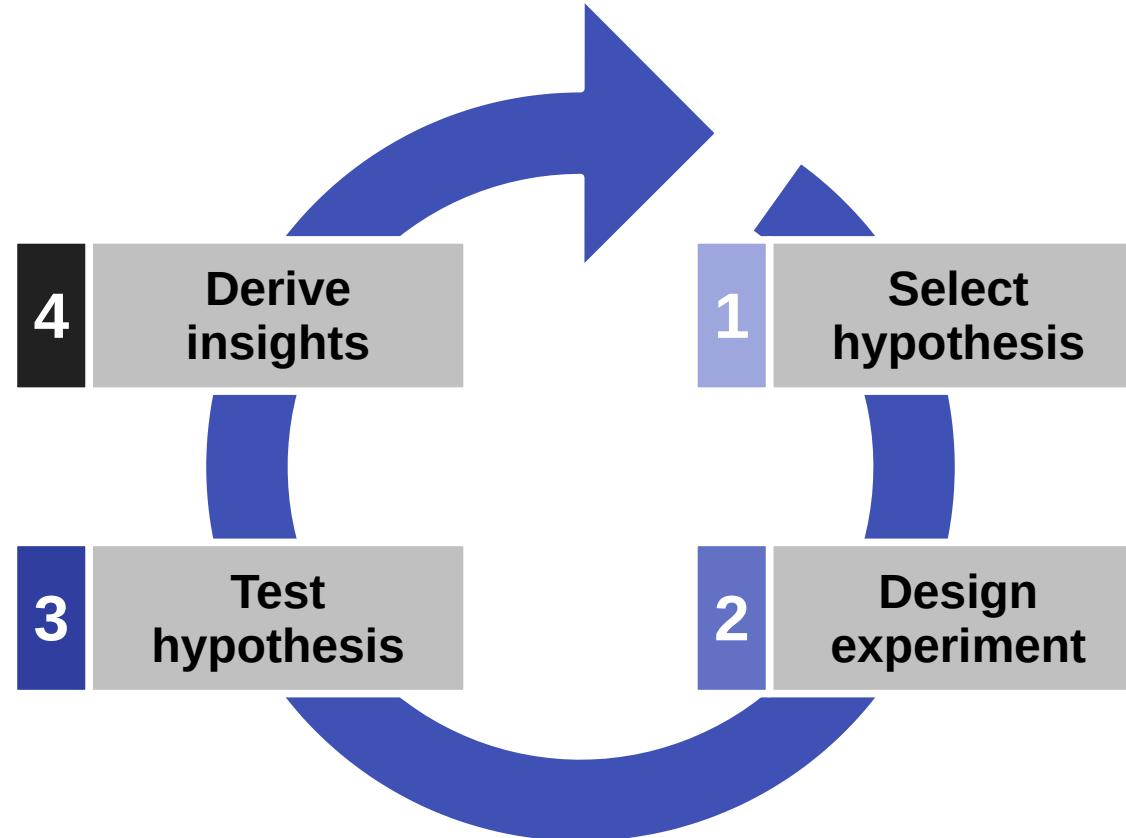
# The Two Activities in Each Challenge of the Search Process

1. Business model building
  - Creating coherent sets of hypotheses (descriptive statements) about the business
2. Business model validation
  - Testing hypotheses from the business model to gather feedback

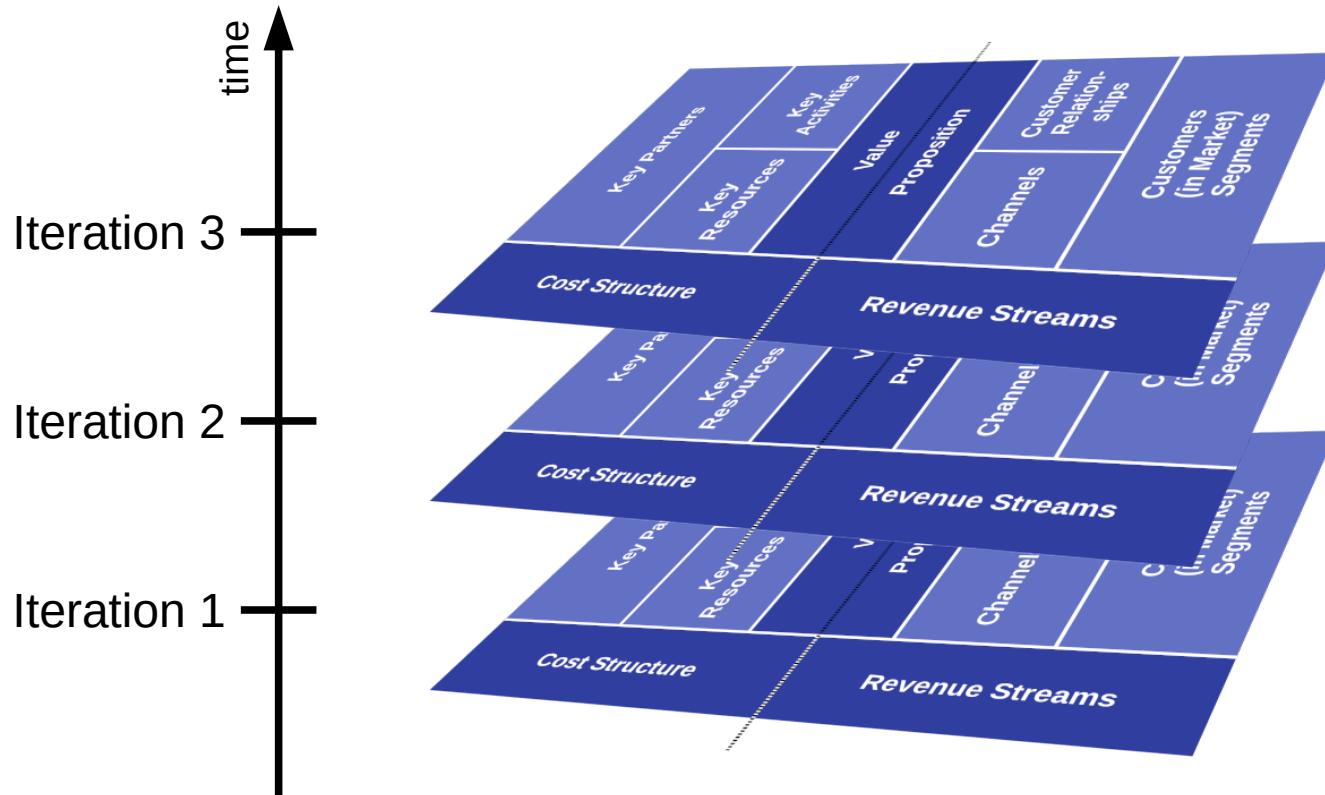
# 1. Business Model Building as Hypothesis Creation

- Create hypotheses from (initial) creative spark and (later) feedback loop
  - The creative spark provides the initial potentially disruptive ideas
  - Experimental feedback guides development and refinement

## 2. Business Model Validation Using Hypothesis Testing



# The Business Model Canvas Over Time



# Dimensions for Business Model Canvas Design

- Variants
  - You experiment with different variants of the canvas
- Markets
  - You design different models for different market
- Evolution
  - You revise the business model canvas as you learn

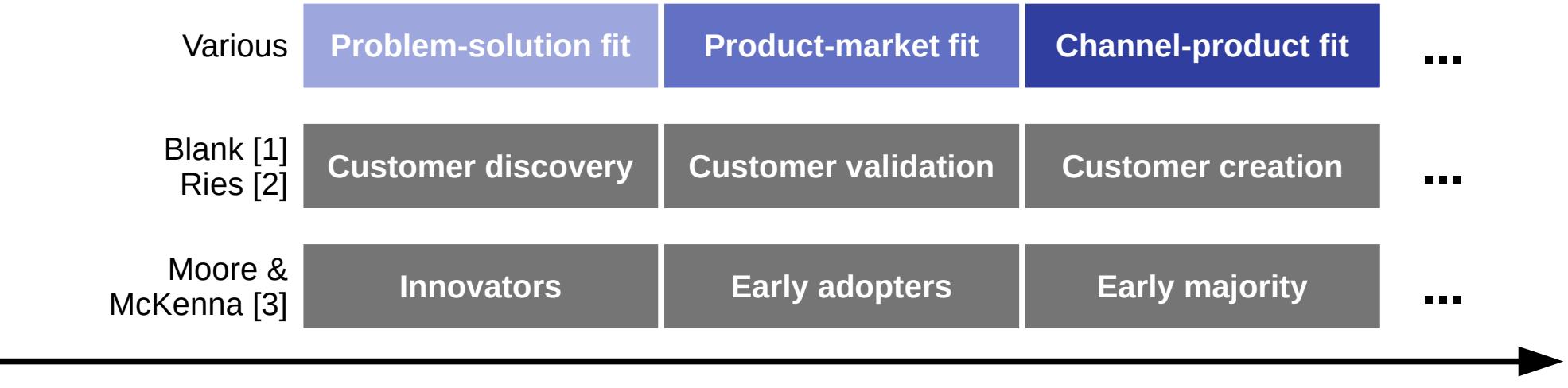
# Pivot or Proceed

- A pivot
  - Is a change of direction
    - Based on a change in the underlying assumptions (idea) of the business
    - Basically, you have been climbing the wrong hill
  - Is triggered by experimental learning
  - Is not a failure

# Benefits of the Search Approach

- Time efficient
- Resource efficient
  - Both capital and labor
- Still, an efficient search requires experience

# Model Correlations



[1] Blank, S. (2005). Four steps to the epiphany.

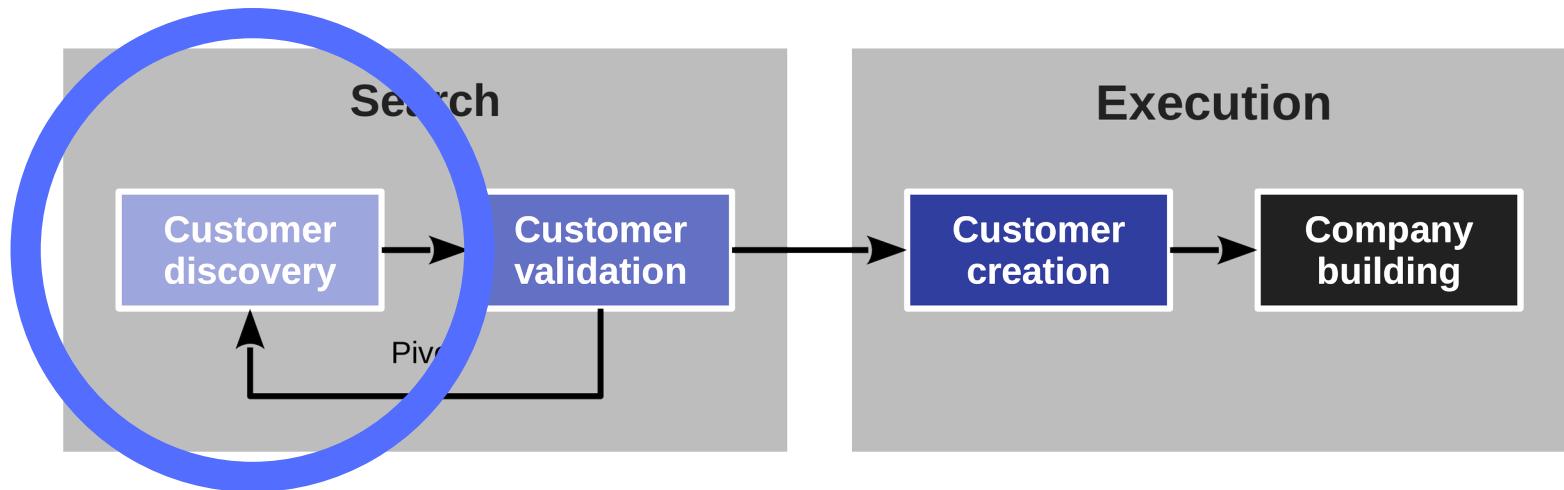
[2] Ries, E. (2011). The lean startup.

[3] Moore, G. A., & McKenna, R. (1999). Crossing the chasm.

### **3. Problem-Solution Fit**

# Finding Problem-Solution Fit with Customer Discovery

- Customer discovery is a search process that
  - Tests whether the hypothesized business model fundamentally works
- Problem / solution fit
  - Is the matching of a value proposition with a market segment
  - Customers want it, you can provide it, and they will pay for it

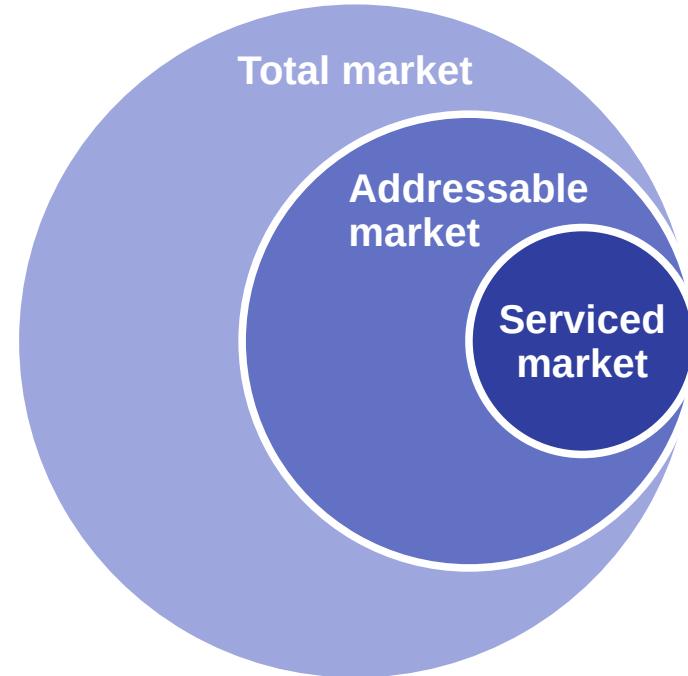


# From Product Vision to Business Model

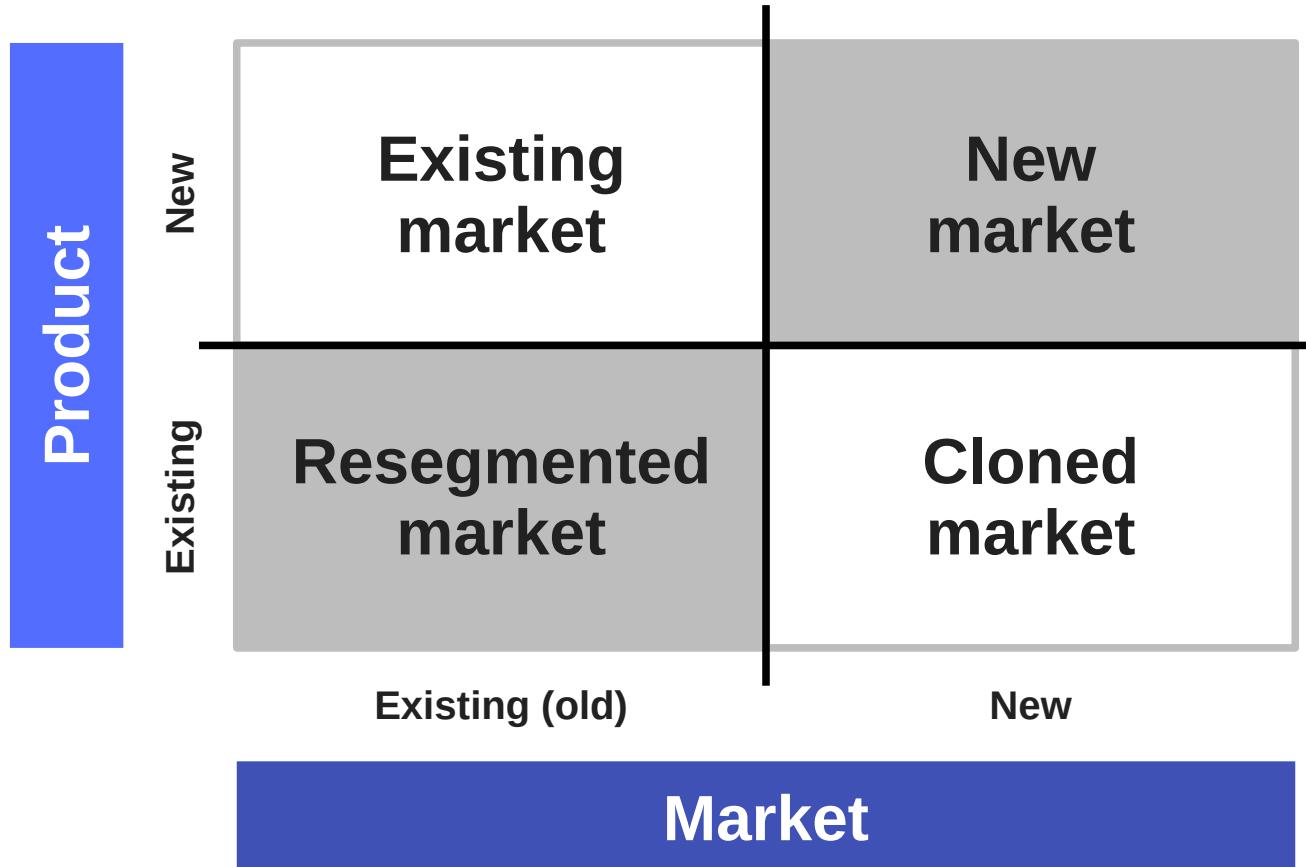
- Founders often have a product vision
  - Assumed value proposition
- But what about
  - Market segments
  - Channels
  - Customer relationships
  - Revenue streams
  - Key partners
  - Key resources
  - Key activities
  - Cost structure

# Start the Search with Market Sizing

- Start with a market size assessment
  - Too small a market
    - Makes you unfundable by venture capitalists
    - May not meet your own expectations
  - This way, you start in a good spot



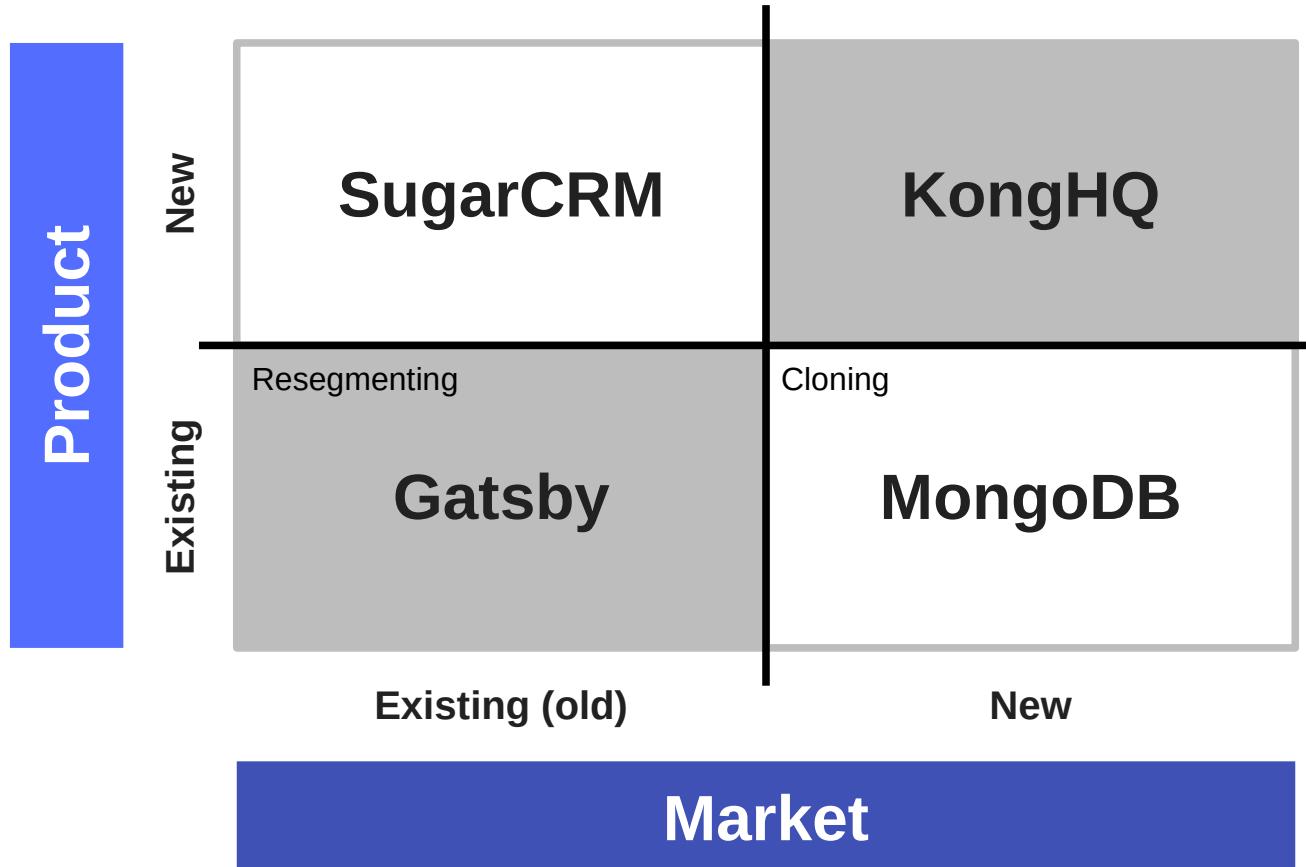
# Market Types and Business Models



# The Impact of Different Market Situations

- A new product in an existing market
  - Market is known, little uncertainty
  - Product has efficiency gains
- Resegmenting an existing market
  - Market is known, little uncertainty
  - Product focus on low-cost or niche
- A new product for a new market
  - No market yet; evangelism needed
  - Breakthrough product
- Cloning into a new market
  - Market can be reasonably guessed
  - Product is well understood

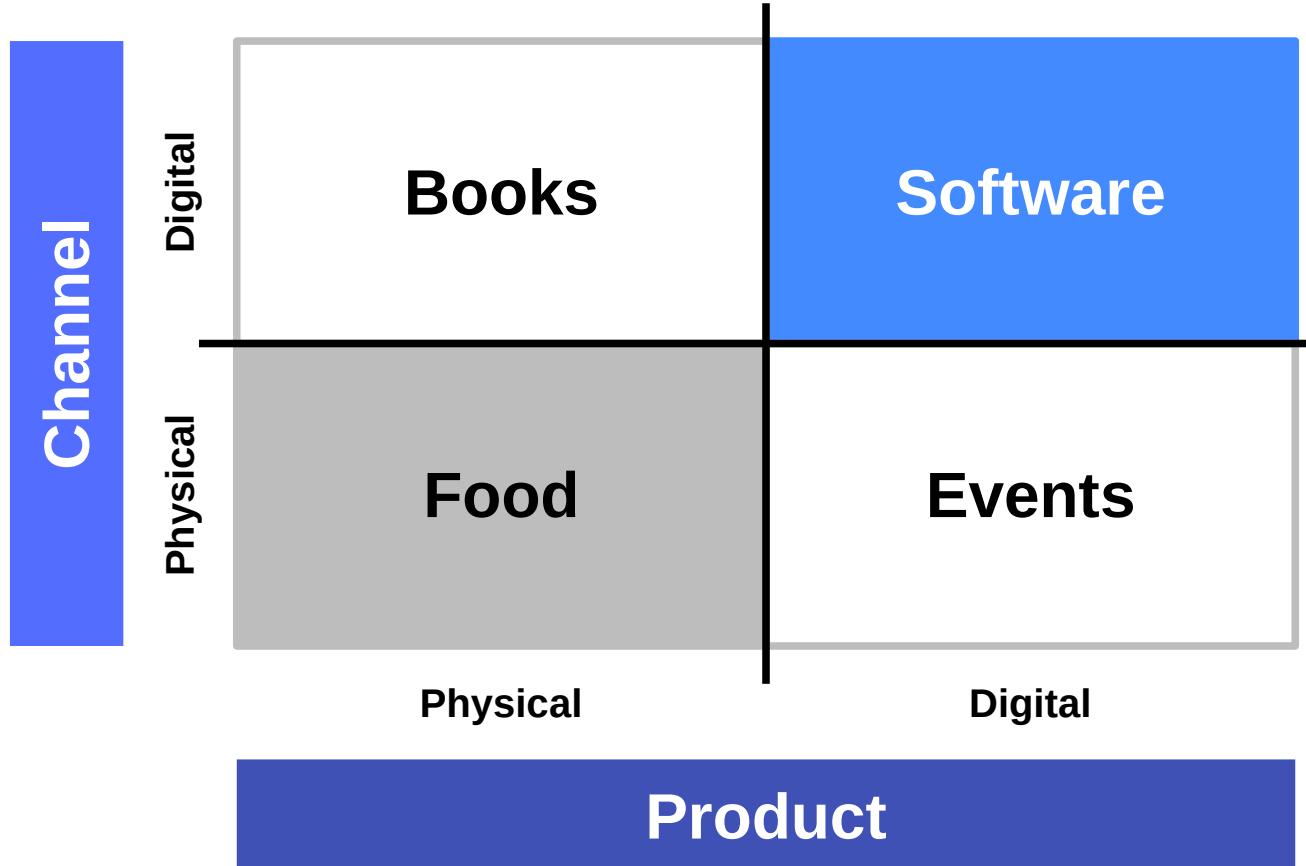
# Market Types (Commercial Open Source)



# 1. Create Hypotheses (Problem-Solution Fit)

- Turn the product vision into a proposed business model
  - Using the business model canvas
- Turn the business model into testable hypothesis
  - Write short summaries for each hypothesis
- Align each hypothesis with a BMC section
  - Value proposition (problem)
    - Customer want/need
    - Channels
  - Value proposition (market type)
    - Customer relationships
    - Key resources
    - Key partners
    - Revenue streams

# Products and Channels for the Digital World



# Questions to Ask / Hypotheses to Describe

<b>KP</b> By category, ask <ul style="list-style-type: none"><li>• Who they are</li><li>• What they provide</li><li>• What you provide</li></ul>	<b>KA</b> Ask, what <ul style="list-style-type: none"><li>• Capabilities and</li><li>• Activities you need</li></ul>	<b>VP</b> Describe <ul style="list-style-type: none"><li>• The market you are in</li><li>• The competition you face</li></ul> Describe <ul style="list-style-type: none"><li>• How to fulfill wants/needs</li><li>• A minimum viable product</li></ul>	<b>CR</b> Describe your <ul style="list-style-type: none"><li>• Customer acquisition</li><li>• Retention, and</li><li>• Growth strategy</li></ul>	<b>MS</b> Describe <ul style="list-style-type: none"><li>• Market segments</li><li>• Customer wants/needs</li><li>• (Customer) personas</li></ul>
	<b>KR</b> By category, ask <ul style="list-style-type: none"><li>• What you need</li><li>• How much</li><li>• Where to find them</li><li>• At what cost</li></ul>		<b>CH</b> Describe <ul style="list-style-type: none"><li>• How the product gets from company to customer</li></ul>	

<b>C\$</b>	Describe <ul style="list-style-type: none"><li>• Fixed costs</li><li>• Variable costs per unit</li><li>• Assumed economics<ul style="list-style-type: none"><li>• Of scale</li><li>• Of scope</li></ul></li></ul>
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<b>R\$</b>	Of product sold, describe <ul style="list-style-type: none"><li>• Expected quantities</li><li>• At what prices</li></ul>	Assess <ul style="list-style-type: none"><li>• market sizes</li></ul>
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# Create Hypotheses (the Open Source Way)

- Listen to the community for insights and ideas
- Talk to the community
- Survey

## 2. Design Experiment (Problem-Solution Fit)

- Design an experiment to test the hypotheses
- In the initial stages, you don't necessarily need code
- A mock-up / sign-up / survey can provide the needed information

# Minimum Viable Product

- The minimum viable product (MVP)
  - Represents the value proposition for testing
  - In a minimal form that answers the test
- The MVP is minimal in terms of
  - Features customers need
  - Development costs

# The Minimum Viable Product Over Time

Phase	Action	Goal
Customer engagement preparation	<ul style="list-style-type: none"><li>• Build a low-fidelity MVP</li><li>• Drive a little traffic to MVP</li></ul>	<ul style="list-style-type: none"><li>• Test customer problem/need</li><li>• Assess significance</li></ul>
Low-fidelity problem test	<ul style="list-style-type: none"><li>• Slowly increase acquisition</li><li>• Closely study customer behavior</li><li>• Meet customers face-to-face</li></ul>	<ul style="list-style-type: none"><li>• Understand problem/need</li><li>• Learn how to explain problem</li><li>• Keep assessing significance</li></ul>
High fidelity problem test	<ul style="list-style-type: none"><li>• Increase customer acquisition</li><li>• Monitor speed of acquisition</li></ul>	<ul style="list-style-type: none"><li>• Test solution (do customers buy?)</li><li>• Determine early evangelists</li></ul>
Customer acquisition optimization	<ul style="list-style-type: none"><li>• Scale up customer acquisition</li></ul>	<ul style="list-style-type: none"><li>• Optimize customer acquisition</li></ul>

# Design Experiments (the Open Source Way)

- Open source lets you design and run experiments in parallel
  - Let the community explore options (their own experiments)
  - Lead community to design and implement your experiments
  - At a university, you can use student theses to design experiments

### 3. Test Hypothesis (Problem-Solution Fit)

- Run the experiment as designed and collect the needed information

# Test Hypotheses (the Open Source Way)

- Get users through open source project community
- Test hypotheses through up-sell

## 4. Derive Insight (Problem-Solution Fit)

- Analyze the data and determine validity of hypotheses
- Based on overall validity (or lack thereof) decide to pivot

# Derive Insight (the Open Source Way)

- Openly discuss findings / mirror back findings to community
- Listen to and learn from the response to identify biases

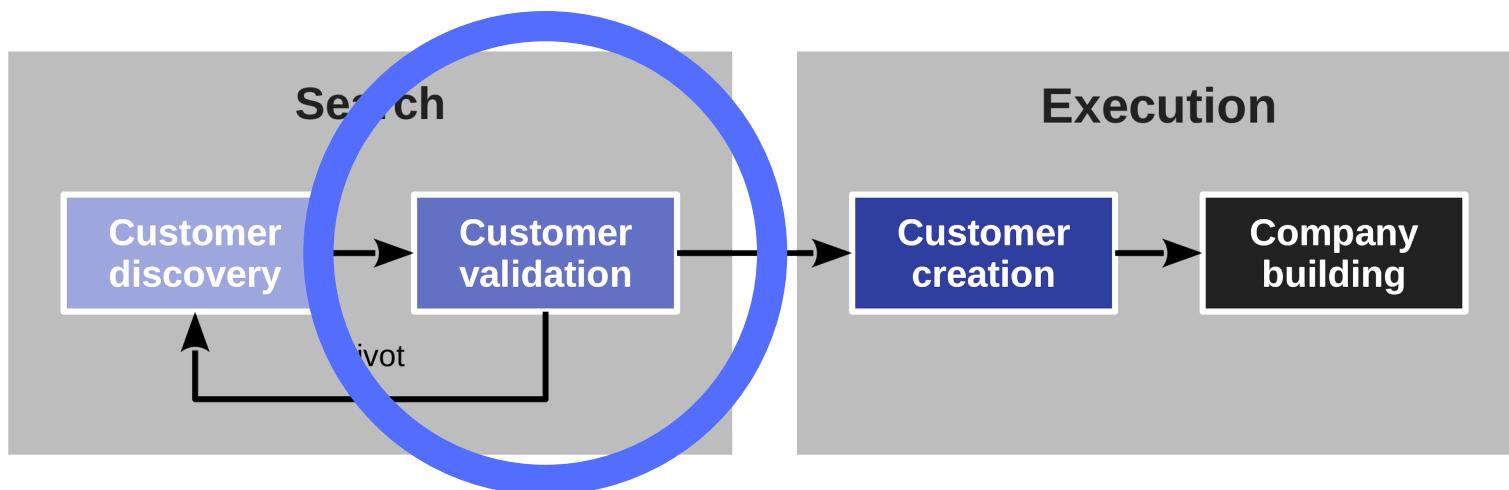
# Pivot or Proceed?

- Based on analysis, decide whether to pivot or proceed

## 5. Product-Market Fit

# Finding Product-Market Fit with Customer Validation

- Customer validation is a search process that
  - Tests whether the discovered business model is repeatable and scalable
- Product-market fit
  - Is the matching of all value propositions with their market segments



# After Customer Discovery...

- You have a tested business model that delivers value to customers
  - Your initial market sizing suggests the market is worth your efforts, but
  - Your customer discovery tests are not representative
- Customer validation will now test the market in its entirety
  - By testing and validating how to scale the business
  - Do you have product-market fit for the assumed market?

# Testing for Both a Scalable and Repeatable Business Model

- Scalable
  - After an initial startup, will CLV >> CAC consistently?
  - Is customer acquisition (sales funnel) predictable?
- Repeatable
  - Can you consistently and predictably sell?
  - Can you consistently produce and deliver?

# The Customer Validation Feedback Loop

## 1. Generate hypotheses

- Decide on most promising market segments
- Decide on most promising channels and relationships

## 2. Design experiment

- Prepare MVP and collateral with market and reach in mind
- Prepare for priming and using channels

## 3. Test hypotheses

- Instrument! Be ready to collect data! Then:
- Fill channels, let sales work

## 4. Derive insights

- Analyze data, possibly revise business model
- Stop if stopping criterion is reached

# Demand Creation (the Open Source Way)

- Word-of-mouth marketing
  - Social media
  - Conferences
- Practitioner conference talks
- Research conference talks

# Pivot or Proceed

- Before you start, define a stopping criterion for customer validation
  - For example, sales volume reached or number of customers acquired
- Only after stopping criterion is fulfilled, proceed to customer creation

## 6. Product-Channel Fit

# Product-Channel Fit

- Product-channel fit
  - Is when the product fits your channel, that is, the product's features are optimized for
    - Growth (initially)
    - Throughput (later)

# 6. Startup Metrics

# Business Model Metrics

- Customer lifetime value (CLV) and costs (CLC)
- Customer acquisition (CAC), retention, growth costs
- Annual / monthly recurring revenue (ARR / MRR)

# Startup Survival Metrics

- Cash burn rate
- No. months of cash left
- Time to cash-flow break even

# Summary

1. Definition (startup)
2. The search process
3. Problem-solution fit
4. Product-market fit
5. Product-channel fit
6. Startup metrics

# Thank you! Questions?

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