INFO4444 Computing 4 Innovation

Week 8: Commercialisation I

Presented by: Dr. Eman Sayed
School of Computer Science

THE UNIVERSITY OF SYDNEY

Copyright warning

COMMONWEALTH OF AUSTRALIA

Copyright Regulations 1969

WARNING

This material has been reproduced and communicated to you by or on behalf of the University of Sydney pursuant to Part VB of the Copyright Act 1968 (**the Act**).

The material in this communication may be subject to copyright under the Act. Any further copying or communication of this material by you may be the subject of copyright protection under the Act.

Do not remove this notice.

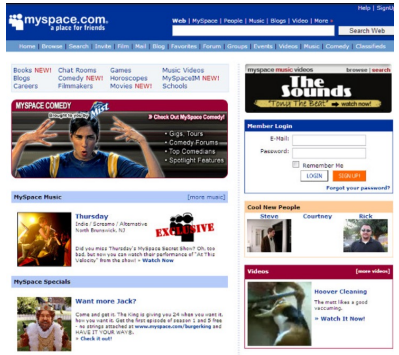
Innovation by Startup Companies

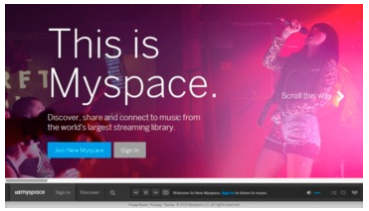
What's a start-up company?

How can a couple of people beat and displace major global corporations?

VS

News Corporation





- **social entertainment destination**
  - Willingness to address the market needs
  - **Technology to do anything users wanted**
- User comments – for what would be the next application

http://www.forbes.com/sites/adamhartung/2011/01/14/why-facebook-beat-myspace/#7fae4f177023

What's a startup company?

- Term first used in the 1970s
- Most used for starting technology companies

- Steve Blank:
  "a temporary organization in search of a scalable, repeatable, profitable business model"
  - The Startup Owner's Manual (2012)

www.steveblank.com/about
Steve Blank

What's a startup company?

- Eric Ries:
  "a **human institution** designed to deliver a new product or service under conditions of extreme **uncertainty**"
  - The Lean Startup (2011)

www.theleanstartup.com
Eric Reis

Organising for Innovation: Overview

- A company's size and structure impact its ability to innovate
  - May foster creativity and experimentation
  - Enhance efficiency of product development
  - Some structures may enable both simultaneously

- Traditionally technological innovation in-house in R&D labs

- Trend towards more "open innovation"

Size and structural dimensions of companies

- Large companies might also be disadvantaged for innovation
  - R&D efficiency may decrease due to loss from managerial control
  - Large companies can have more administrative activities
  - More commitments tie companies to current technologies

- Small firms are often more flexible and entrepreneurial

- **Innovation favors agility**

Source: Schilling (2013)

Established Companies vs. Startups

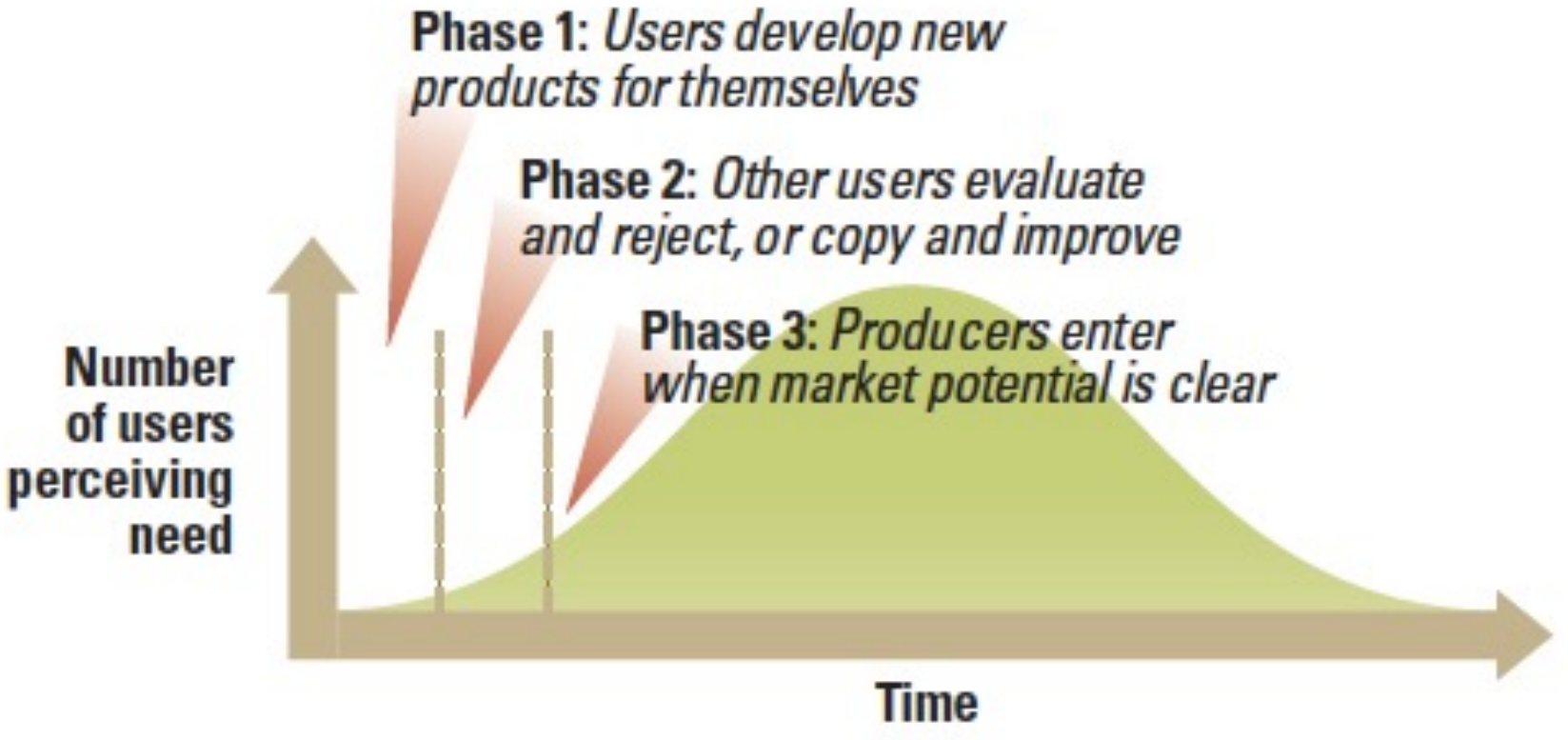
- Established companies…
- **Execute a business model**

- Startups…
- **Search for a business model**

How do I get an idea for a start-up?

Recap : Many innovations start at “user innovation”

Eric Von Hippel
MIT Sloan School of Management



http://sloanreview.mit.edu/article/the-user-innovation-revolution/

Paul Graham: How to get startup ideas

Paul Graham

- Look for problems, preferably problems you have yourself

The very best startup ideas:

- Something the founders themselves want,
- The founders can build,
- Few others realize are worth doing

Microsoft, Apple, Yahoo, Google, and Facebook all began this way.

http://paulgraham.com/startupideas.html

Paul Graham: How to get startup ideas

- Address real problems

- The "Well":
  - Build something a small number of people want a lot
- Getting yourself ready
  - Be at the leading edge of a field
  - "Live in the future, then build what's missing"
  - External stimulus hitting a prepared mind
- Noticing:
  - Not "think up ideas" but "notice"
  - It's OK to work on projects that produce "toys" as it prepares you to notice
  - "Live in the future and build what seems interesting"

http://paulgraham.com/startupideas.html

Differences between established companies and start-ups

Some differences between established companies and start-ups

	Established companies	Start-up companies
Markets for products	Known	Mostly unknown (hypothesis only)
Customers	Known	Mostly unknown (hypothesis only)
Products	Known	Mostly unknown (hypothesis only)
Future product features	Learn from customers	Learn from potential customers and test hypotheses
Business model	Company executes the current business model	Company searches for the best business model
Product	Full specifications as needed by market	Minimum feature set (for speed to market and flexibility for change)
Product development	Smooth execution using proven methods	Pivots (until find market, customers, products, business model)
Structure	Relatively stable	Fluid

Based on work of Steve Blank
eg http://www.slideshare.net/sblank/why-product-managers-need-sneakers?from=ss_embed
:

Towards more systematic methods for startups

- Emerging “management science” for startups
- Some influential books:
  - “Four Steps to the Epiphany”, Steve Blank, 2005
  - “Business Model Generation”, Alexander Osterwalder, Yves Pigneur, Alan Smith, and 470 others across 45 countries, 2010
  - “The Lean Startup”, Eric Ries, 2011
  - “The Startup Owner’s Manual”, Steve Blank and Bob Dorf, 2012
  - “The Value Proposition Design”, Alexander Osterwalder, Yves Pigneur, Greg Bernarda, Alan Smith, 2015
  - “The Leader’s Guide”, Eric Reis, 2015 (Kickstarter campaign)

The startup – 3 key principles

- Customer Development
  "get out of the building"
  - including hypothesis-driven experiments with customers, pivoting etc

- Business Model Canvas
  "Sketch Out Your Hypotheses."

- Agile software development
  "Quick, Responsive Development."

Steve Blank, Why the Lean Start-Up Changes Everything, Harvard Business Review, 2013,
https://hbr.org/2013/05/why-the-lean-start-up-changes-everything

Customer Development

Steve Blank

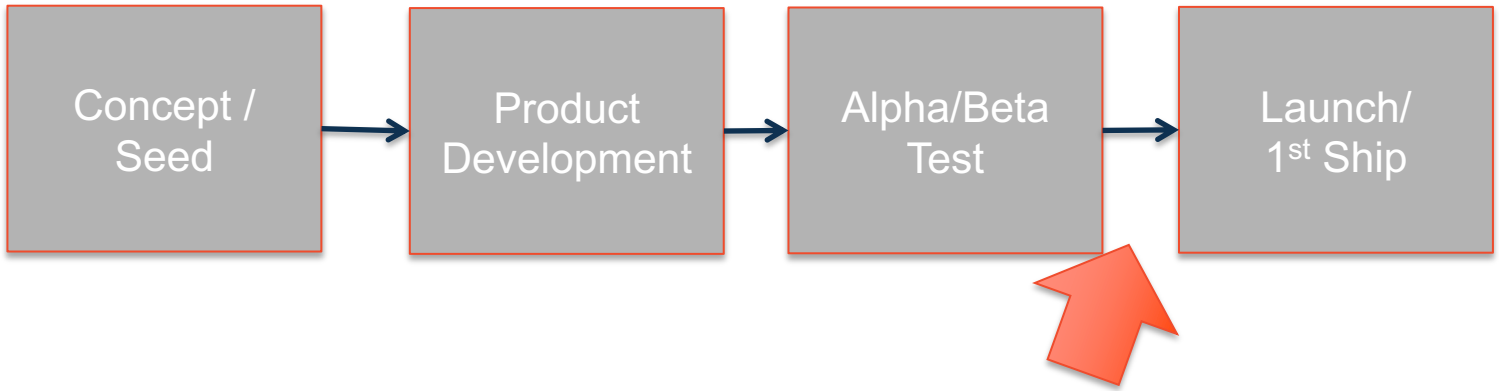
What's wrong with the New Product Introduction Model (for startups)

- "The 9 deadly sins of the New Product Introduction Model":
  1. Assuming "I know what the customer wants"
  2. The "I know what features to build" flaw
  3. Focus on Launch date
  4. Emphasis on execution instead of hypotheses, testing, learning and iteration
  5. Traditional business plans assume no trial and no errors
  6. Confusing traditional job titles with what a startup needs to accomplish
  7. Sales and marketing execute to a plan
  8. Presumption of success leads to premature scaling
  9. Management by crisis leads to a death spiral

Source: Steve Blank and Bob Dorf, "The Startup Owner's Manual" (2012)

Introducing new products to a market: Traditional model

New Product Introduction model:



"No business plan survives first contact with customers" – Steve Blank

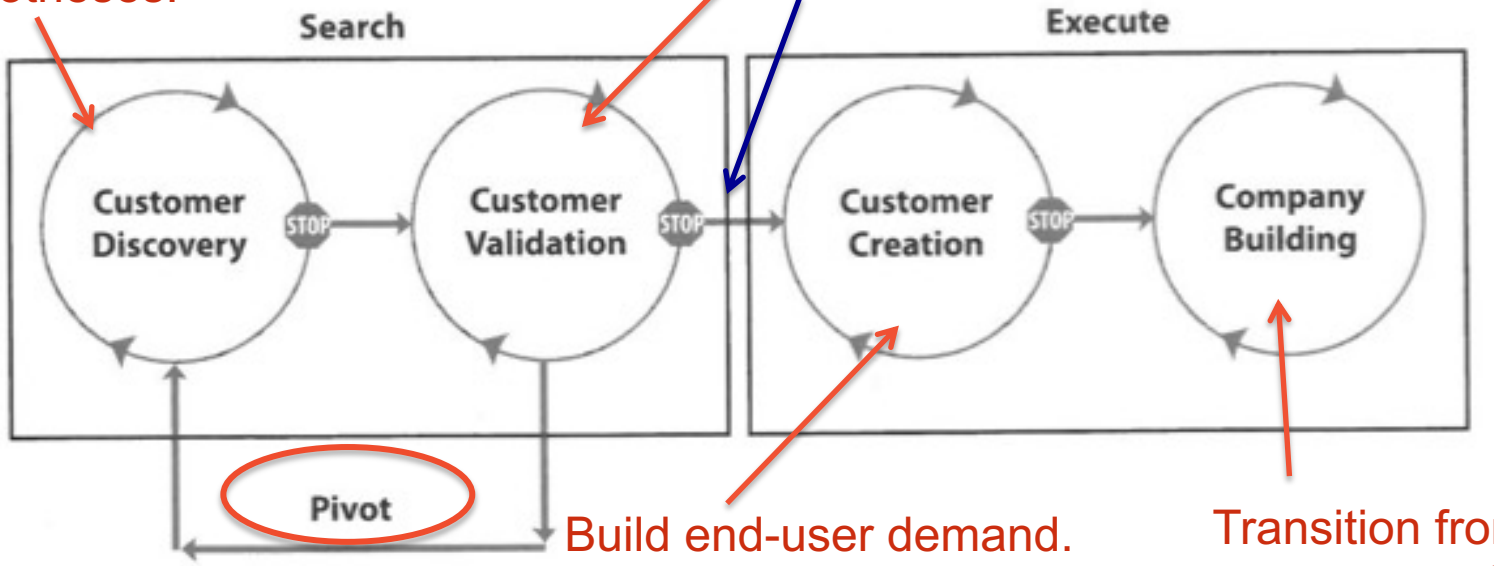
Created by Bill Simpson-Young based on Steve Blank and Bob Dorf "The Startup Owner's Manual" (2012)

Alternative approach for startups: Customer Development Process

Capture vision and turn it into business model hypotheses.
Develop plan to test hypotheses with customers.
Test hypotheses.

Test whether related business model is repeatable and scalable

Product/market fit



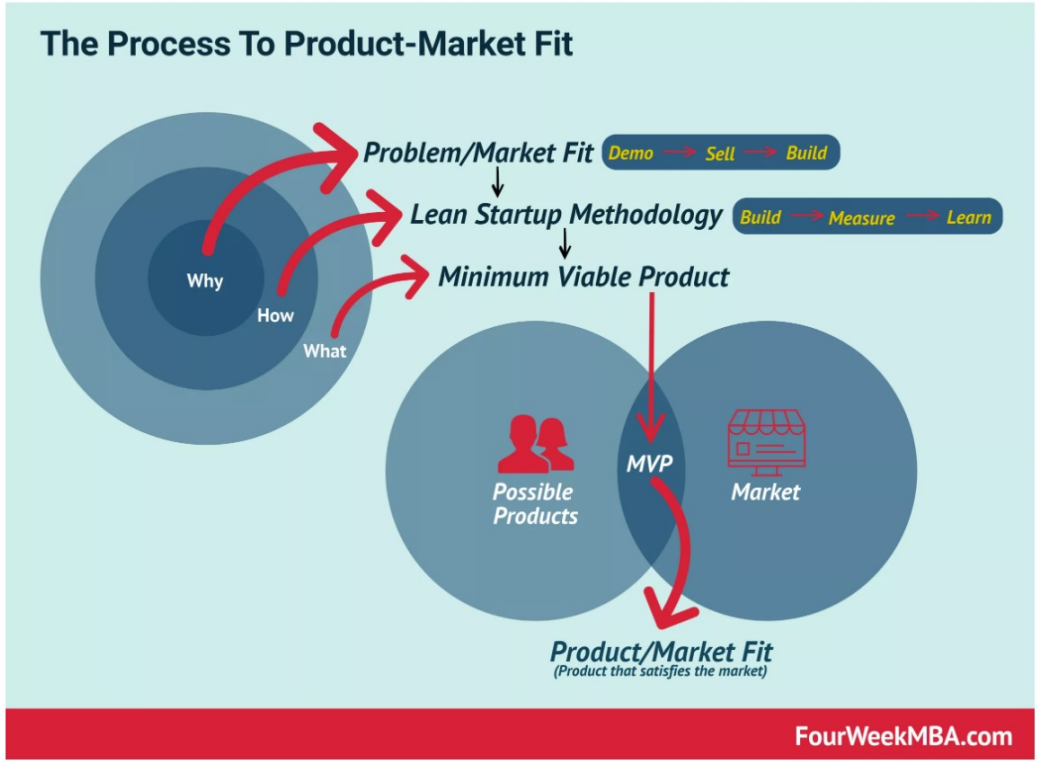
Build end-user demand.
Build sales channel.
Scale business.

Transition from startup to typical company

Source: Steve Blank and Bob Dorf, "The Startup Owner's Manual" (2012)

Product-Market Fit

- A degree to which a product satisfies a strong market demand.
- A step in between customer validation and customer creation
  - Steve Blank



https://fourweekmba.com/product-market-fit/

The Customer Development Manifesto (The 14 Rules)

Rule 1. There are no facts inside your building, so get outside

Rule 2. Pair Customer Development with Agile Development

Rule 3. Failure is an integral part of the search

Rule 4. Make continuous iterations and pivots

Rule 5. No business plan survives first contact with customers so use a business model canvas (more soon)

Rule 6. Design experiments and test to validate your hypotheses

…

Source: Steve Blank and Bob Dorf, "The Startup Owner's Manual" (2012)

The Customer Development Manifesto (The 14 Rules)

Rule 7. Agree on market type. It changes everything

- Bringing a new product into an existing market
- Bringing a new product into a new market
- Bringing a new product into an existing market and trying to:
  - Re-segment that market as a low-cost entrant
  - Re-segment that market as a niche entrant
  - Cloning a business model that's successful in another country

…

Source: Steve Blank and Bob Dorf, "The Startup Owner's Manual" (2012)

https://www.youtube.com/watch?v=6y3WIrgp_NY

The Customer Development Manifesto (The 14 Rules)

- …

Rule 8. Startup metrics differ from those in existing companies

Rule 9. Fast decision-making, cycle time, speed and tempo

Rule 10. It's all about passion

Rule 11. Startup job titles are very different from a large company

Rule 12. Preserve all cash until needed. Then spend

Rule 13. Communicate and share learning

Rule 14. Customer development success begins with buy-in

Source: Steve Blank and Bob Dorf, "The Startup Owner's Manual" (2012)

Agile Development

How can project management be done for innovation?

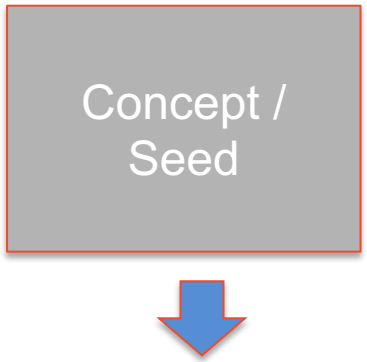
Background

- In innovation projects, there are many unknowns:
  - Feasibility of idea may be unknown
  - Product or process concept may be vague
  - Target customers may be unknown
  - The way to make revenue may be unknown

- Some companies attempt to use traditional project management approaches for innovation projects
  - This often fails

Introducing new products to a market: Traditional model

New Product Introduction model:

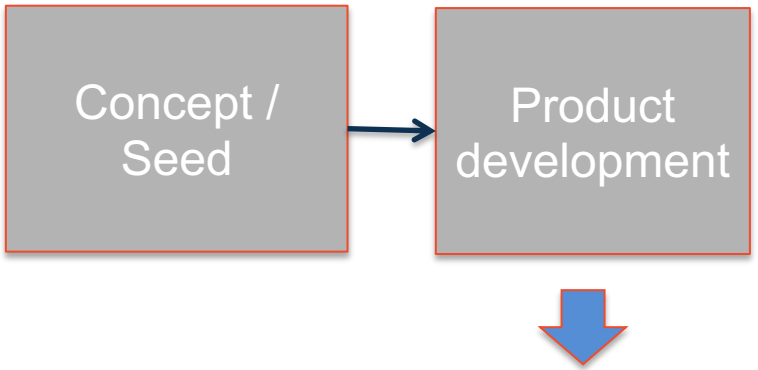


Come up with concept
Define product and product features
Determine customers
Do market research (statistical and some interviews)
Develop business plan

Created by Bill Simpson-Young based on Steve Blank and Bob Dorf "The Startup Owner's Manual" (2012)

Introducing new products to a market: Traditional model

New Product Introduction model:

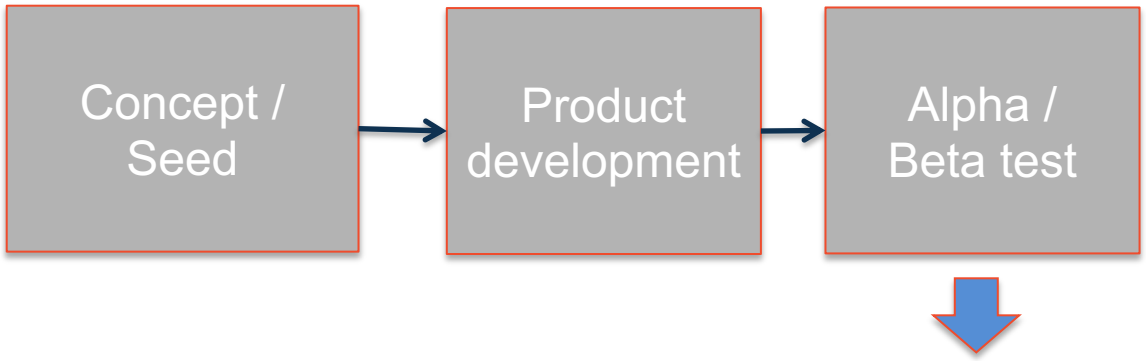


Specify market requirements
Develop product/service - typically using waterfall model:
Requirements, design, implementation, testing, maintenance
Promote future product/service

Created by Bill Simpson-Young based on Steve Blank and Bob Dorf "The Startup Owner's Manual" (2012)

Introducing new products to a market: Traditional model

New Product Introduction model:

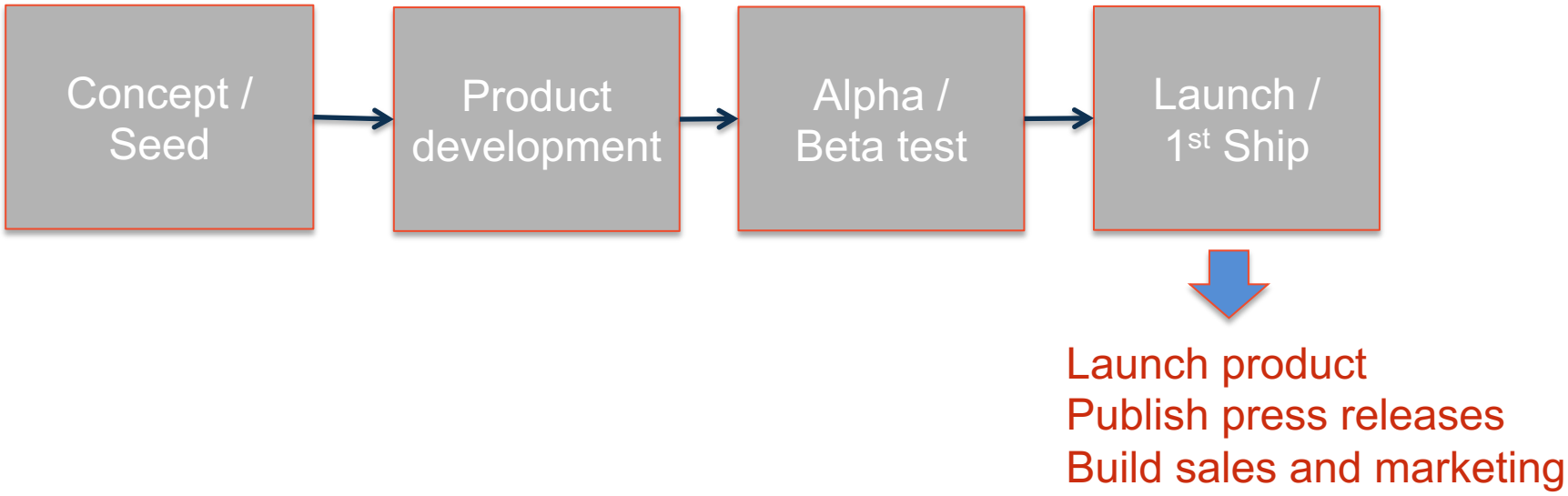


Sign up alpha/beta customers
Run alpha/beta trials
Develop sales and marketing materials
Get channel partners and build sales organisation

Created by Bill Simpson-Young based on Steve Blank and Bob Dorf "The Startup Owner's Manual" (2012)

Introducing new products to a market: Traditional model

New Product Introduction model:

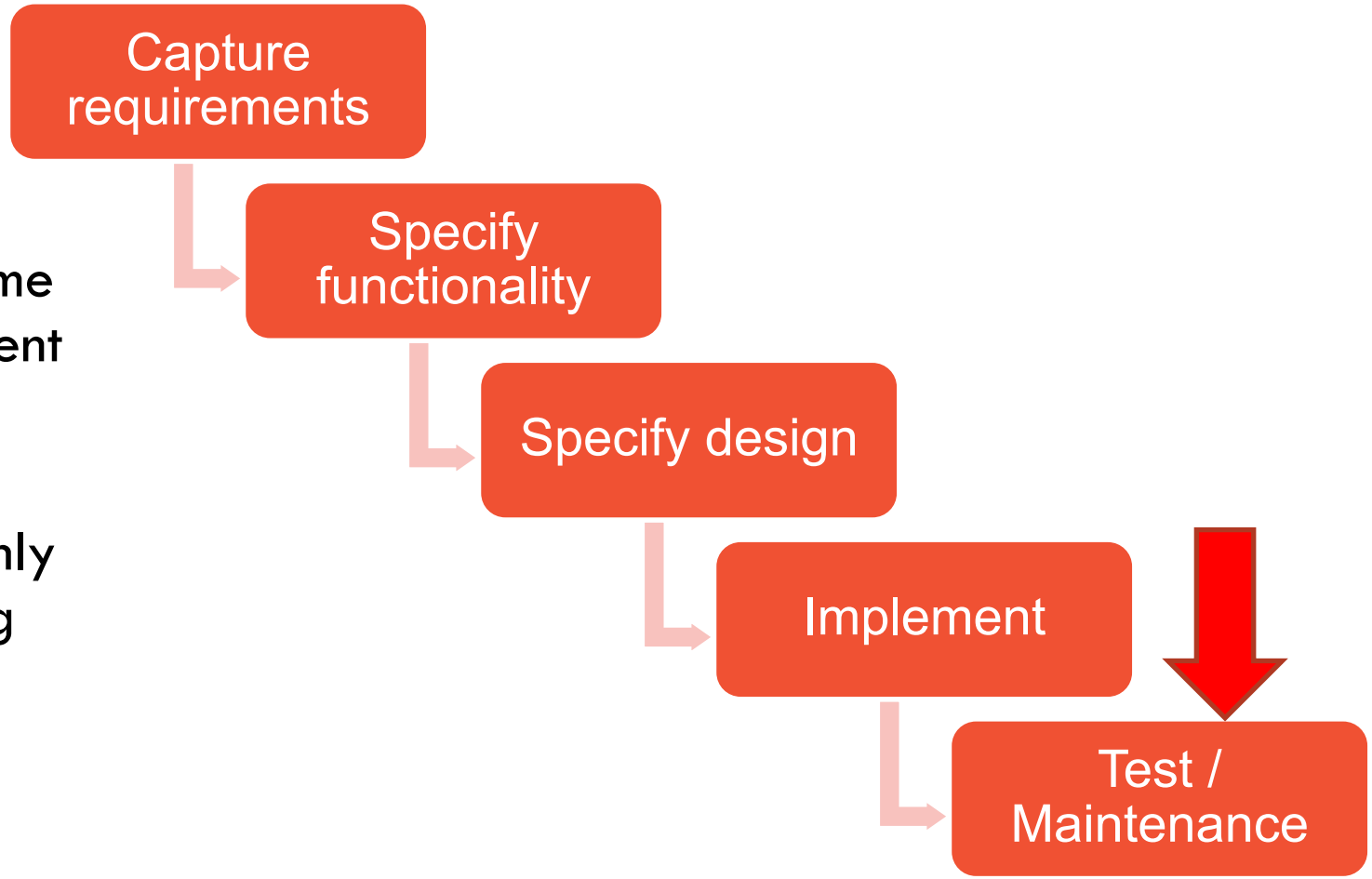


Created by Bill Simpson-Young based on Steve Blank and Bob Dorf "The Startup Owner's Manual" (2012)

What's wrong with this model when there is high degree of uncertainty?

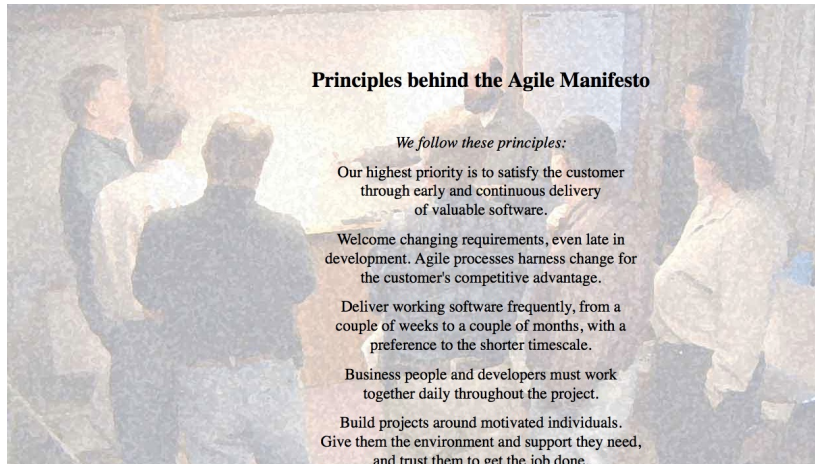
Problems with the traditional model

- Impossible to know all requirements in advance
  - The project takes time so the requirements at the time of capture may be different from those at the time of delivery
  - Some requirements are only clear when users are using the product
  - Too long to get customer validation of product



"The Agile Manifesto" (2001)

- We are uncovering better ways of developing software by doing it and helping others do it. Through this work we have come to value:
  - **Individuals and interactions** over processes and tools
  - **Working software** over comprehensive documentation
  - **Customer collaboration** over contract negotiation
  - **Responding to change** over following a plan



http://agilemanifesto.org
http://agilemanifesto.org/principles.html

Success of agile approaches on projects

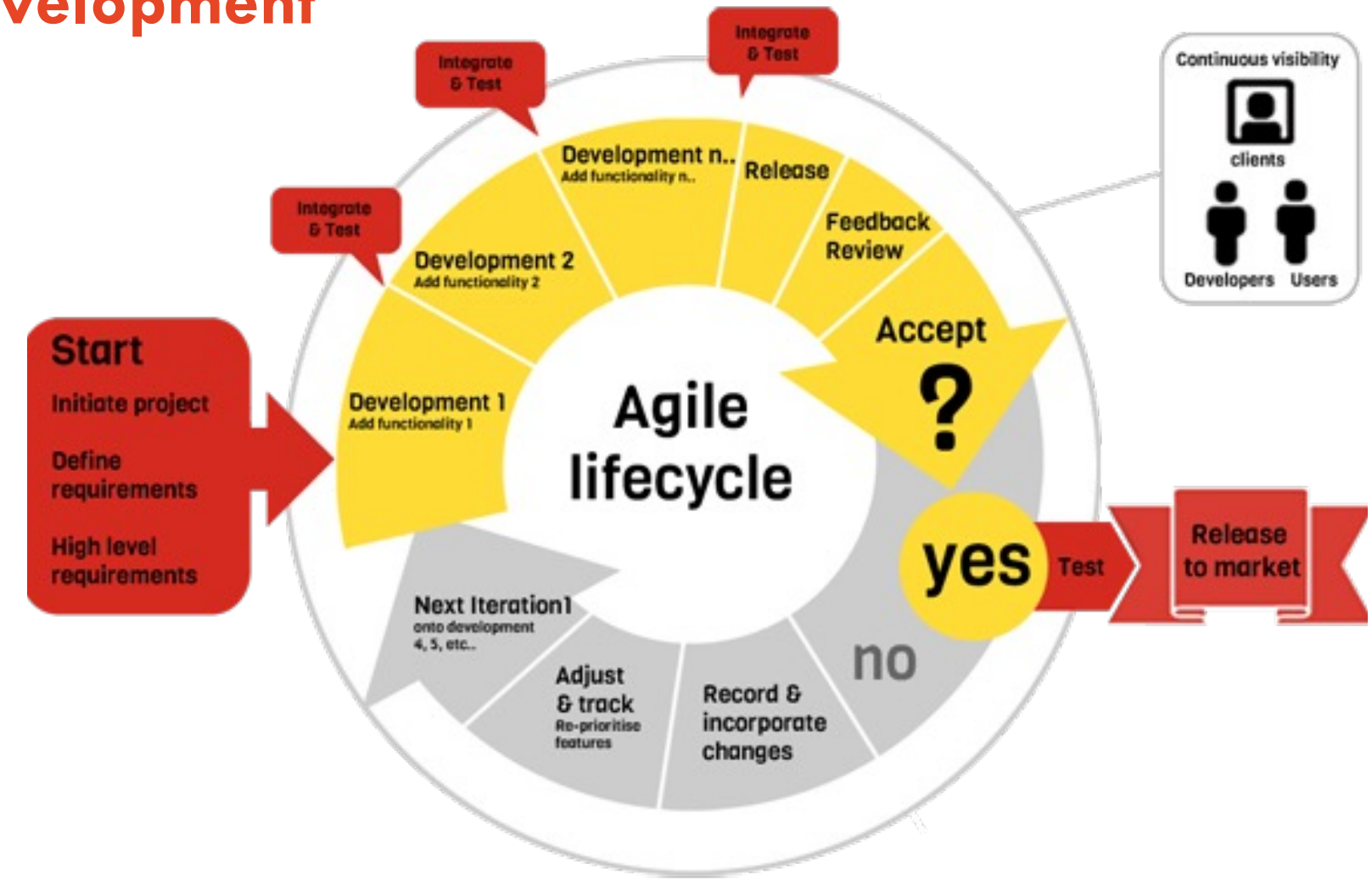
CHAOS RESOLUTION BY AGILE VERSUS WATERFALL

SIZE	METHOD	SUCCESSFUL	CHALLENGED	FAILED
All Size Projects	Agile	39%	52%	9%
	Waterfall	11%	60%	29%
Large Size Projects	Agile	18%	59%	23%
	Waterfall	3%	55%	42%
Medium Size Projects	Agile	27%	62%	11%
	Waterfall	7%	68%	25%
Small Size Projects	Agile	58%	38%	4%
	Waterfall	44%	45%	11%

The resolution of all software projects from FY2011–2015 within the new CHAOS database, segmented by the agile process and waterfall method. The total number of software projects is over 10,000

Source: The CHAOS Manifesto by the Standish Group 2015
referred to by http://www.infoq.com/articles/standish-chaos-2015

Agile development



Agile Alliance - Key Agile Concepts (Management)

- **User Stories**
  - Functional increments divided into ("user stories“) - add value to the overall product
- **Daily Meeting**
  - The team meets to briefly describes any "completed" contributions and any obstacles that stand in their way
- **Incremental Development**
  - Working version of the product (usable), adding user-visible functionality

Agile Alliance - Key Agile Concepts (Management)

- **Iterative Development**
  - "repeating" software development activities, and for potentially "revisiting" the same work products
- **Team**
  - Small group of people, full-time basis
- **Retrospective**
  - Detailed analysis of the project's significant events and how to improve
- **Personas**
  - When user experience is a major factor - the team crafts detailed, synthetic biographies of fictitious users of the future product

Three common forms of Agile development

	SCRUM	KANBAN	LEAN DEVELOPMENT
Guiding Principles	Empower creative, cross-functional teams	Visualize workflows and limit work in process	Eliminate waste from the system as a whole
Favorable Conditions for Adoption	Creative cultures with high levels of trust and collaboration, or Radical innovation teams that want to change their working environment	Process-oriented cultures that prefer evolutionary improvements with few prescribed practices	Process-oriented cultures that prefer evolutionary improvements with overarching values but no prescribed practices

https://hbr.org/2016/05/embracing-agile

The Lean Startup

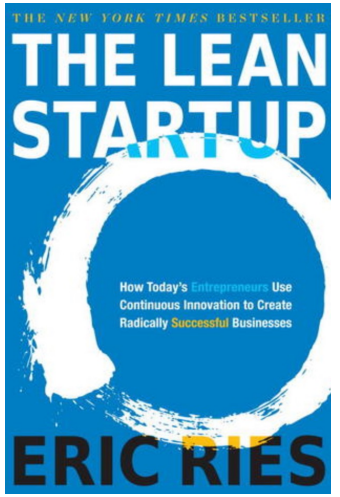
MVP, Product Market Fit etc

The Lean Startup

- Eric Ries developed the concept of “The Lean Startup”
- Combines Steve Blank’s Customer Development process with Agile Software Development

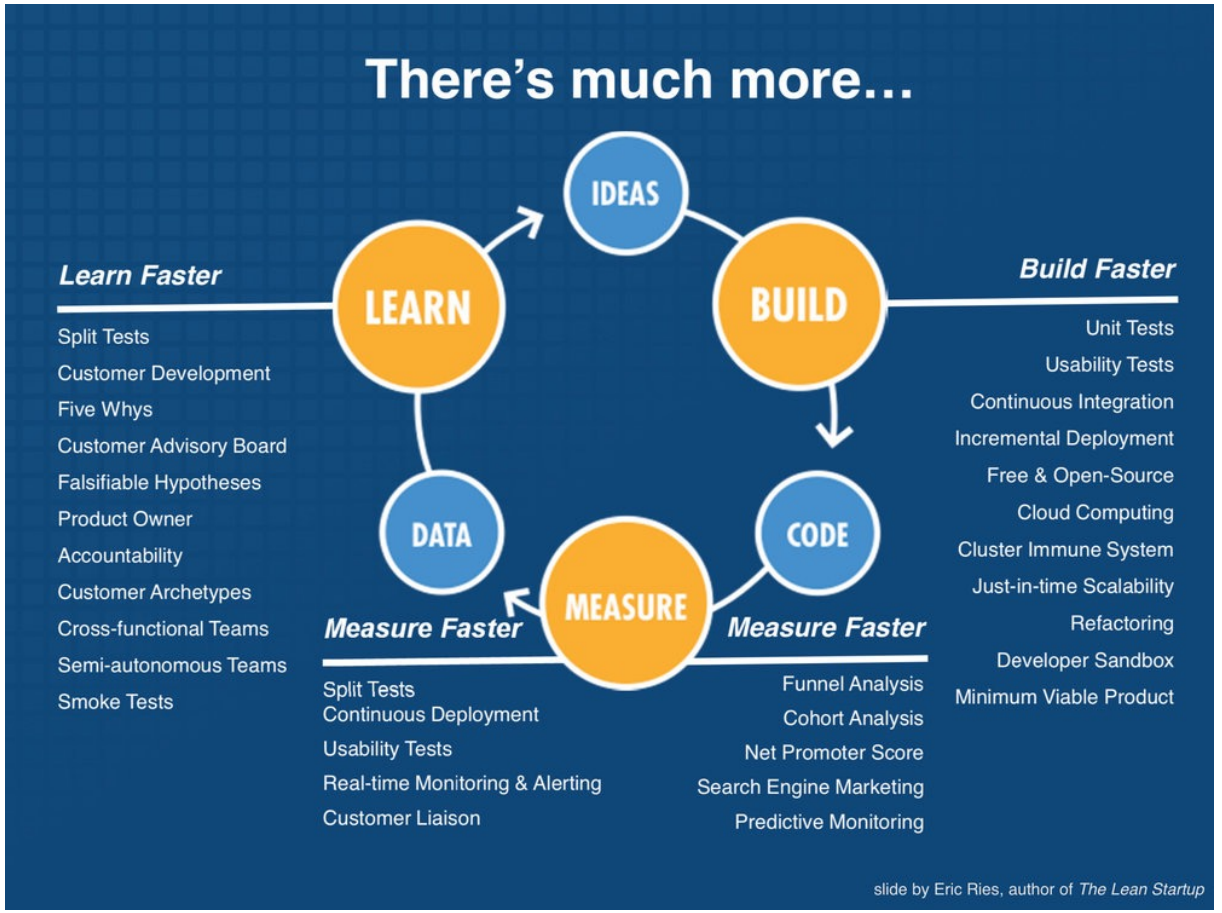
www.theleanstartup.com
Eric Reis
Software developer/entrepreneur

- Video of Eric Ries speaking, Oct 2011:
- https://www.youtube.com/watch?v=tNw4Ht75DvA
- (10 minutes)



The Lead Startup by Eric Ries

- Learn Faster
- Code Faster
- Measure Faster



http://theleanstartup.com/principles

The Minimum Viable Product (MVP)

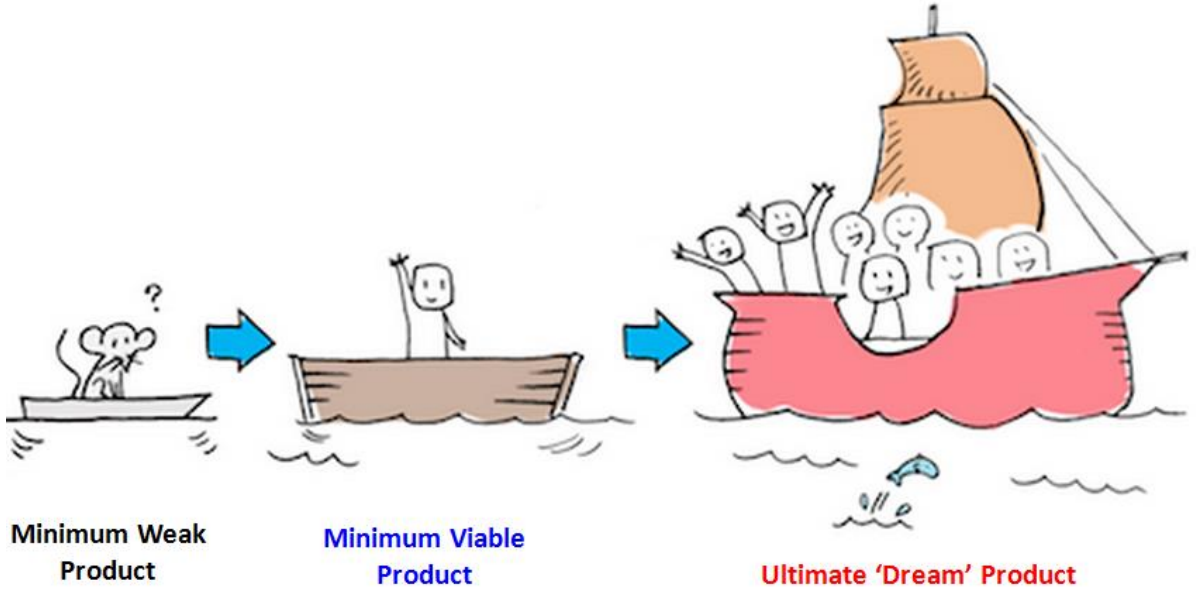
- Definition (from Eric Reis):

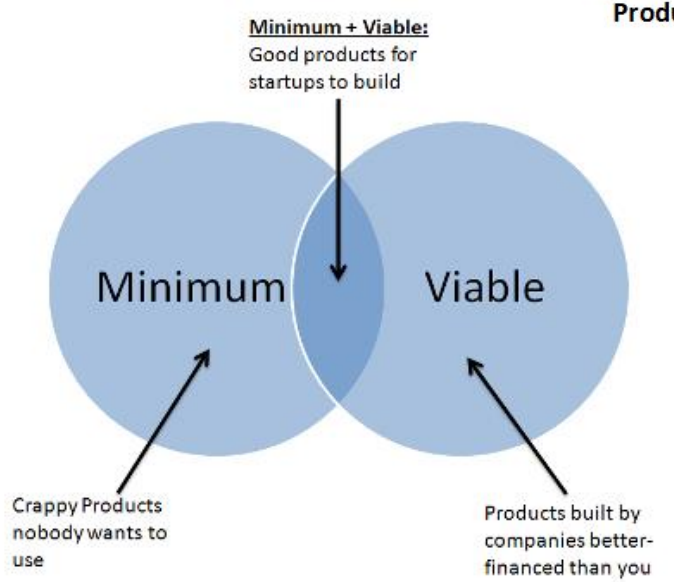
- "the minimum viable product is that version of a new product which allows a team to collect the maximum amount of validated learning about customers with the least effort."

The Minimum Viable Product (MVP)

"The MVP is that version of the product that enables a full turn of the Build-Measure-Learn loop with a minimum amount of effort and the least amount of development time.

- Ries, Eric (2011-09-13). The Lean Startup (p. 77), Random House, Inc.. Kindle Edition.





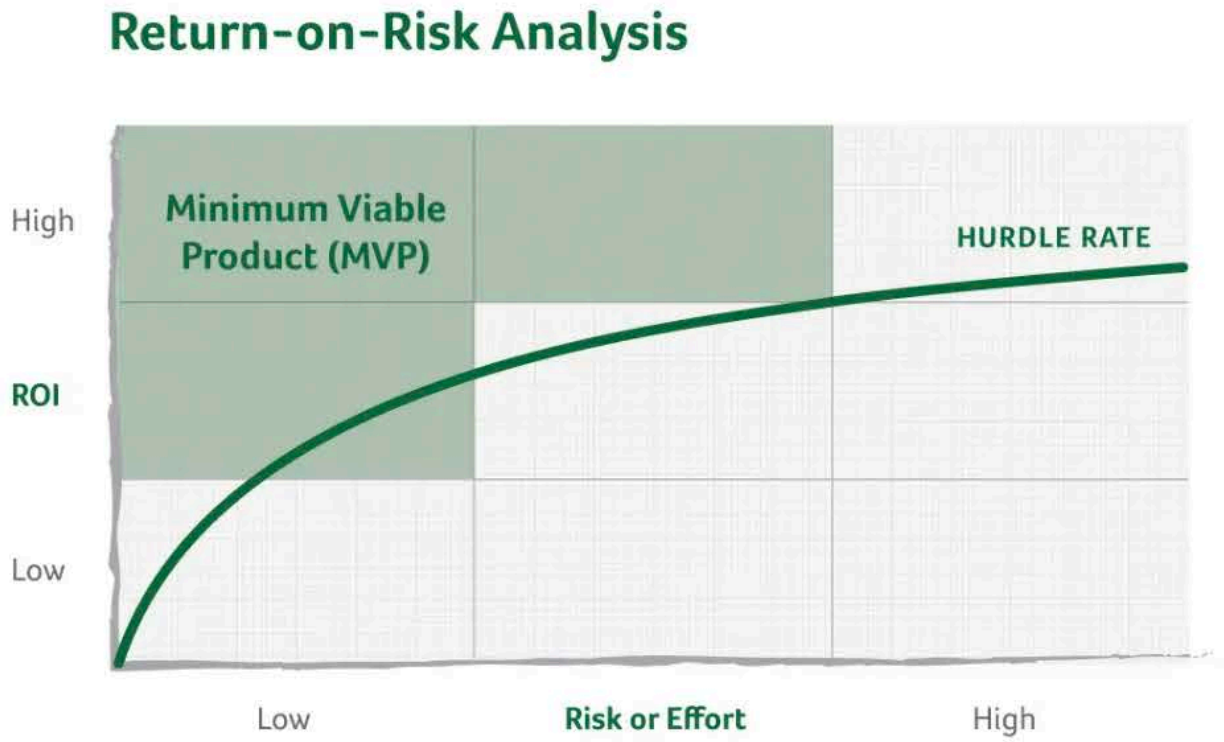
The Minimum Viable Product (MVP)

Too large or too small = trouble.

Missing key features = early failure.

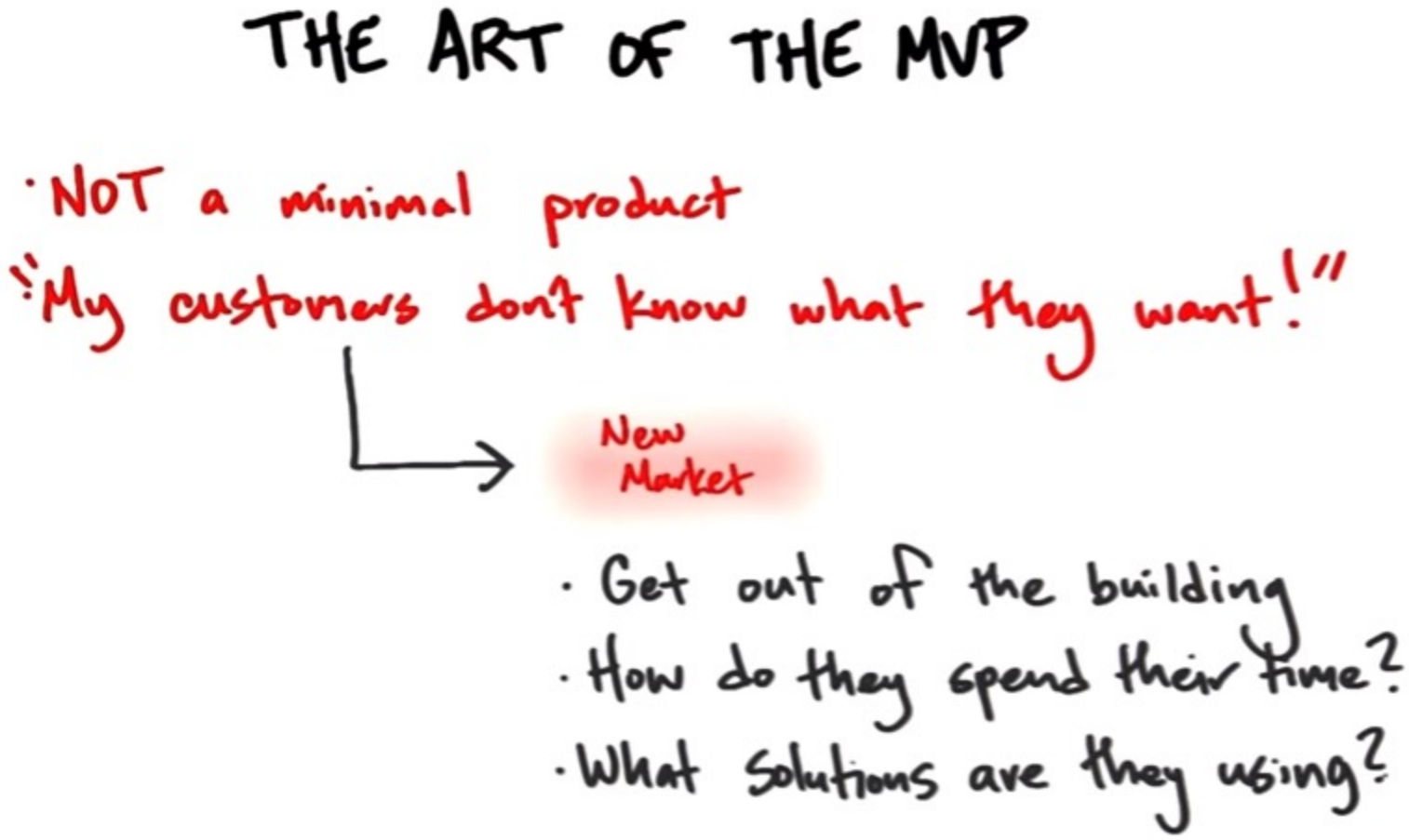
Too many features = higher risk, lower returns.

The MVP is the solution



http://www.syncdev.com/minimum-viable-product/

The Minimum Viable Product (MVP)



https://www.youtube.com/watch?v=Fj0qsAyKPN8

The Minimum Viable Product (MVP) – Principles

1. **Entrepreneurs are everywhere**

2. **Entrepreneurship is management:** startup requires management, a new kind of management specifically geared to its context.

3. **Validated learning:** startups exist to learn how to build a sustainable business. This learning can be validated by running experiments that allow to test each element of our vision

4. **Innovation accounting:** how to measure progress, how to setup milestones, how to prioritize work. This requires a new kind of accounting, specific to startups

5. **Build-measure-learn:**. all successful startup should be geared to accelerate that feedback loop; turn ideas into products, measure how customers respond, and then learn whether to pivot or persevere

https://www.youtube.com/watch?v=tNw4Ht75DvA

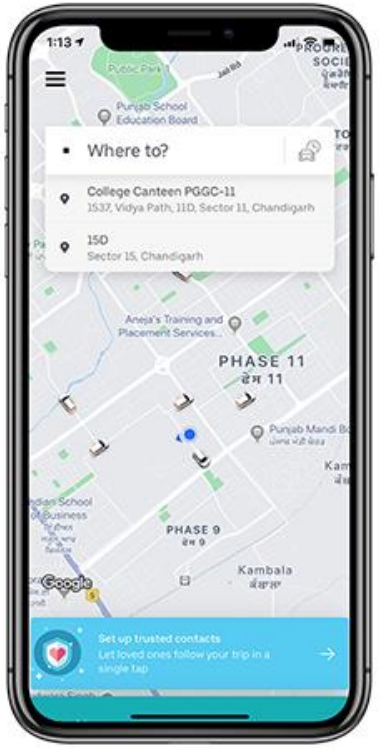
http://theleanstartup.com/principles

MVP Example 1 - Uber

Minimum Viable

UberCab' s MVP, 2009

Viable product

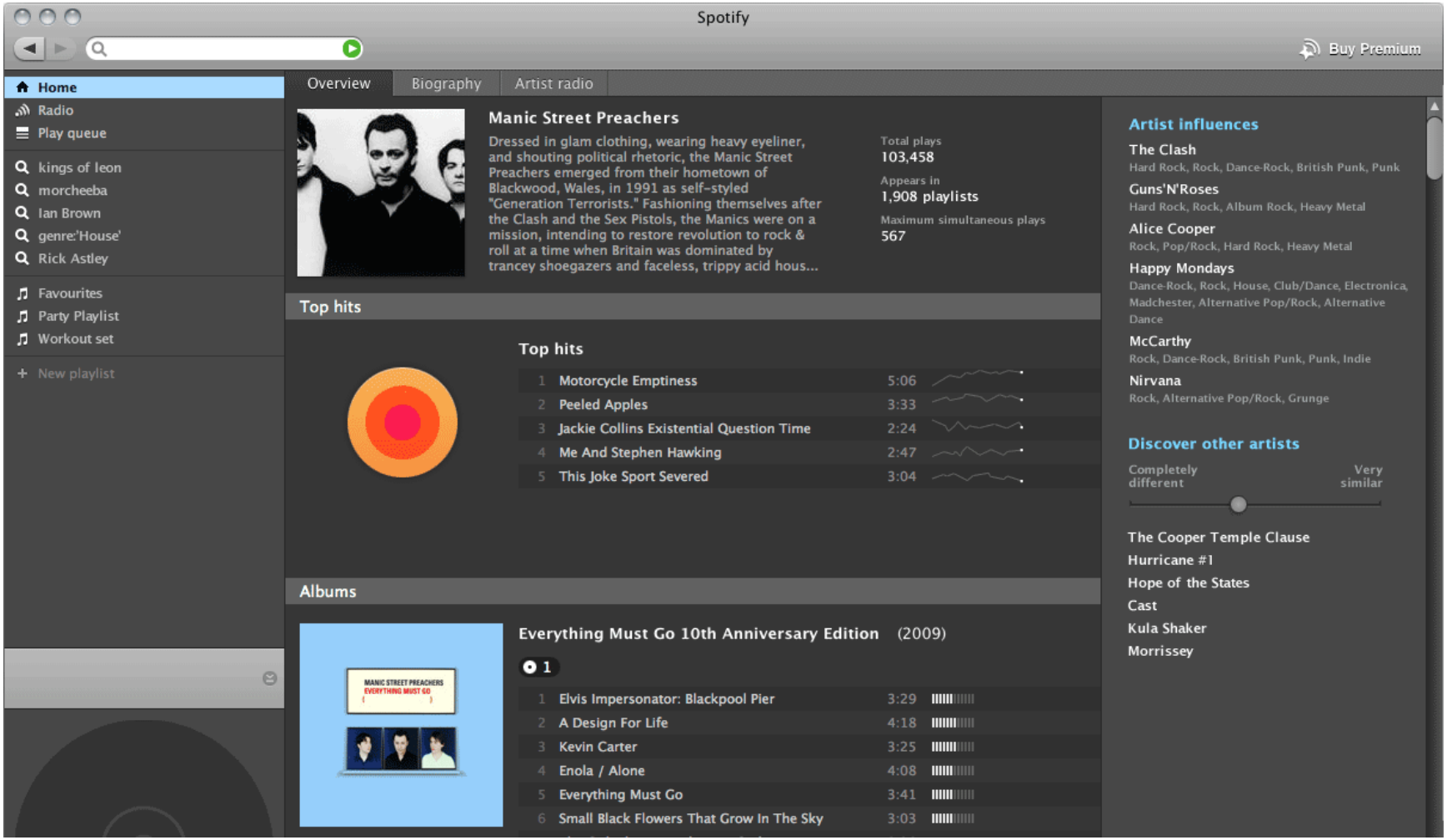


Uber Mobile App version 2019

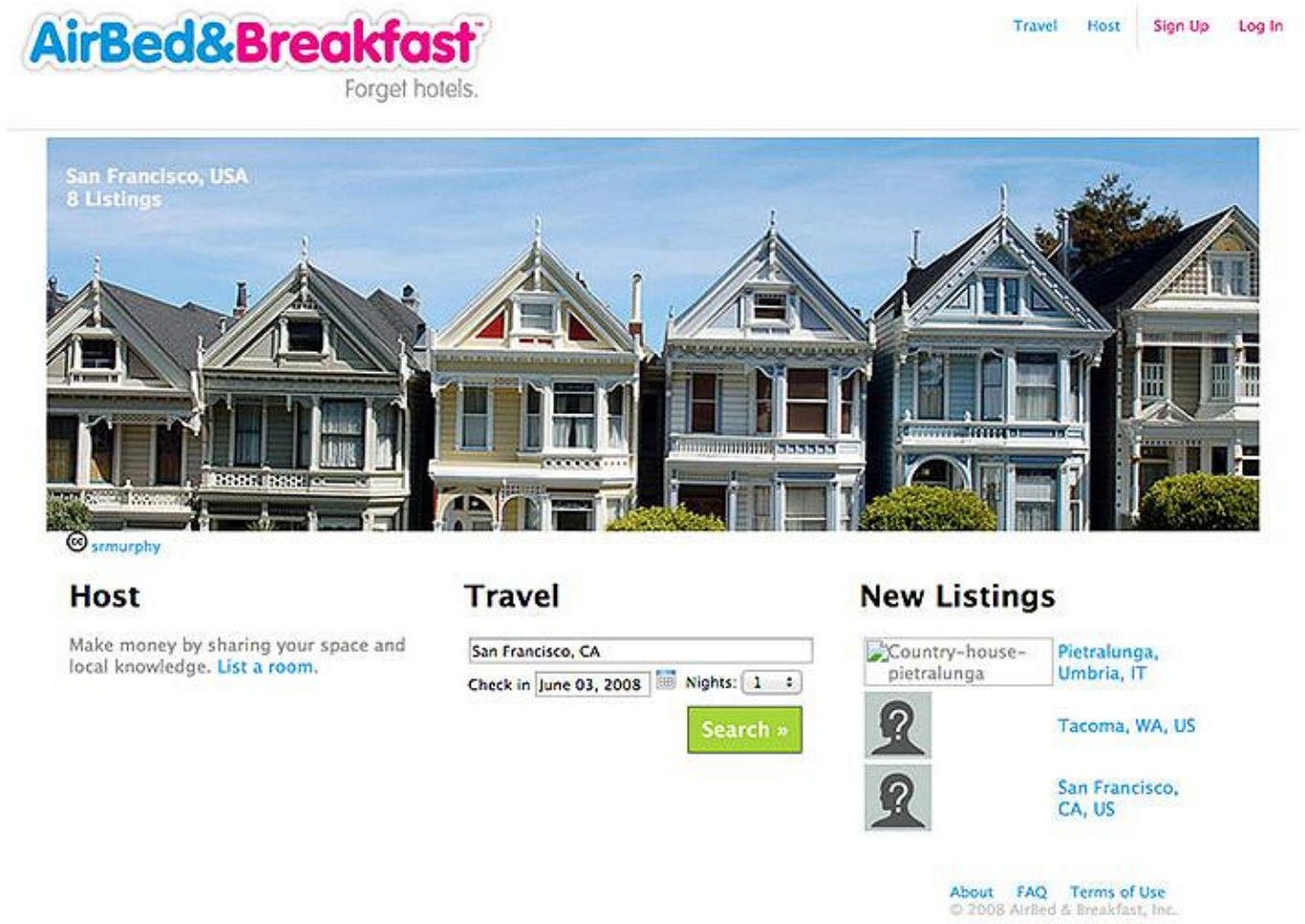
- PUSH NOTIFICATIONS
- DRIVER'S RATINGS AND REVIEWS
- FARE ESTIMATION
- BOOKING RIDE HISTORY
- REGISTER/LOG IN VIA SOCIAL MEDIA
- MESSAGING
- TRACKING
- PRICE CALCULATION
- PAYMENT INTEGRATION
- BOOKING INTERFACE

SellnShip

MVP Example 2 - Spotify



MVP Example 3 - Airbnb



MVP Example 4 - inDriver

New ride service inDriver arrives in Melbourne - pick your own fares.

Key Highlights from the Book “inDriver” - a Distinct Player in the Ride-Hailing Realm.

inDriver: Making affordable travel accessible to all with Google Maps Platform.

Product Market Fit

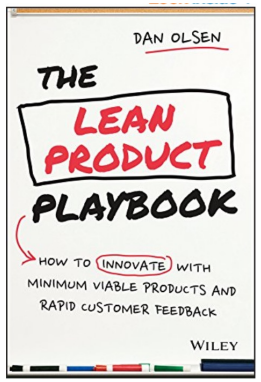
- "Being in a good market with a product that can satisfy that market."
- You can always feel when product/market fit isn't happening.
  - Customers do not get value
  - Word of mouth not effective
  - Usage not growing fast
  - The sales cycle takes too long

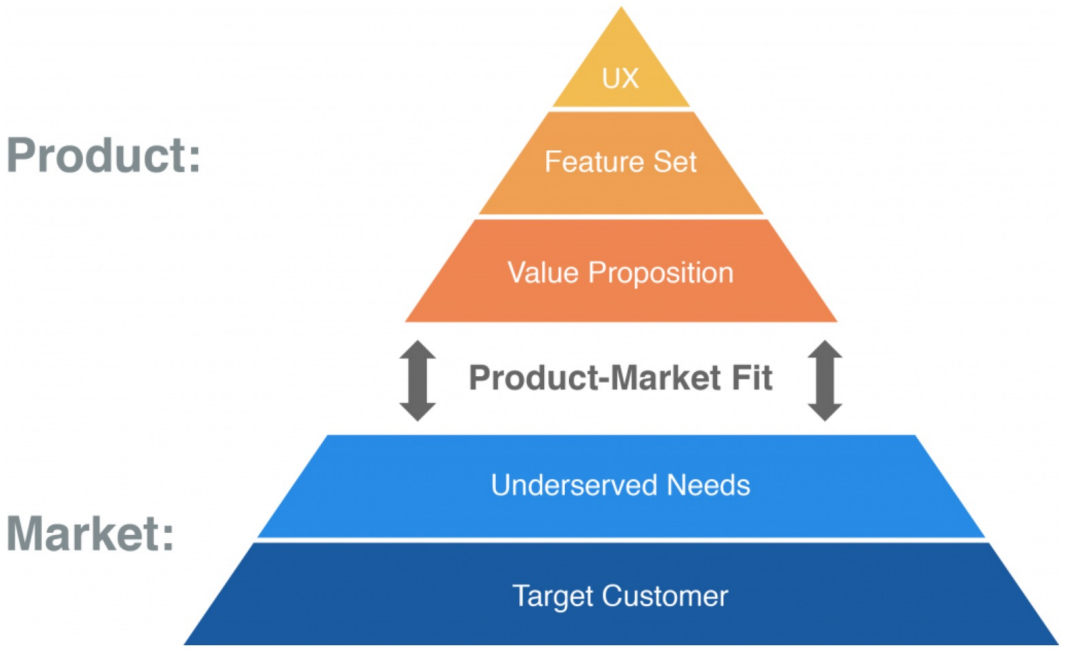
Marc Andreessen

https://youtu.be/zfOsP3PmI1U

http://web.stanford.edu/class/ee204/ProductMarketFit.html

Product-Market Fit Pyramid for Lean Product Process





The Product-Market Fit Pyramid

- Test your MVP with customers
- Create your MVP prototype
- Specify your Minimum Viable Product (MVP) feature set
- Define your value proposition

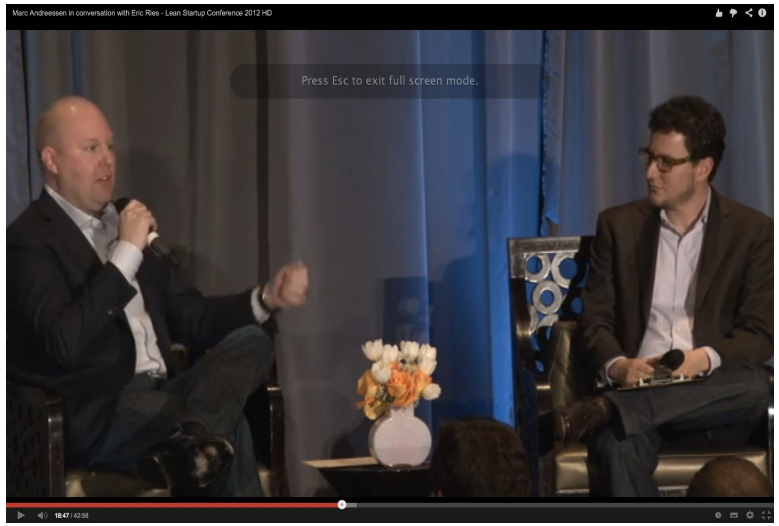
- Identify under-served customer needs
- Determine your target customer

The goal of an MVP is to validate the product idea with minimal resources and iterate based on real-world feedback

https://leanstartup.co/a-playbook-for-achieving-product-market-fit/

Good sources of tips for startups

- Steve Blanks' blog – http://steveblank.com
- Paul Graham's articles – http://paulgraham.com/articles.html
- Andreessen Horowitz 'software is eating the world' – https://a16z.com/
- "Lean Startup" isn't all you need to know - Marc Andreessen on role of lean startup - https://youtu.be/GGui1AB66k8?t=2416 (from 40:16 to end)



W9 lecture: Commercialization II

.

THE UNIVERSITY OF SYDNEY