U.S. DEPARTMENT OF ENERGY

Office of
ENERGY EFFICIENCY & RENEWABLE ENERGY

2017 BTO FOA Kick-off Meeting

Customer Discovery
and Maximizing Impact

- Segway raised over **$100MM USD in 2001**.

- Largely based on cult-of-personality of inventor, Dean Kamen.

- Planned to revolutionize urban transportation.

- Projected to sell 10,000 Segways per week.

- Largely used funds for _tech development_ – and it was GREAT technology!

- Hired logistics consultants to work on providing **10,000 Segways per week**.

- At the end of **2 years they sold 6,000 TOTAL Segways.**

- Did not identify and validate a true "unmet need" from CUSTOMER PERSPECTIVE.

In other words,

don't be the next

Segway!

In other words,

don't be the next

Mall Cop!

How many of you want *to create a startup?*

How many of you want *license your technology?*

How many of you want *increase the impact of your research?*

Is your solution *"better and more expensive"*?

Is your solution *"better and less expensive"*?

Is your solution *"worse and less expensive"*?

Is your solution "worse and more expensive"?
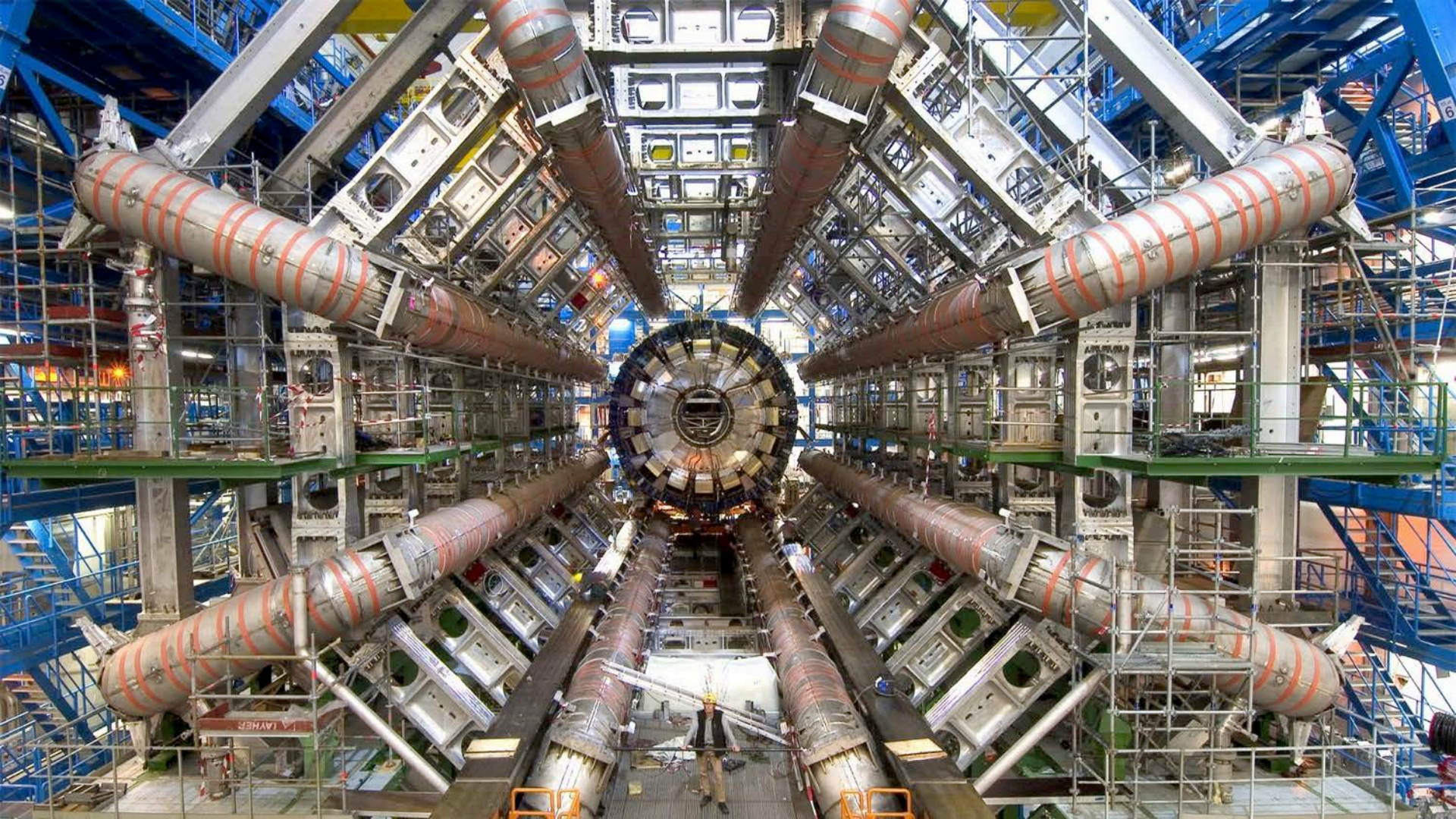
To be *continued...*

The *Prequel*

My startup set out to change *an entire industry...*

We had a *much better way*

What *Happened?*

10 years *$20M later*

The *Sequel*

2,000+ *Teams*

10,000+ *Hours*

Science and
Technology Focus

Startups and
Transformational Opportunities

Two Primary

Examples

Innovation Corps
(I-Corps)

I WANT YOU
FOR I CORPS
NSF Innovation Corps
NEAREST RECRUITING STATION

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 Lean Start-Up Changes Everything

by Steve Blank

Harvard Business Review

TURN A GREAT IDEA INTO A GREAT BUSINESS

"Lean" is changing everything you know about starting a new venture **PAGE 63**

has 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-

"minimum viable product" and "pivoting"—have quickly taken root in the start-up world, and business schools have already begun adapting their curricula to teach them.
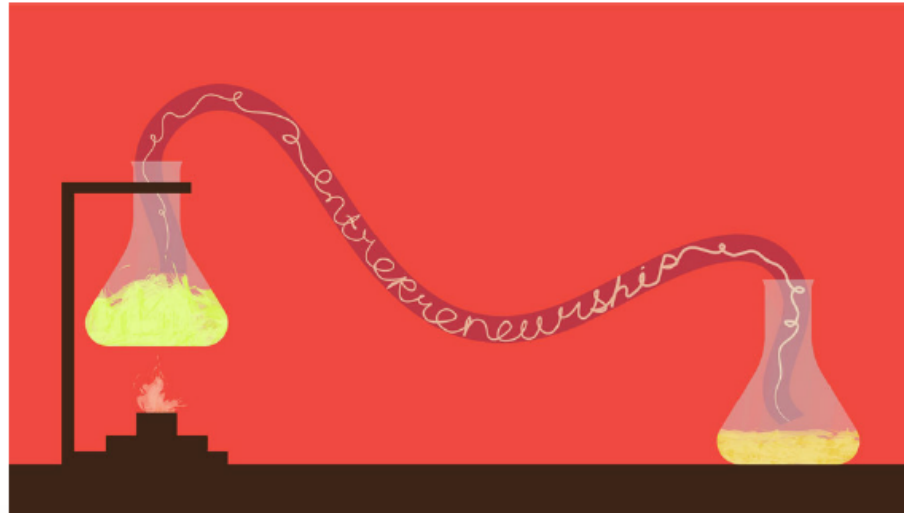
The lean start-up movement hasn't gone totally mainstream, however, and we have yet to feel its full impact. In many ways it is roughly where the big data movement was five years ago—consisting mainly of a buzzword that's not yet widely understood, whose applications companies are just beginning to grasp. But as its practices spread, they're turning the conventional wisdom about entrepreneurship on its head. New ventures of all kinds are attempting to improve their chances of success by following its principles of failing fast and continually learning. And 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-

ENTREPRENEURSHIP

This Program Uses Lean Startup Techniques to Turn Scientists into Entrepreneurs

by Greg Satell

MARCH 07, 2017

Buzz Aldrin, *Apollo 11* moonwalker, would like a word with you.

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

We've stopped solving big problems.
Meet the technologists who refuse to give up. p26

MIT Technology Review

VOL. 115 NO. 6 | $5.99 US

HAS QUANTUM
COMPUTING
FINALLY
ARRIVED?

Upfront p24

HOW
TOMORROW'S
STARTUPS WILL
BE FUNDED

Business Report p75

TECH
TRANSFORMS
MUSIC, ART,
AND PROSE

Reviews p87

Buzz Aldrin,
Apollo 11
moonwalker,
would like a
word with you.

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

Getting

Better?

Not I-Corps
Focus

I-Corps first program to apply lean startup principles

to complex engineering, technology, and science based startups

SBIR/STTR

Bootcamp

Venture Capital

<10% of seed stage investments

Venture Capital

<10% of seed stage investments

SBIR/STTR

> 90% of seed stage investments

"Transforming the world's largest seed fund

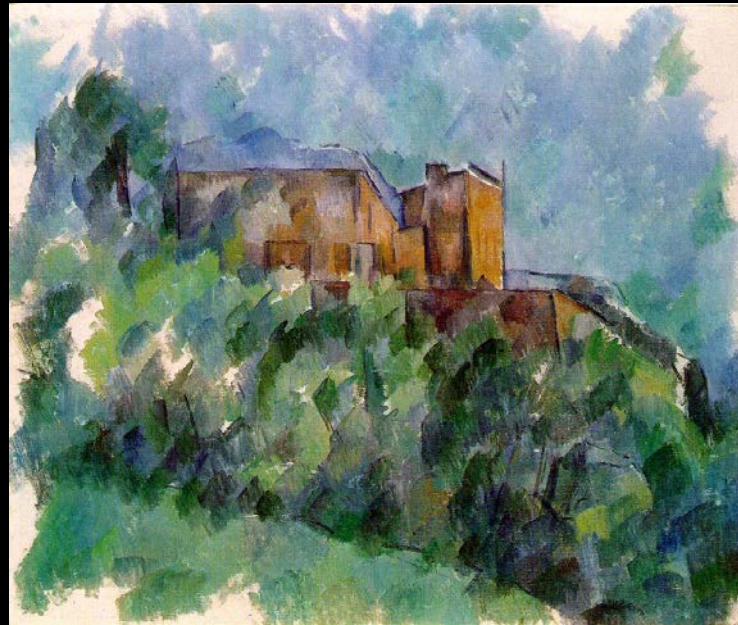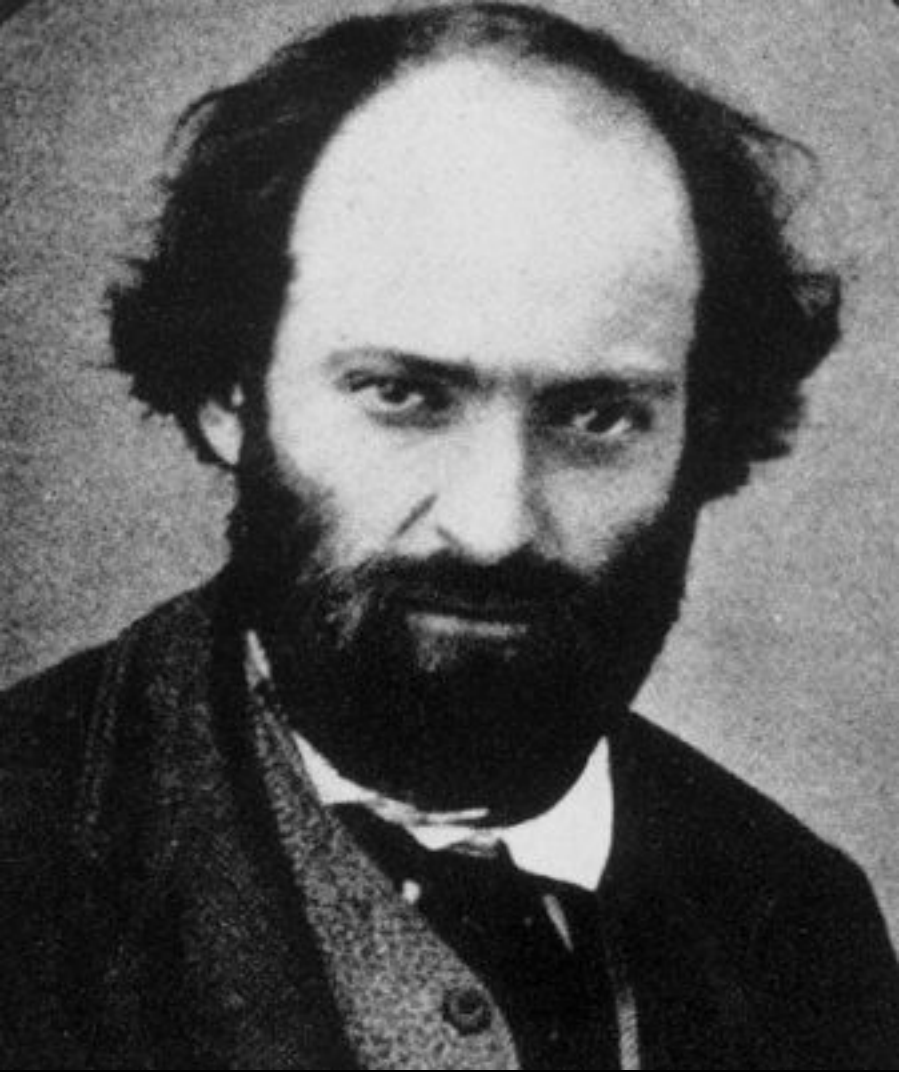...into the *world's largest Accelerator.*"

How about a little *Art History?!*

David W. Galenson

OLD MASTERS

and

YOUNG GENIUSES

The Two Life Cycles of Artistic Creativity
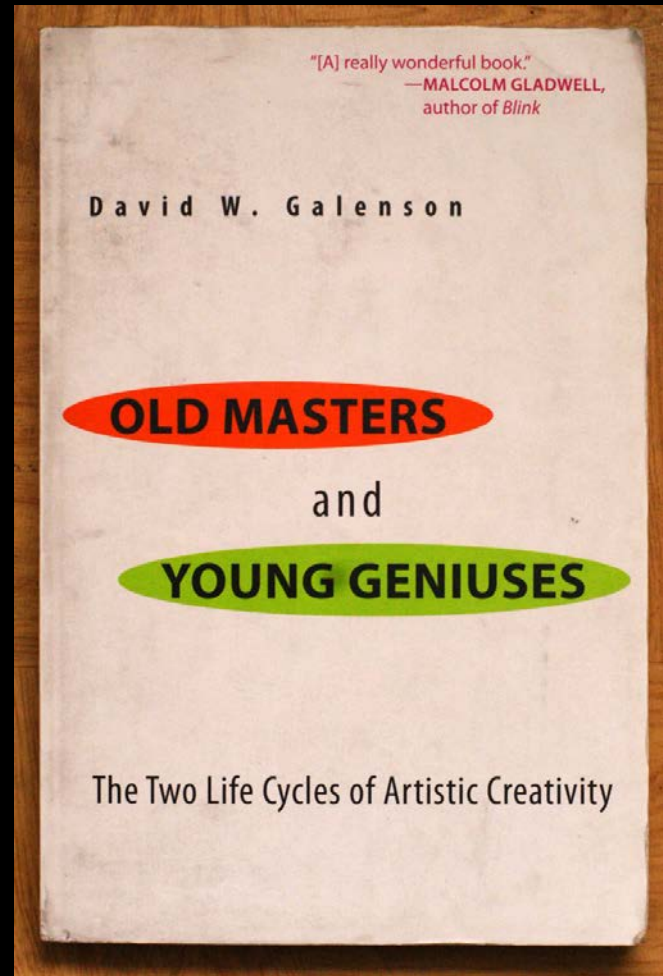
Two Extremes
of Innovation

The Innovation
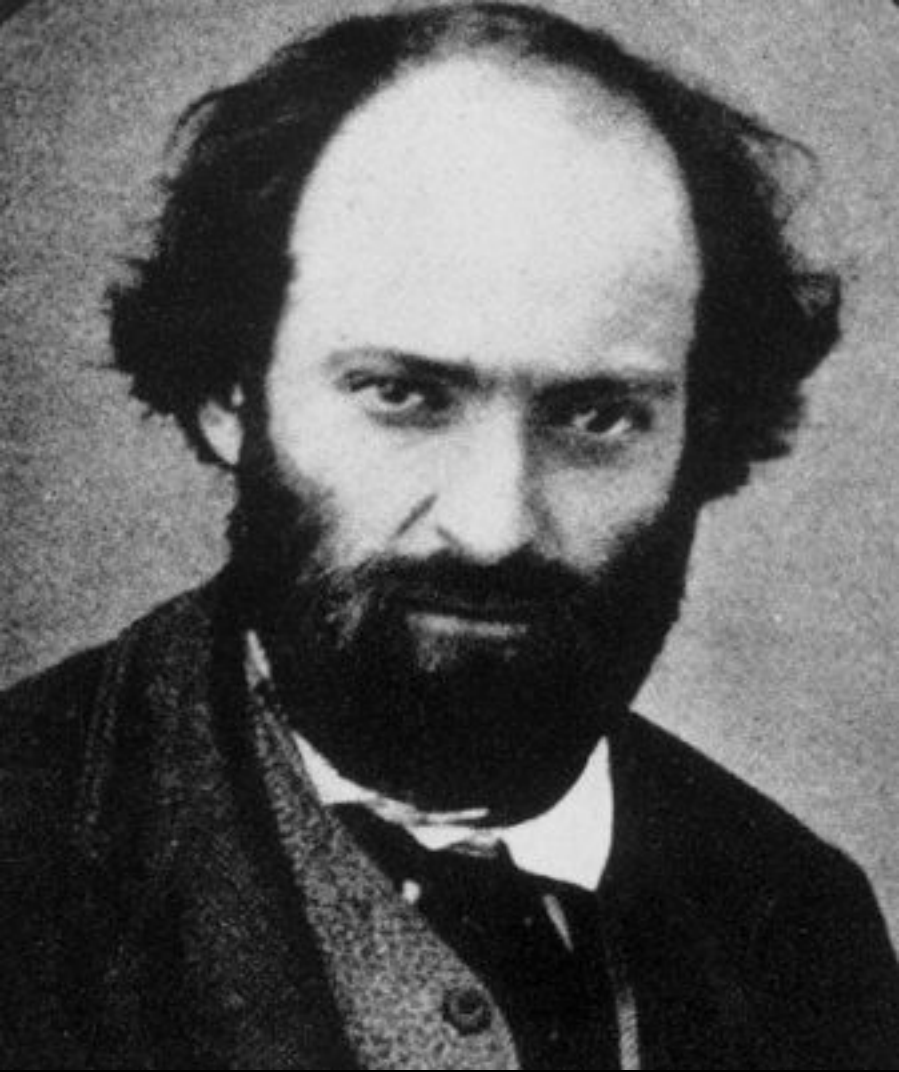*Continuum...*

Conceptual
Innovation
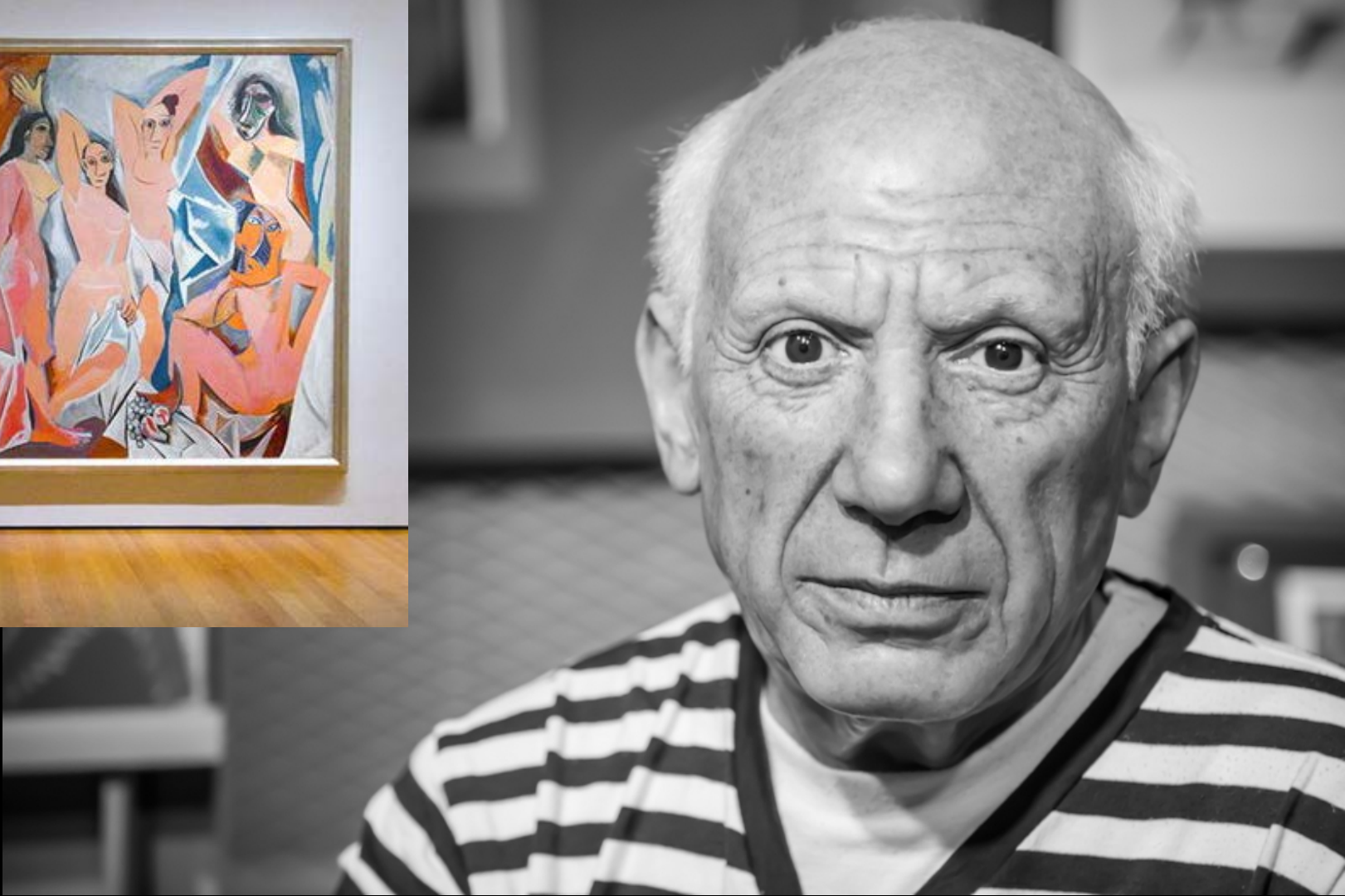
Experimental
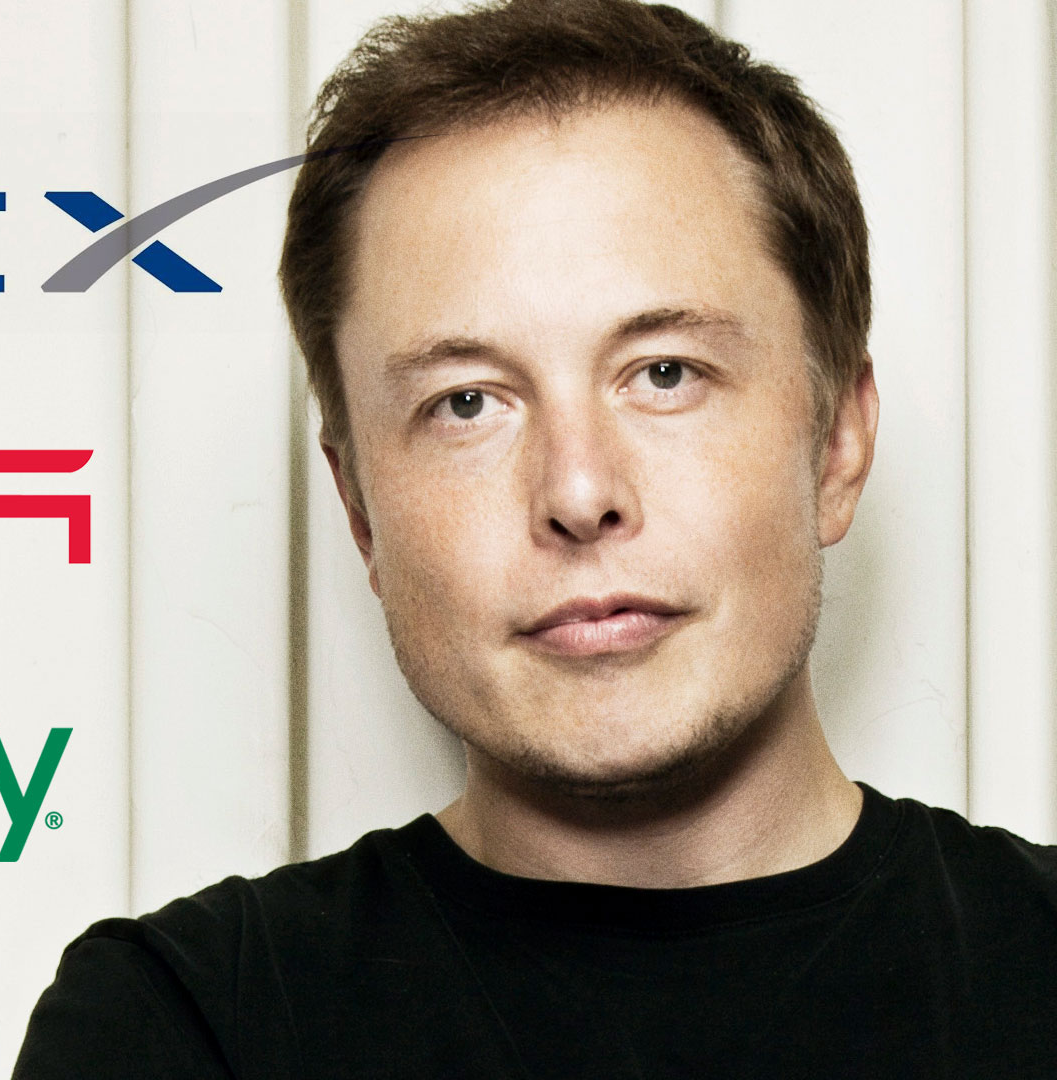## *Innovation*
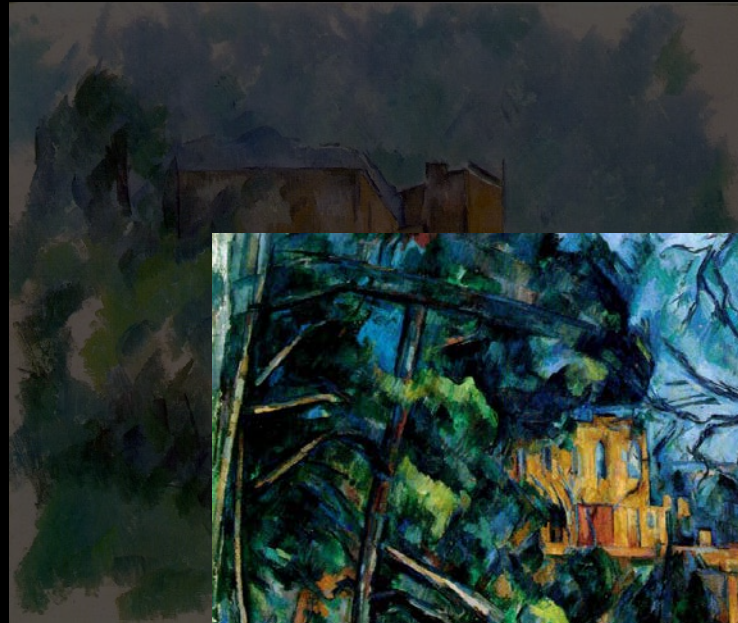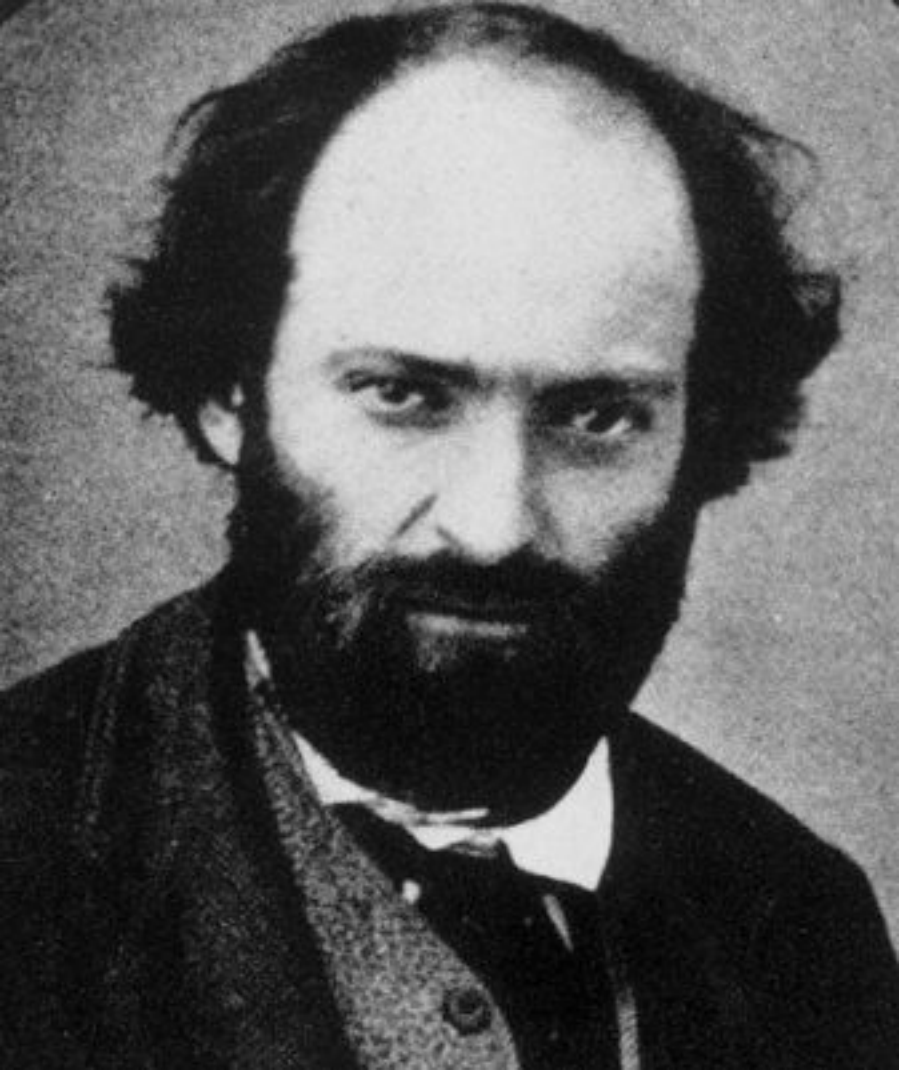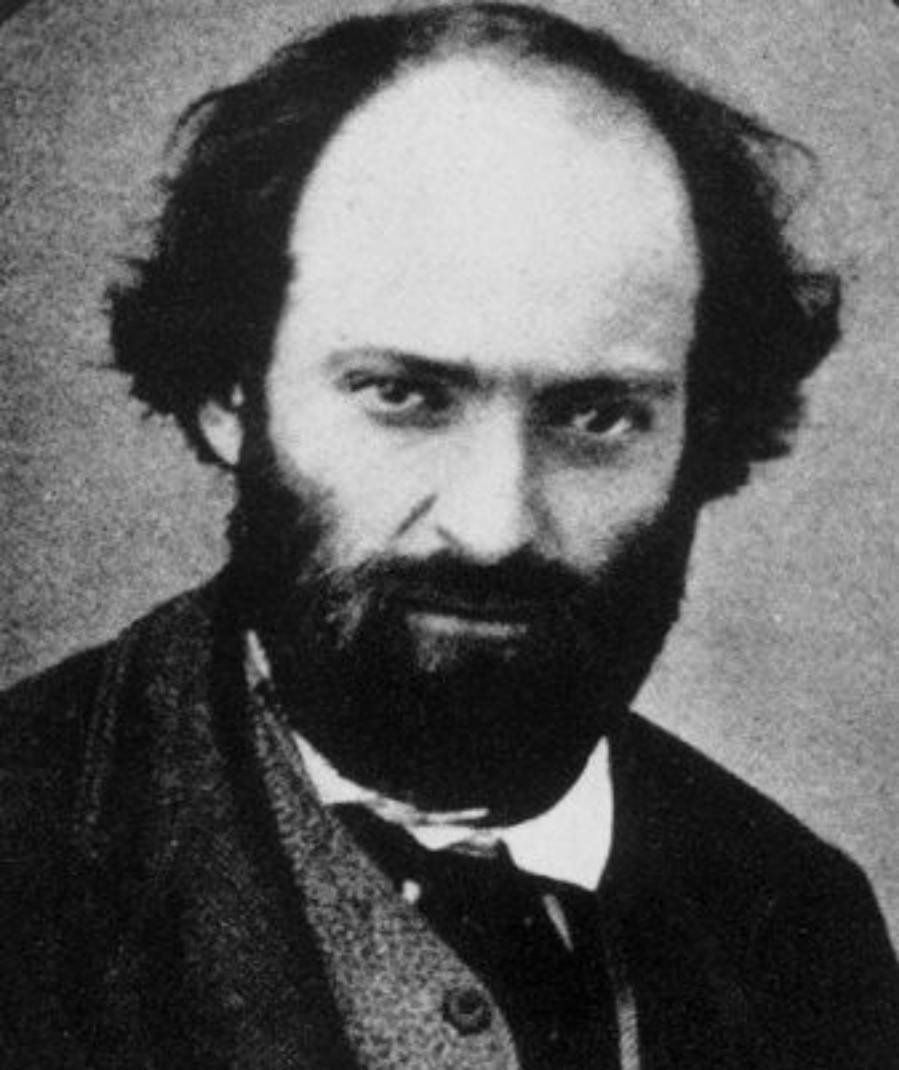
Not Just
for Art!

Rethinking

Technology Innovation
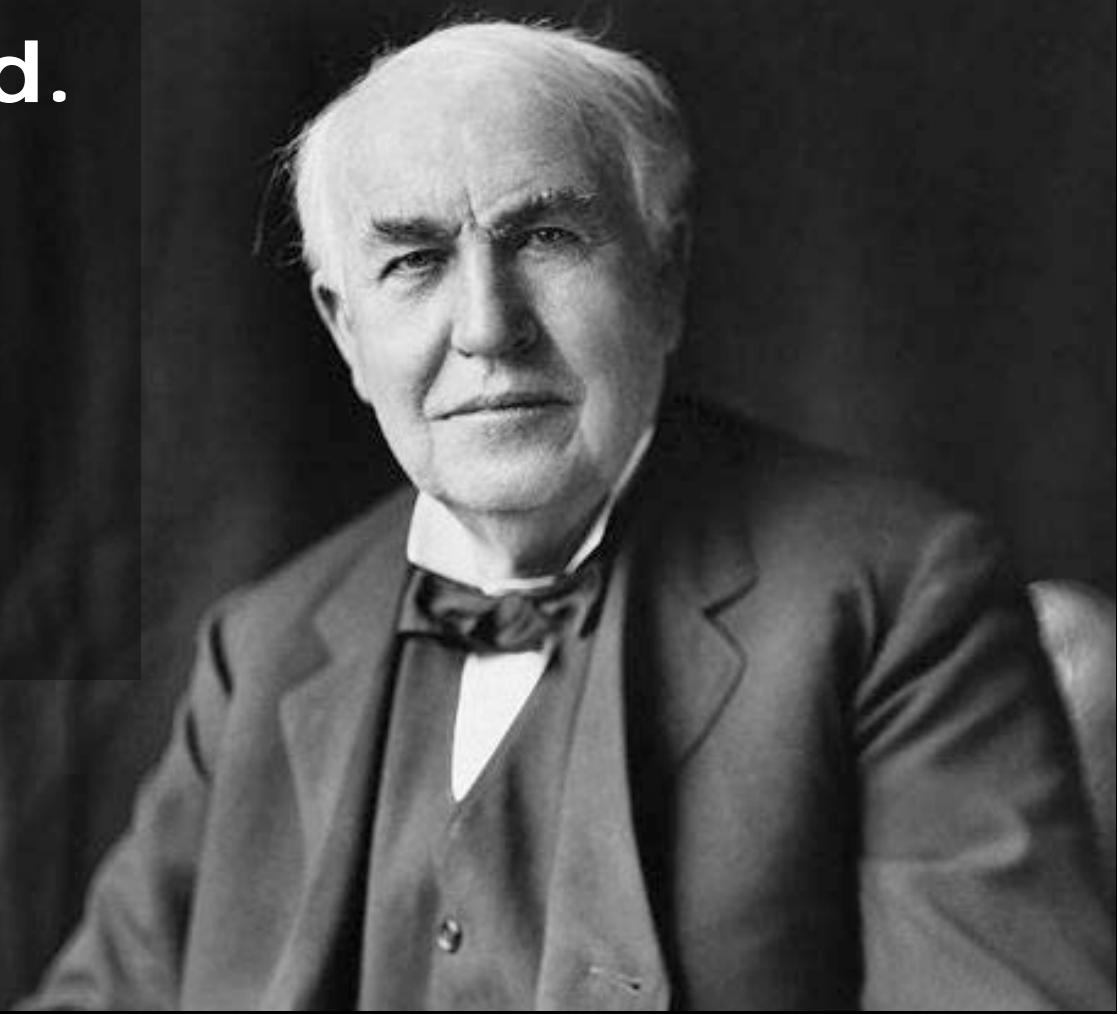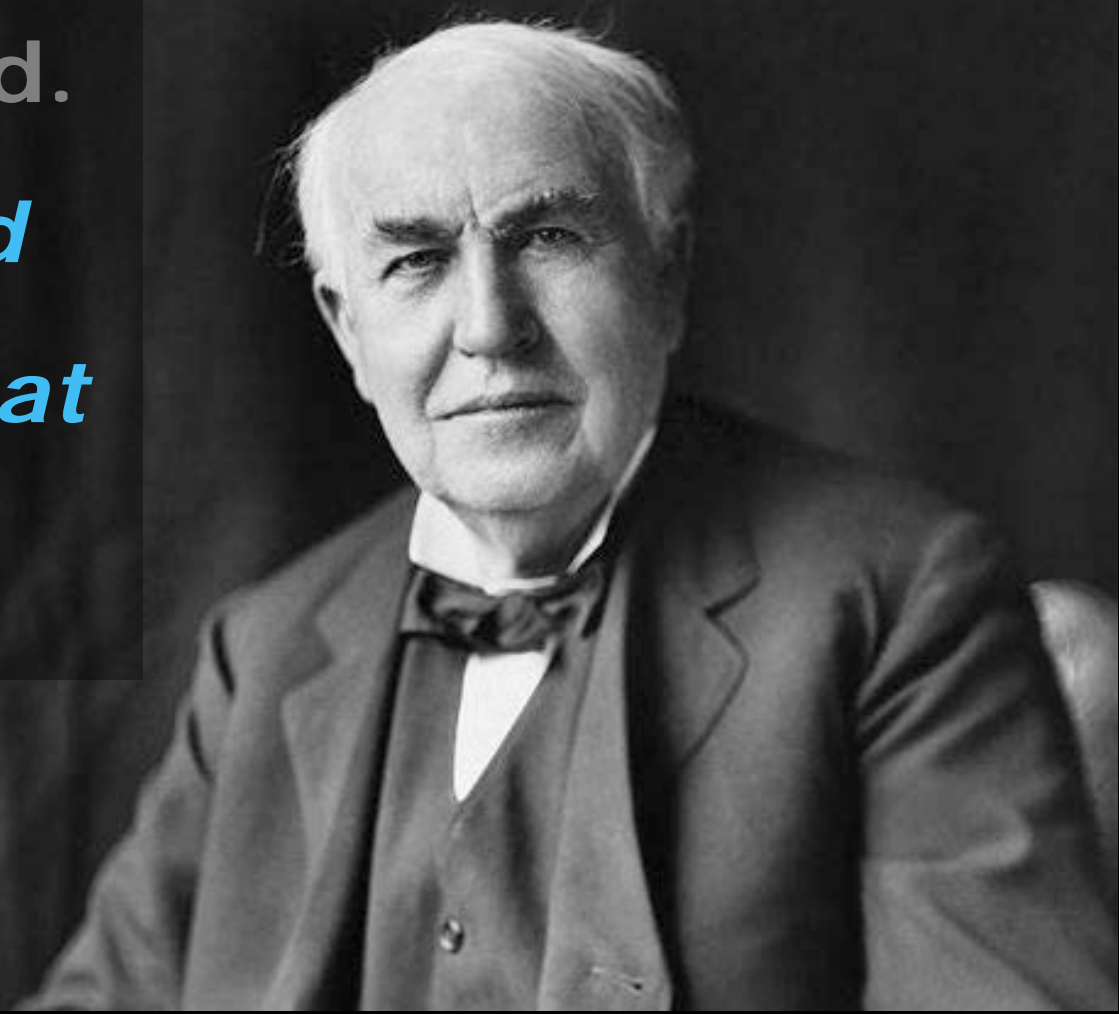
"I haven't failed.

"I haven't failed.

I've just found

10,000 ways that

won't work."

– Thomas Edison

Conceptual or *Experimental?*

"People don't know what they want…

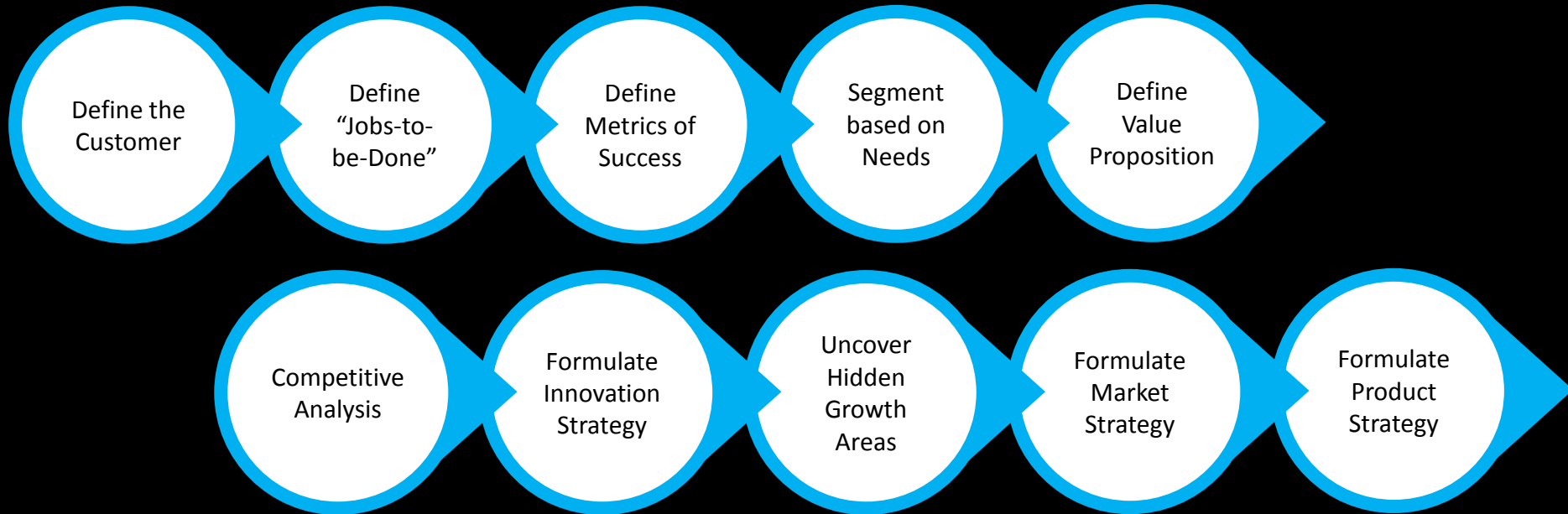"People don't know *what* they want... until I show it to them!"

Experimental
Innovation

Steps we tend to Ignore!!!
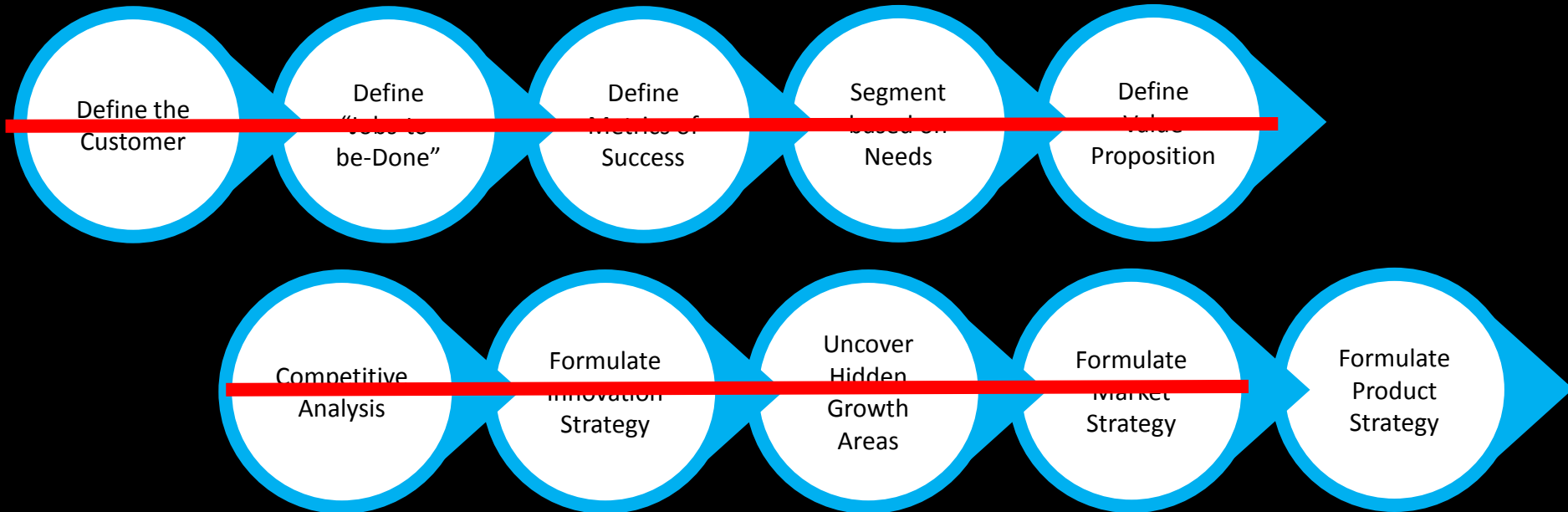
Conceptual *Innovation*

Product Development as *Conceptual Innovation*

Google Market Trends → Pay for market forecasts → "Guess" at potential market share → Input from sales and marketing → Technical Brainstorm → What are we good at doing?

Who else is doing what we are doing? → What can we do "better" → Formulate Market Strategy → Formulate Product Strategy → **Build, show, and hope**
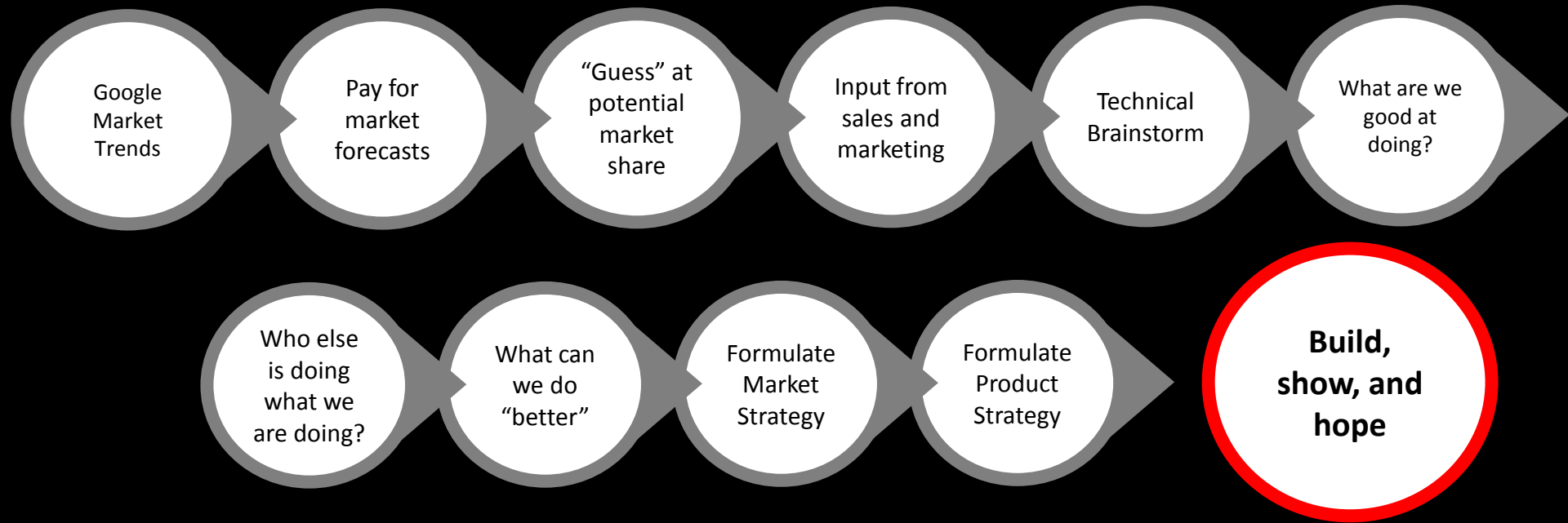
Sobering
Statistics

Strikeouts   Base Hits   Home Runs

Frequency

Outcome (ROI)

PALO ALTO
venture
science
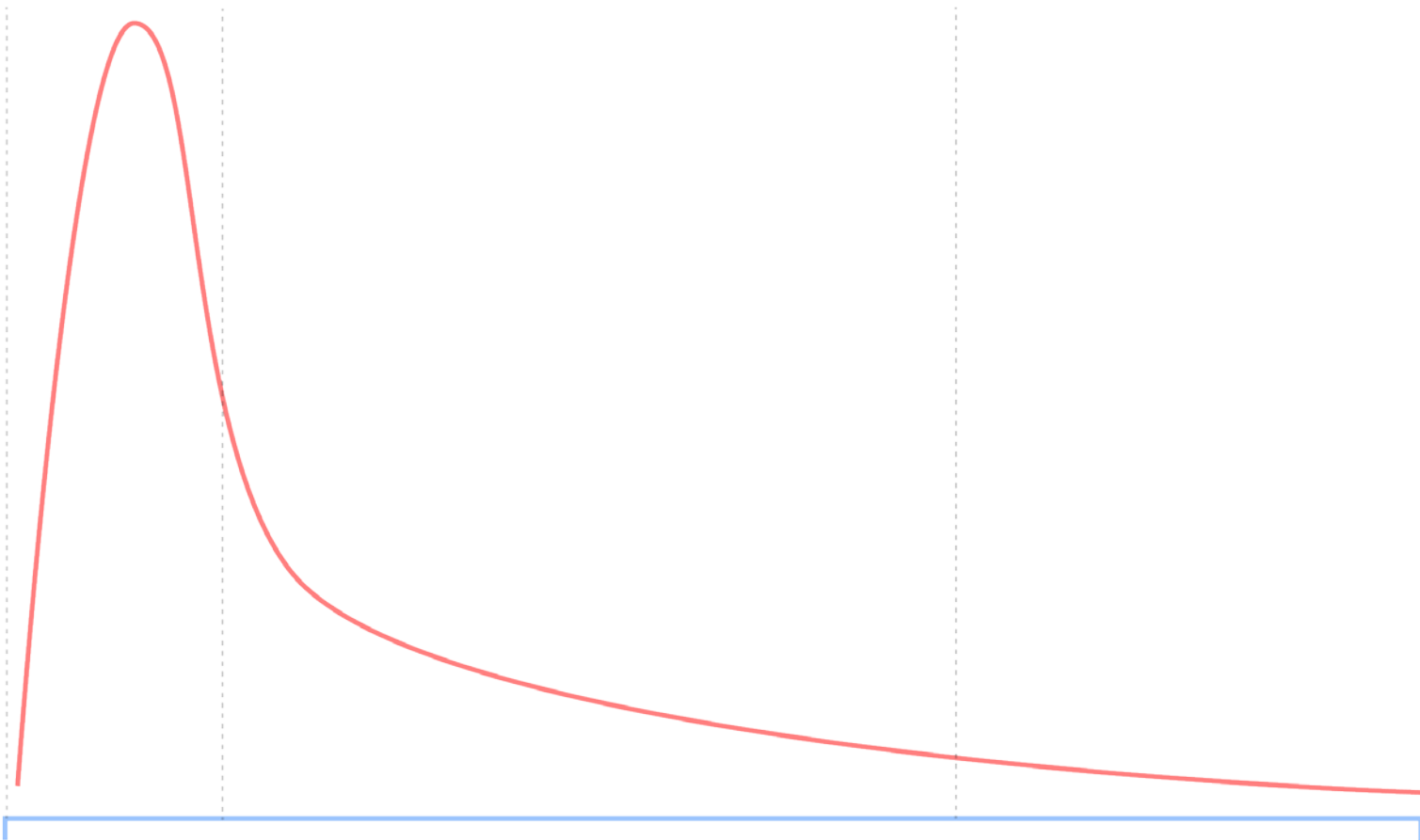
More startups fail from a

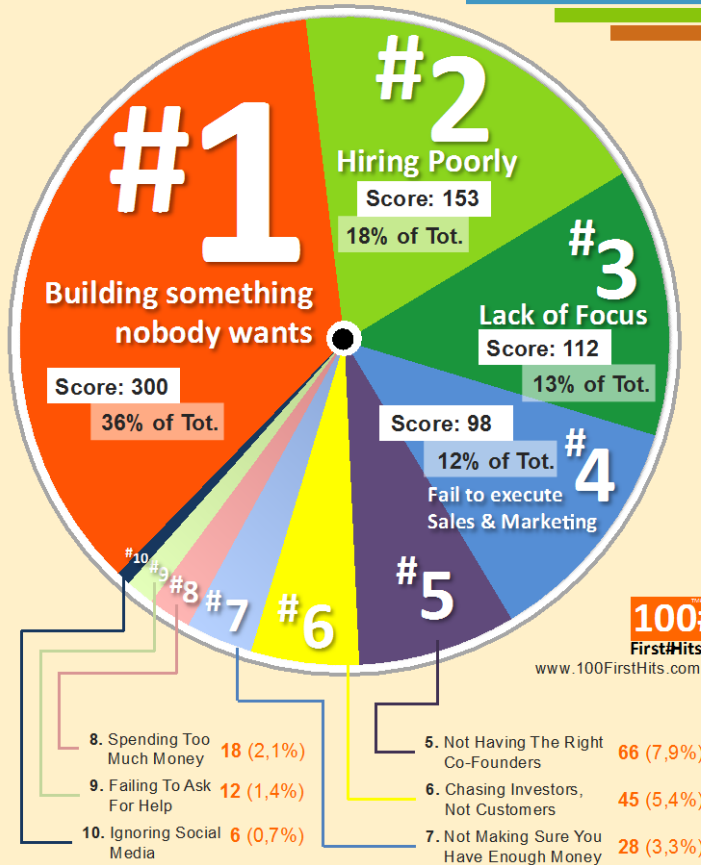*lack of customers*

than from product failure

More startups fail from a

lack of customers

than from product failure

TOP 10
STARTUP MISTAKES

#1 Building something nobody wants
Score: 300
36% of Tot.

#2 Hiring Poorly
Score: 153
18% of Tot.

#3 Lack of Focus
Score: 112
13% of Tot.

#4 Fail to execute Sales & Marketing
Score: 98
12% of Tot.

#5
#6
#7
#8
#9
#10

8. Spending Too Much Money — **18** (2,1%)
9. Failing To Ask For Help — **12** (1,4%)
10. Ignoring Social Media — **6** (0,7%)

5. Not Having The Right Co-Founders — **66** (7,9%)
6. Chasing Investors, Not Customers — **45** (5,4%)
7. Not Making Sure You Have Enough Money — **28** (3,3%)

100 First Hits
www.100FirstHits.com

#1
Building something nobody wants
Score: 300

#2
Hiring Poorly
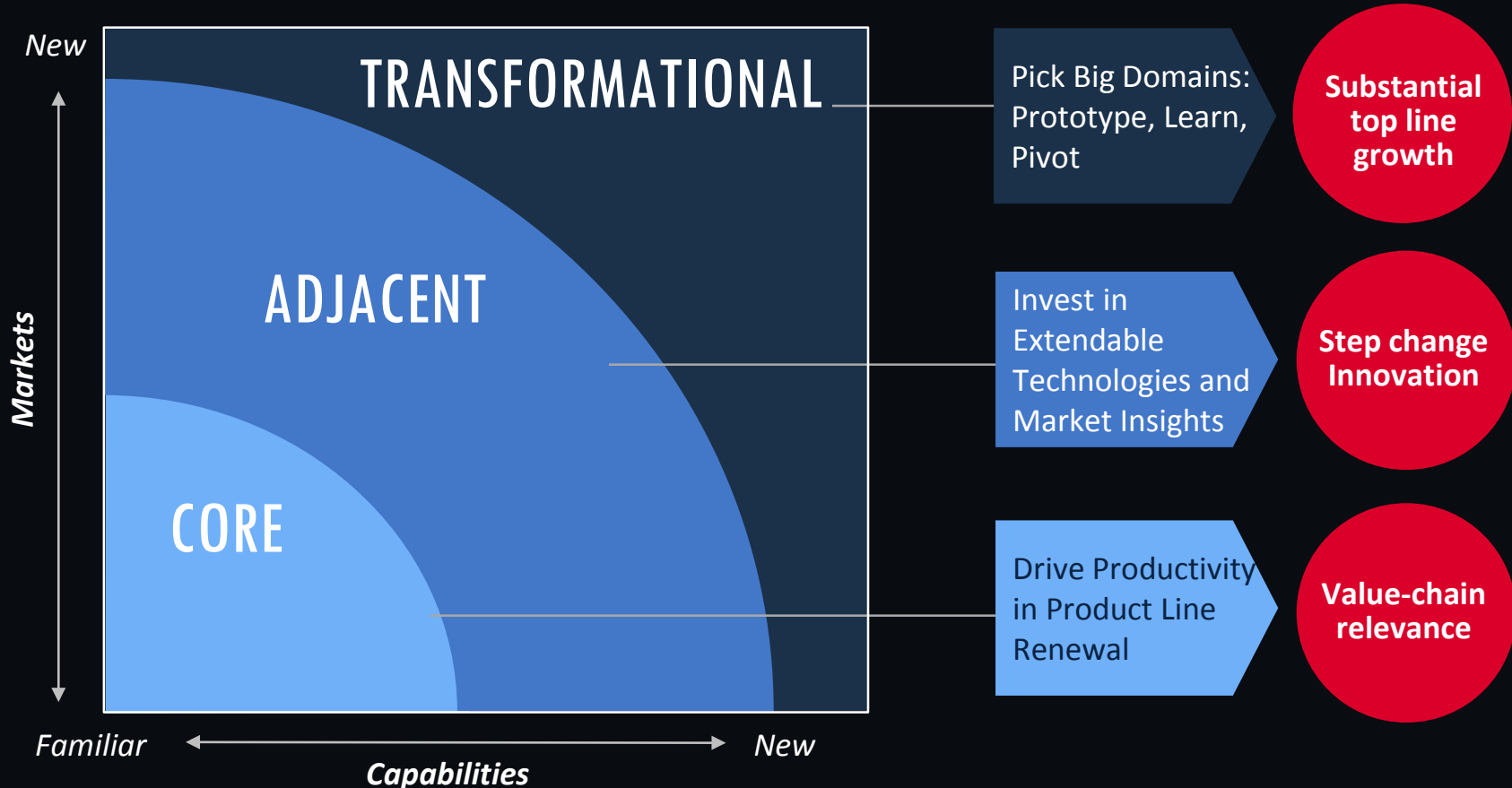**Score: 153**
18% of Tot.

#3
Lack of Focus
Score: 112
13% of Tot.

Not Just
for Startups

Where do companies *look for growth?*

GROWTH OBJECTIVES REQUIRE A PORTFOLIO APPROACH

TRANSFORMATIONAL

ADJACENT

CORE

New

Markets

Familiar — *New*

Capabilities

Pick Big Domains: Prototype, Learn, Pivot

Substantial top line growth

Invest in Extendable Technologies and Market Insights

Step change Innovation

Drive Productivity in Product Line Renewal

Value-chain relevance

Search

Unknown

Execute / Search

Partially Known

Execute

Known
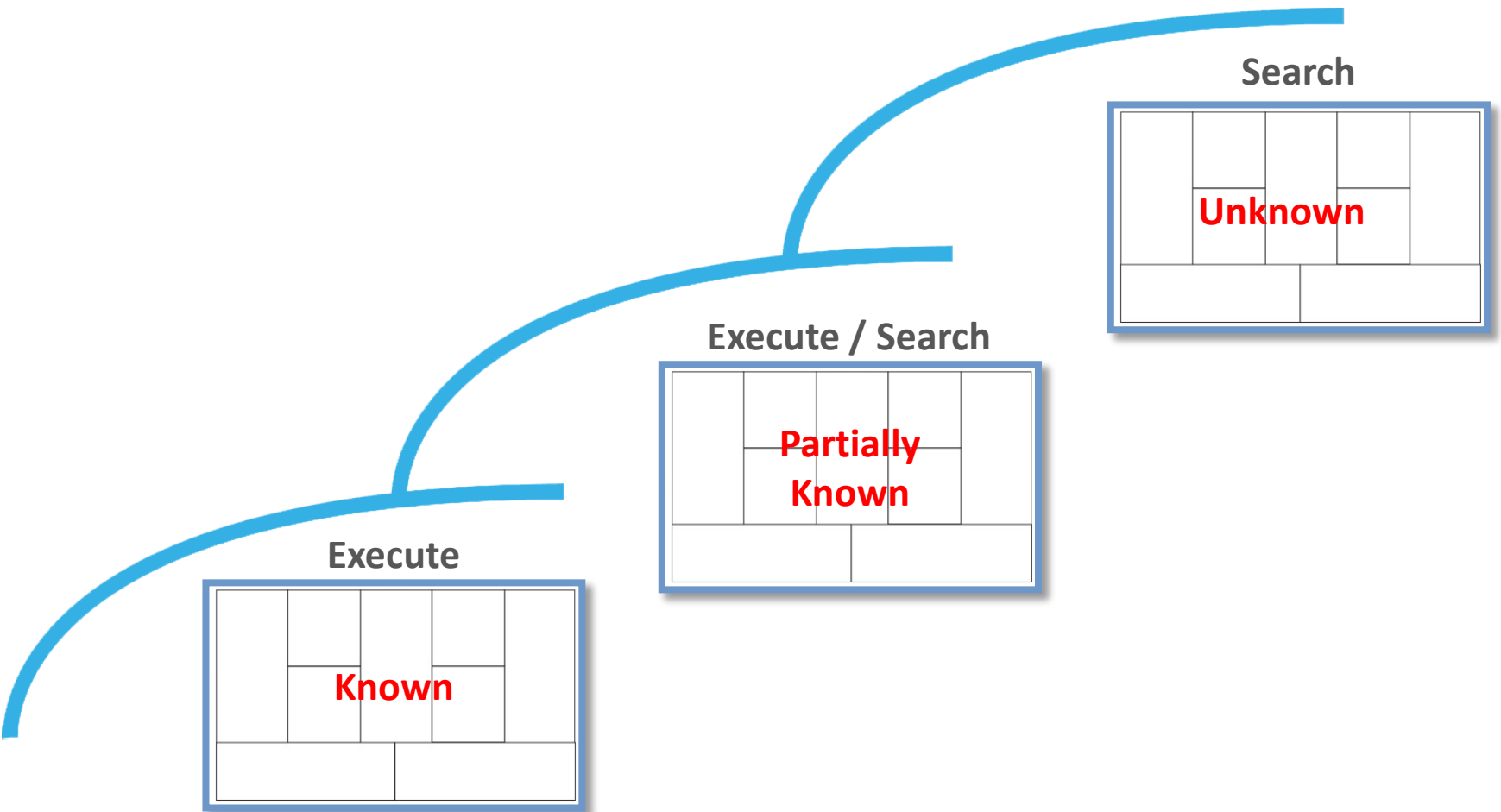
Our *Goal*

Improve *Odds*

Reduce *Customer Risk*

Create *More Winners*

Strikeouts   **Base Hits**   **Home Runs**

Frequency

Shift the Curve

Outcome (ROI)

PALO ALTO
venture
science
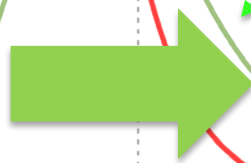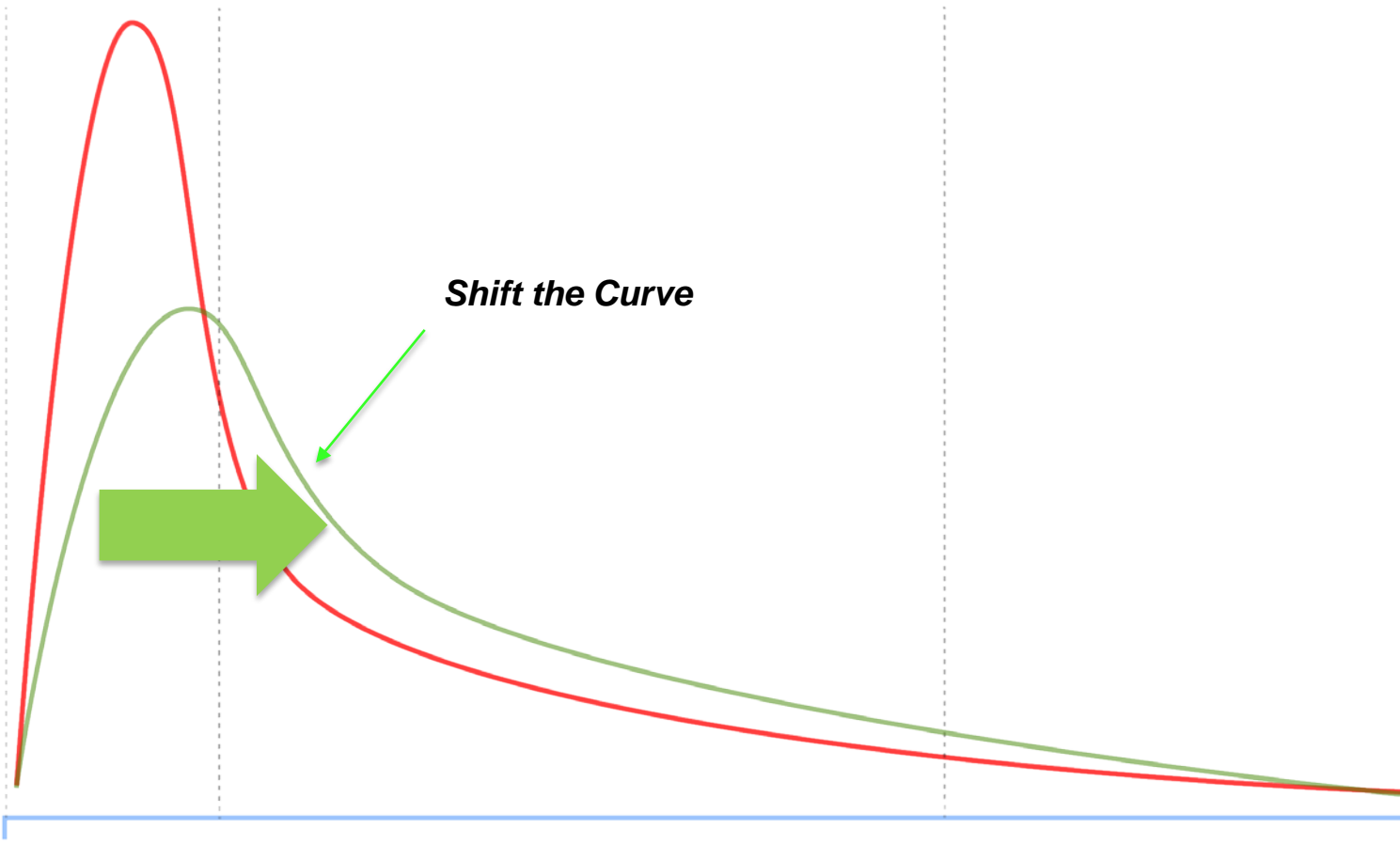
AND

Reallocate Resources

if No-Go

Invention

Innovation

Invention
about Technology

Innovation

about Customer Needs

Our *Approach*

Innovation
Culture Change

Solutions Based to *Needs Based*

How might we apply
Experimental Innovation

Customer *Discovery*

Scientific *Method*

TEST *and* VALIDATE assumptions

Talk (listen)
to customers...

Jobs to *be Done*

Uncover
Unmet Needs

Immersive
Experiential

Get *out* of the building!

Jump!
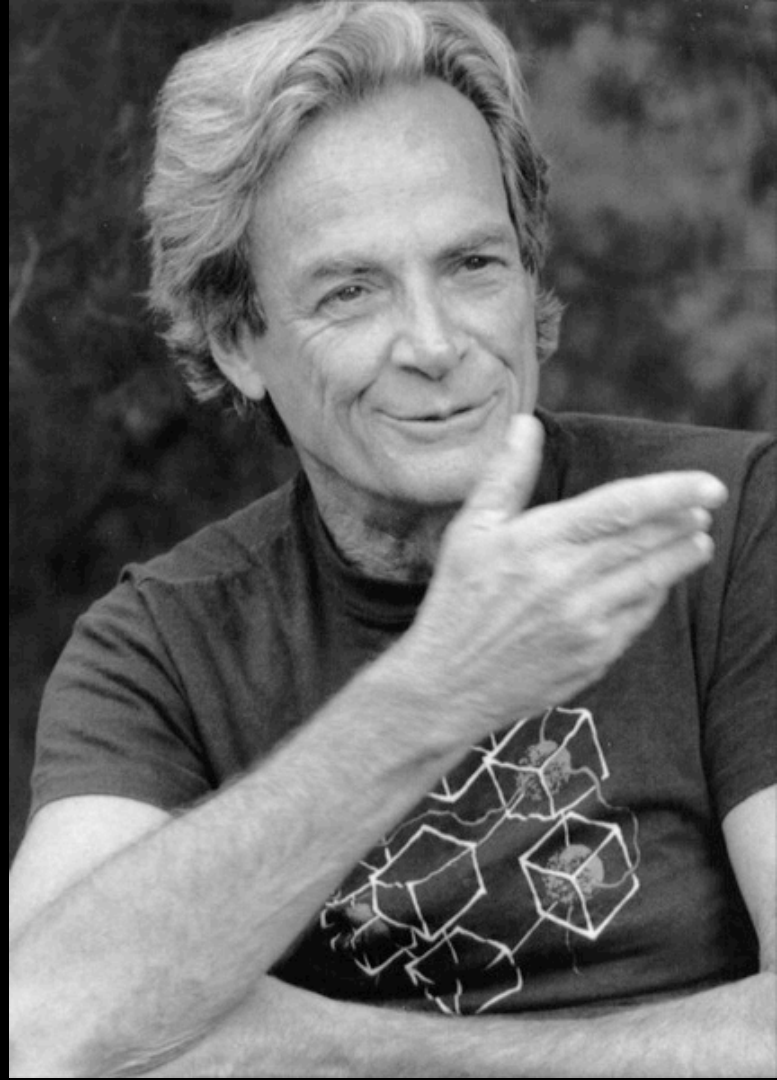
But *why*?

"*The first principle is that you must not fool yourself*

– Richard Feynman

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

– Richard Feynman

Everyone has *a plan...*

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

Our *Philosophy*

Coaches...
not Consultants

How to think...
not what to think.

Test the
Problem First

Search for...
Problem-Solution Fit

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

Test the
Solution Second

Search for...
Product-Market Fit

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

Is this a business *worth doing...*

Search for...
Business Model Fit

What's a *Business Model?*

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

…or how a company *makes money!*

Key Partners	Key Activities		Value Propositions	Customer Relationships		Customer Segments
	Key Resources			Channels		

Cost Structure	Revenue Streams

You're holding a handbook for visionaries, game changers, and challengers striving to defy outmoded business models and design tomorrow's enterprises. It's a book for the...

Business Model Generation

WRITTEN BY
Alexander Osterwalder & Yves Pigneur

CO-CREATED BY
An amazing crowd of 470 practitioners from 45 countries

DESIGNED BY
Alan Smith, The Movement
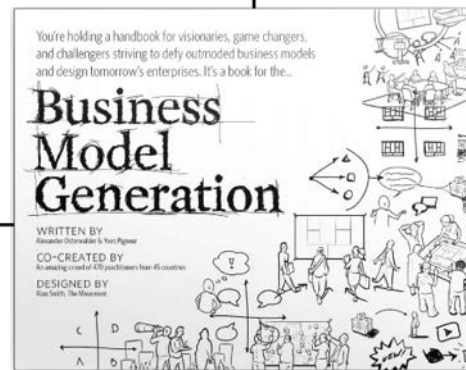
The Business Model *measures value to the business.*

Key Partners	Key Activities	Value Propositions	Customer Relationships	Customer Segments
	Key Resources		**Channels**	
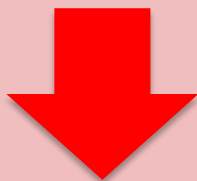
Cost Structure	Revenue Streams
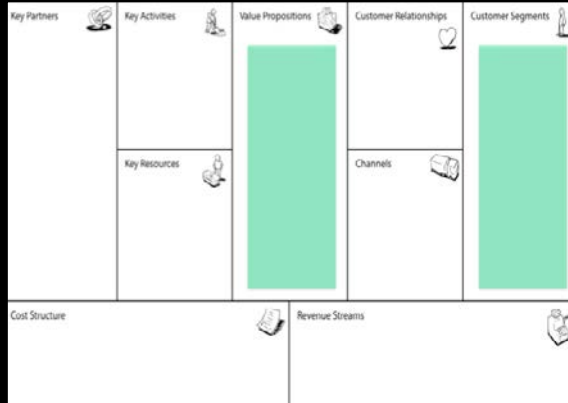
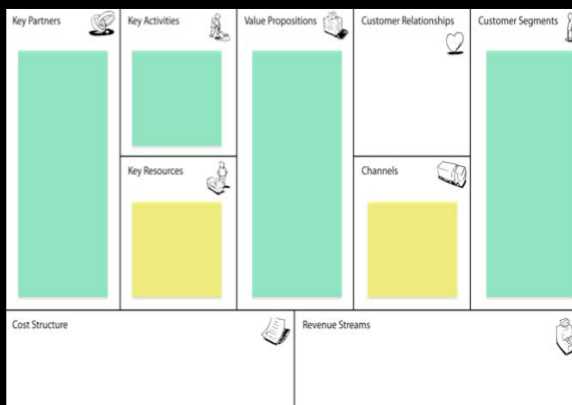**Problem-Solution Fit**   **Product-Market Fit**   **Business-Model Fit**
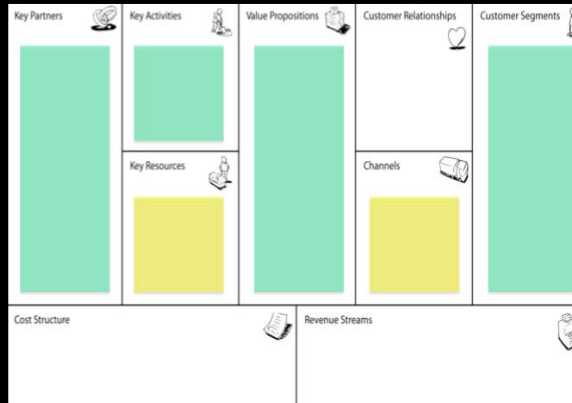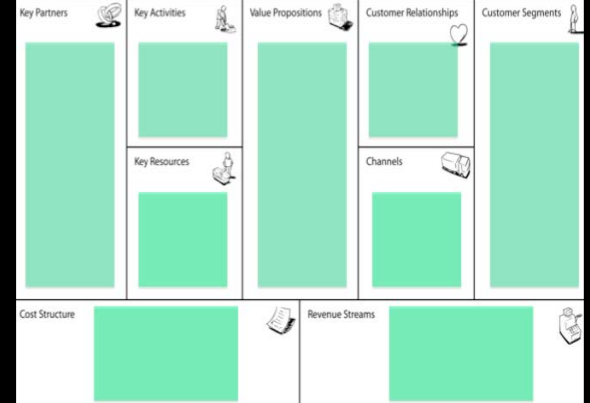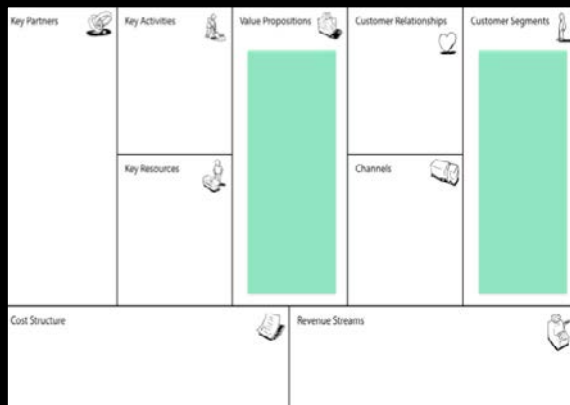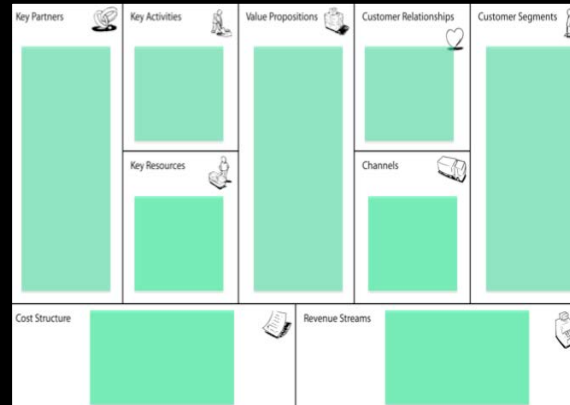
Problem-Solution Fit   **Product-Market Fit**   **Business-Model Fit**
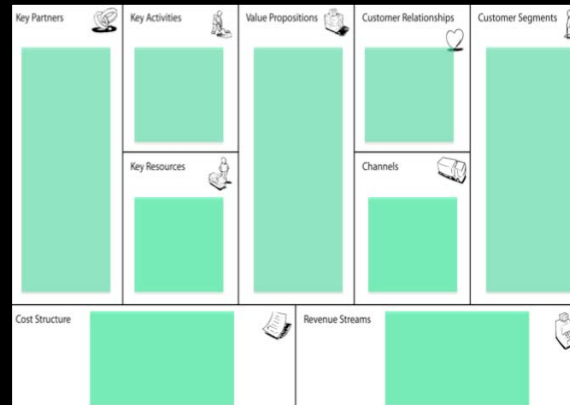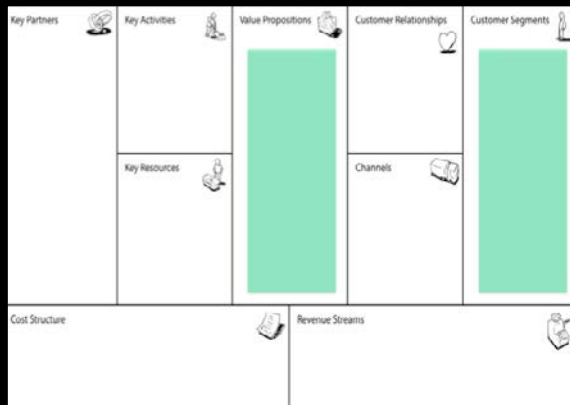
Problem-Solution Fit   Product-Market Fit   Business-Model Fit

End Goal
Validated Business Model

Where we *start...*

Key Partners

Key Activities

Value Propositions

Customer Relationships

Customer Segments

Key Resources

Channels

Cost Structure
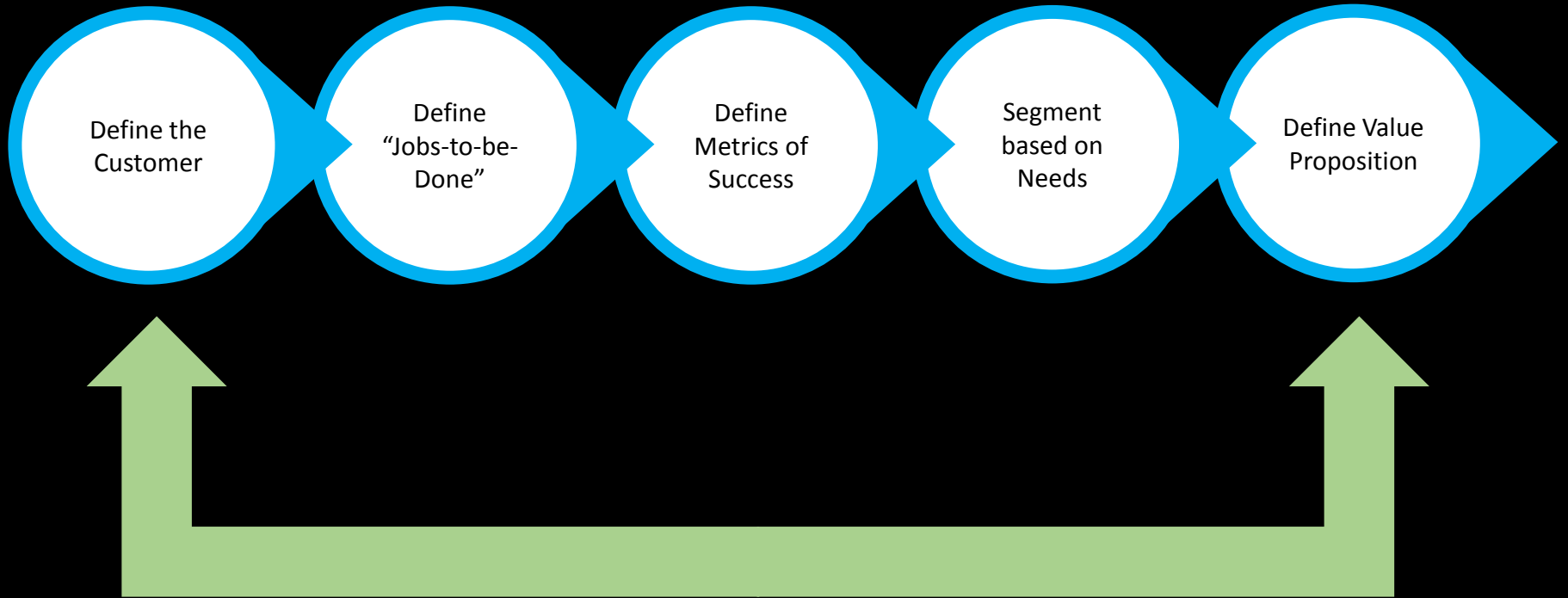
Revenue Streams

Identify Customer Segment and Value Proposition(s)

prior to building rest of Business Model

Key Partners	Key Activities	Value Propositions	Customer Relationships	Customer Segments
		Hypotheses		**Hypotheses**
	Key Resources		Channels	

Cost Structure	Revenue Streams

How do we validate *a Customer Segment and corresponding Value Proposition(s)?*

Define the Customer → Define "Jobs-to-be-Done" → Define Metrics of Success → Segment based on Needs → Define Value Proposition
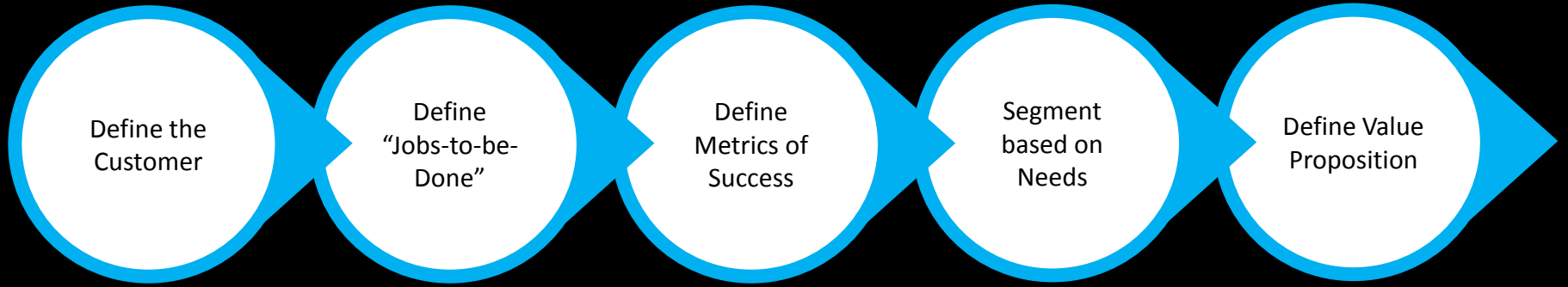
Customer Discovery
Driven Steps

Key Partners

Key Activities

Value Propositions

Customer Relationships

Customer Segments

Key Resources

Channels

Cost Structure

Revenue Streams

Defining
Customers

End Users

Purchasers / Buyers

Everyone Else

B2B vs *B2C*
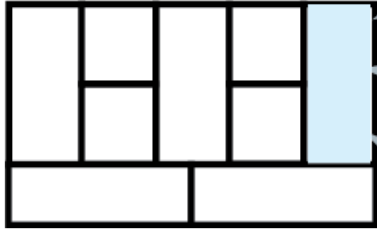
You have a business model…
and so does your customer if selling to a business

YOUR COMPANY

YOUR CUSTOMERS

B2B*

How are you driving value to your customers?
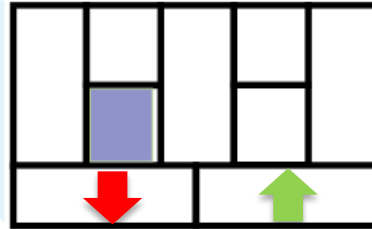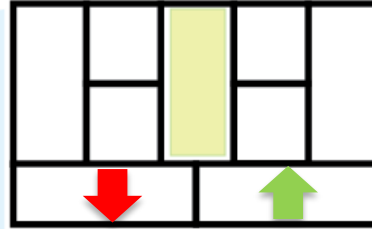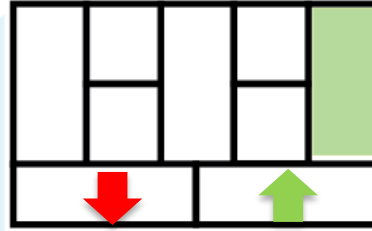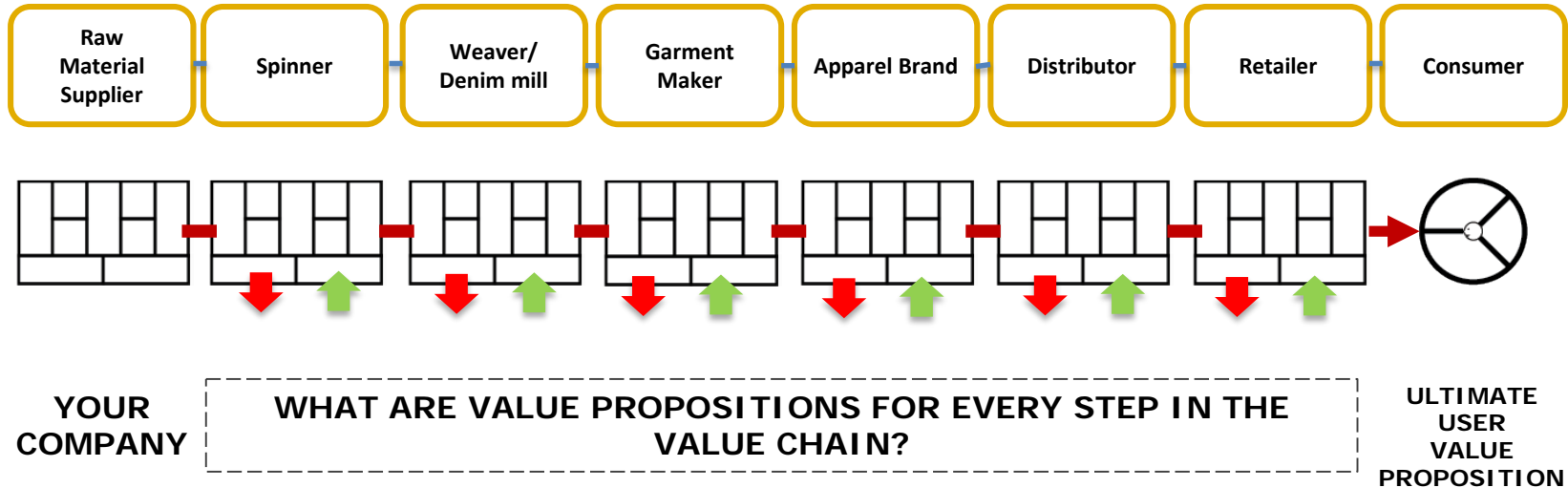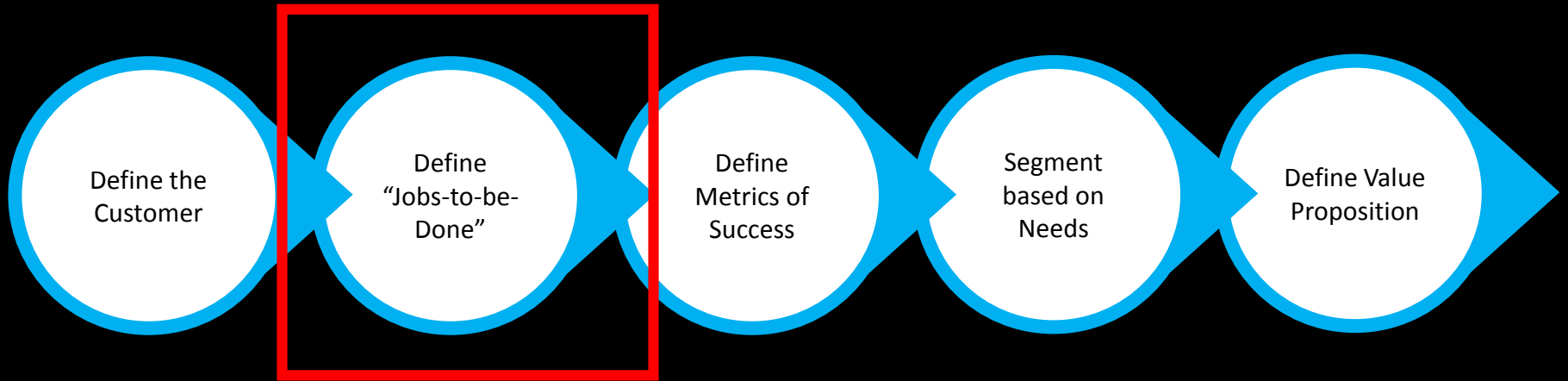
Customers in
B2C, B2B, B2B2C

Understand Business Models in Value Chain

Example: Material supplier for clothing line.

| Raw Material Supplier | Spinner | Weaver/ Denim mill | Garment Maker | Apparel Brand | Distributor | Retailer | Consumer |

YOUR COMPANY

WHAT ARE VALUE PROPOSITIONS FOR EVERY STEP IN THE VALUE CHAIN?

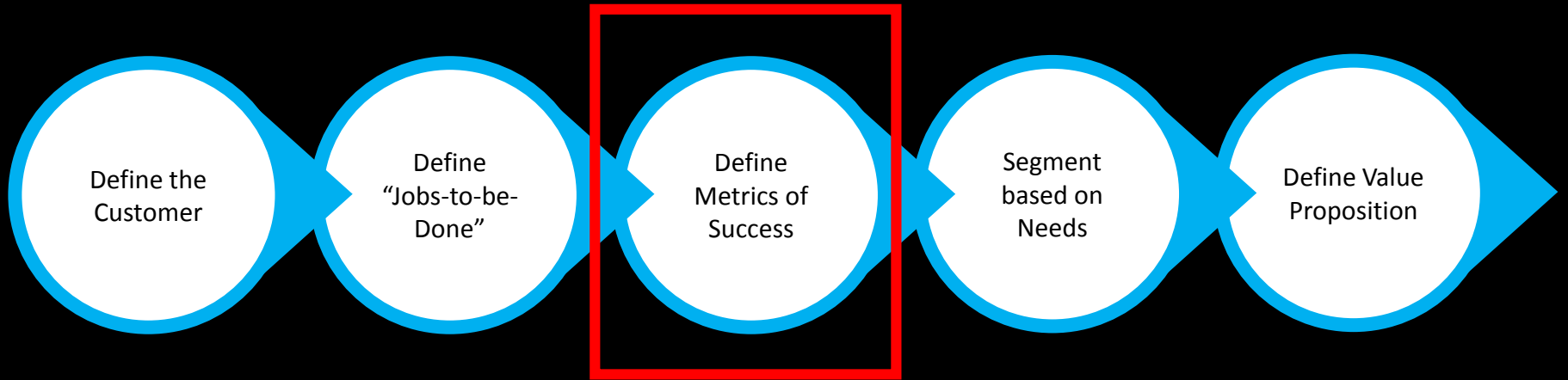**ULTIMATE USER VALUE PROPOSITION**

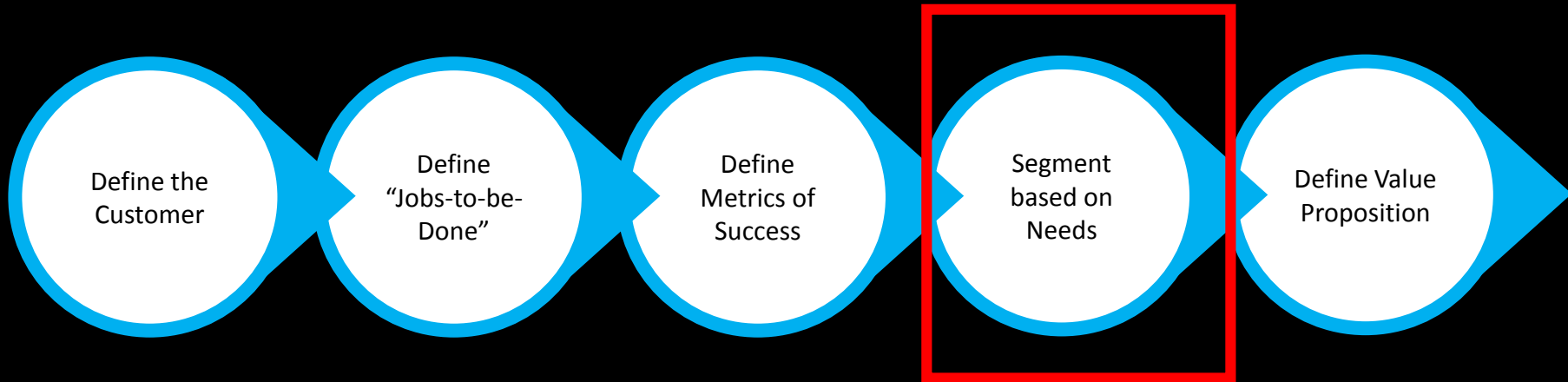# What "job" are *you trying to do?*

Not just "functional" job...there are often key social, emotional, or consumption jobs.

A job is defined as *the progress that a customer desires to make in a particular circumstance.*

What are "key" *outcomes they care about?*

How do customers rank order and measure satisfaction towards these outcomes?

Segment customers based on common prioritization (rank ordering) *and satisfaction (under or over served) of outcomes.*

Key Partners

Key Activities

Value Propositions

Customer Relationships
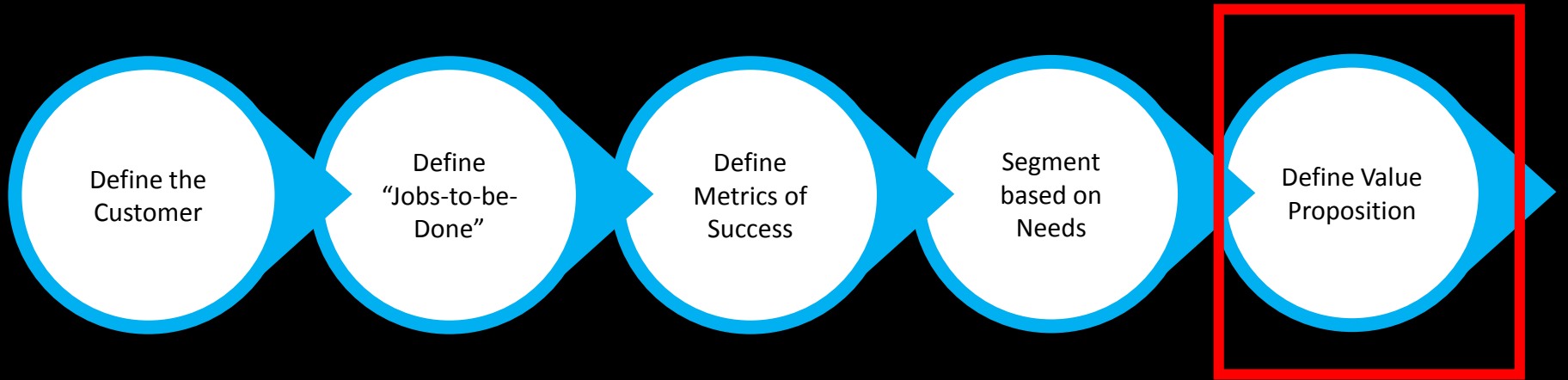
Customer Segments

Key Resources

Channels

Cost Structure

Revenue Streams

Key Partners	Key Activities	Value Propositions	Customer Relationships	Customer Segments
	Key Resources		**Channels**	

Cost Structure	Revenue Streams

Pick BEST strategy based on needs of targeted Customer Segment

Get the Job Done **Better**

Differentiated Strategy
(underserved customers)

Dominant Strategy
(all types of customers)

Sustaining Strategy
(existing customers)

Get the Job Done **Worse**

Discrete Strategy
(Customers with limited options – trapped market)

Disruptive Strategy
(Overserved customers and non-consumers)

Charge **More**   Charge **Less**

JOBS TO BE DONE
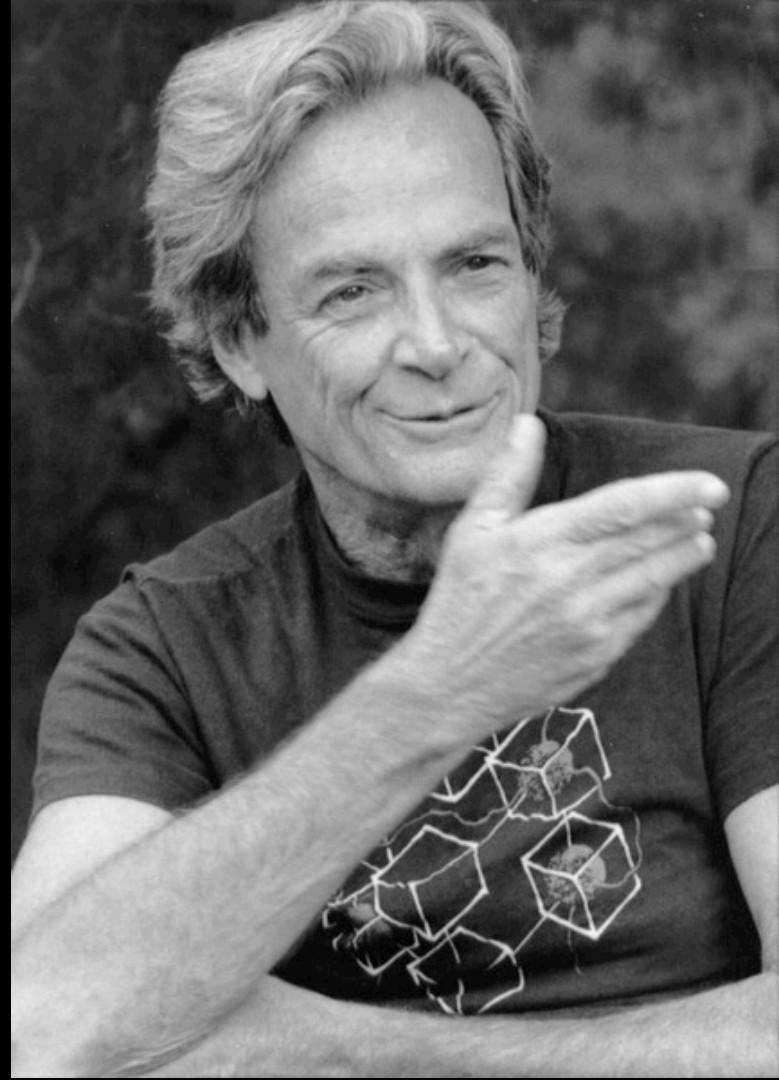THEORY TO PRACTICE
ANTHONY W. ULWICK
FOREWORD BY ALEX OSTERWALDER
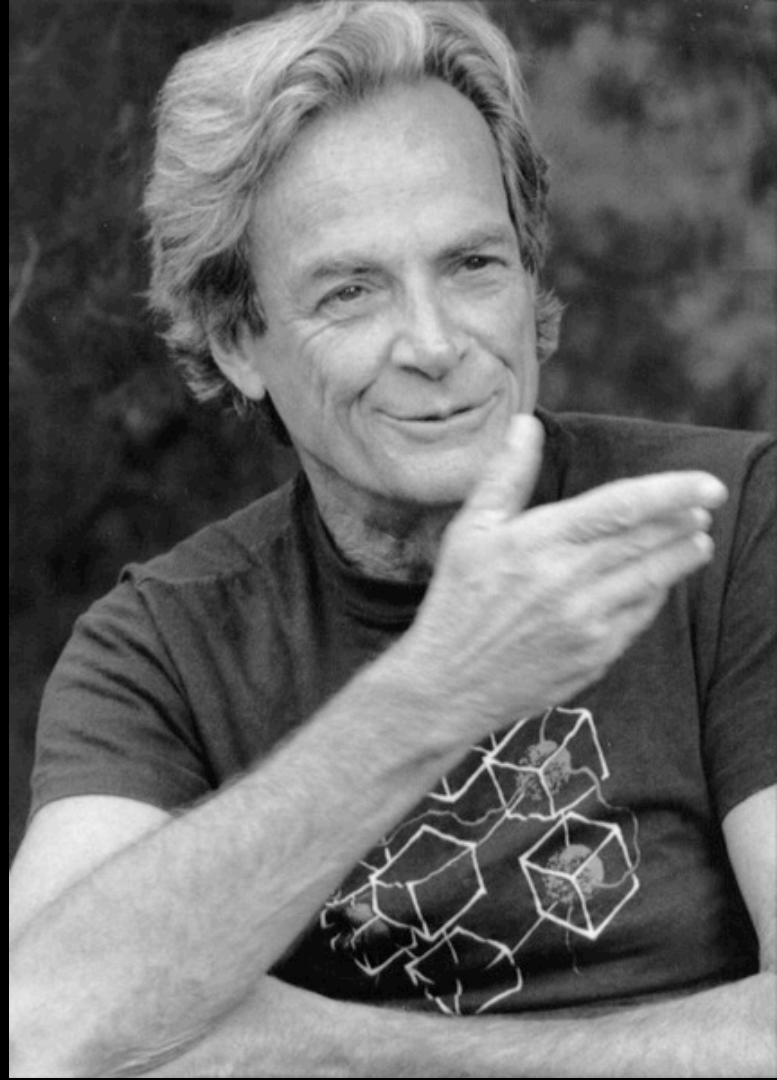
Some Final
Thoughts

"*I have approximate answers and possible beliefs and different degrees of certainty about different things*
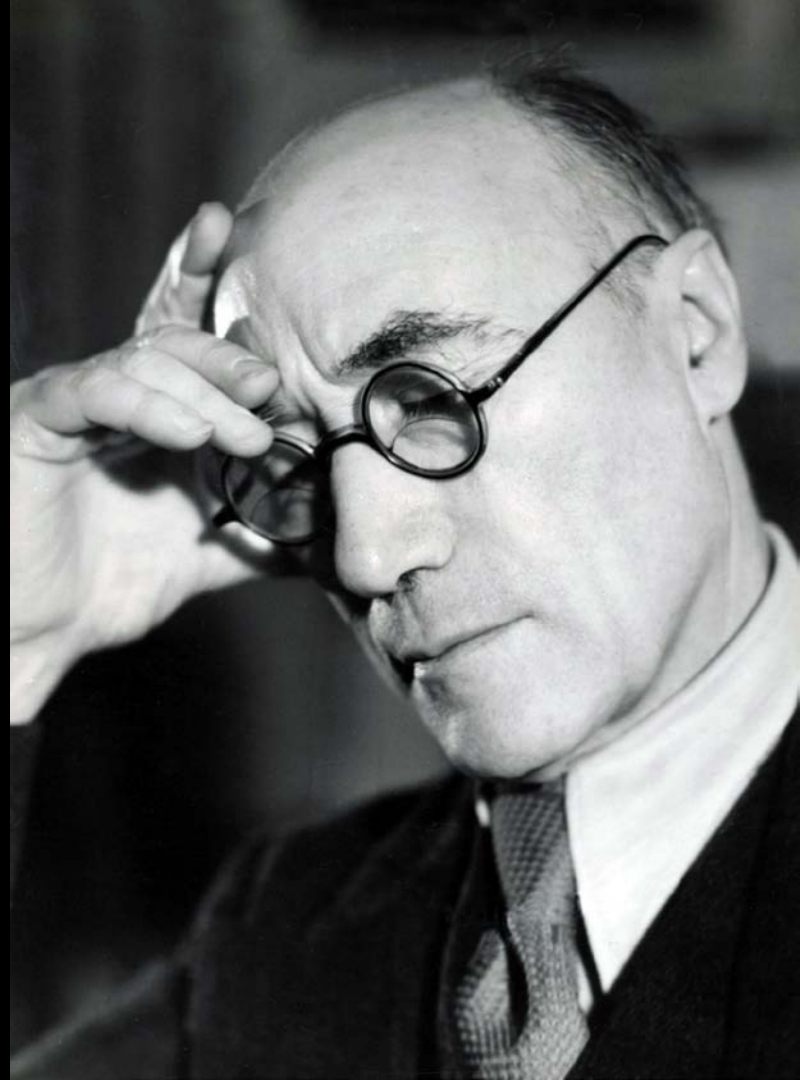
– Richard Feynman

"I have approximate answers and possible beliefs and different degrees of certainty about different things **but I'm not absolutely sure about anything."**

– Richard Feynman

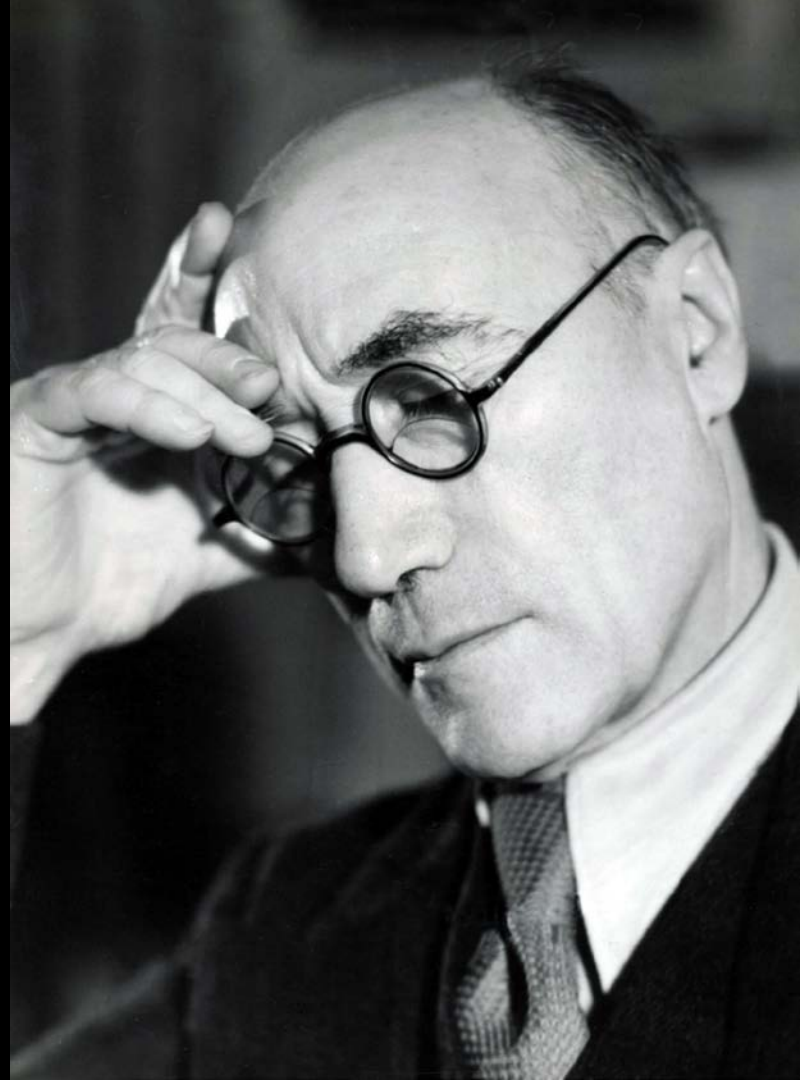"Everything that needs to be said has *already been said.*"

André Paul Guillaume Gide
French Author and Nobel Laureate

"Everything that needs to be said has already been said."

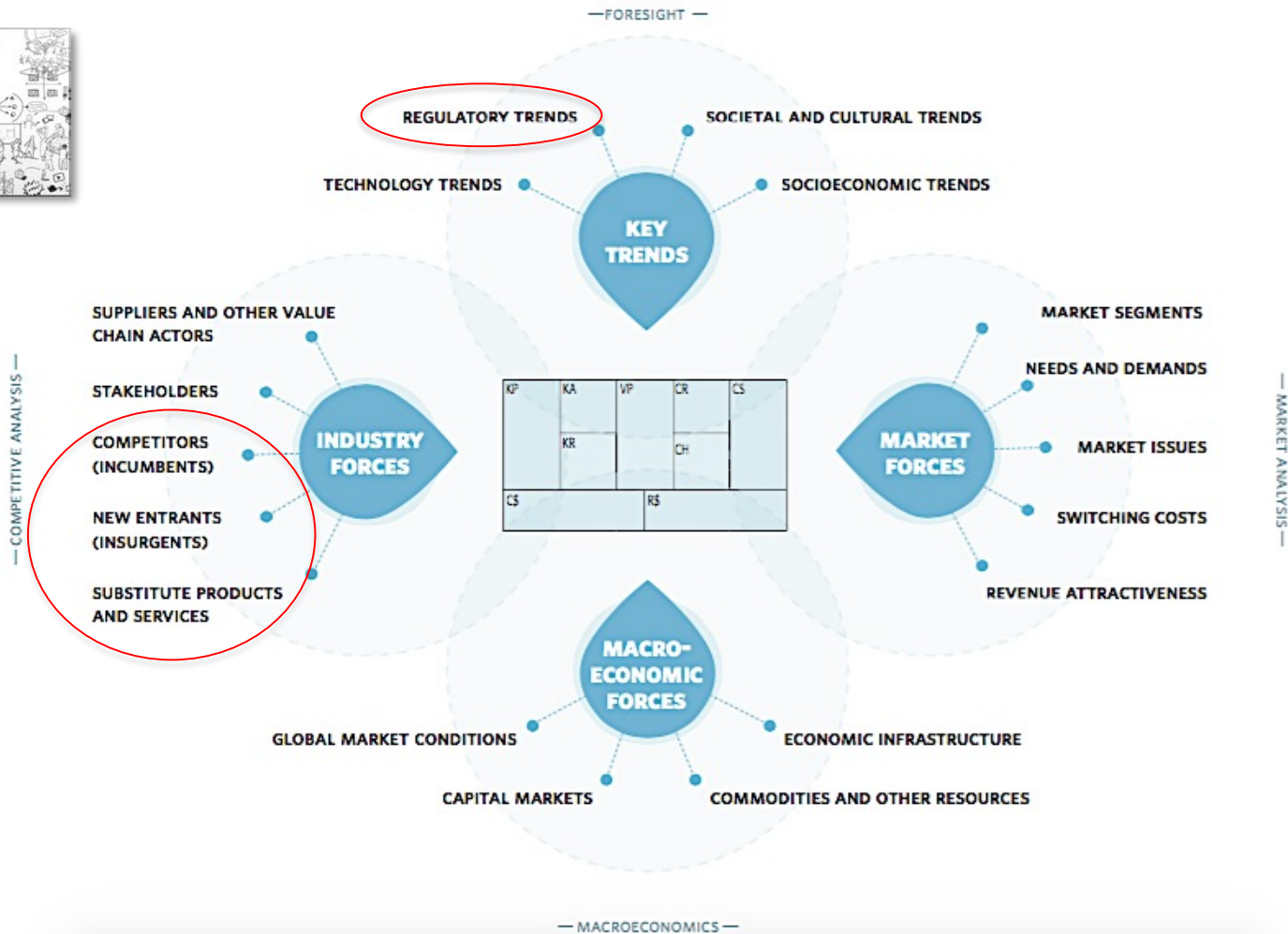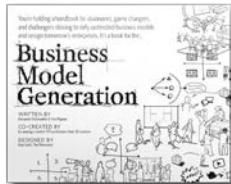"But since no one was listening, everything must be said again."

André Paul Guillaume Gide
French Author and Nobel Laureate

Question

Answer

Business Models are subject to *external forces*

Business Models evolve,
they are not static

Options

Time

INDUSTRY FORCES

DRIVING TRENDS

MARKET FORCES

MACRO-ECONOMIC FORCES

INDUSTRY FORCES

DRIVING TRENDS

MARKET FORCES

MACRO-ECONOMIC FORCES

— PRESENT ENVIRONMENT —

— PROJECTED ENVIRONMENT —

Business Model Generation