



# Evaluating Business Models

## Venture Capital Program

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# How I got into startup investing...



Free 2-day delivery on orders over \$35 excludes AK, HI, U.S. Territories and APO & FPO addresses. Delivery may take more than 2 days for certain products and orders placed on Friday and Saturday. Please see product detail pages on site for estimated delivery times. No delivery on Sunday or major holidays.

# Lets test PollEverywhere! How was video quality and sound?

**A**

Great, could not  
be better!

**B**

Good enough,  
maybe not my  
usual TV quality  
but fine...

**C**

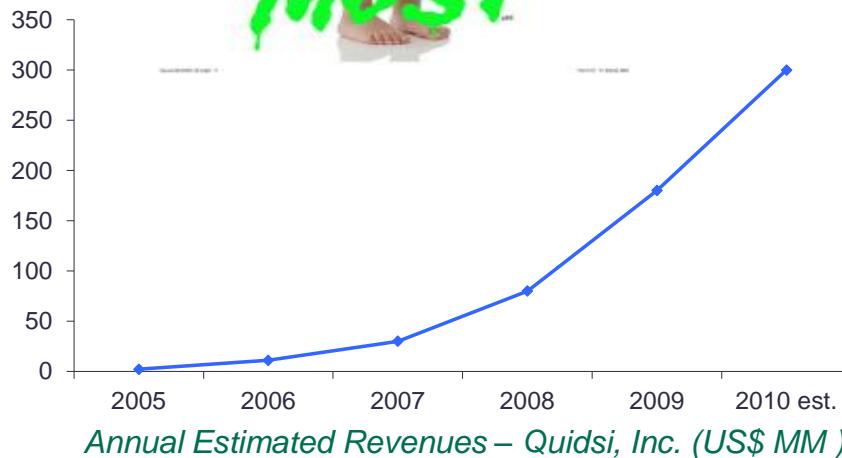
Problematic:  
maybe we  
should limit  
videos

**D**

Terrible, I could  
not tell what  
this video was  
about

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# We deliver everything but the baby...



**Started in 2005 in a garage in Long Island, Quidsi was bought out by Amazon for US\$ 600 MM in 2010.**



diapers.com

SOAP.com

BEAUTY BAR.com



**Marc Lore: Founder & CEO, Wharton MBA**

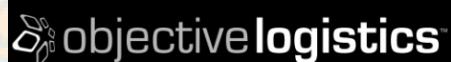
**Scott Hilton: COO, Wharton EMBA**



Jet.com



# My investments and startup advisory (see Crunchbase)



Boston, MA. Funding: about \$8M, Acquired



Delaware. Funding \$2M.



Singapore.  
Funding: about \$100M, Acquired



Singapore. Seed Rounds: <\$1M



Silicon Valley. Funding about \$2M. RIP.



PERCOLATA

Silicon Valley, CA.  
Funding: >\$10M.



London. Funding about \$7M.



Malaysia. Seed rounds <\$1M.



Rapid Flow

Pittsburgh: funding about \$2M.



NYC. Funding: about \$3.5M.  
Exited.



Washington, DC. Seed rounds: <\$1M.



LifeGuides™  
Life Challenges Simplified

Worldwide, seed funds.



Delaware. Funding about \$5M



Switzerland. Funding about \$2M. RIP



LookBooker beta

NYC. Funding: about \$2M. RIP



TABSQUARE

Singapore. Funding about \$5M.

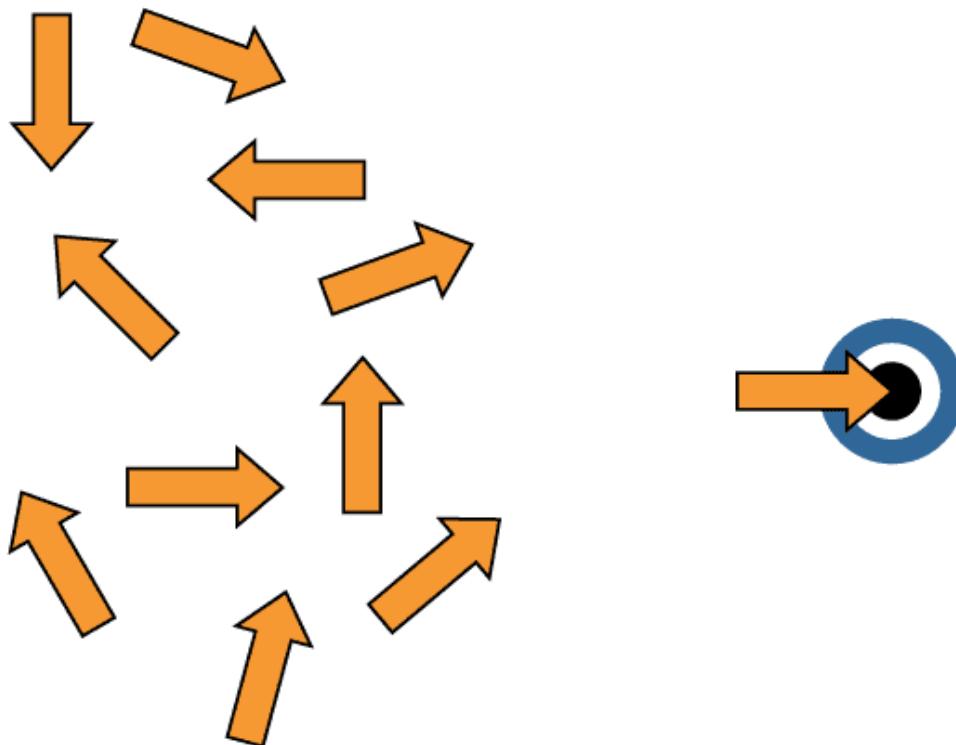


# **Did founders of Diapers.com invent anything? If so, what was it??**

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# innovation

A new match between a solution and a need.



# Value Creation and Capture in Innovation

1. How significant is the need?



2. How well does the solution meet the need?



3. Can the solution and the organization create and capture value?

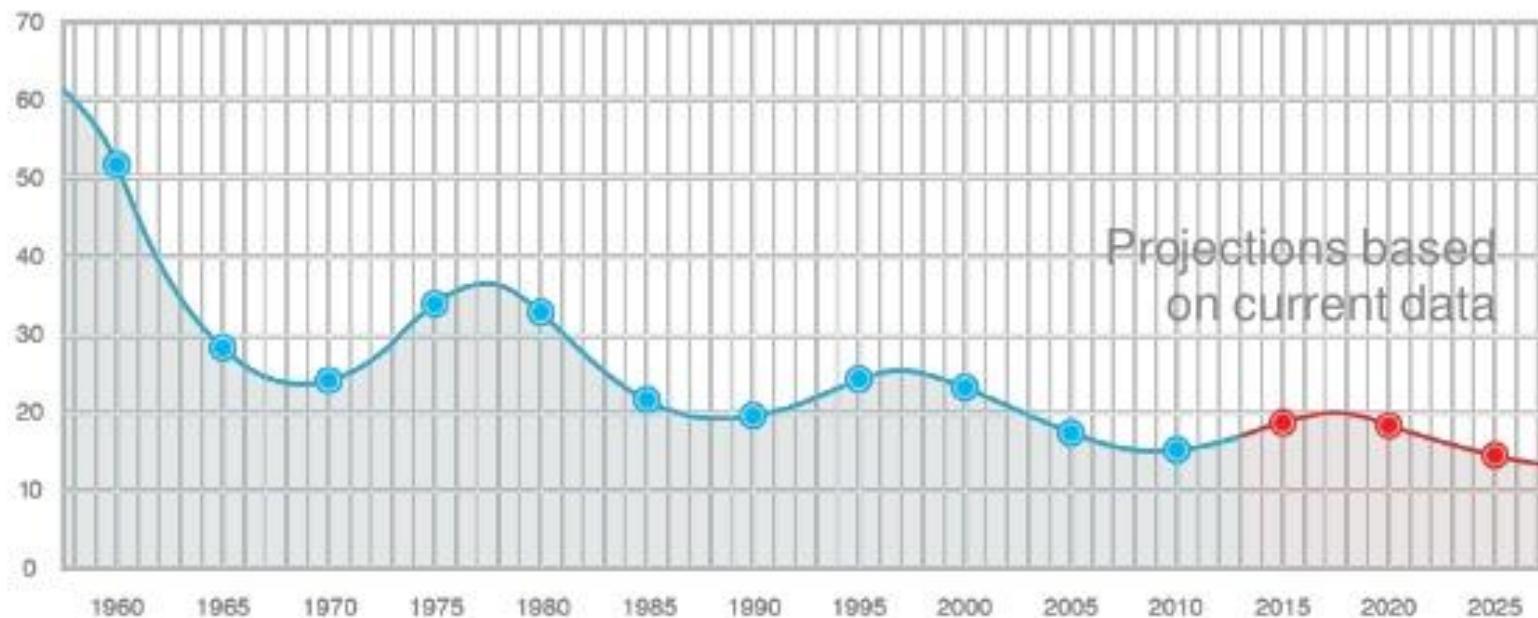


**Price – Cost >> 0**

Unfortunately, creating innovation is hard...

# The world is changing fast... Too fast...

## At the Current Churn Rate, 75% of the S&P Will Be Replaced by 2027



Average company lifespan on S&P 500 Index (in years)

Year (each data point represents a rolling scale 7-year scale average of average lifespan)

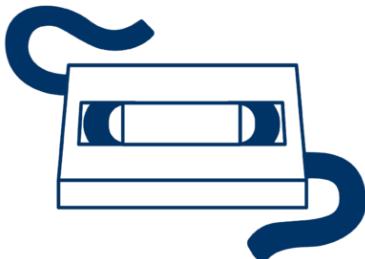
Data: INNOSIGHT, Richard N. Foster, Standard & Poor's



# Why life-span of large public companies is shrinking?

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# What we learned from history



## NETFLIX / VIDEO STREAMING

Neither RedBox nor Netflix are even on the radar screen in terms of competition.

JIM KEYES  
CEO of Blockbuster

Speaking to Motley Fool in 2008.



## IPHONE

We've learned and struggled for a few years here figuring out how to make a decent phone ... PC guys are not going to just figure this out. They're not going to just walk in.

ED COLLIGAN  
CEO of Palm

In 2006, After getting the news that Apple was developing a phone.

## GOOGLE

Google's not a real company. It's a house of cards.

STEVE BALLMER  
CEO of Microsoft

During a court case regarding an engineer leaving Microsoft to work at Google



## WEARABLES / SMARTWATCHES

The Apple watch is an interesting toy, but not a revolution.

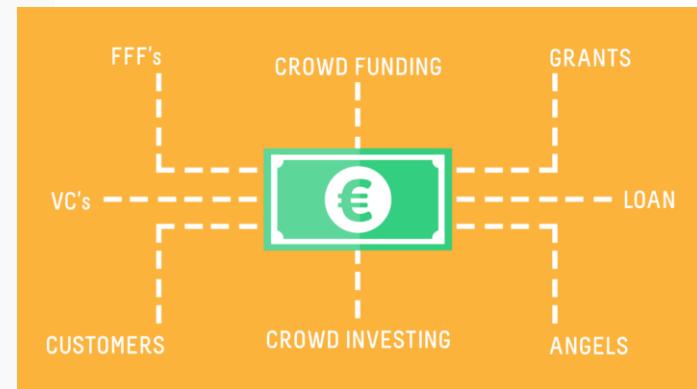
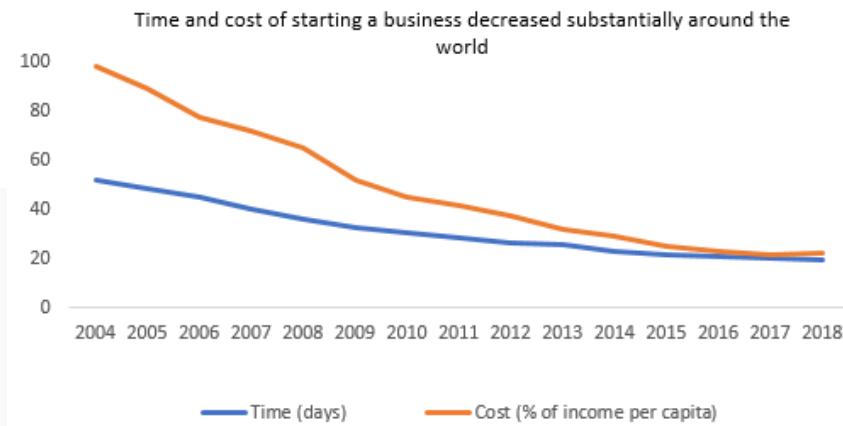
NICK HAYEK JR.  
Swatch Executive

In 2015

# Meanwhile in startup ecosystems around the world...

Years from founding to \$1 billion valuation

Bird	1.25
Desktop Metal	1.79
Essential Products	1.93
letgo	2.05
Katerra	2.24
Illumio	2.28
Nikola Motor Company	2.48
Zoox	2.5
Opendoor	2.75
Grail (Biotechnology)	2.89
Airbnb	2.98
Instacart	2.99
Mercari	3.17
Samsara	3.22
Tempus	3.22
Human Longevity	3.26



# As a VC, which innovation would you bet on?



A



B



C

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# What makes it hard to predict which innovation succeeds and which fails?

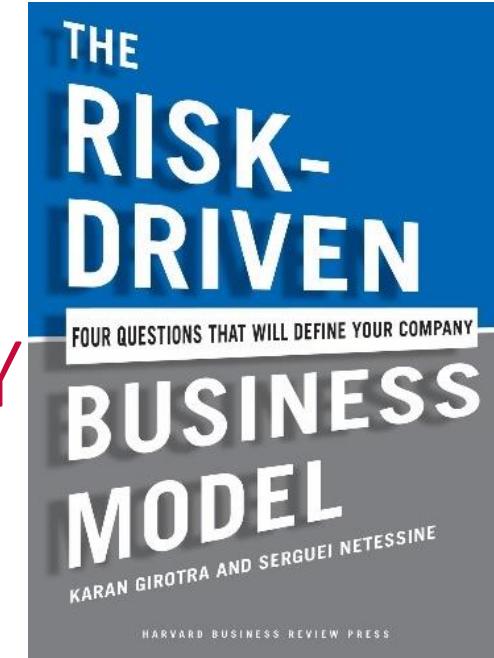
**Top**

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# The myth: importance of first-mover advantage and IP

Innovation	Early Commercial Attempts (year)	First Mainstream Product (year)	Leader(s) During Peak Growth Period (year)
Cable television	Panther Valley Cable TV, Service Electric Cable TV 1948	Cox, Westinghouse, Teleprompter ~1960	Comcast, Time Warner, Cox, TCI, Cablevision, MediaOne ~1985
Compact fluorescent light bulb	Philips, Westinghouse ~1980	Philips, Westinghouse, GE ~1985	Philips, GE, Westinghouse, N:Vision, Sylvania ~1990
Disposable diapers	PauliStrom 1942	Chicopee Mills (J&J) 1949	Procter & Gamble, Kimberly Clark 1961
Microwave oven	Raytheon 1947	Amana (Raytheon) 1967	Litton ~1970
Mobile telephone	Motorola 1973	Motorola 1983	Nokia, Motorola ~1991
Mutual fund	Massachusetts Investors Trust 1924	Fidelity Fund 1928	Vanguard Group Fidelity Investments 1977
Personal computer	MITs Altair 1975	Apple II 1977	IBM PC 1985
Search engine	Lycos 1994	Excite, AltaVista, Yahoo! 1995	Google, 1998 Yahoo!, Microsoft, 2004
Television	Telefunken, 1934 Dumont, 1938	RCA 1948	Magnavox, Zenith, Philips ~1960
Video cassette recorder	Ampex 1956	Sony 1971	Matsushita 1976

TRUE INNOVATION RARELY  
HAPPENS BECAUSE OF  
TECHNOLOGY SHIFT, IT IS USUALLY  
DUE TO A CHANGE OF BUSINESS  
MODELS. ESPECIALLY NOW...



The world's largest taxi company, owns no vehicles.



The most valuable retailer, has no inventory.



The world's most popular media owner, creates no content.



The world's largest accommodation provider, owns no real estate.

# Innovations Hiding in Plain Sight



## GROUPON



MORE EXAMPLES ON [HTTP://WWW.DEFINEYOURCOMPANY.COM](http://www.defineyourcompany.com)

# What was the key innovation introduced by Sears Roebuck?

Top

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# What was the key innovation introduced by Dell?

Top

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# A Different Approach to Innovation

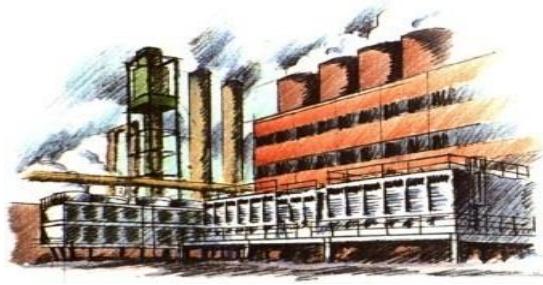
## EXISTING PRODUCTS/TECHNOLOGY



## EXISTING MARKET NEEDS



## SUPERIOR BUSINESS MODELS TO PROVISION PRODUCTS OR SERVICES TO THE MARKET

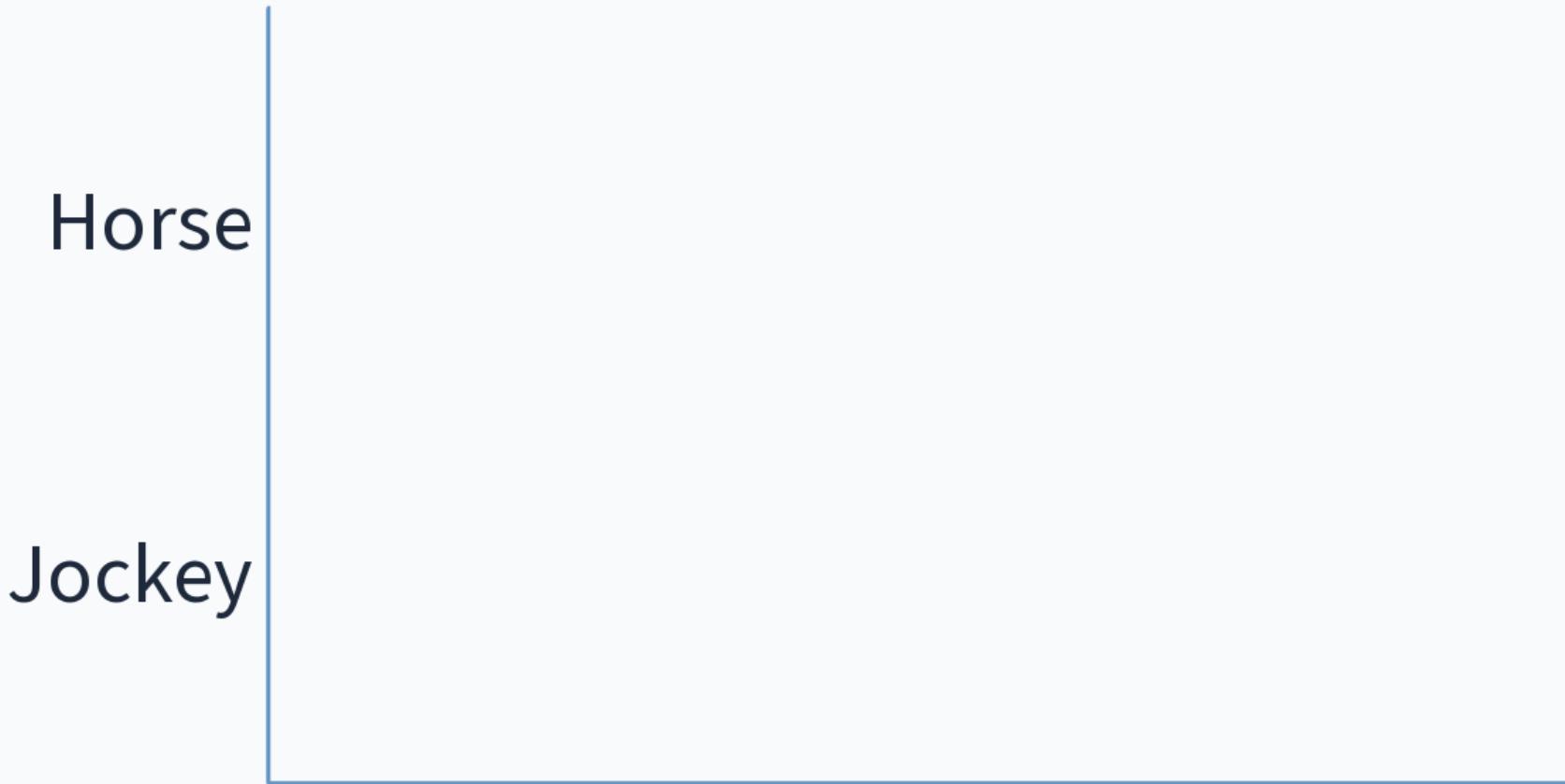


***Business Model Innovation***

# Horses or and jockeys



# As a VC, do you bet on the horse or on the jockey?



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# How VCs select investment opportunities



Factor	% think important
Team	95%
Business Model	83%
Product	74%
Market	68%
Valuation	56%
Fit	50%
Ability to add value	46%
Industry	31%

Management Team Quality	% most important
Industry Experience	95%
Entrepreneurial Experience	83%
Ability	74%
Teamwork	68%
Passion	56%

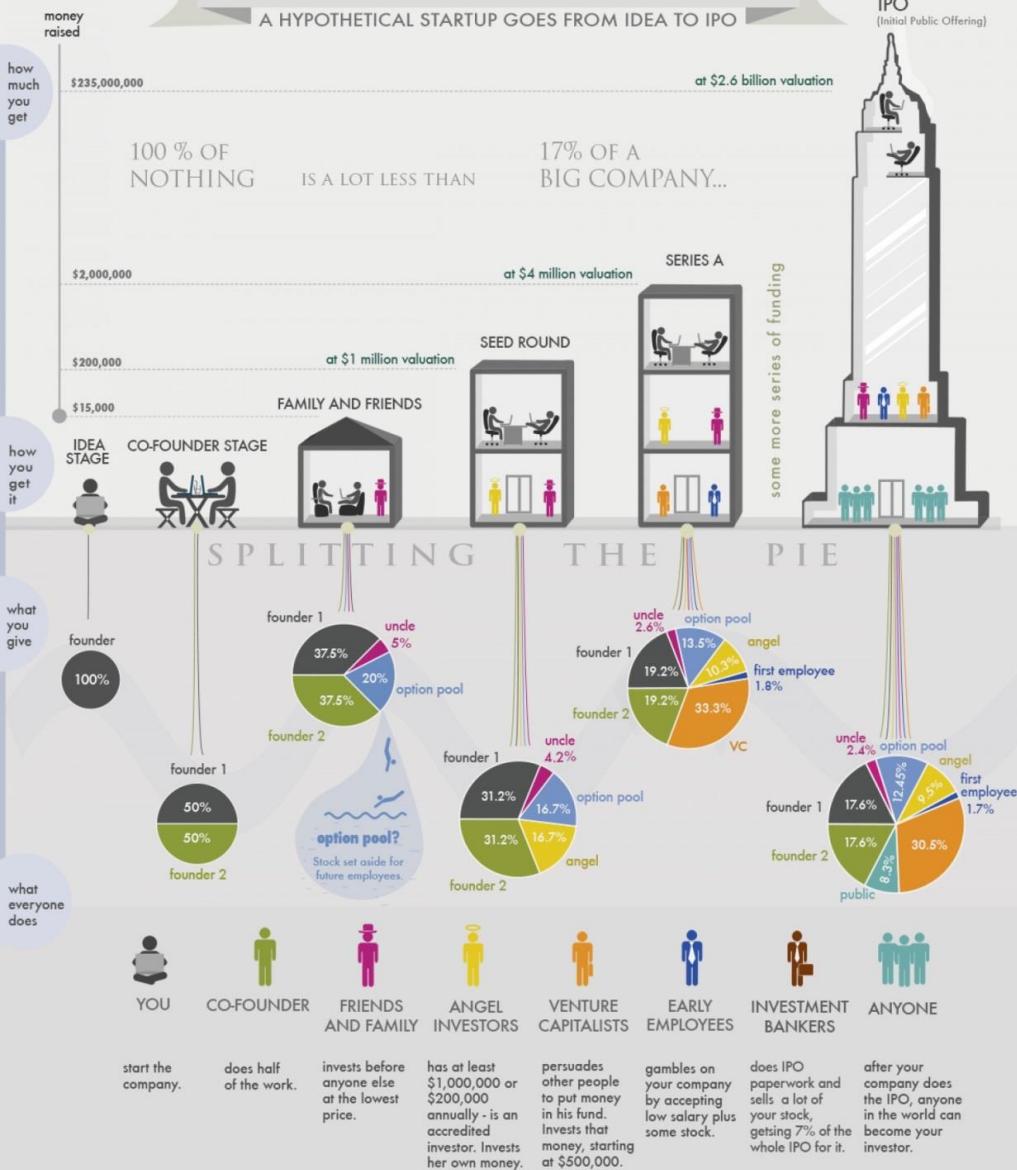


Source: "How do venture capitalists make decisions?" Gompers et al. 2016.

# HOW STARTUP FUNDING WORKS

A HYPOTHETICAL STARTUP GOES FROM IDEA TO IPO

BY ANNA VITAL



# When is business model analysis most important?

The idea stage

The co-founder stage

Friends and family stage

Seed round stage

Series A stage

Late stage investing

IPO

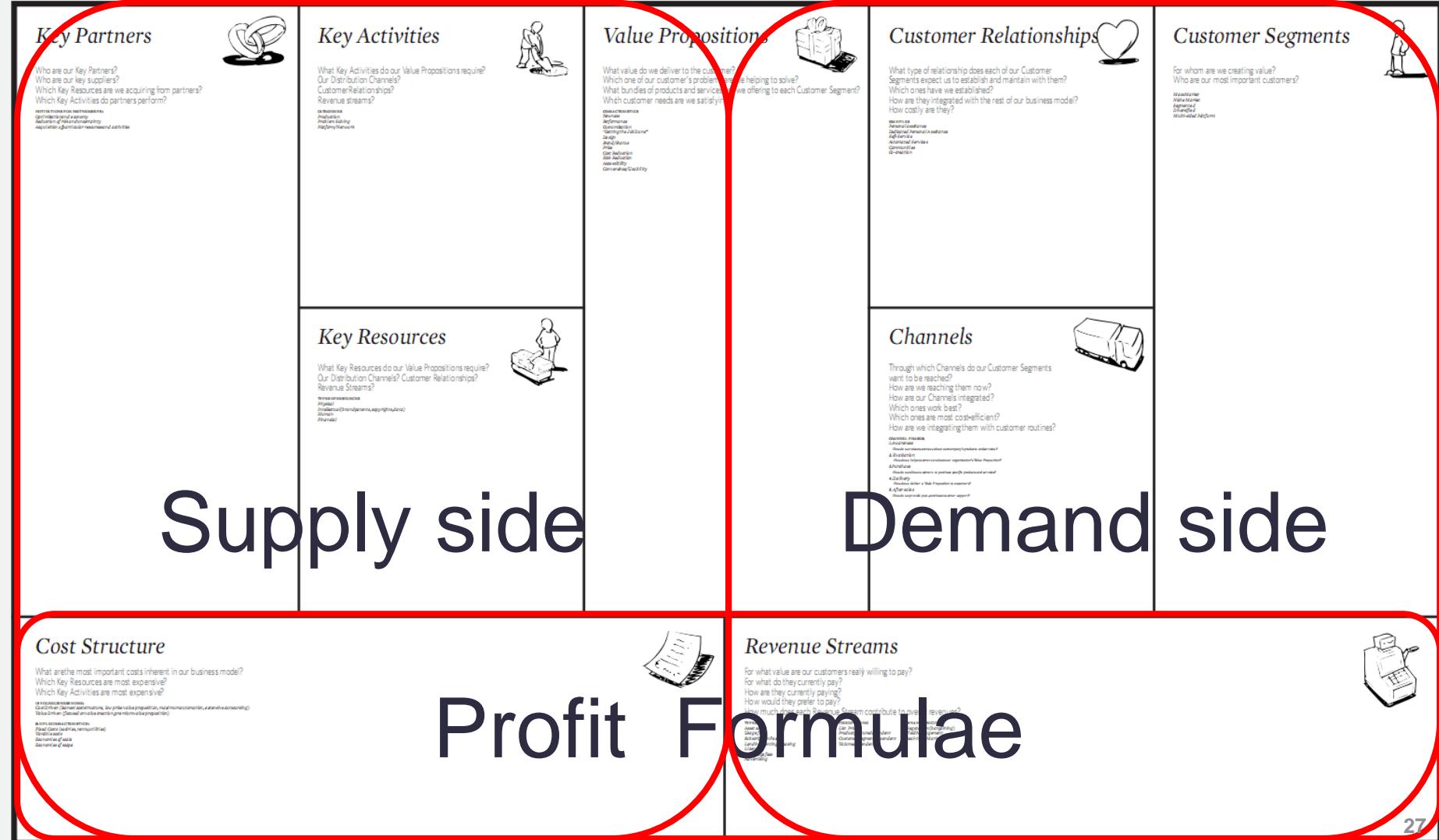
# Next: The language of business models

## The Business Model Canvas

Designed for:

Designed by:

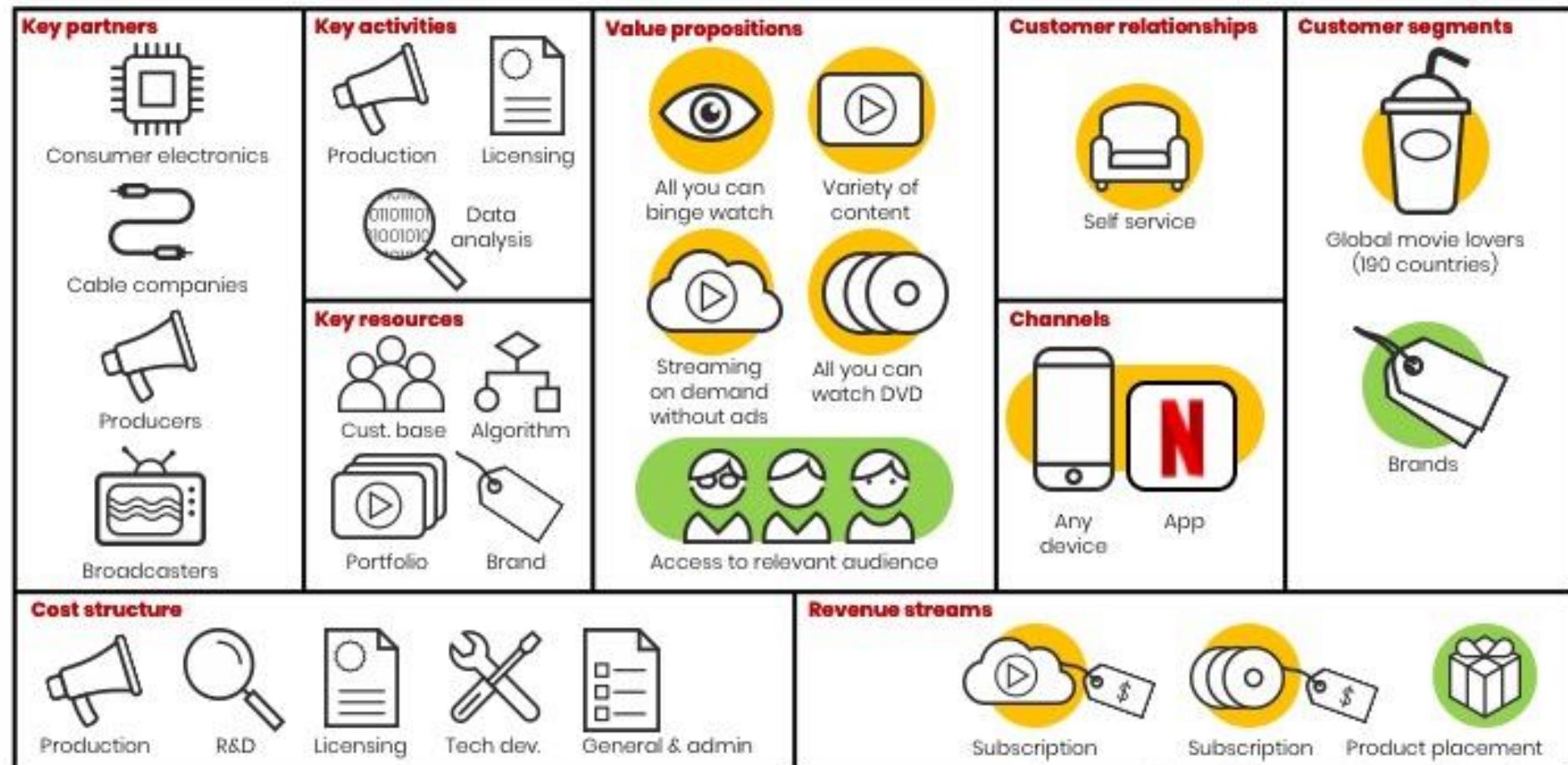
On: Day Month Year  
Iteration: No.



# Example: Business Model Canvas for Netflix

## BMI • Business model canvas

NETFLIX



Business Models Inc © www.businessmodelgeneration.com

# Deeper dive on Profit Formulae: Unit Economics

<b>Customer Acquisition Cost (CAC):</b>		
<b>Total cost to acquire all customers</b>	<b>100,000</b>	This is the amount spent on sales and marketing. This should not include ordinary fixed operating expenses such as research, development and G&A.
<b>Total new customers</b>	<b>400</b>	The number of new customers that purchased or are expected to purchase your product.
<b>Customer Acquisition Cost</b>	<b>250</b>	= Total cost to acquire all customers / Total new customers
<b>Lifetime Value (LTV):</b>		
<b>Annual Collections per Customer:</b>	<b>365</b>	Amount of money you expect to earn over the next 12 months from that customer. This is also known as the annual contract value (ACV), or, simply, revenue. For example, if you sell a \$1 apple to a customer every day, you can expect \$365 in revenue.
<b>Gross Margin (GM%):</b>	<b>70%</b>	This is the amount you collect after deducting any direct cost attributable to producing what you sell. For example, if it cost you \$0.30 to purchase the apple that you sold for a \$1, your gross margin (excluding your time to actually sell the apple) would be 70%.
<b>Lifespan of a customer:</b>	<b>1.5</b>	This is how long you can expect the customer to continue purchasing your product. Let's say they will stick around for 1.5 years.
<b>Lifetime Value (LTV)</b>	<b>383</b>	Annual Collections * GM% * Lifespan. Note that this is a simple example for LTV and does discount the LTV to present value dollars.
<b>LTV to CAC Ratio</b>	<b>1.5x</b>	= LTV / CAC

# Interpretations

Show that  $CAC < LTV$  and you have a business (most VCs will want  $CAC < (2 \div 3) \times LTV$ )

Demonstrate that this is scalable (and difference gets higher with volume) and VCs will fund you!

But...

CAC and LTV are not independent... And they work best for consumer businesses...

Early stage companies rarely have long-term history so CAC and LTV are usually tracked over the last few months only...

So usually CAC and LTV are highly uncertain... (watch out!)

# How familiar are you with Segway

- I invented Segway
- I have tried Segway
- I have seen Segway
- Never heard of it until now



# Segway: The Horse



\$80 mm investment by Kleiner-Perkins,  
CSFB

\$500 mm valuation

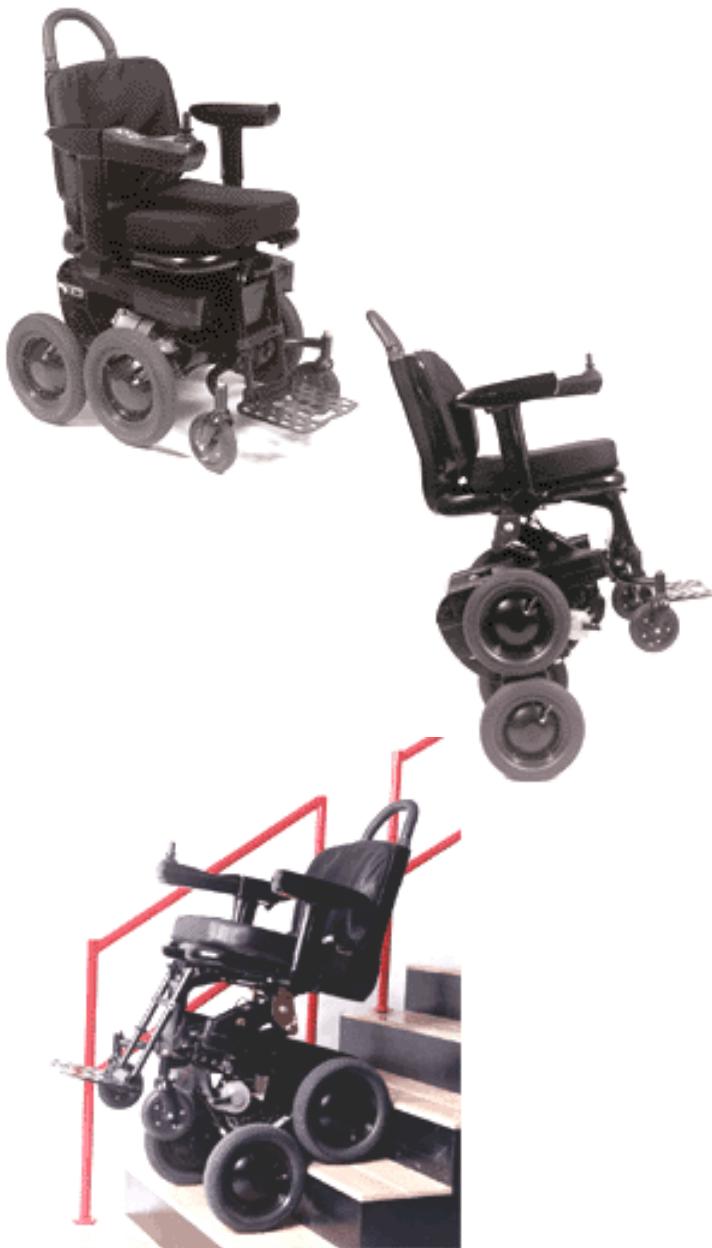
***Specifications:***

- 12.5 mph
- 80 lbs
- 11 miles range
- \$9000  
(consumer version \$4950)

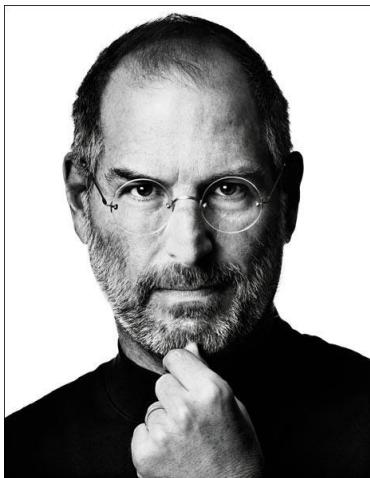
Original volume projections:  
40,000 units/month by end of 2002.

“I would stake my reputation, my money and my time on the fact that 10 years from now, this will be the way many people in many places get around. If all we end up with are a few billion-dollar niche markets, that would be a disappointment. It’s not like our goal was just to put the golf-cart industry out of business”  
– Dean Kamen

# The technology: iBot chair



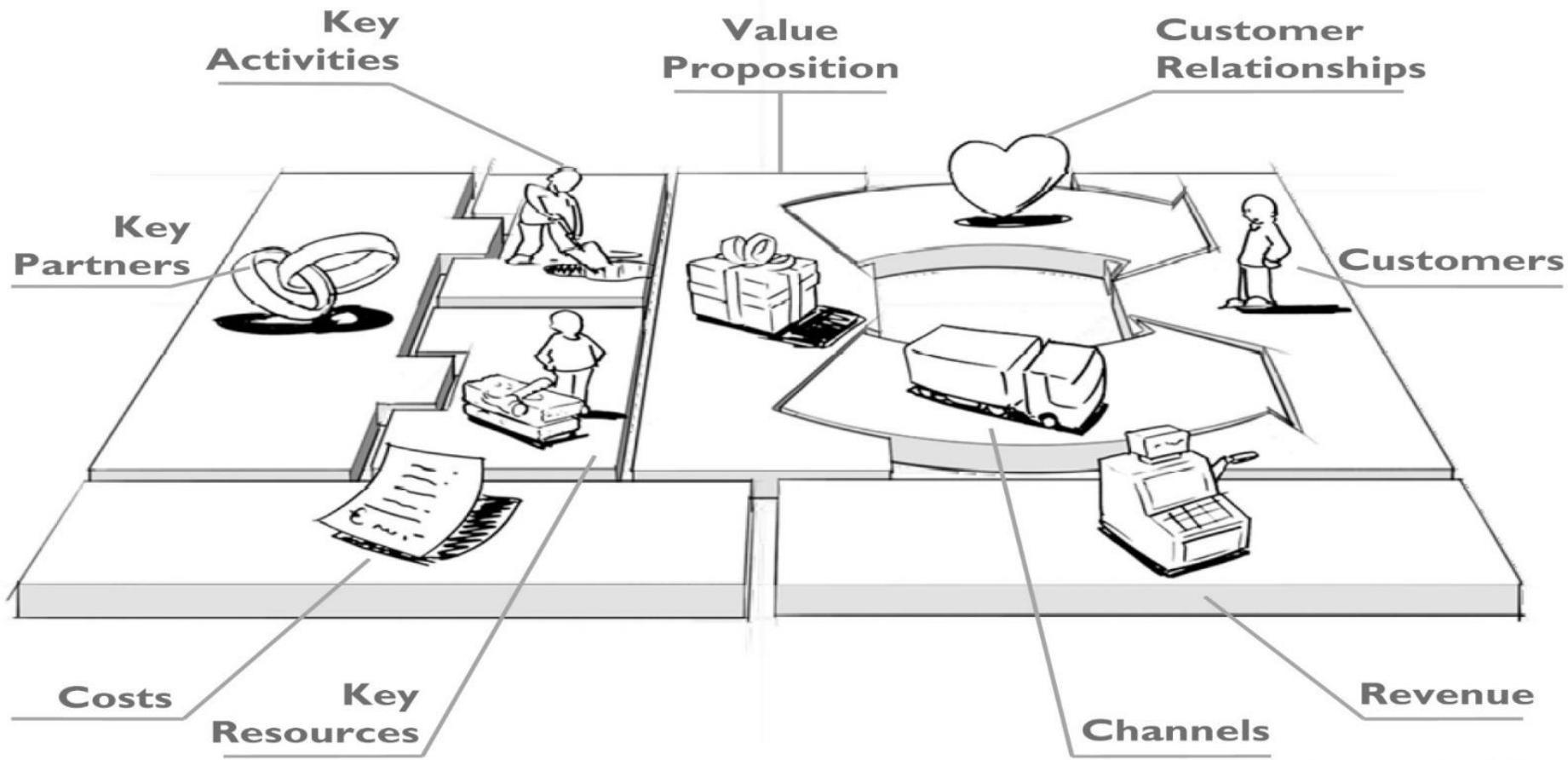
# Segway: The Jockeys







# VC Business Model Audit



drawings by JAM

- Map out startup's business model.
- Is there value created? Is there value captured?
- Audit each part: where are the biggest issues?

# What Makes a Start-up Work? – Value Creation Analysis

*Step 1: Use Business Model Canvas to map out the business model for startup*

*Step 2: Identify your points of comparison*

*Next best option for customers*

*Organization with closest operational systems*

*Other industries where the business model works*

*Step 3: Use the Business Model Canvas to see the difference between your organization and the points of comparison. Ideally, you should do this for each of the organizations identified in the previous step.*

*Step 4: Why will the dogs eat the dog food? (**Value Proposition**) From the demand side, why will a customer purchase your product rather than the other products – alternately, which customers are most likely to purchase your product?*

*Step 5: Will you be able to provision the promised product in a profitable way? Is the business model profitable? (**Profit Formulae and Unit Economics Analysis**).*

Good  
Dog

# Group Work (on a separate file)

With your team, create Business Model Canvas for Segway. You might want to focus on a specific customer segment. Pick one “Scribe” to take notes on “Empty Business Model Canvas.docx”.

Think through Value Proposition. Identify parts of the canvas that, in your opinion, have most issues and are likely to derail the business model. Underline them on the canvas and rank order.

Be ready to present top 3 most critical business model issues. Refer to “Business Model Canvas Slides.pdf”

Segway

Regulatory - ①

Use of use

Safety

② Pricing (high)

B2B → B2C

Design → regulation

⑥ High cost (service  
distribution (w/ follow))

③

Regulatory = liability, where?  
Cost? Too high  
Own or Lease?

④ B2C → best option.

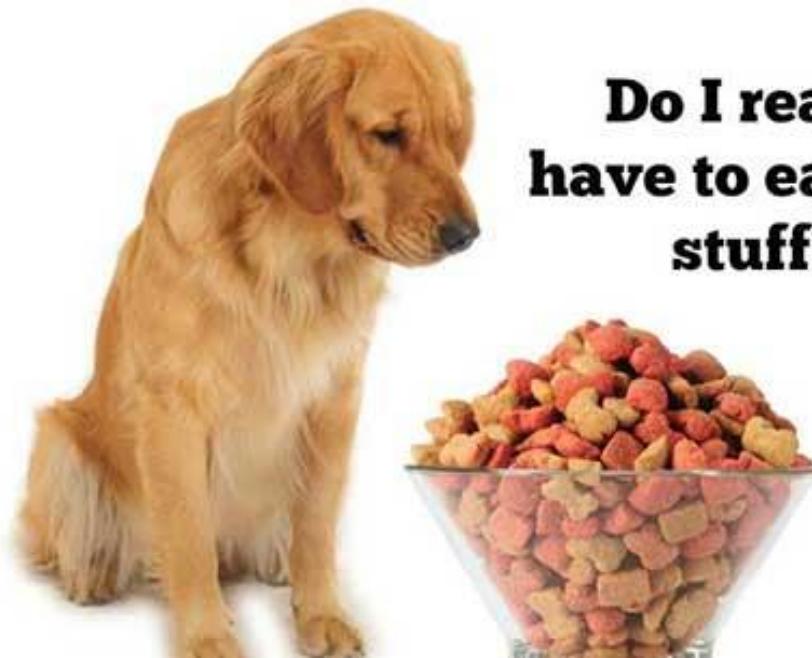
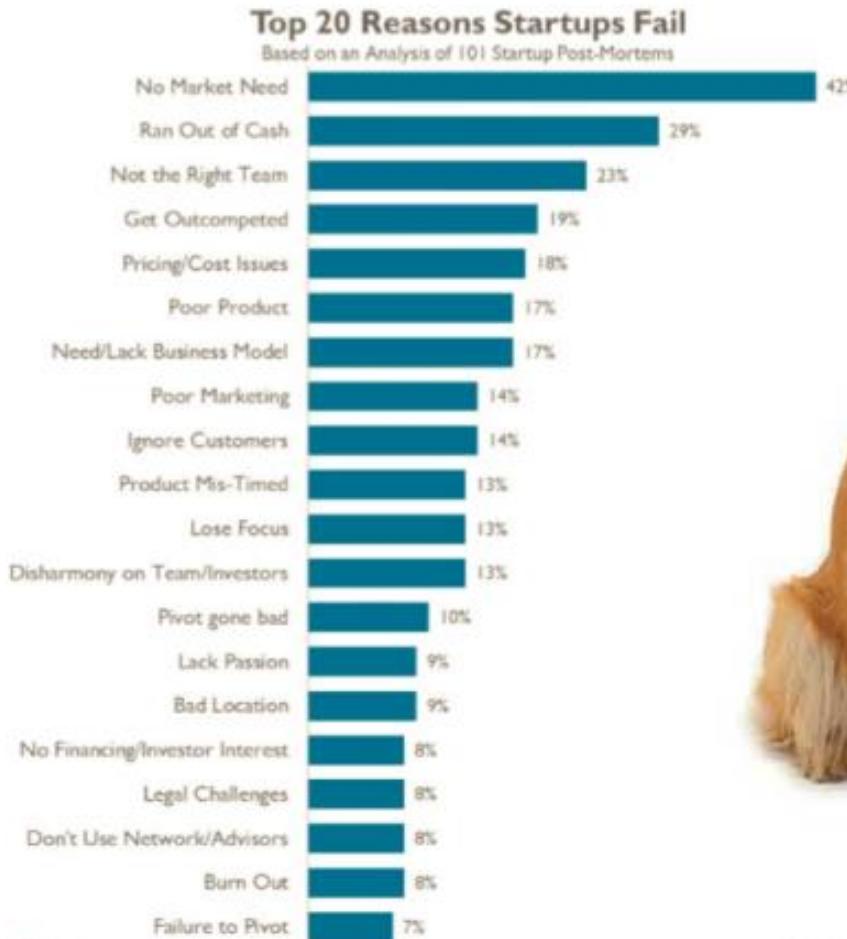
No infrastructure  
Bad channel Transport.

⑤ No pain point  
B2B (no value proposition  
(in regulatory areas))

Governance

# Value Proposition or Product-Market Fit

- Ideas matter. But they are dime a dozen...



# Do dogs want to eat dog food? The product-market fit question... (Andy Rachleff) wealthfront

- A value hypothesis: an attempt to articulate the key assumption that underlies why a customer is likely to use your product.  
Identifying a compelling value hypothesis is product/market fit.
- A value hypothesis identifies the features you need to build, the audience that's likely to care, and later the business model required to entice a customer to buy your product. Companies often go through many iterations before they find product/market fit, if they ever do.
- If you address a market that really wants your product — if the dogs are eating the dog food — then you can screw up almost everything in the company and you will still succeed. Conversely, if you're really good at execution but the dogs don't want to eat the dog food, you have no chance of winning.

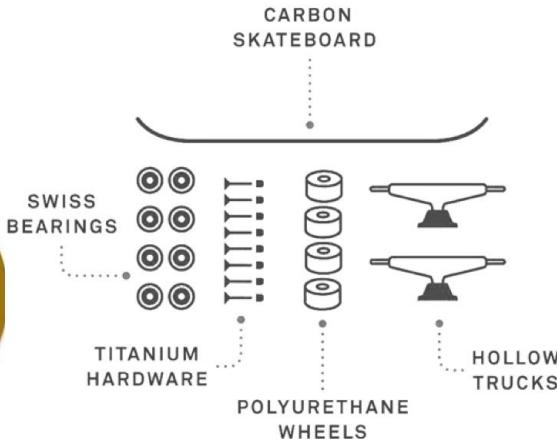
# Other points about Product-market fit

- First to market rarely matters, first to product market-fit matters a lot! (think Dropbox, Google, Amazon)
- Finding product-market fit is not a discrete event but the process of iterations
- It is rarely obvious when you have product/market fit
- You can lose product/market fit and you can be outcompeted on product/market fit
- Based on analysis of about 3200 high growth internet startups approximately 70% of the startups in the dataset scaled prematurely. Startups that scale properly grow about 20 times faster than startups that scale prematurely (Startup Genome Report).

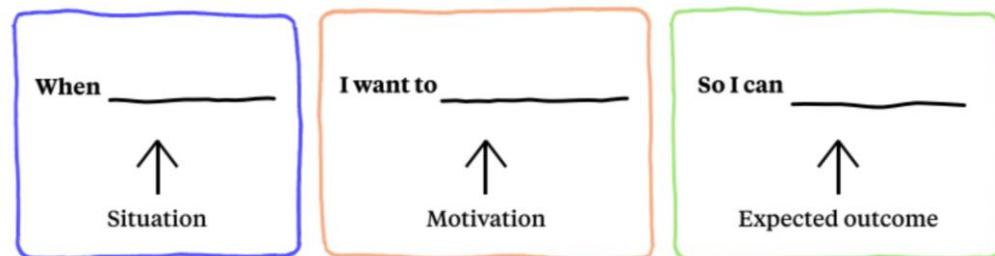
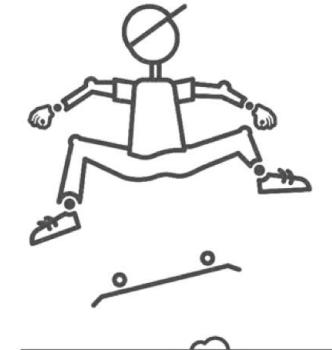
# Useful angle to think about: Jobs-to-be-done



Even though customers buy this...

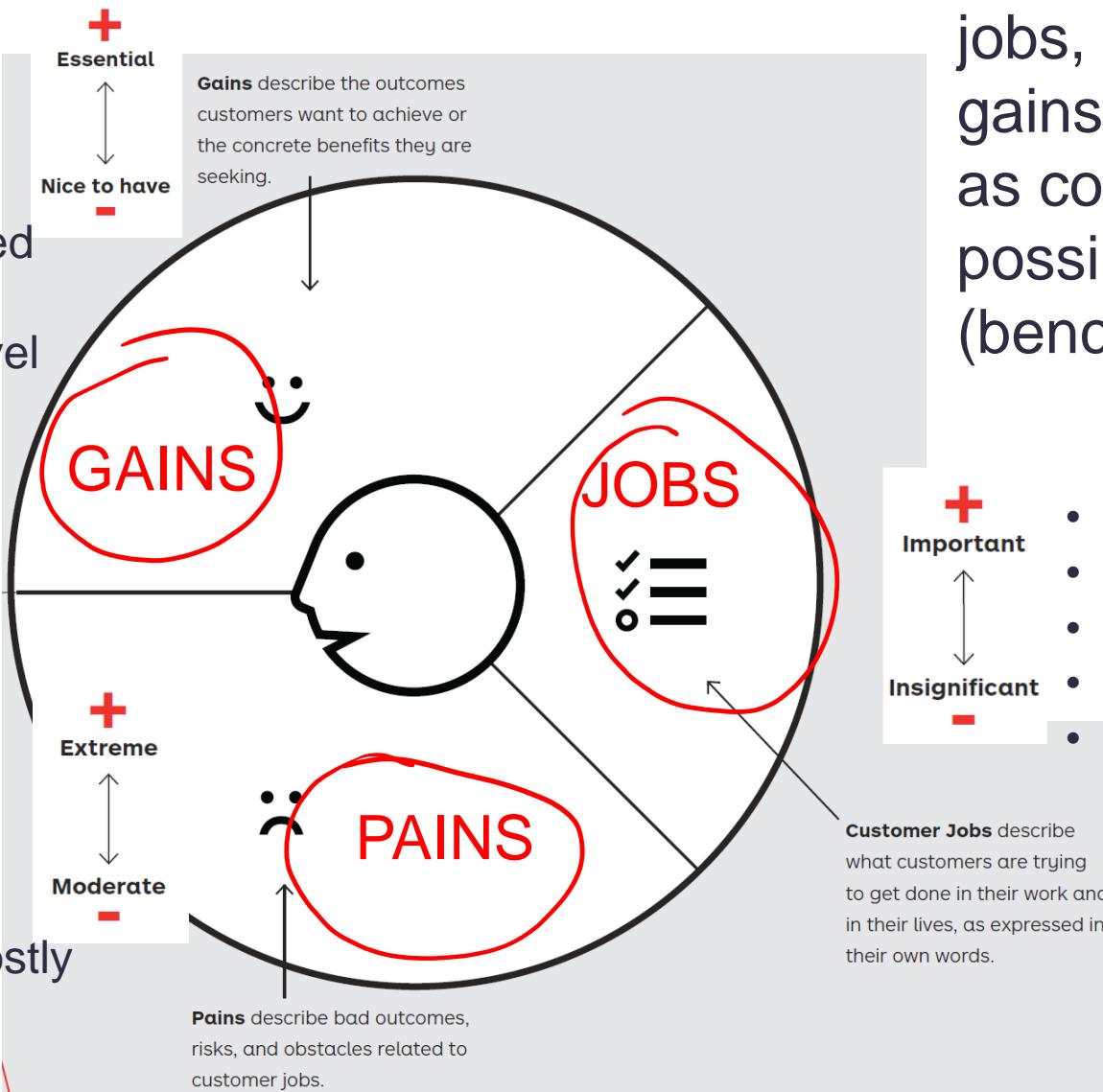


...they really want this.



# Step 1: Draw Customer Profile

- Required
- Expected
- Desired
- Unexpected
- Savings
- Quality level
- Dreams
- Undesired outcomes
- Obstacles
- Risks
- What is costly
- Mistakes
- Barriers

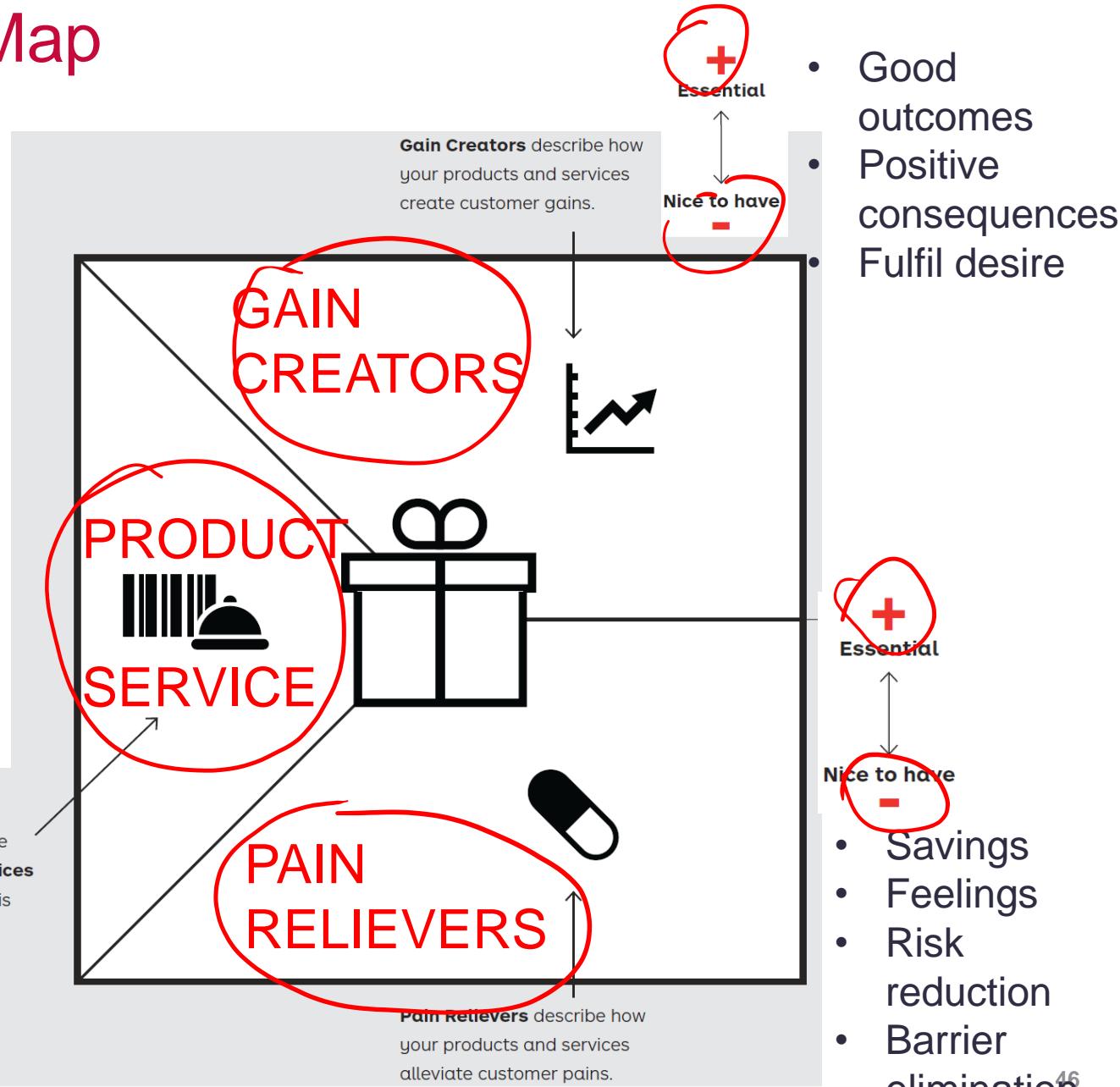


To differentiate jobs, pains and gains, make them as concrete as possible (benchmark, KPI).

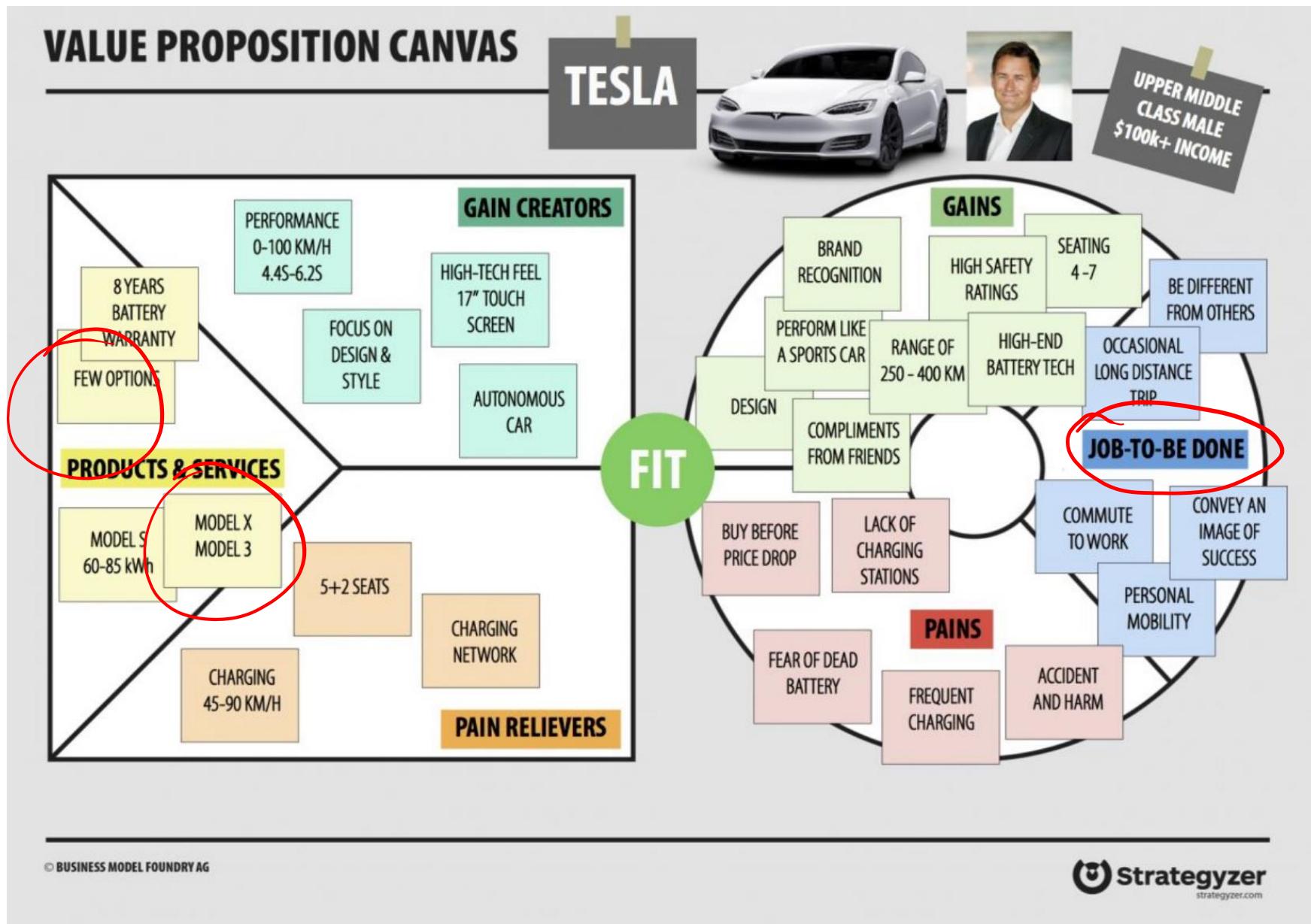
- Functional
- Social
- Emotional
- Personal
- Supporting

## Step 2: Value Map

- Tangible
- Intangible
- Digital
- Financial



# Step 3: What fits and what does not



# How to measure product-market fit

## The 40% rule

At least 40% percent of customers indicate that they would be "very disappointed" if they no longer have access to a particular product or service.

At least 40% of surveyed customers considering the product or service as "must have".

## Analytics metrics (for websites) above average

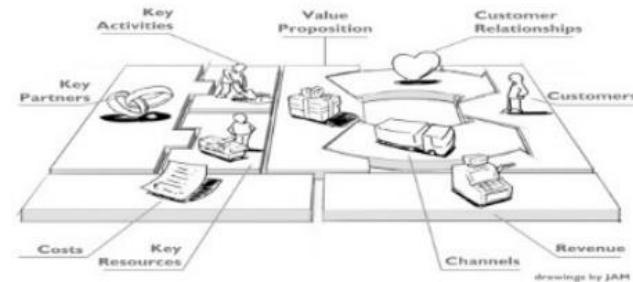
1. Low bounce rate,
2. High time on site,
3. Many pages per visit
4. Many returning visitors
5. High customer lifetime value.

# Summary for today

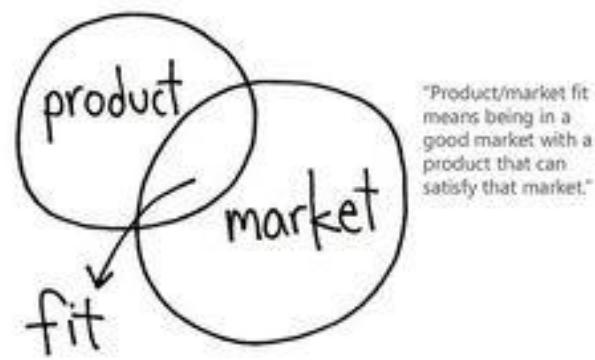
Business model analysis is often the Blind Spot for innovators who think technology first. VCs should first think (and fund) business models and the teams.



The path to validating a business model lies through Business Model Audit, including Profit Formulae and Unit Economics.



Product-market fit is paramount to building the right Value Proposition, and it is important to question it early on through metrics and reasoning.



"Product/market fit means being in a good market with a product that can satisfy that market."

# Venture Capital Business Models



## “Spray and Pray”

- \$150,000 for around 6% of the company (subject to dilution at the time of conversion of our convertible security).
- right to make a follow-on investment of an additional \$500,000 or 20% of your next priced round of \$1,000,000 or more
- Portfolio of over 2,500 companies



- Existing business model copied, data-driven management and benchmarking.
- Product development, user experience design, marketing campaigns and legal work are conducted by seasoned developers, designers and lawyers, centralized.
- Founders are managers from McKinsey, BCG and Goldman Sachs with comparable salary but single digit in equity.



## Revenue-Based Financing

- Principal amount fully funded at closing
- Structured as a loan
- Monthly payments equal a set percentage of monthly revenue (typically 1 to 9%)
- Monthly payments continue until a set dollar amount has been paid back, usually 1.3-2.5X the amount of the financing
- At maturity, which is typically 3 to 5 years, any unpaid amount of the cap is due



- ① Community of startup builders is the central piece of the model and a moat;
- ② Make fewer bets and engage hands-on to improve the odds;
- ③ Fill gaps in management and operations on as-needed basis.



Wharton  
UNIVERSITY OF PENNSYLVANIA