

# Entrepreneurship Using Physics

### Welcome – we'll get started soon

- Dial in or use your computer's microphone and speakers.
- Submit questions via the Questions panel on the right.
- This session is being recorded.
- The recording will be sent to you via a follow up email.

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### Scientist & Entrepreneur: Lab to Business Basics

Jeff Bargiel Founder/CEO of EntoBio

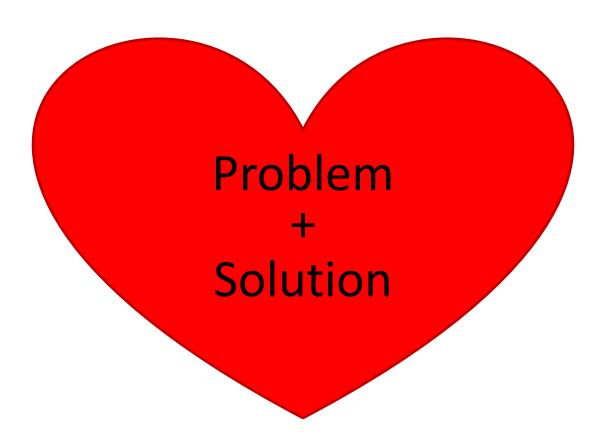
## Scientist/Entrepreneur

Both use the scientific method to gain knowledge and resolve uncertainty.

Just do this, but for commercialization.

Piece of cake, right?

### Ideation



### Ideation

Thought Experiments

Mind & Mine Complaints

**Opportunity Redefinition** 

**Extreme It** 

**Biomimicry** 

# Break Fixedness, Be Mindful & Make Connections

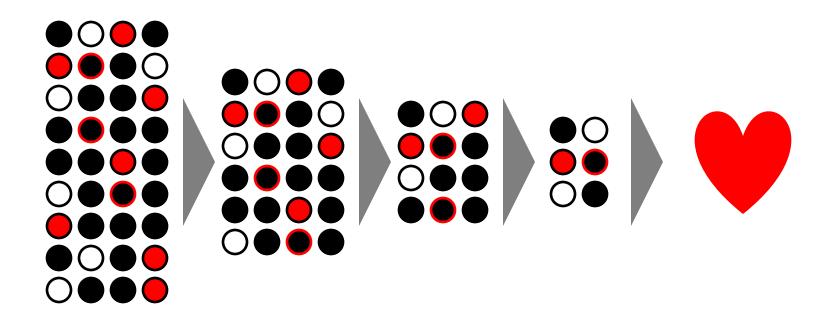
Wishing

Think INSIDE the Box

What If... Mindmapping

**Brainstorming** 

Challenge Assumptions



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

- Richard Feynman



Can we do it?

# Should we do it?

Hypothesize  $\rightarrow$  Test  $\rightarrow$  Adjust  $\rightarrow$  Repeat

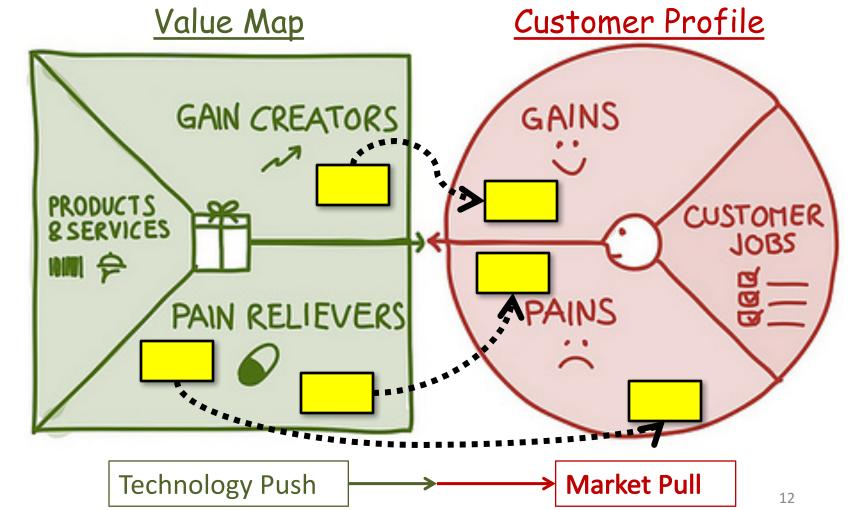
Talk...to...customers.
Do it now. Do it often.
Or the market will kill you later.

Business Plan Value Proposition Canvas **Business Model Canvas BASE** Board Lean Canvas

### Value Proposition

- A promise of value to be delivered.
- The reason a customer buys. Benefits, not features!
- A clear statement that:
  - Is **relevant** (explains how your product solves customers' problems or improves their situation),
  - Is quantified (delivers specific benefits),
  - Conveys your unique differentiator (tells the ideal customer why they should buy from you and not from the competition).

Proposition Canvas Value



#### **KEY PARTNERS**

Who are our key partners? Who are our key suppliers? Which key resources are we acquiring from our partners? Which key activities do

COST STRUCTURE

partners perform?

#### **KEY ACTIVITIES**

value propositions require? Our distribution channels? Customer relationships?

What key activities do our

### Revenue streams?

#### **KEY RESOURCES**

What key resources do our value propositions require? Our distribution channels? Customer relationships? Revenue streams?

#### VALUE PROPOSITIONS

What value do we deliver to the customer?

Which one of our customers' problems are we helping to solve? What bundles of products and

services are we offering to each segment? Which customer needs are we

satisfying? What is the minimum viable product?

#### CUSTOMER RELATIONSHIPS

How do we get, keep, and grow

customers? Which customer relationships have we established?

CUSTOMER

SEGMENTS

For whom are we

Who are our most

important customers?

What are the customer

creating value?

archetypes?

How are they integrated with the rest of our business model?

How costly are they?

#### CHANNELS

customer segments want to be reached? How do other companies reach them now? Which ones work best?

Through which channels do our

Which ones are most cost-efficient?

How are we integrating them with customer routines?

#### REVENUE STREAMS

What are the most important costs inherent to our business model? Which key resources are most expensive? Which key activities are most expensive?

For what value are our customers really willing to pay? For what do they currently pay? What is the revenue model? What are the pricing tactics?

#### ASSESSMENT

GROWTH

Where?

growth?

- . How will we monitor and assess?
- . What metrics will we use for our key activities
- . How will we handle customer issues? auestions?
- · How are we handling problems? . How often will we review performance?

. How do our goals, mission and value proposition translate to growth?

. How should we grow? Why? How fast?

. How will this growth be managed?

Are there any immediate opportunities for

#### CUSTOMER RELATIONSHIPS

CUSTOMER SEGMENTS

What are our customer personas?

· What value are we creating for each persona?

. Who are our most important customers?

- . How do we retain and serve customers? . What type of relationship do we want with our
- customers? . How will our company's operations accomplish this?

#### CHANNELS

. Which Solution (So) channels (Chn) do we reach customers?

. What does your business do?

· How will you make money?

- How do other companies reach customers?
- . Which ones are most cost efficient?

OFFERING

#### **KEY ACTIVITIES**

111

- How do we deliver our value proposition to the customer?
- · What activities accomplish our goals? Development (Creative, R&D)? Production?
- Promotion?
- · Are these activities daily? Occasional? Seasonal?

#### KEY PLAYERS



EVOLVING

- . Who are the key people in our company? Who are our key partners?
- . What value do they bring to our company?

WEAKNESSES

THREATS

O

Seasonal?

#### MARKETING & SALES STRATEGY



- · What is your current marketing strategy?
- . What is your current Cost-Per-Customer with this strategy?
- · What is your sales funnel?

#### FINANCIAL STRATEGY



- . How much money do we need to start?
- · How long will that last us?
- . How much do we need on a monthly basis?

#### OPERATIONAL STRATEGY



- . Where will the company be based?
- · What is the current operating structure?
- . How will that structure change over the next 1-3 years?

#### GO-TO-MARKETING STRATEGY



- product and/or service? . What are the steps your company needs to take in order to
- guide customer interactions with your products?
- Align this with the value propositions you worked on below.

#### VALUE PROPOSITION



- . Connects the vision and mission with the goals to deliver to the customer by solving a specific problem.
- . What is our value to our customer?
- . What is our stated value proposition?
- . How is this value driven by our goals/mission?

#### COMPANY GOALS



- . Goals are what you want to achieve with the business and build from the vision and mission:
- . What do we want to achieve? Why? How? For whom?
- . What is our mission statement? · How will this goal translate to our value proposition?

#### MARKET

· What is the market size?

- · Who are our customers?
- · Why would they buy?

#### **NEEDED RESOURCES**

SWOT ANALYSIS

OPPORTUNITIES

STRENGTHS

Complete a SWOT Analysis of the Opportunity

- . What skills/people do we need?
- . What partners do we need?
- . What money, facilities and/or equipment do we need?
- . What strategy help do we need (marketing, financial, other)?

#### ME (Entrepreneur) What are my motivations/interests? . What are my personal strengths/

- weaknesses?
- . How do these all play into this effort?
- · Where do I see myself as an entrepreneur in five years?

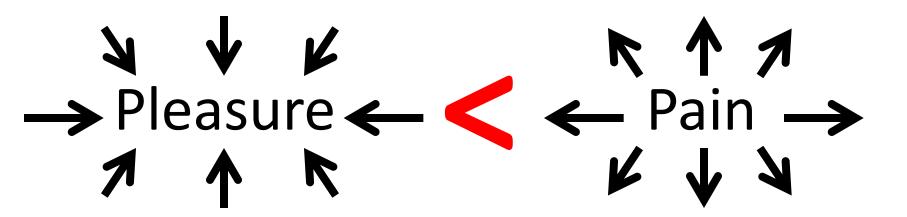
#### MY IDEA

- What is your "revolutionary idea"?
- What is your company name?
- What is the vision?

### Seriously, talk to customers.

And, stakeholders, decision makers, purchasers, executives, users, etc.

### Evaluation (A bit more advice.)



### Evaluation (A bit more advice.)

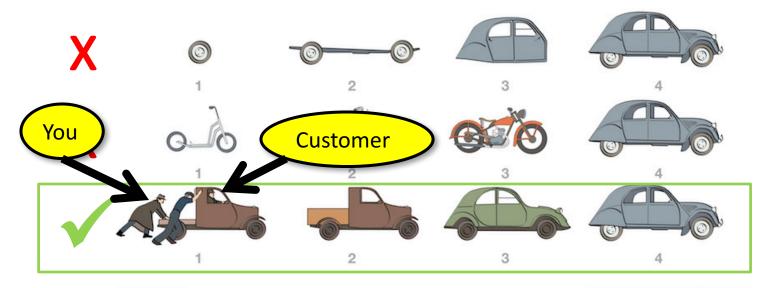
### Big Problem, Big Market

But can you start (selling) small and fast?

### Evaluation (A bit more advice.)

#### Minimum Viable Product

Minimum product that delivers customer value. Prove the market, then improve the product.



# Funding

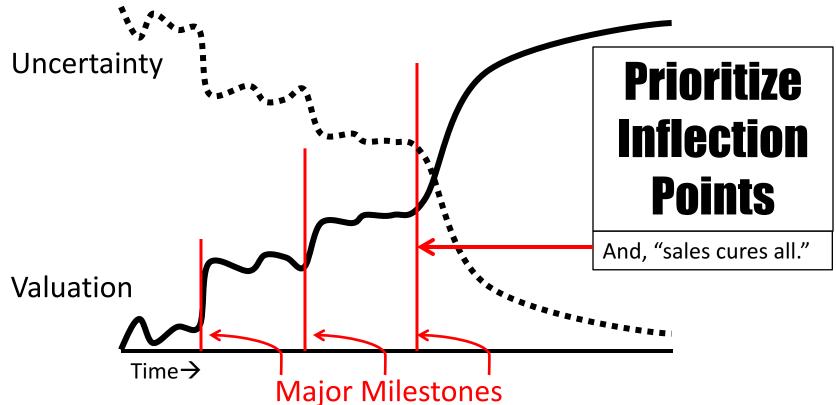
- Yourself
- SBIR/STTR
- FFF: Friends, Family (and Fools)
- Pitch Competitions
- Local, County, State
- Angels & VCs (Venture Capitalists)
- Your Customers

# Pitching is Selling

# 20 Seconds

Be compelling.
The tech probably doesn't matter.
Common language.
PRACTICE, PRACTICE.

# Making Progress



### Pitfalls/Advice

- Startups are NOT small versions of big companies.
- Products are not businesses.
- Solution is not at least 10X better.
- Be smart about protection. Most people are too busy to care about stealing your idea. But don't disclose publically. Get a patent attorney to write.

### Pitfalls/Advice

- Starting too late. Waiting until it is perfect.
- Do not let the perfect be the enemy of the good.

### Pitfalls/Advice

- Be humble but decisive.
- Be coachable.
- Find mentors.
- Don't ask for crazy valuations.

# Where I Struggle(d)

- Analysis Paralysis
- Clear, concrete, down-to-earth communication
- Oooh, shiny!
- Cold calling anxiety
- Ignoring the unimportant

### Resources

APS PIPELINE Undergrad Physics Entrepreneurship <a href="https://www.aps.org/programs/education/innovation">www.aps.org/programs/education/innovation</a>

Science and Technology Entrepreneurship Program (STEP) at Case Western Reserve University, MS Physics Entrepreneurship

Inside the Box by Drew Boyd and Jacob Goldenberg
Financial Intelligence for Entrepreneurs by Karen Berman
and Joe Knight

Scrappy Project Management by Kimberly Wiefling
Business Model Canvas (Udacity Course) by Steve Blank
Writing a Compelling Executive Summary (Blog Post) by
Garage Technology Ventures

Perfecting Your Pitch (Blog Post) by Garage Technology Ventures

Zero-to-One by Peter Thiel
Everybody Writes by Ann Handley
The Lean Startup by Eric Ries
Art of the Start by Guy Kawasaki
Pitch Anything by Oren Klaff
Grit by Angela Duckworth
Start with Why (TED Talk) by Simon Sinek

The Wave Theory of Startups (Blog Post) by Guy Turner

The Four Hour Work Week by Tim Ferris

How to Measure Anything by Douglas Hubbard

### **Don't Fool Yourself**