2016 NSF SBIR/STTR Phase I Grantee Fall Workshop

HYATT REGENCY CRYSTAL CITY September 19 - 21, 2016



July 19, 2016

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Toll Free: 1-888-464-1607

Attendee access code: 3849383

Hosted by:

Ruth Shuman, SBIR/STTR Program Director Edmund Pendleton and Mike Abbott, NSF I-Corps



I-Corps Story



\$7 Billion

"How can we increase the economic impact of the research dollars invested every year?"









Lean LaunchPad Course

Developed by entrepreneurs

Taught by entrepreneurs

Stanford University and a lecturer and National Science Foundation principal investigator at the University of California at Berkeley and Columbia University. He has participated in eight high-tech start-ups as either a cofounder or an early employee.

Why the Start-Up **Everything** by Steve Blank

Harvard Business Review

P ******* E.S. Drive Wetch The Limits of Social Influence

In Search of the Next Big Thing. the environment

The Unmanageable Star Performer

TURN A GREAT "Lean" is changing everything you know

nas emerged, one that can make the process of starting a company less risky. It's a methodology called the "lean start-up," and it favors experimentation over elaborate planning, customer feedback over intuition, and iterative design over traditional "big design up front" development. Although the meth-

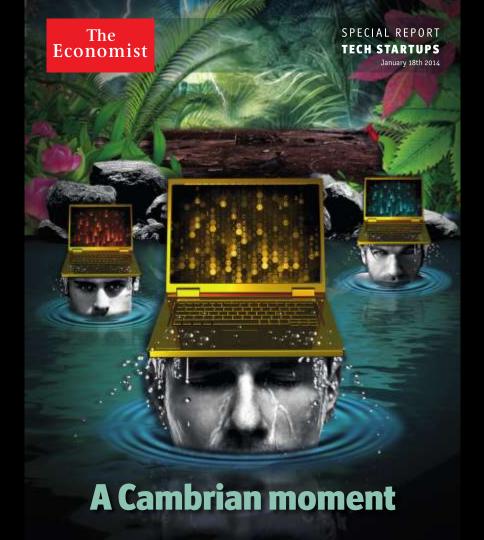
about starting a new venture PAGE 63

"minimum viable product" and "pivoting"-have ickly taken root in the start-up world, and busiss schools have already begun adapting their curula to teach them.

The lean start-up movement hasn't gone totally ainstream, however, and we have yet to feel its full

pact. In many ways it is roughly where the big data ovement was five years ago-consisting mainly of suzzword that's not yet widely understood, whose plications companies are just beginning to grasp. it as its practices spread, they're turning the conntional wisdom about entrepreneurship on its ad. New ventures of all kinds are attempting to prove their chances of success by following its inciples of failing fast and continually learning. d despite the methodology's name, in the long term some of its biggest payoffs may be gained by the large companies that embrace it.

In this article I'll offer a brief overview of lean start-up techniques and how they've evolved. Most important, I'll explain how, in combination with other business trends, they could ignite a new entre-







You Promised Me Mars Colonies. Instead, I Got Facebook.

I-Corps first program to apply lean startup principles

to complex engineering, technology, and science based startups

I-Corps Results

700+ *Teams**

350+ Companies

\$50M+ Raised



You Tube

6 New Agencies

SBIR Programs

I-Corps the premiere federally funded innovation and commercialization program in the US

Beat-the-Odds Bootcamp derived from same concept ...evidence based entrepreneurship.

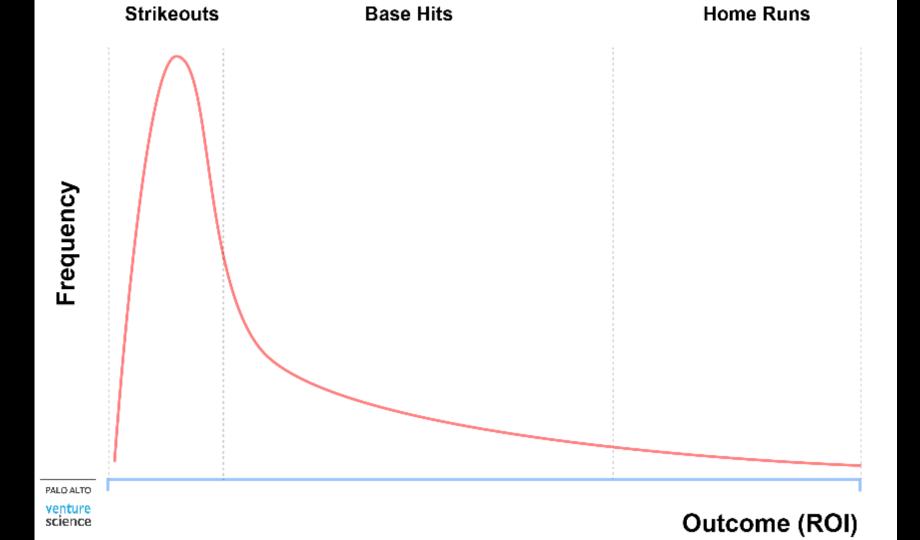
Why are we here?

Our Goal

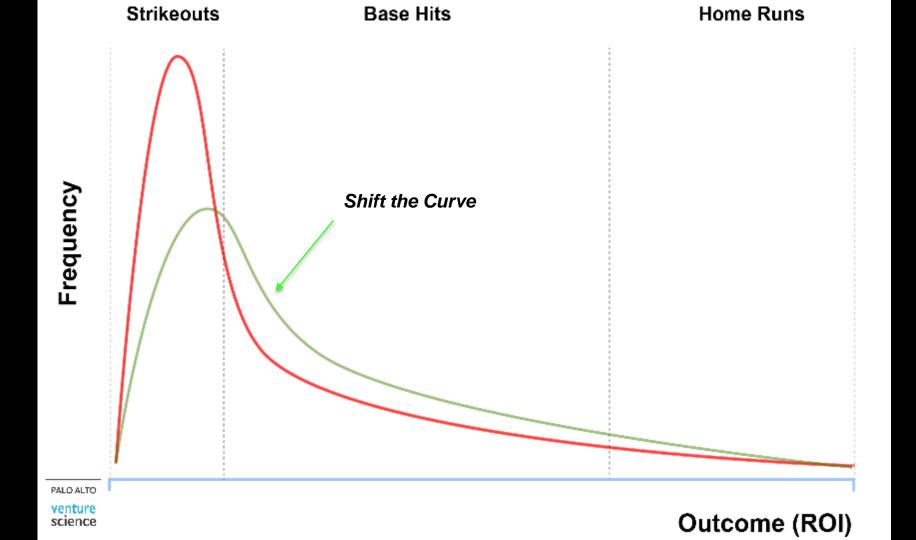
Improve Odds

Pick Winners

Pick Winners



Create More Winners



What will you do?

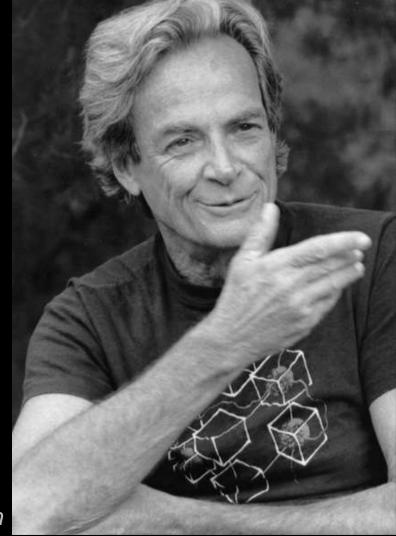
Jump In



30+ Interviews

But why?

"The first principle is that you must not fool yourself



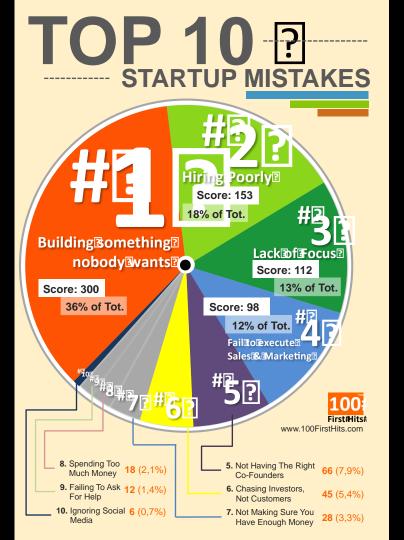
"The first principle is that you must not fool yourself, and you are the easiest person to fool."



Everyone has a plan...

...until he gets punched in the face."







Hiring Poorly?

Score: 153

18% of Tot.

#3<u>1</u>

Lack of Focus ?

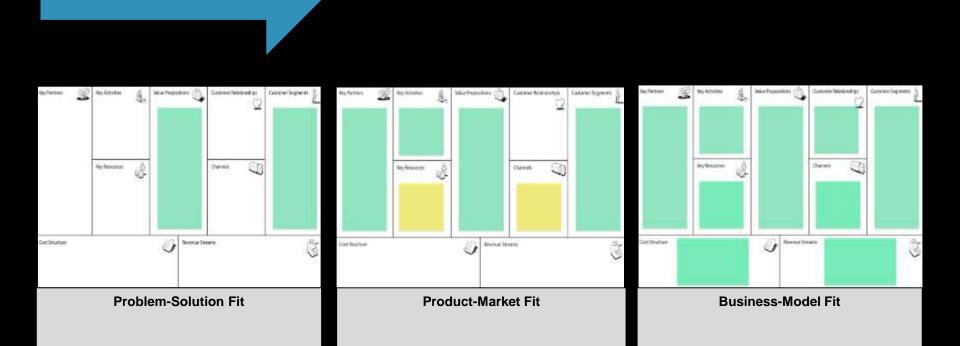
Score: 112

13% of Tot.

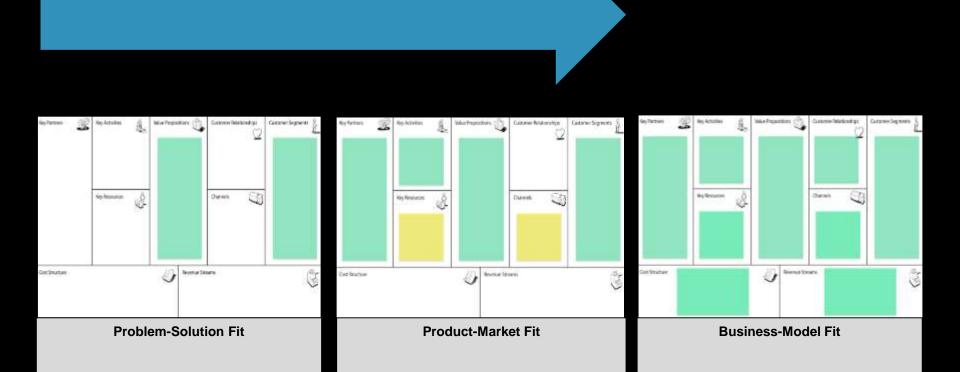
Building something nobody wants

Score: 300

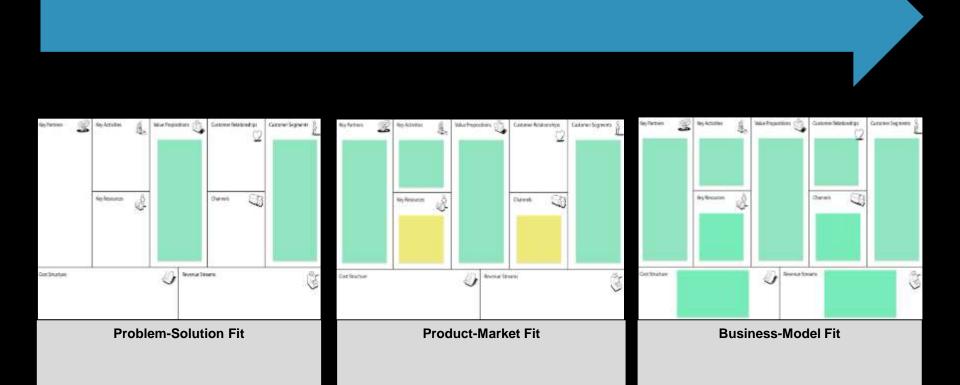
Search for... Problem-Solution Fit



Search for... Product-Market Fit



Search for... Business Model Fit



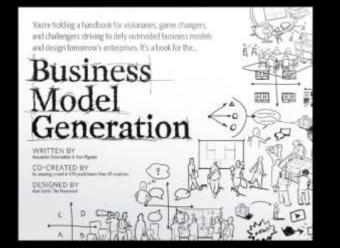
Teaching *Team*

Coaches... not Consultants

Flipped Classroom







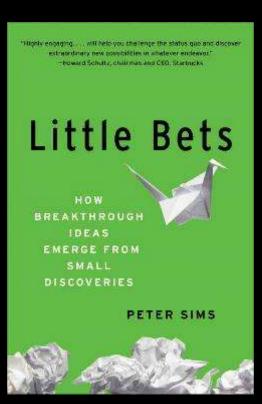


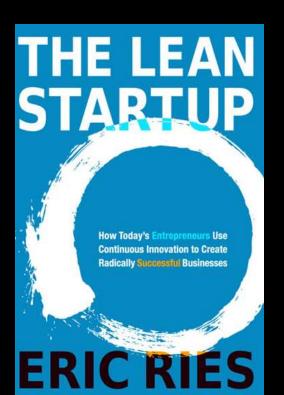
TALKING TO HUMANS

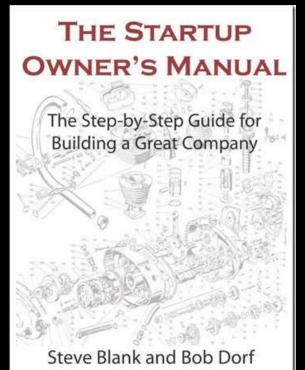
Success starts with understanding your customers

GIFF CONSTABLI with Frank Rimalovski

with Frank Rimalovski illustrations by Tom Fishburne and foreword by Steve Blank







Our Expectations

How do we build a startup?

What we *Used to Believe*What we *Now Know*

What we used to believe

Startups are

smaller versions of large companies

What we now know

Startups are NOT

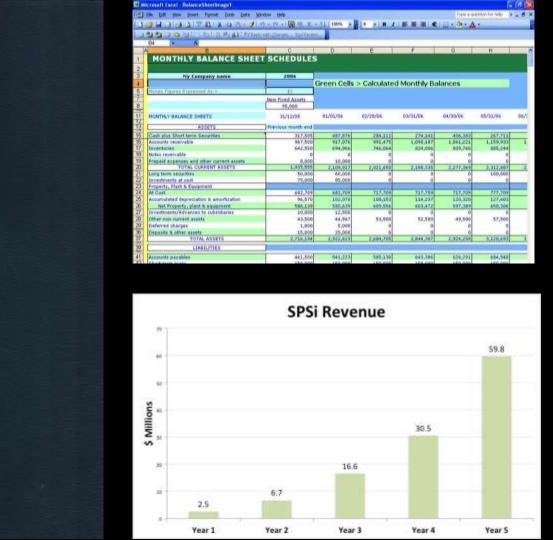
smaller versions of large companies

Startups search

Companies execute

What we used to believe

Start with Business Plan



Business Plan

September 1995

No business plan survives...

first contact with customers

Tyson's Law



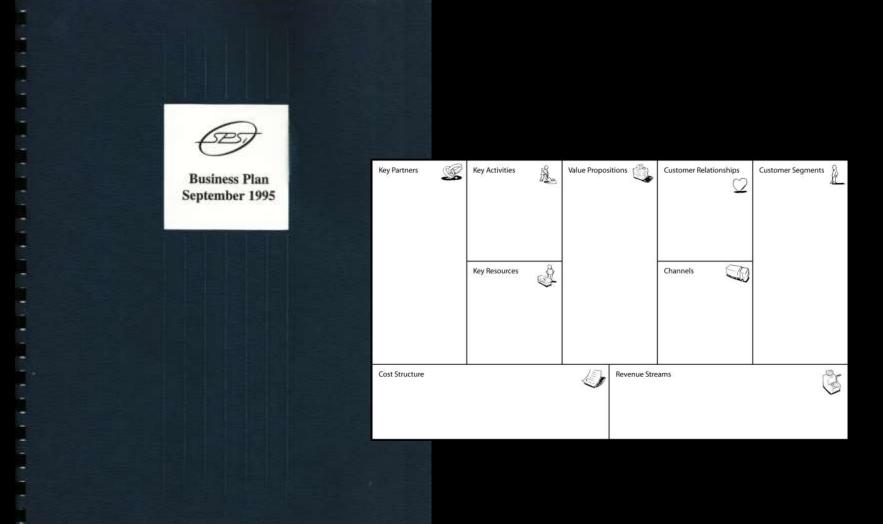


Planning comes

before the plan

The Business Model is the Foundation of your plan...

So we start there.



What's a company?

What's a company?

A business organization that sells a product or service in exchange for revenue and profit.

What's a startup?

A temporary organization

A temporary organization

designed to search

A temporary organization designed to search

for a repeatable and scalable

business model

A temporary organization designed to search for a repeatable and scalable

business model

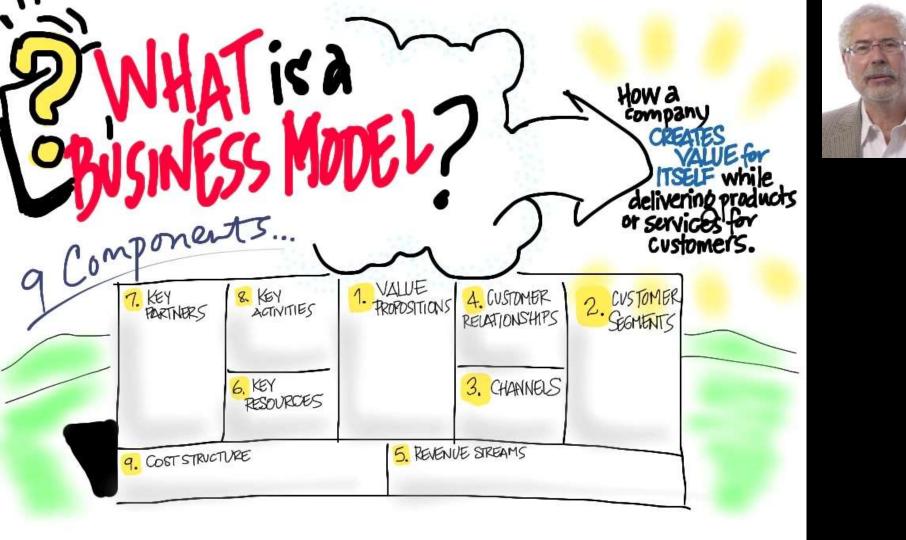
Startup aims to become a company

How are companies organized?

How are companies organized?

Companies are organized around *Business Models*

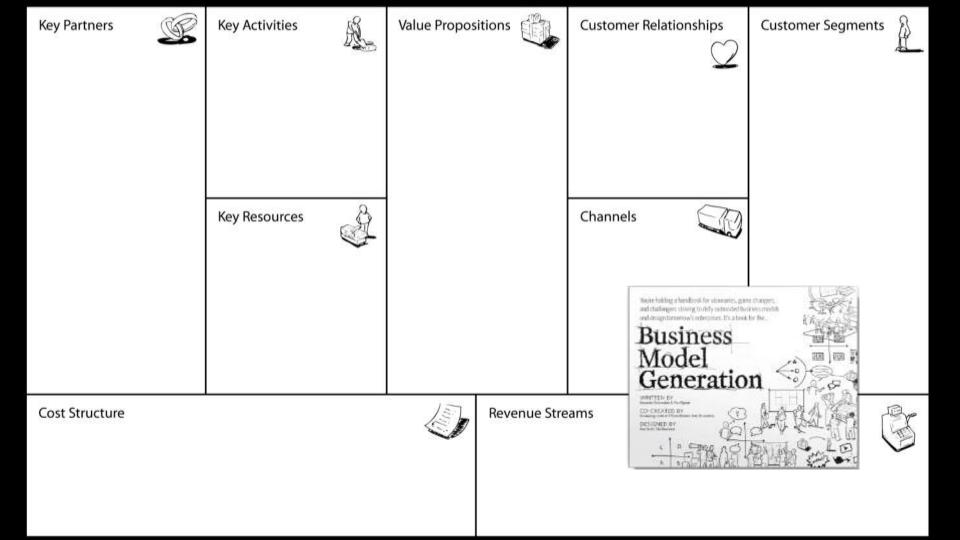
What's a Business Model?



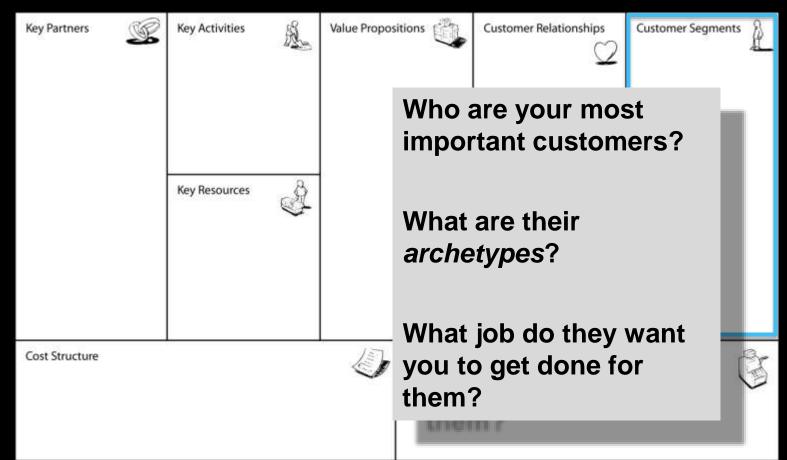
... how a company creates, delivers, and captures value.

...or how a company *makes money!*

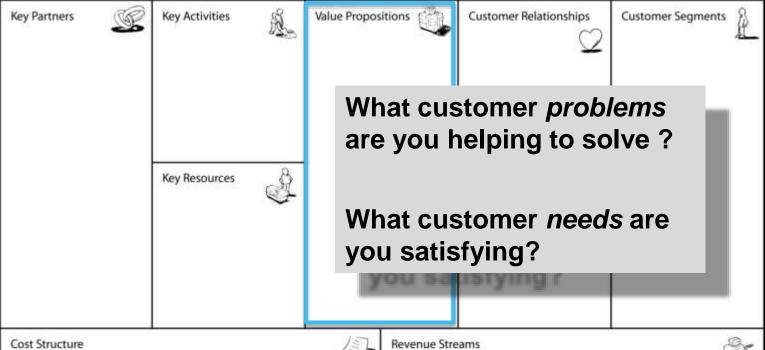
Business Model Canvas



Customer Segments



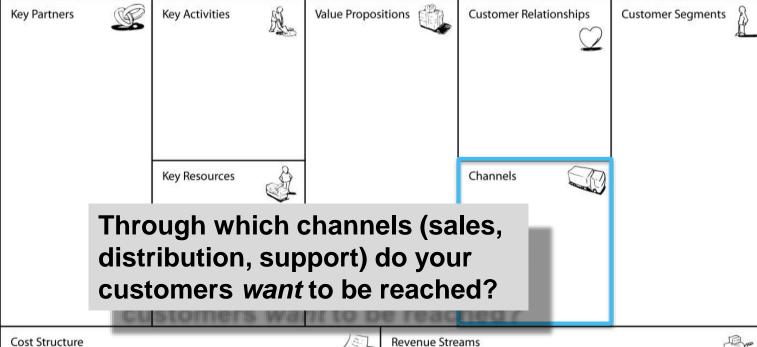
Value Propositions







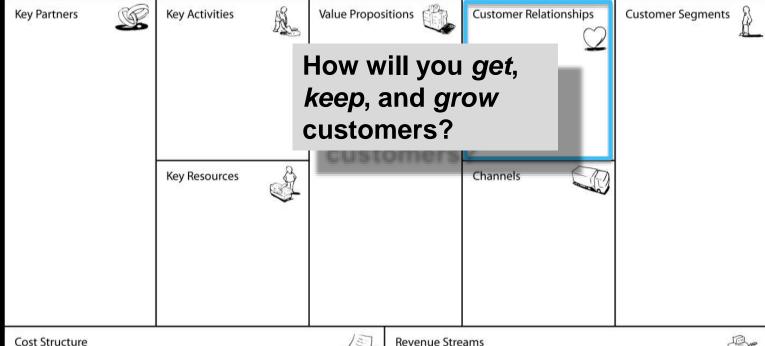
Channels







Customer Relationships

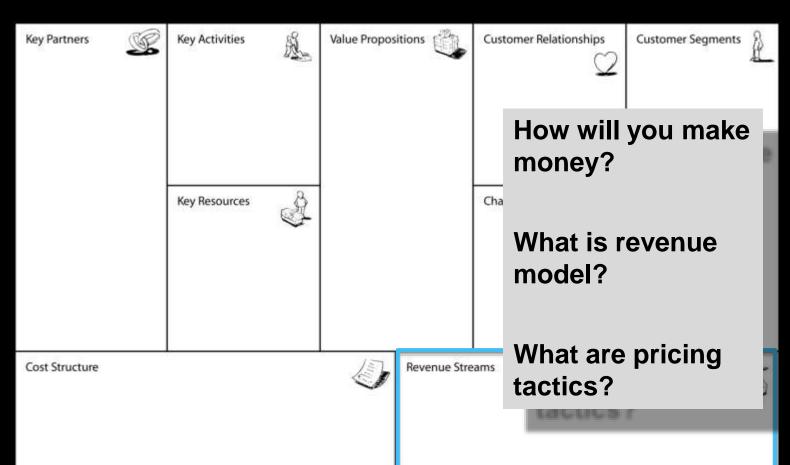




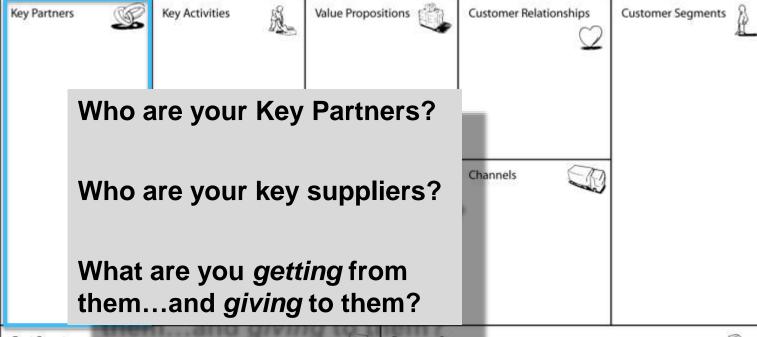
Revenue Streams



Revenue Streams



Key Partners



Cost Structure

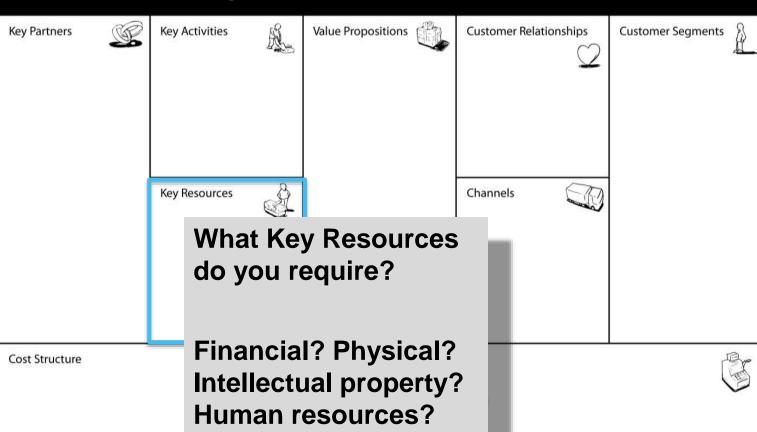




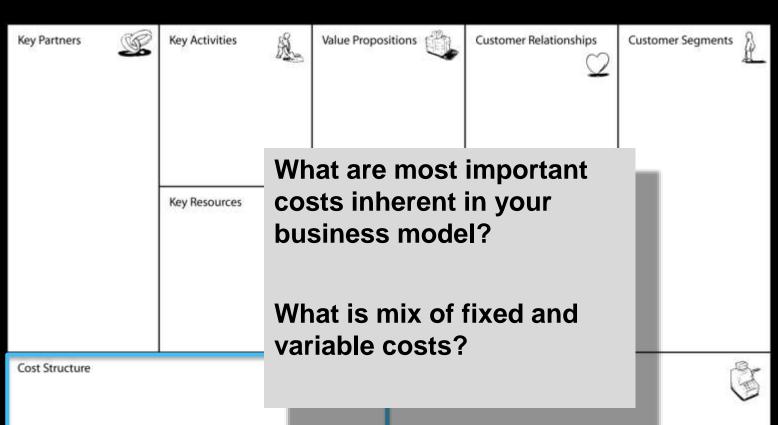
Key Activities



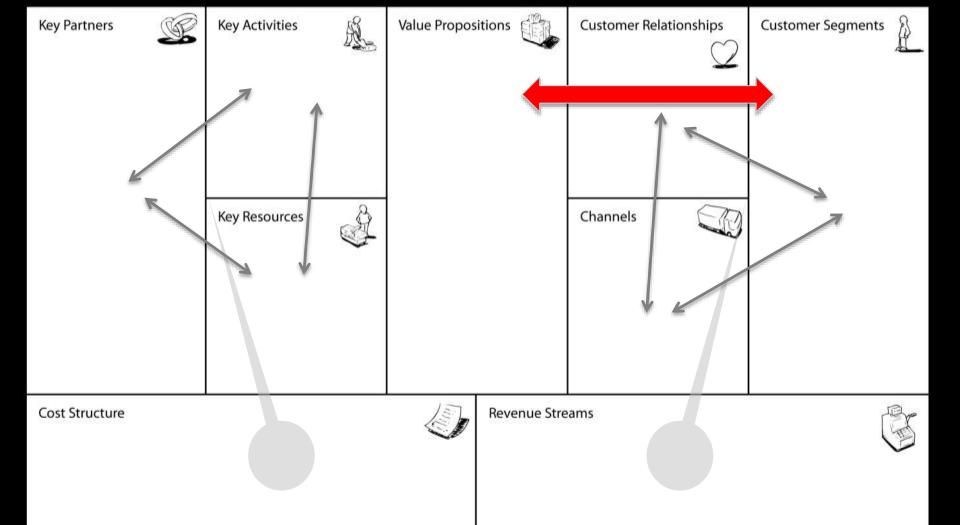
Key Resources



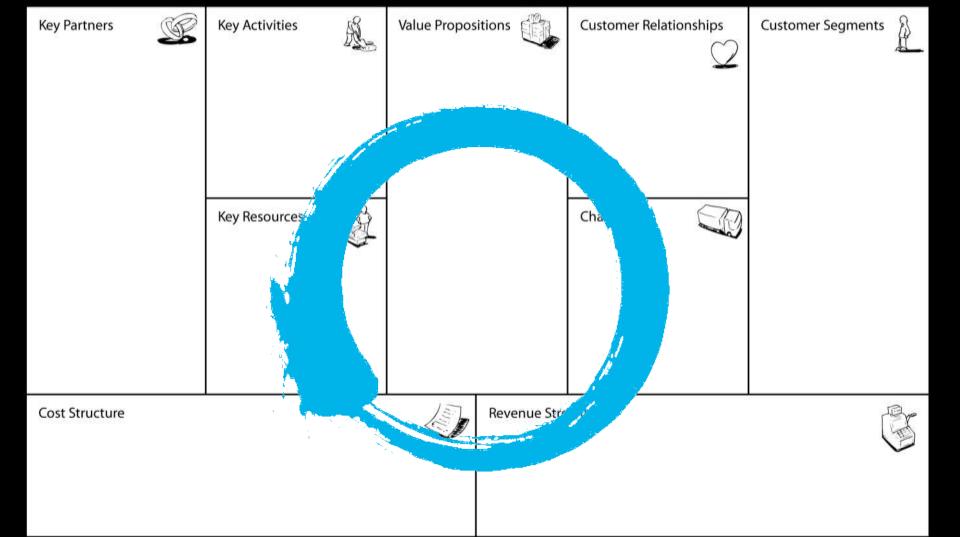
Cost Structure



Elements Linked

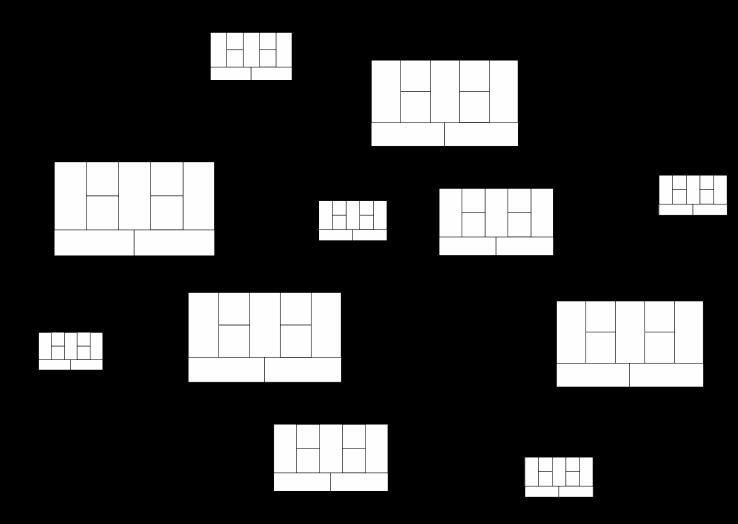


Iterate *Pivot*



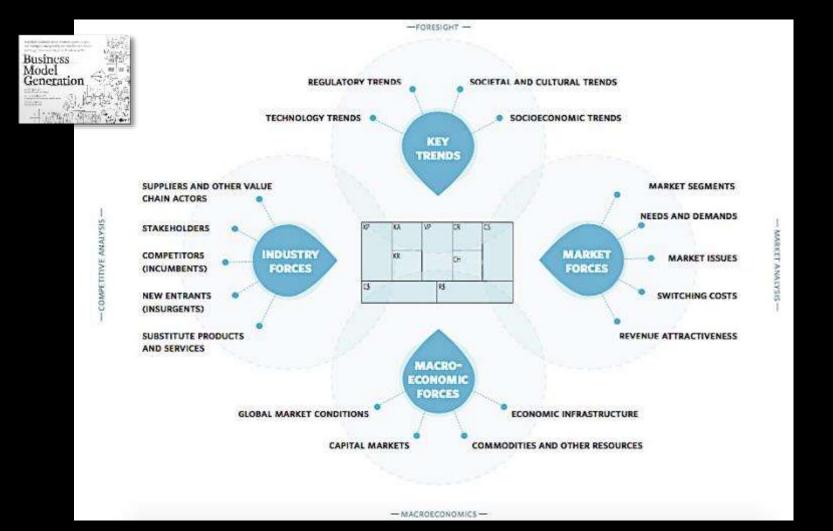
Business Model Multiverse

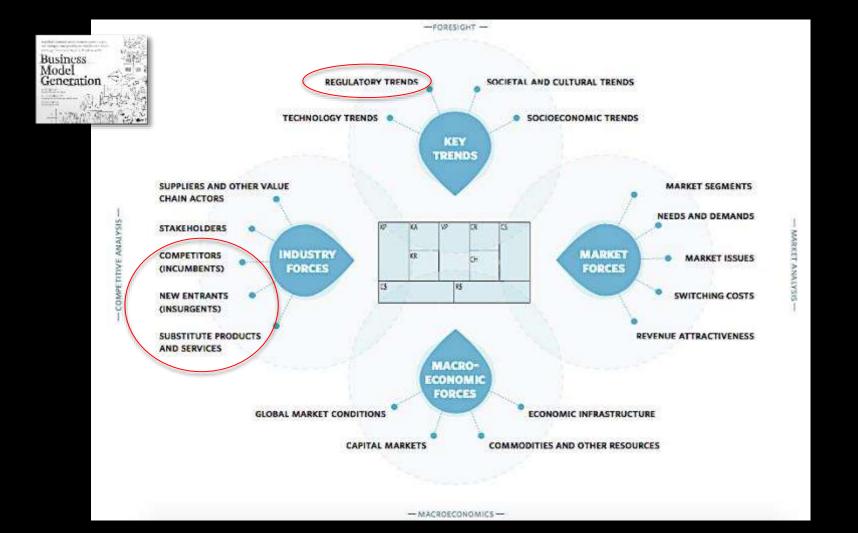
There are MANY potential Business Models...



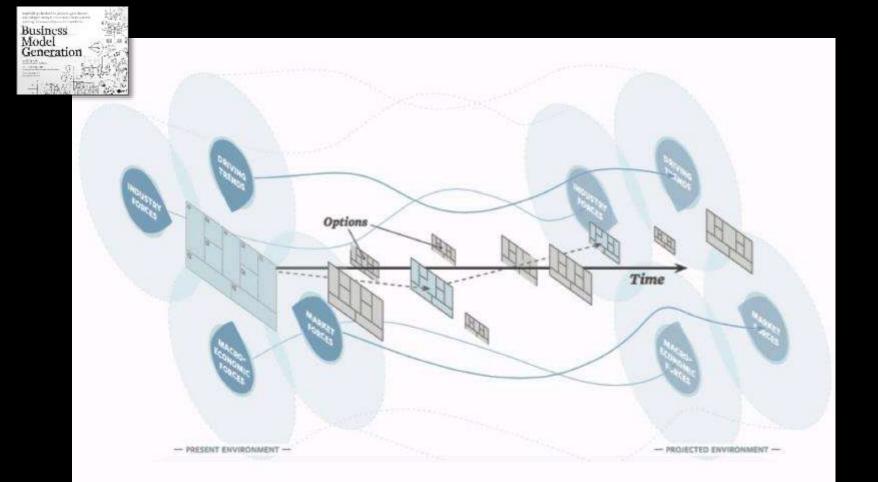
...your job is to find the optimal one given *Customer*Needs and Environment

Business Models are subject to external forces



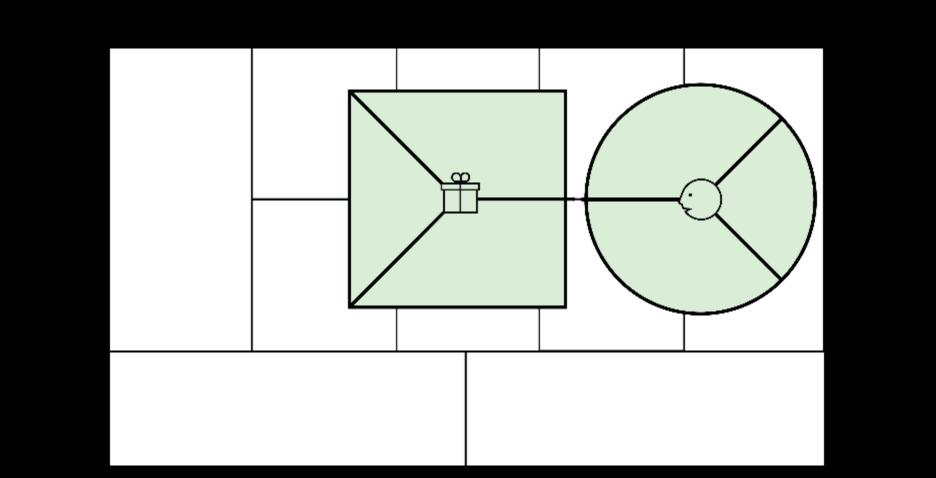


Business Models evolve, they are not static



Business Model generation is a never-ending processes...

...but for Bootcamp, focus on the customer!



More startups fail from a

lack of customers

than from product / tech failure

More startups fail from a

lack of customers

than from product / tech failure

Remember the top startup mistake...



Hiring Poorly?

Score: 153

18% of Tot.

#3<u>1</u>

Lack of Focus ?

Score: 112

13% of Tot.

Building something nobody wants

Score: 300

Building something nobody wants!

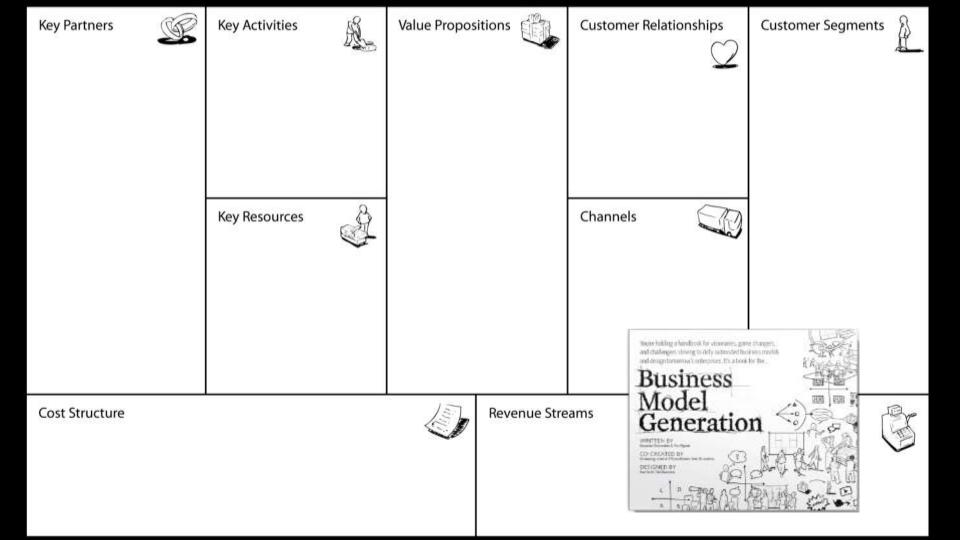
How can you minimize this risk?

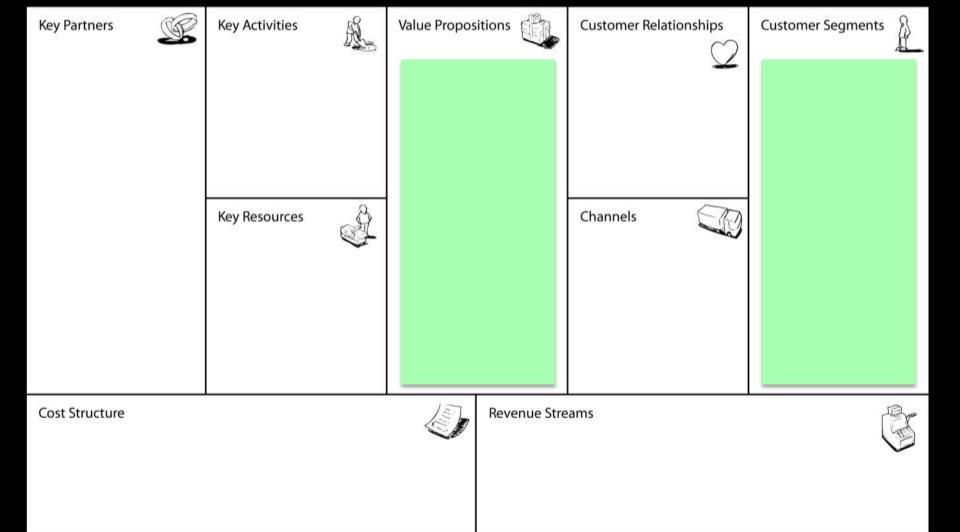
Get out of the building!

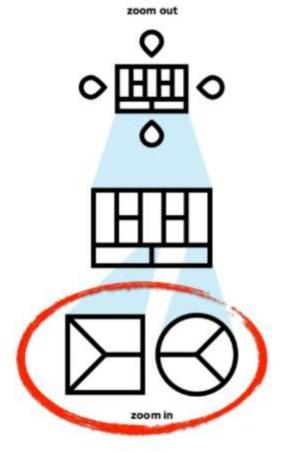
Test the Problem First

Can you identify and validate a problem or need that enough people care about?

...what we call finding a Problem-Solution Fit





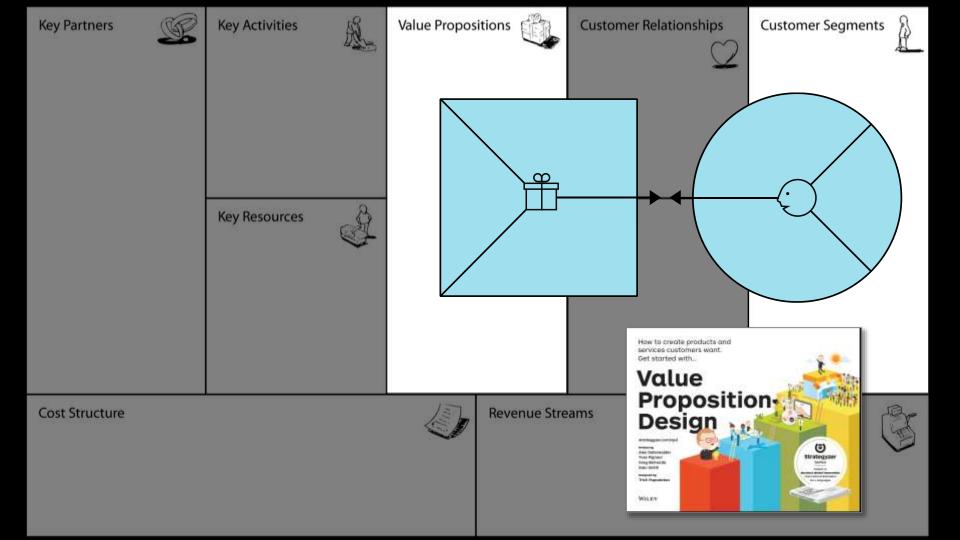


The **External Environment** describes the space where you create

The **Business Model Canvas** helps you create value for your business

The Value Proposition Canvas helps you create value for your customer

Value Proposition *Canvas*



This is a list of all the **Products and Services**

ന a value proposition is built around. Pain Relievers describe how your products and services

Gain Creators describe how

your products and services

create customer gains.

alleviate customer pains.

customers want to achieve or the concrete benefits they are

Gains describe the outcomes

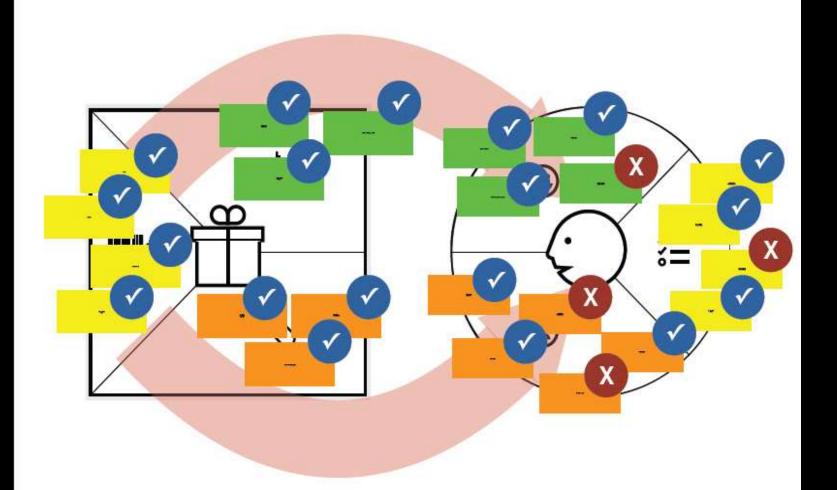
Customer **Profile**

The Customer (Segment) Profile describes a specific customer segment in your business model in a more structured and detailed way. It breaks the customer down into its jobs, pains, and gains.

Customer Jobs describe what customers are trying to get done in their work and in their lives, as expressed in their own words.

Pains describe bad outcomes, risks, and obstacles related to customer jobs.

> You achieve Fit when your value map meets your customer profile—when your products and services produce pain relievers and gain creators that match one or more of the jobs, pains, and gains that are important to your customer.



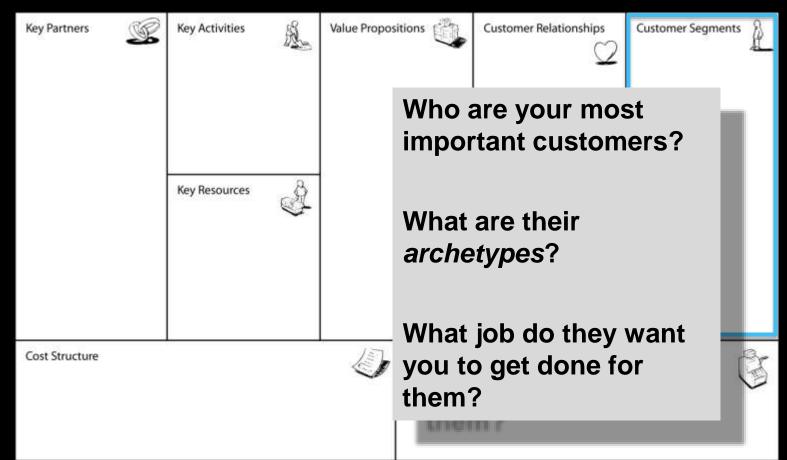
Once Again

"Can you identify and validate a problem or need in the market that enough people care about?"

Many startups do not adequately test the problem or need from key customer stakeholder perspectives.

Customer Segmentation Value Propositions

Customer Segments



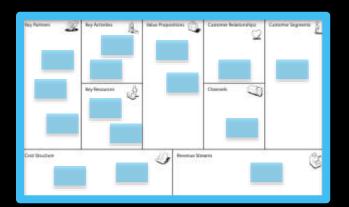
Why do we group into Customer Segments?

Different Customer Segments often have...

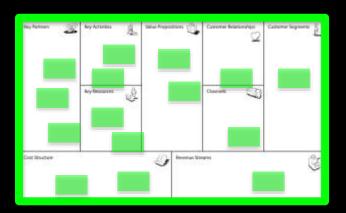
Different Customer Segments often have...

Different Business Models

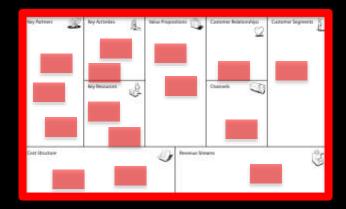
Customer Segment #1



Customer Segment #2



Customer Segment #3



Customer Segments often have

Sub-Segments

Customer Segments



Hospitals

Customer Segment

<u>Group</u> University Teaching Hospitals	→	Definition Those large hospitals with over 400 licensed beds, a scope of service index over 100, heavy teaching emphasis (over 700 intern hours per bed) and either are the primary-training site for a university which has a school of medicine or has over 1,000 intern hours per bed.
Major (Non-University) Teaching Hospitals	\rightarrow	Those hospitals with over 500 intern hours per bed that do not qualify as a university teaching hospital.
Large Teaching Emphasis Hospitals		Those hospitals over 300 licensed beds and between 200 and 550 intern hours per bed.
Medium/Small Teaching Emphasis Hospitals		Those hospitals under 300 beds with between 200 and 550 intern hours per bed.
Extremely Large Sized Hospitals		Those urban hospitals with 500 or more licensed beds that do not qualify for any other group.
Large Sized Hospitals	,	Those urban hospitals with at least 380 but under 500 licensed beds that do not qualify for any other

Customer Segments



Hospitals

Customer Sub-Segments

University Teaching Hospitals

Major (Non-University)
Teaching Hospitals

Customer Segments



Primary Customer Segment

Customer Sub-Segment

Will you "re-segment" the market to find sub-segments of an initial Customer Segment...

Initial Target

...perhaps a niche that you can enter and own?

Not Done

Customer Segments also have

Customer Types

Customer Types

Roles Customer Types

Defining Customers*

The definition of "customer" is often quite complex...

Who is the "customer" for a new drug?

The person taking or receiving the drug?

The person administering the drug?

The person or group prescribing or recommending the drug?

What about regulators and reimbursement / payers?

A strategic partner or acquirer of your company? ...not yet!

Most of you have complex customer and stakeholder ecosystems.

Where do you start?

Customer Segments



University Teaching Hospitals

Beneficiary (Patient)

Customer Segments



- Beneficiary (Patient)
- End User

Customer Segments



- Beneficiary (Patient)
- End User
- Decision Maker

Customer Segments



- Beneficiary (Patient)
- End User
- Decision Maker
- Payer

Customer Segments



- Beneficiary (Patient)
- End User
- Decision Maker
- Payer
- Influencer

Customer Segments



- Beneficiary (Patient)
- End User
- Decision Maker
- Payer
- Influencer
- Recommender

Customer Segments



- Beneficiary (Patient)
- End User
- Decision Maker
- Payer
- Influencer
- Recommender
- Saboteur

Customer Types

Customer Segments



- Beneficiary (Patient)
- End User
- Decision Maker
- Payer
- Influencer
- Recommender
- Saboteur

Identify Key Roles in Purchase Decision

And Finally

Describe the Archetype (prototypical example)

for the End User, Decision Maker, and Payer.

Depending on the Customer Segment, these roles may be filled by...

the same person, different individuals, or even a group of people (committee, board, etc.)

Example Archetype - End User

Customer Segment: Professional-class consumers shopping frequently online



Pat the Professional

Upwardly mobile professional (some Grad Students)
Salary: \$40,000 – 150,000/year
Finance, Consulting, PR, Marketing
Follows fashion/technology trends
Spends \$1-15K on discretionary Items online
Purchased online in last 30 days

Demographics

- · Male/female, aged 18-35
- Minimum bachelors from expensive school

fraits:

- · Ideas from blogs & shopping websites
- Values celebrity trends & friends' opinions
- Wants high ticket items at lowest price

Event-driven shopper—new release or sale

Motivation

- · Craves new products
- Hates tedious work
- · Identifies as influencer among friends
- · Fears being cheated online

Behavior

- · Spends 5 hour+ monthly hearing about products
- Shares online and in person about products he loves

Budget

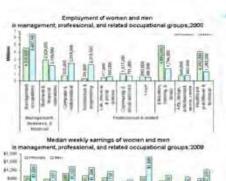
\$2-10K+/year in discretionary online purchases

"The XXX is awesome, I really want one. I know I iust bought the YYY, but it's probably time to upgrade."

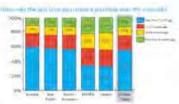
~5.9M "Pat the Professionals" in US

Drawn from top 1/3 of 17.8M frequent online shoppers

17.8M based on 40.2M Professionals (2008 Census) * 0.762 US Internet Penetration (Nielsen 2010Q1) * 0.58 consumers shopping online in fast month (Nielsen 2010Q1)







Online Recommendation Market Opportunity (conservative strawman #s)

Assuming 10% share, 5% affiliate fees

Top Shoppers

(~\$7B/year spend): ~ \$35M/year

Professional-class frequent shoppers (~\$1.88/year): ~\$9M/year

Other Professional-class shoppers (\$0.7B/year): ~3.5M/year

Source: US Bureau of Labor Statistics

Example Archetype - End User



Reads





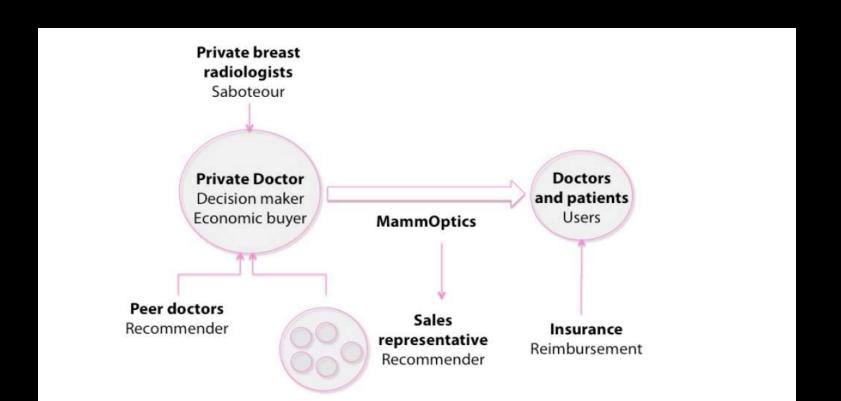
Attends



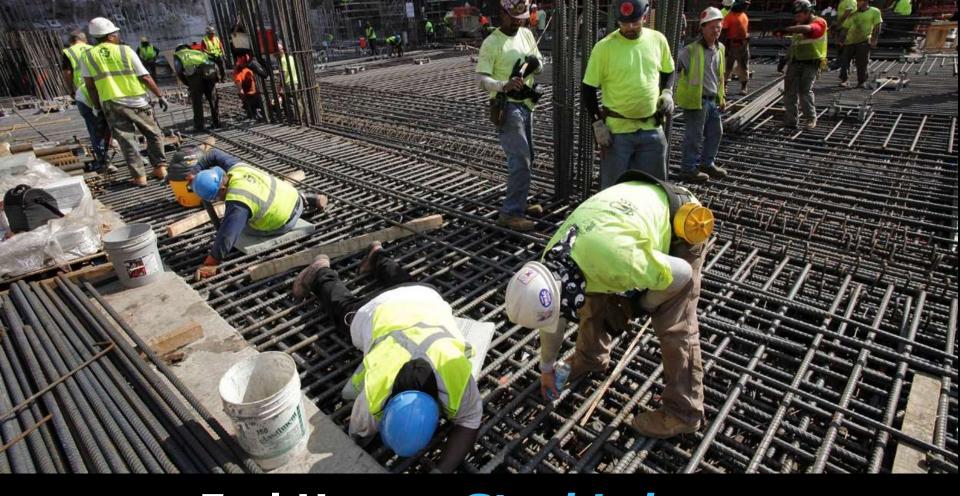
Describe or show a

typical purchase decision

Example Purchase Decision







End User = Steel Laborer



Decision Maker = *Project Manager*



Payer = Purchasing Director



Saboteur = Construction Surveyor

Business to Business









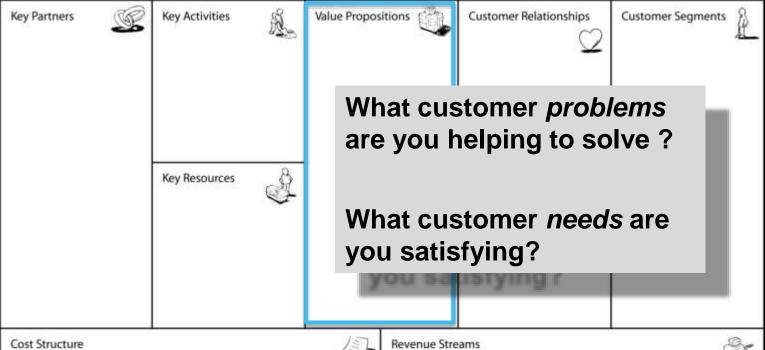
...typically have distinct End Users, Decision Makers, Payers, and others.

Value Propositions

...describe the benefits your customers derive from your products or services.

...describe the benefits your customers derive from your products or services.

Value Propositions







What about my idea / technology / product?

Customers don't care about your idea, technology, or product...

Customers don't care about your idea, technology, or product...

they are trying to solve a problem or satisfy a need.

What, How, Why?

Product, Features, Value

What?

What?

Product

How?

How?

Features

Why?

Why?

Value

Product Features



Value Propositions

Value Propositions

...but they do deliver value.

Product Benefits

Value Propositions

Easy to use

Easy to use

Feature or VP?

Faster

Faster

Feature or VP?

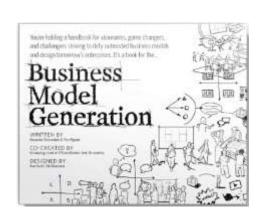
Cheaper

Cheaper

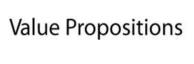
Feature or VP?







What are some categories of Value Propositions...



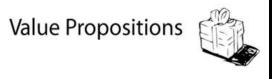
Newness





Newness

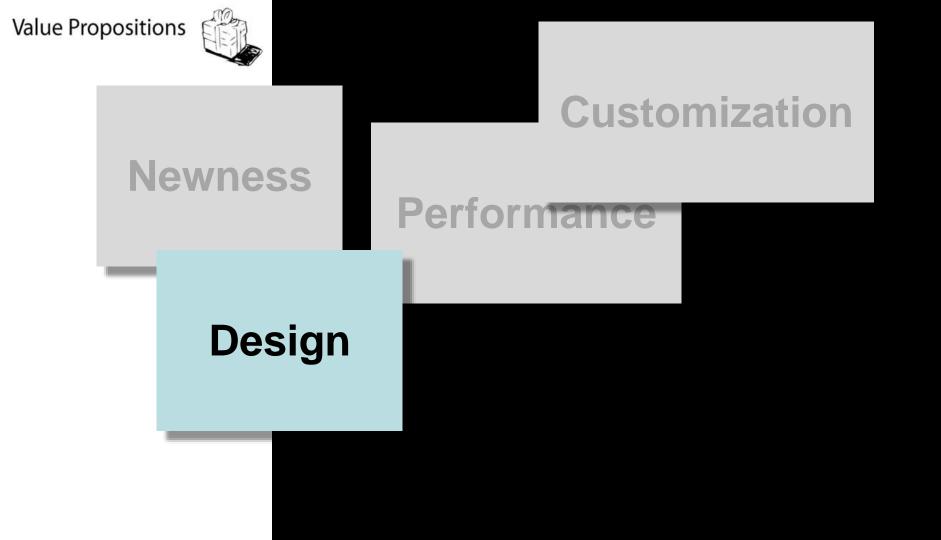
Performance

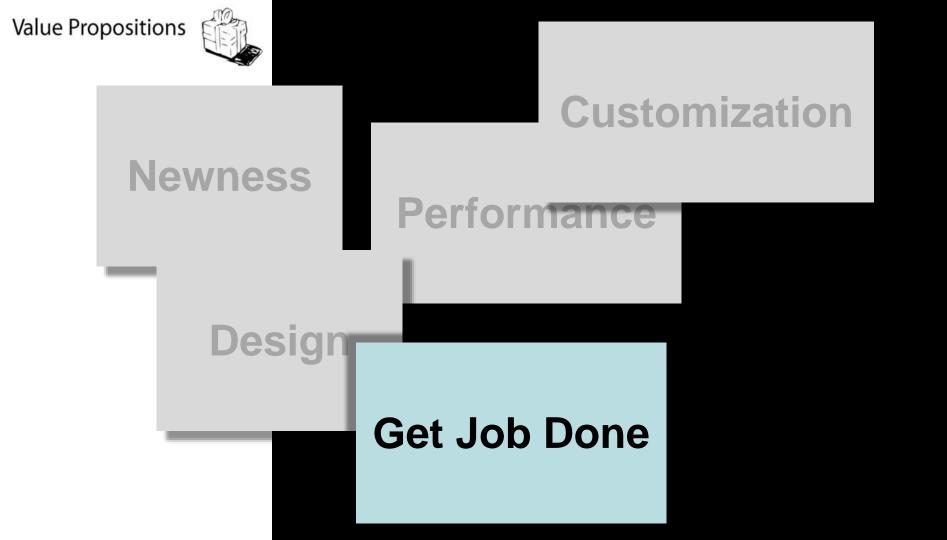


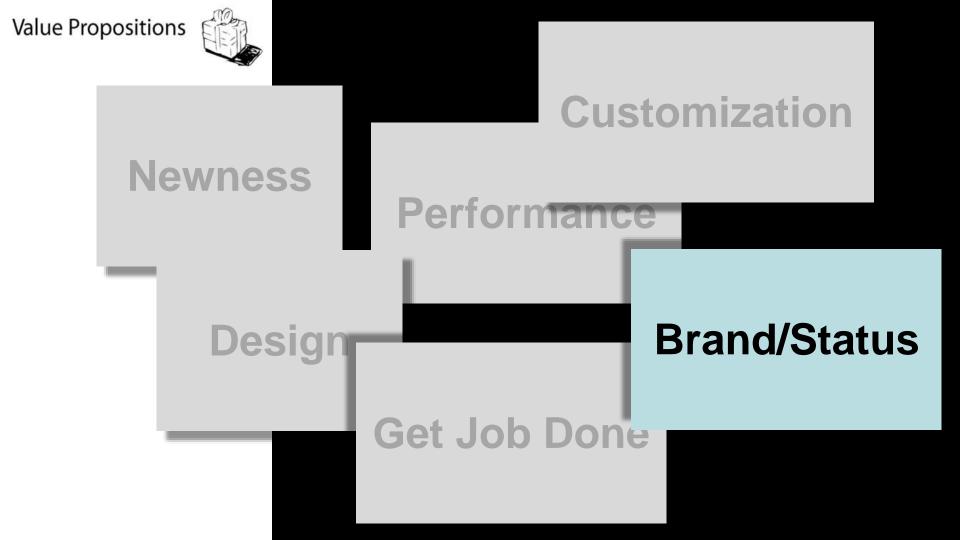
Newness

Customization

Performance

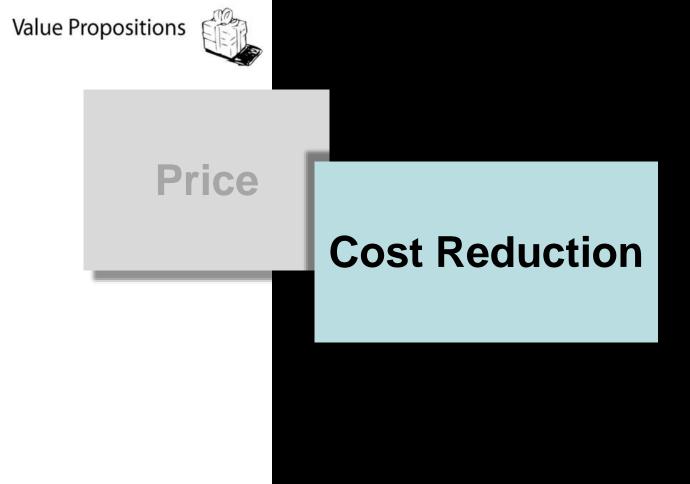




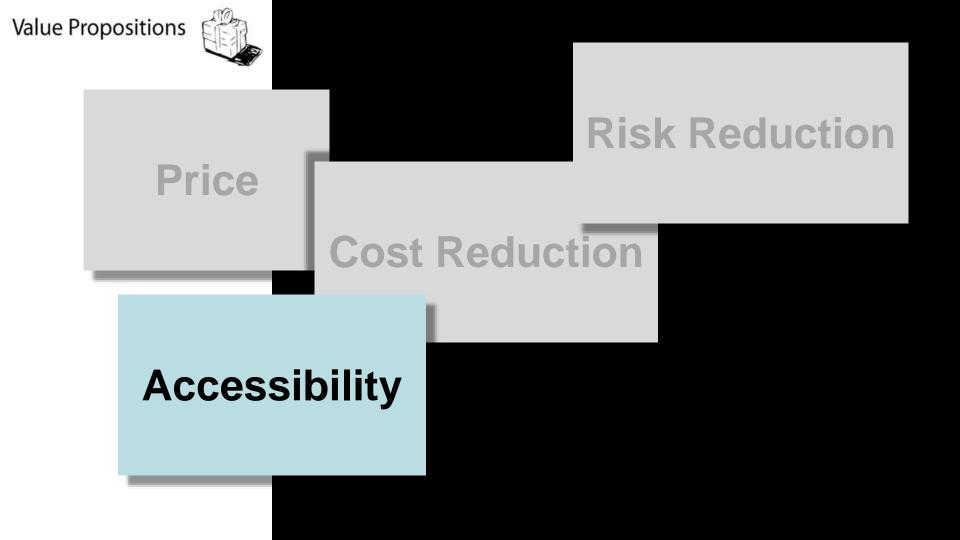


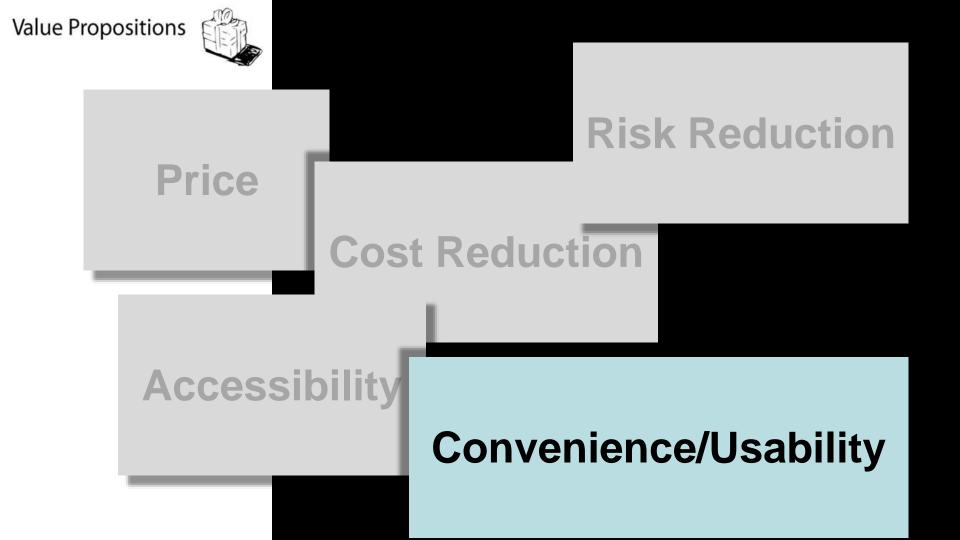


Price









General Guidelines

Specifics Matter

Quantify Benefit

Rank Order



Ad-Lib Value Proposition Template

Ad-libs are a great way to quickly shape alternative directions for your value proposition. They force you to pinpoint how exactly you are going to creating value. Prototype three to five different directions by filling out the blanks in the ad-lib below. Ξ

OBJECTIVE
Quickly shape potential value proposition directions

Alternative prototypes in the form of 'pitchable' sentences

Strategyzer

www.strategyzer.com/vpd



Value Proposition Exercise

Customer Segment: specific people – start with End Users	
need a way to	
Jobs to be done	
in a way that	
Verb (reduces, avoids, etc.) a Custo	mer Pain
and/or	
Verb (increases, enables, etc.)	a Customer Gain
(unlike)
competition, substitutes, alternative	es. doina nothina. etc.





Job importance

Rank jobs according to their importance to customers.



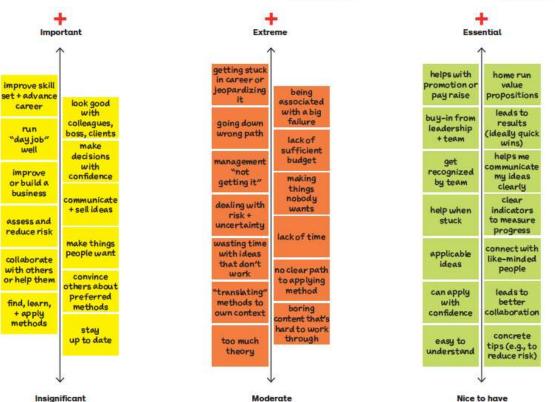
Pain severity

Rank pains according to how extreme they are in the customers' eyes.



Gain relevance

Rank gains according to how essential they are in the customers' eyes.



Simple Example



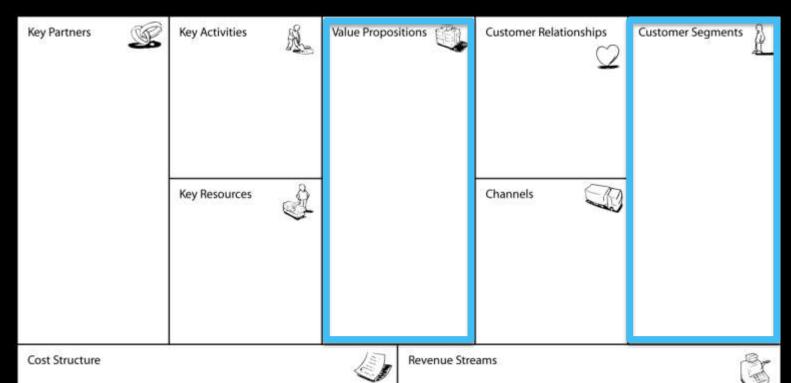
Feature = *Bright Colors*



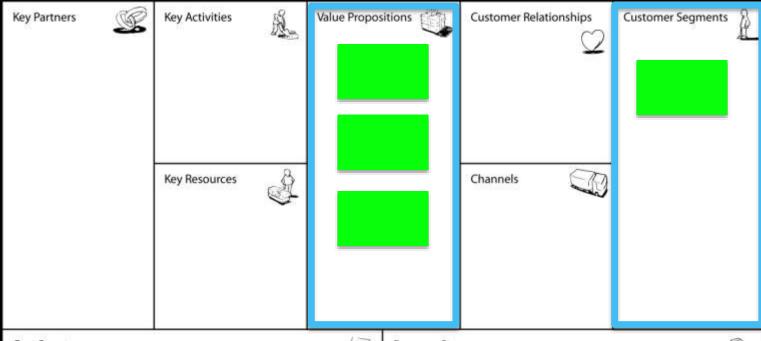
Value = User Feels Cool!

Customer Discovery

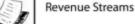
Start *Here*



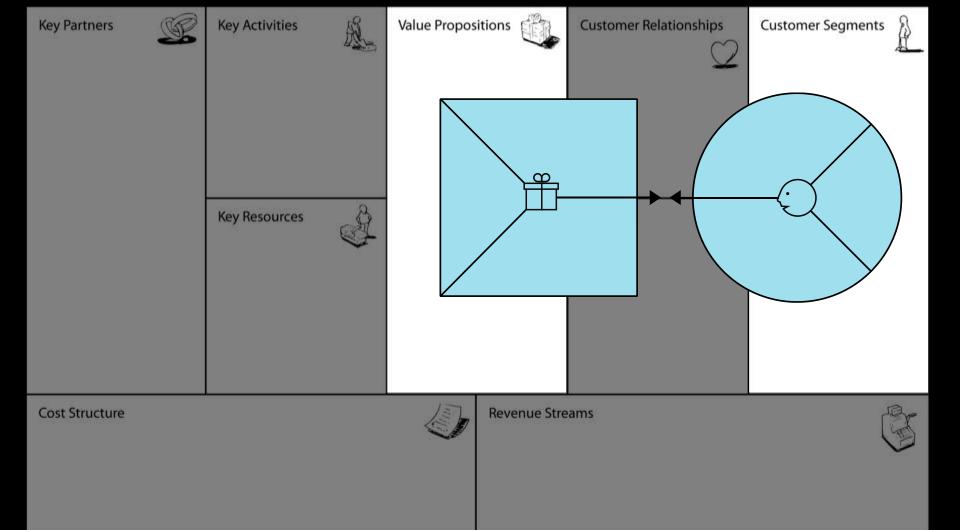
State Your *Guesses*

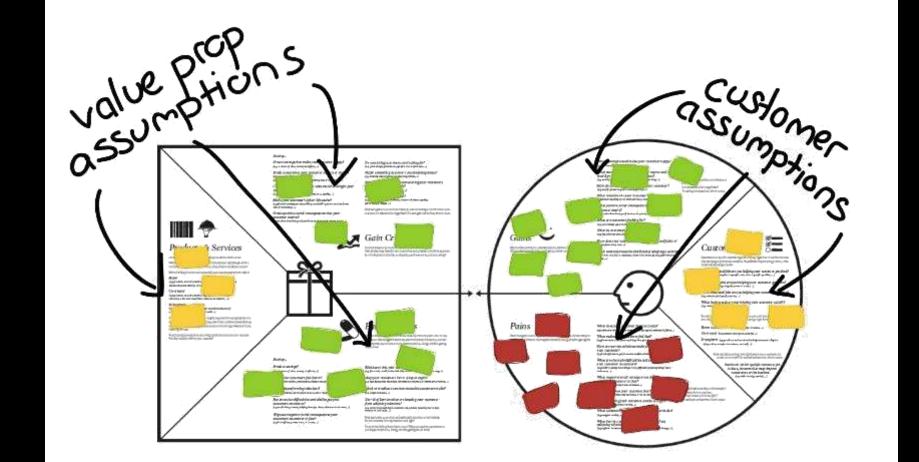












Get out of the building!

Test the Problem

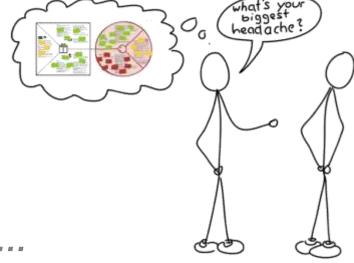
Test the *Problem*

Value Propositions



Customer Segments

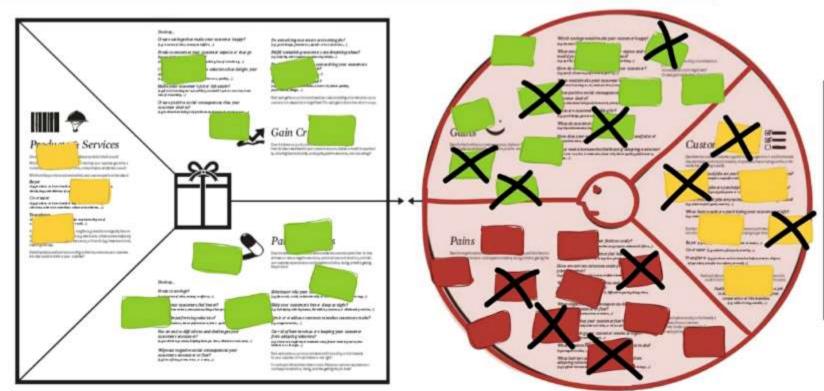




Identify customer problems and needs...

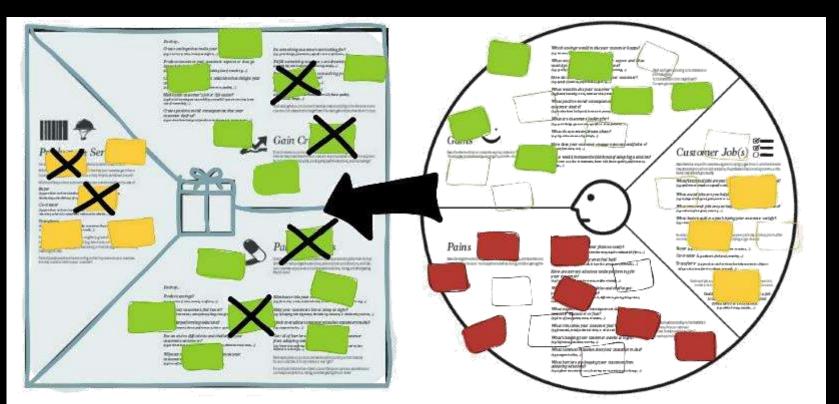
focus on customer pains, desired gains, and jobs.

Iterate and *Pivot*



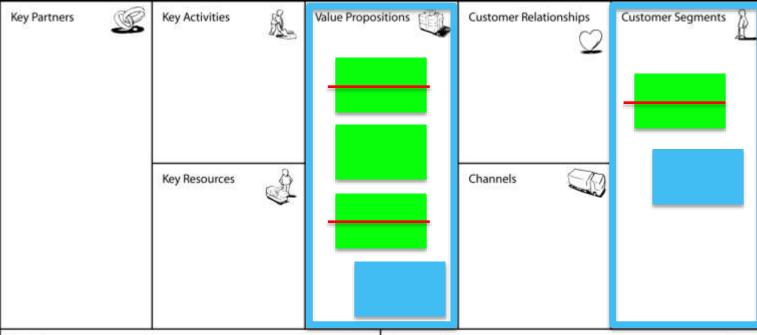
Wrong Customer Assumptions

Iterate and *Pivot*



Wrong Value Proposition Assumptions

Iterate and *Pivot*



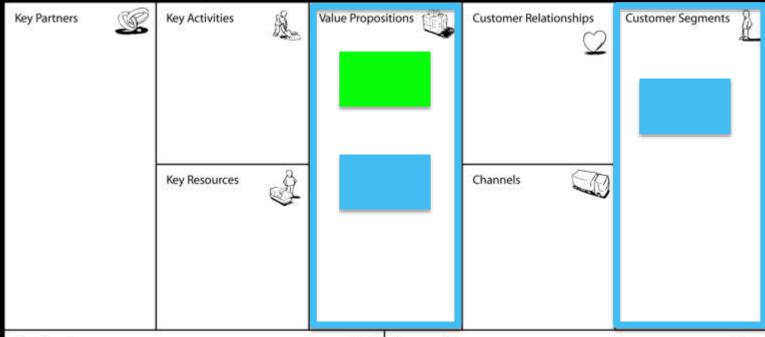
Cost Structure



Revenue Streams



Restate Your *Guesses*



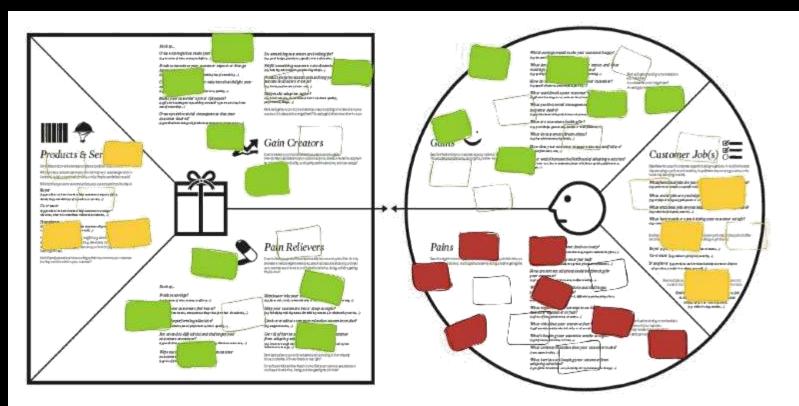
Cost Structure



Revenue Streams



Restate Your *Guesses*



Restate CS & VP Guesses

Repeat as needed

UNTIL you validate a

Problem-Solution Fit



Products & Ser

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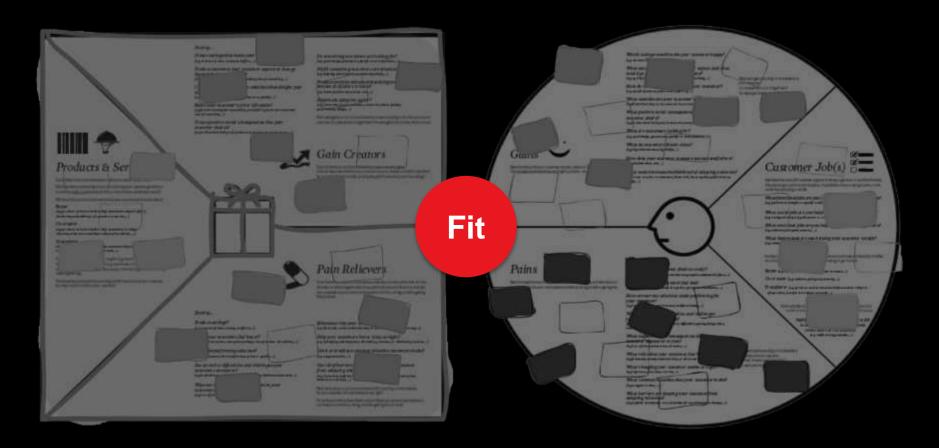
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Fit "validated" by Customer Discovery evidence

But Remember

Customer Discovery is not an exact science...

Customer Discovery is not an exact science...

look for patterns and apply judgment when validating / invalidating hypotheses

Making these decisions is your #1 job as an entrepreneur

More interpretative than prescriptive.

Why is this process so challenging?

The definition of "customer" is often quite complex...

Who really is a customer?

Whom do I talk to?

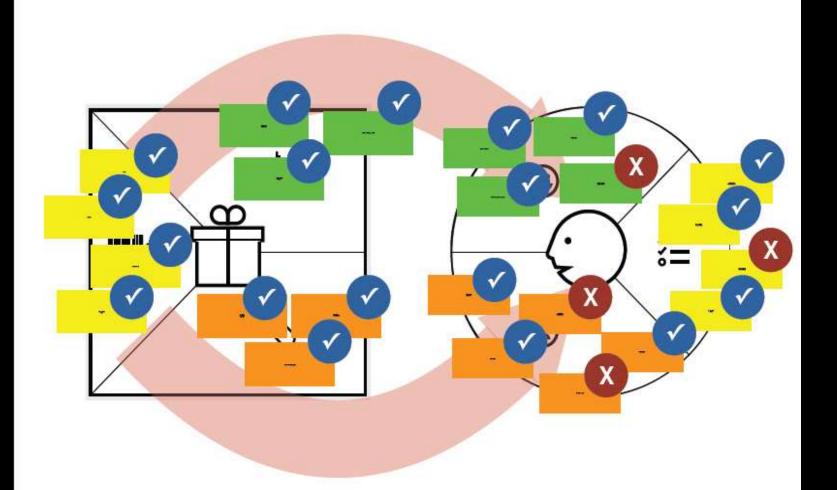
After validating a Problem-Solution Fit....

You will start testing a the product*

Product-Market Fit

"Can you build and deliver a product/service that satisfies the customer problem or need?"

"Do the product / service features deliver value (alleviate pain, create gain) to the customer?"



Initial Guidelines

Identify Primary Customer Segment (s)

Identify Key Roles in Purchase Decision

Stakeholders within Customer Segment



Customers are people.

Identify and understand the stakeholders in an purchase decision.

Primary Customer Segment / Sub-Segment

- End User
- Decision Maker
- Payer
- Influencer
- Recommender
- Saboteur

Different Customer Segments will have...

different Stakeholders!

Different Customer Segments will have...

different
Purchase/Implementatio
n Decisions

Value Propositions

...describe the benefits your customers derive from your products or services.

Different Customer Segments will have...

different Value Propositions

Different Stakeholders will also often have...

different Value Propositions

And you must understand

all of them!

Best Practices for Customer Discovery

Next Week September 26th 2pm EDT

Question Answer