Startup “Quality” Perceptions
Voice of the Customer
& Customer Discovery

Presented by: Mike Riedlinger

Managing Director for Technology Commercialization at

nextcorps

An affiliate of the University of Rochester

nextcorps

The New Hub of Entrepreneurship

NextCorps Mission

- Help tech entrepreneurs launch successful companies, and
- Help manufacturers grow revenues and profits

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Programs & Services

Startup Incubation

Manufacturing Advisors

MEP National Network™

nextcorps HARDWARE SCALEUP

nexus-ny

LUMINATE
ROCHESTER, NY
Optics, Photonics & Imaging Startup Accelerator

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The Ecosystem Under One Roof!

- 40k square feet
- NextCorps' headquarters & staff
- Top-tier mentors to work with entrepreneurs
- Access to legal, accounting, marketing, and HR resources
- Prototype lab, digital studio, wet labs, roof top patio
- Lots of activity – regularly scheduled workshops, programs, Meetups, networking events
- Membership in **Medtech Incubator+plus** program
- Free / discounted services from Amazon, Hubspot, Solidworks and others

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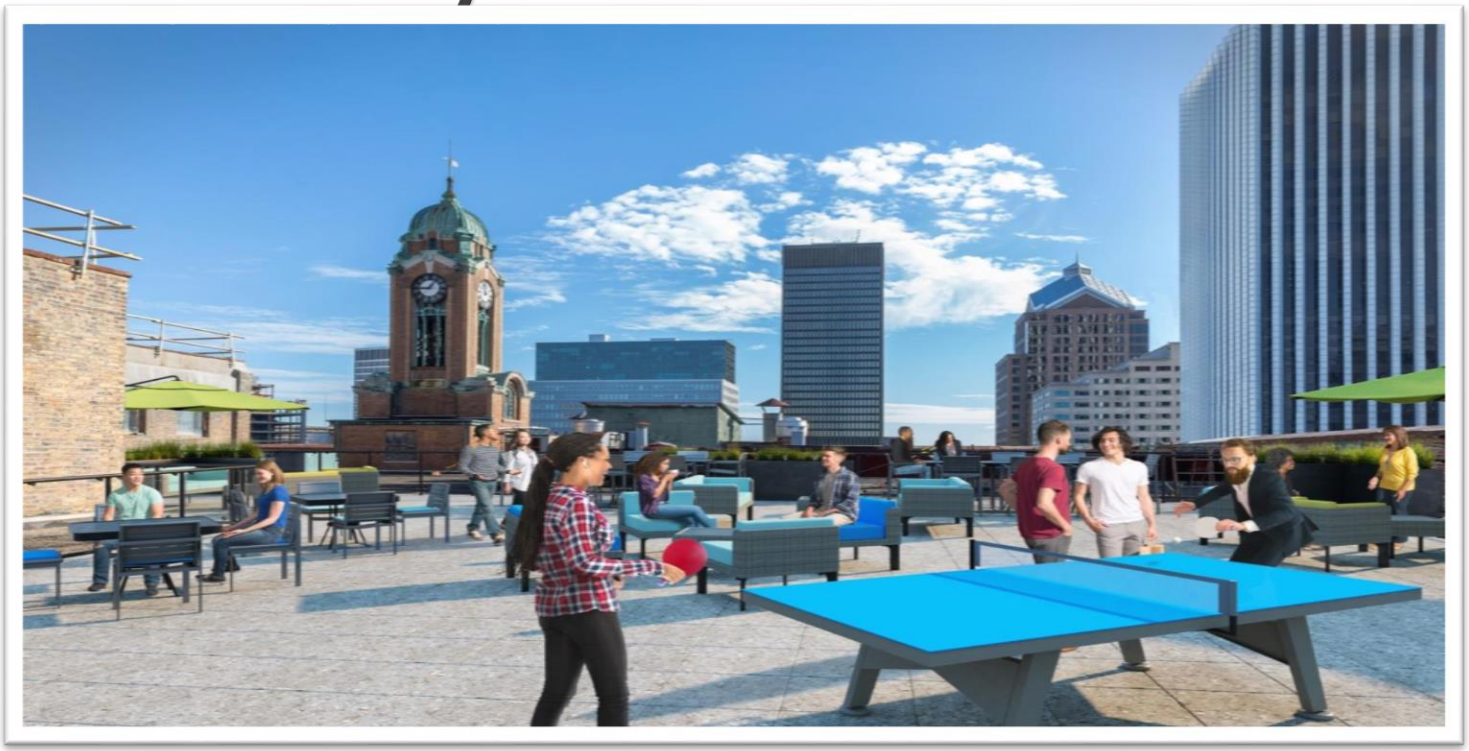
The Ecosystem On the Roof!



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NextCorps Manufacturing Advisors

- Supports manufacturing companies in Greater Rochester Region
- Project assistance for top-line growth and bottom line productivity improvements
- Connections to network of vetted consultants and funding resources
- Complete > 100 projects annually

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- Focused on cleantech hardware startups
- Assists them from prototype to manufacturing
- Cohort program
- Curriculum, connections, mentors, funding

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By the Numbers

- Cumulatively to January 2020, Hardware Scaleup Participating Companies
  - Have manufactured and sold over $2.4 million of their products
  - Raised $6.8 million in additional funding
  - Created 57 additional jobs

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Who Am I? Why Am I Here?

Career in Computers/Software/Embedded Systems

Founder/co-founder of startups (includes QSoft ~1993)

CCMR Industrial Advisory Board Member sine 2006

Became NextCorps (fka “HTR”) staff member in 2009

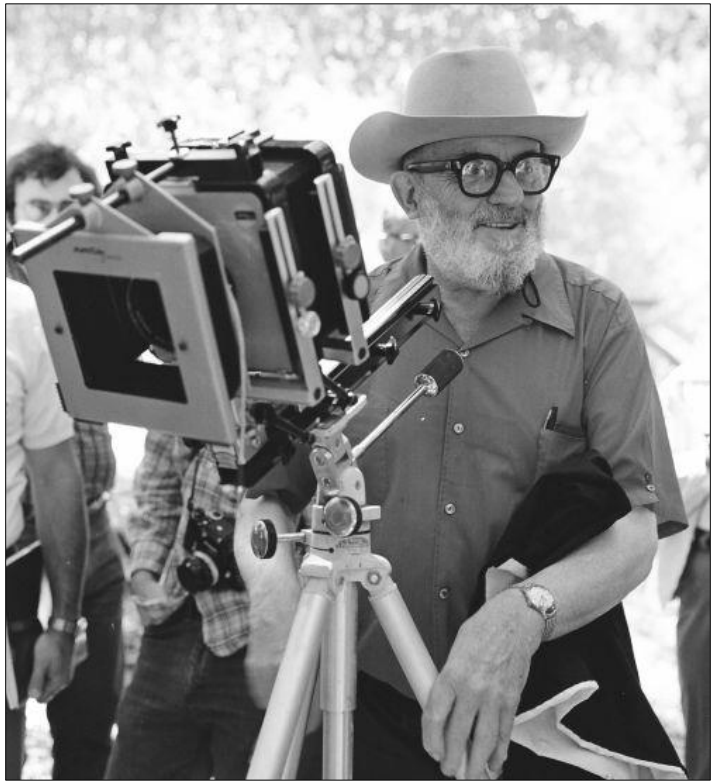
Technology Commercialization Program Developer

Learned “Lean Startup” from Steve Blank @ Stanford in 2012

U of R Simon School Lecturer – Technical Entrepreneurship

Member National Science Foundation I-Corps Teaching Team

Some Personal Background



I came to Rochester to study photography at RIT and spent a summer working with Ansel Adams

Ansel told me I could make a better living if I went to business school—and keep working on photography as an avocation

So—I have an MBA in finance and accounting from U of R and sometimes take artsy photos

Quality Connections

- Helped start QSoft Solutions in 1993-1994
- Implemented Xerox Quality practices in software
- Very small market opportunity!
- Studied the writings of several “Quality” leaders like W. Edwards Deming

“The consumer is the most important part of the production line.

Quality should be aimed at the needs of the customer, present and future.”

W. Edwards Deming, Out of the Crisis, page 5

Lessons Learned At NextCorps

- Over the past eight years working with over 500 new venture teams I've learned a few things
- Initially, almost every team misunderstood who their customers truly are
- So, they made inappropriate product, marketing, and sales decisions
- And offered the wrong value proposition

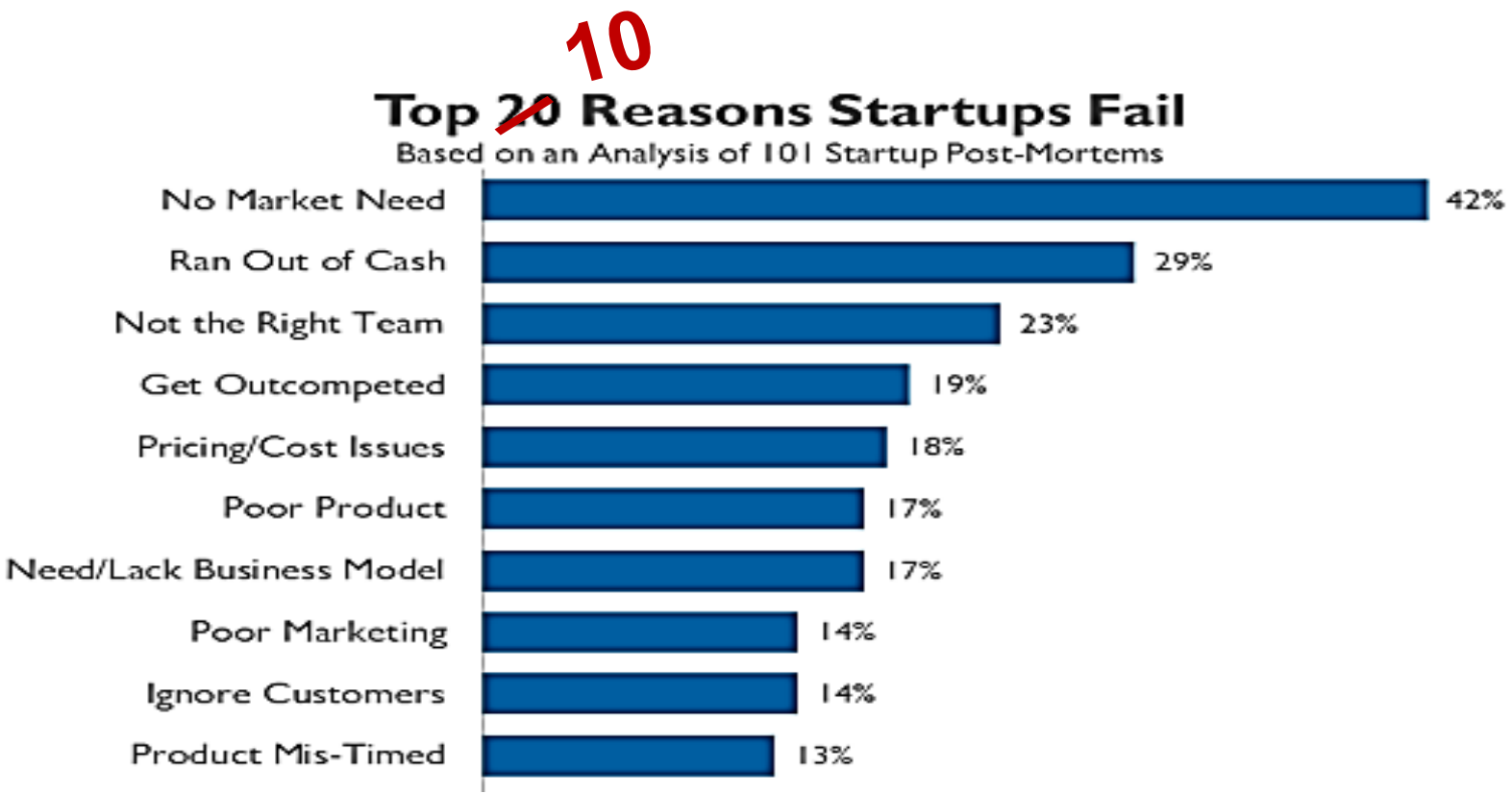
Lessons Learned

If left to continue on their own:

- They would probably run out of cash before they found customers that cared about their products or services
- They might well build a prototype product and conduct “Alpha” or “Beta” tests with a few people that say they “Like the product—let me know when it is ready for sale” without ever really intending to buy a finished item

“Come Back When You Have One for Sale”

Many startups met their demise when they thought this kind of statement was a “buying signal”



http://www.cbinsights.com/blog/startup-failure-reasons-top/

More startups & companies
fail from a lack of customers
than from a
failure of product development

A “Customer” is a person that pays you for your product

“End Users” are often incorrectly identified as customers

In many businesses where purchases involve large expenditures or affect many people (like a process change that requires re-tooling, new capital equipment, re-training of factory personnel, new test equipment and procedures, etc.) there may be several people that have input:

Influencer
Financial Analyst
Saboteur
Technical Evaluator
Recommender

Customers

A “Customer” is a person that pays you for your product

If you create a product that is to be sold to an end-customer through a “Big Box” retail store:

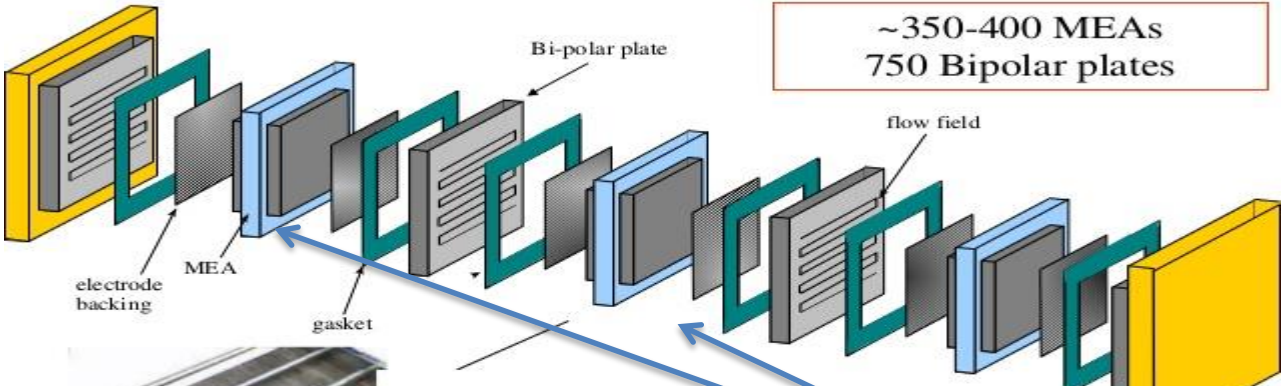
The product category buyer at the Big Box retailer is your customer – that person will be the one that causes a check to be sent to you

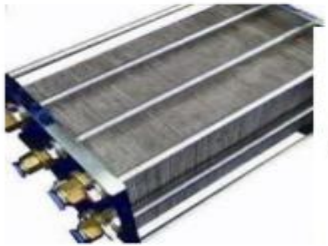
So—you need to know what the requirements are for that buyer and you need to offer them solutions to their problems, not just the end purchaser that buys the product at a retail location

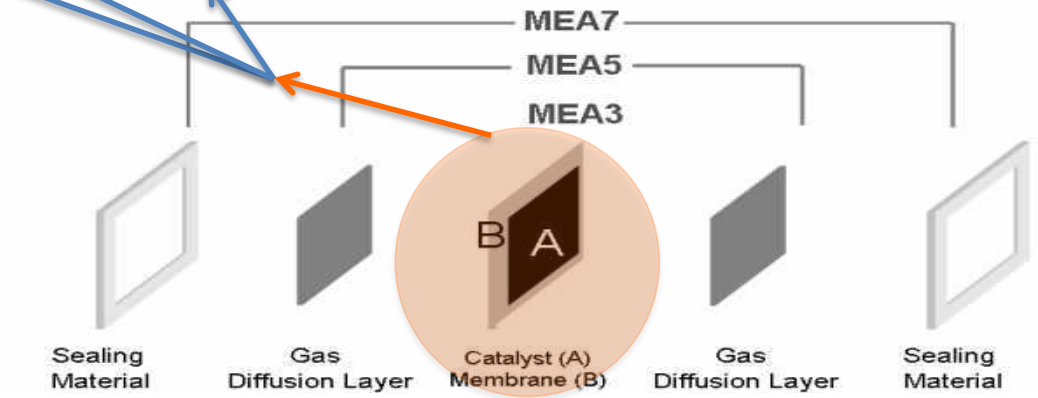
Fuel Cells – Stacks

Automotive: 80,000 W

~350-400 MEAs
750 Bipolar plates







Customers are the Critical Difference Between an Idea and a Successful Company

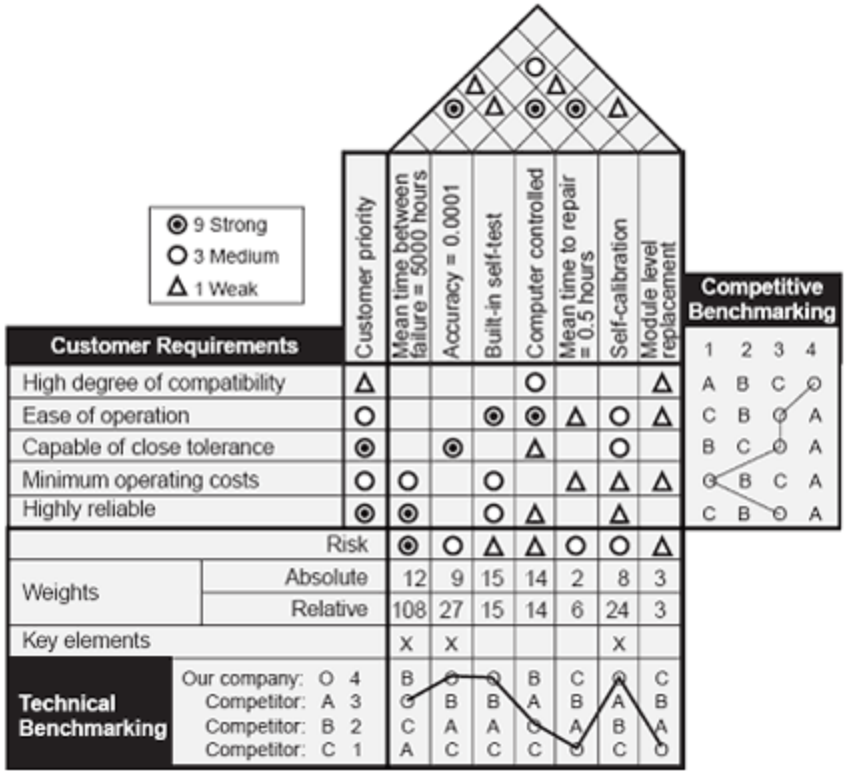
Everyone is a customer for somebody,
or a supplier to somebody.
--W. Edwards Deming

Quality Function Deployment and Voice of Customer

Identify, Structure and
Set Priorities for customer needs

Helps the product development team understand how to satisfy the customer

Customer Need is a description, in the customer's words, of the **benefit** to be provided by the product or service



https://asq.org/quality-resources/house-of-quality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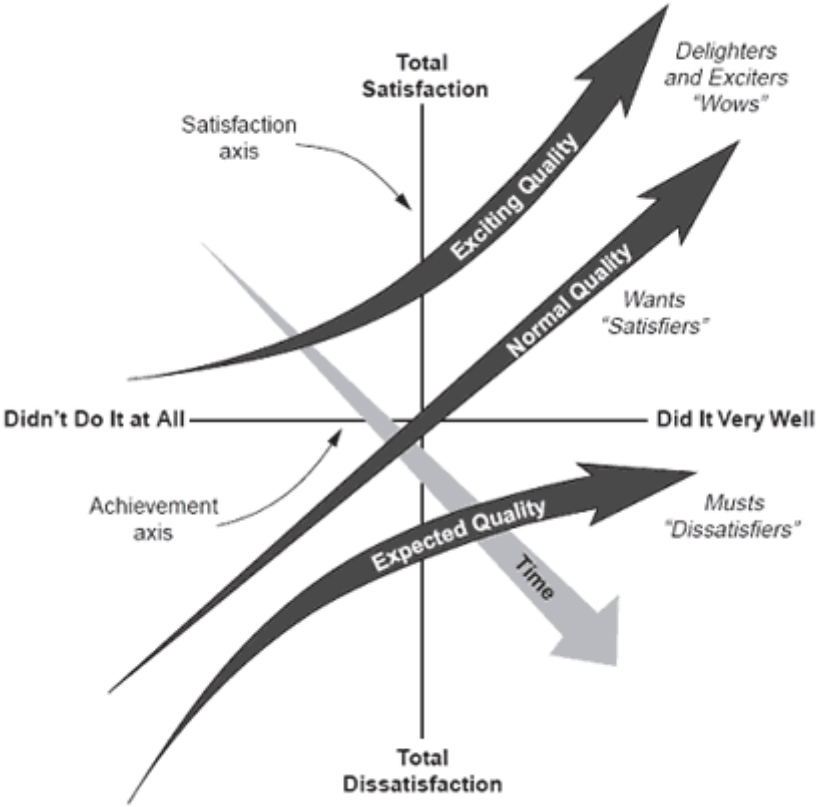
DEWALT

?

“Kano”

Dr. Noriaki Kano



https://asq.org/quality-resources/kano-model

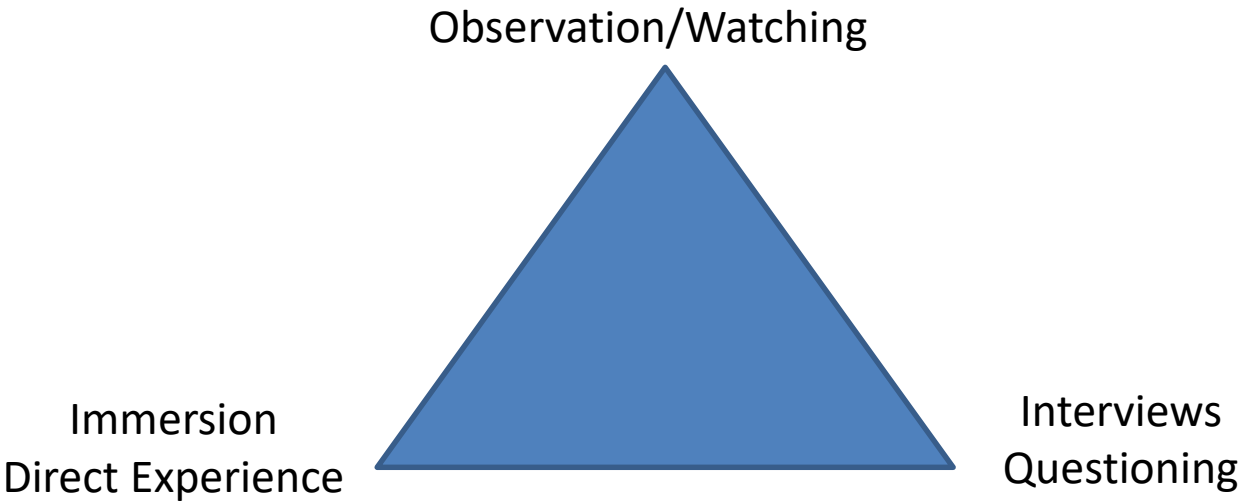
Customer Discovery

Customer Discovery is the approach used to understand customers, their problems, and what they express as preferences for solutions that they will adopt

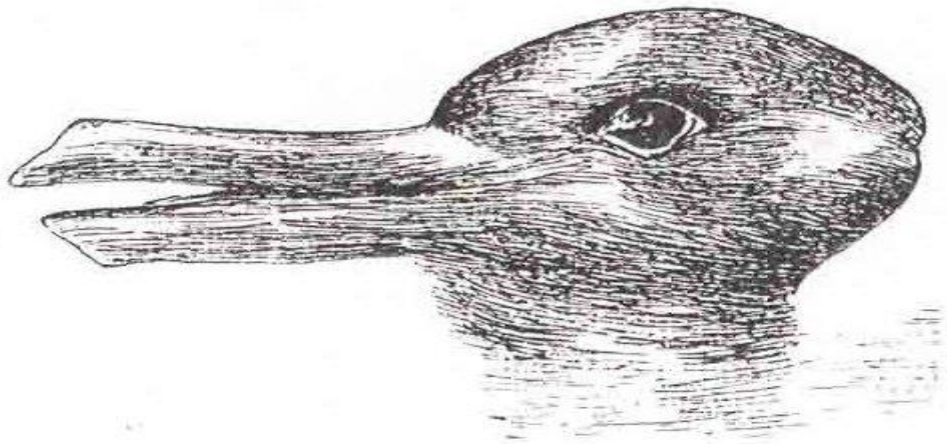
Detailing out customer specifications for their solution preferences is often called “Voice of the Customer”

Customer Understanding

Three techniques

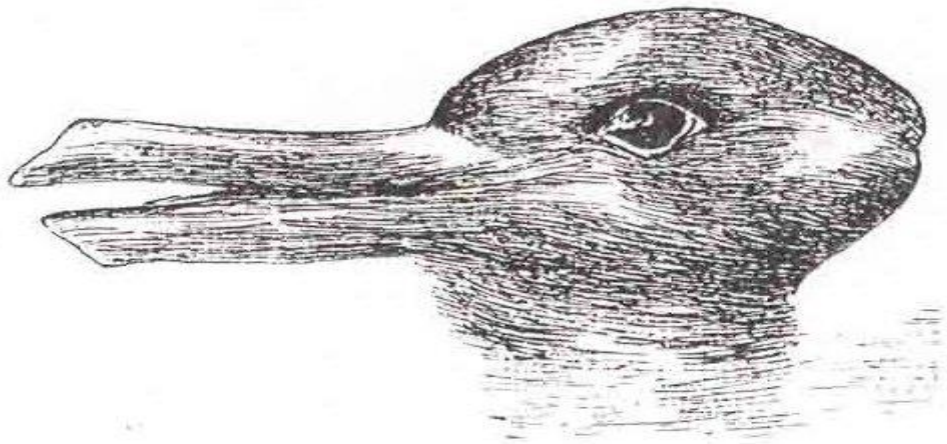


You should not ask questions without knowledge.
--W. Edwards Deming



What Did You “See”?

What questions can you ask
to help you determine
what that was?

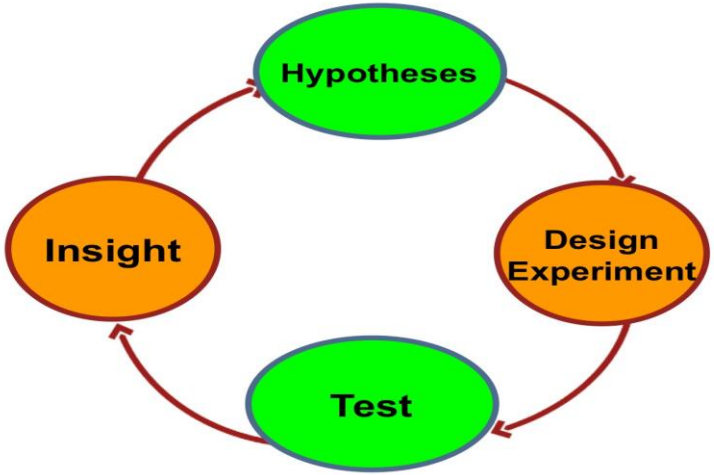


If you do not know how to ask the right question, you discover nothing.

-- W. Edwards Deming

Interviewing for Research

Customer Discovery uses the "Scientific Method"



which begins with the creation of a "Testable hypothesis"

You and your team go into the field to put the hypothesis to the test and collect data that you will review and (hopefully) gain insight from

Tips for Customer/Problem Hypothesis

I believe

[my customer]

has a problem

[achieving a specific goal]

Tips for Customer/Problem Hypothesis

Work to make the hypothesis

- **Quantifiable**
- **Relevant**
- **Specific**
- **Testable**

Customer Discovery Interviews

Test hypothesis using a conversational interview with a person in the role that is relevant to discovering more about the topic

Use past actions and behaviors related in a “story” from the interviewee to probe on areas of interest

“Tell me about the last time you had any problem with…. When was that? What happened? …… How much do you recall spending to deal with that? What things did you try? ….

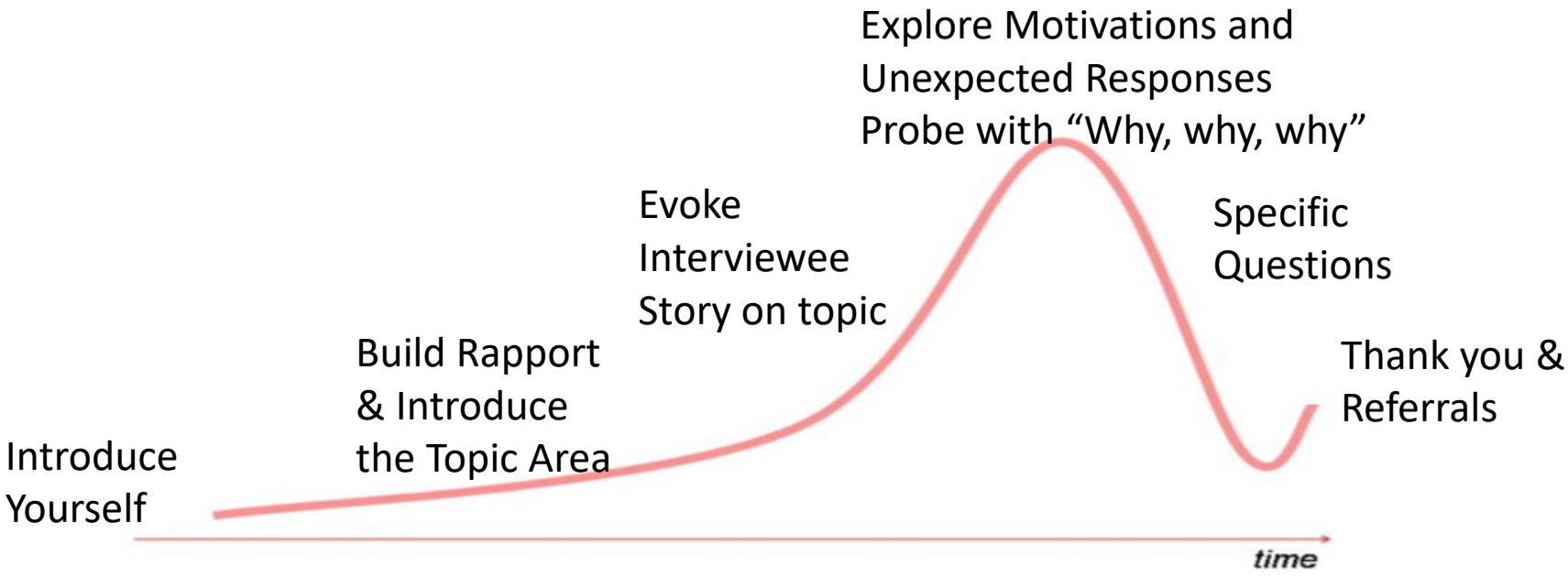
Without questions, there is no learning.
--W. Edwards Deming

Customer Discovery Interviews

You need to be open to hearing things that might be very different from what you expect

The biggest breakthroughs come from getting unexpected responses to questions about the most pressing concerns people have

Interview Flow



Customer Discovery Interview Best Practices

- One-on-one interviews preferred to focus groups
- 30 interviews per customer segment
- Multiple analysts or team members should read and interpret interview transcripts
  - Increases team buy-in
  - Internalizes customer voice for future design work
- Team members with “expertise” introduce bias
  - Surprising or unexpected needs overlooked

See also: “The Voice of the Customer” Griffin and Hauser 1993

Hand weed control is a Nightmare
For Vegetable Farmers in Northern California

Crews of 100s needed

Labor getting harder to get

Back-breaking task

2-3 weedings per crop

Food contamination risk

$250-1,000 per acre

Customer Understanding

Relate what you see as the benefit you offer to a customer in the context of vexing problems that they have along with alternative solutions they might use

Value Proposition Template

For [target customer]

Who wants/needs [compelling reason to buy]

The [product name] **is a** [product category]

That provides [key benefit]

Unlike [main competitor]

For vegetable farmers
that are seeking reduction in the amount of herbicides and labor used for pulling weeds,
the robotic weeding machine is an agricultural tool that applies 10% of the amount of weed killer used by traditional broadcast herbicide treatments

The prototype of an autonomous weeding machine by Swiss start-up ecoRobotix is pictured during tests on a sugar beet field near Bavois, Switzerland May 18, 2018. REUTERS/Denis Balibouse

Iteration: using your learnings

How to handle new information:

When customers do not care about the problem you are solving (interesting idea, let me know when you have something for me to look at, …), you can:

Customer Pivot

- Come up with new customer segment hypothesis

OR

Value Proposition Pivot

- Stick with same segments, identify new value propositions (It would be great if, what I really care about is, …)

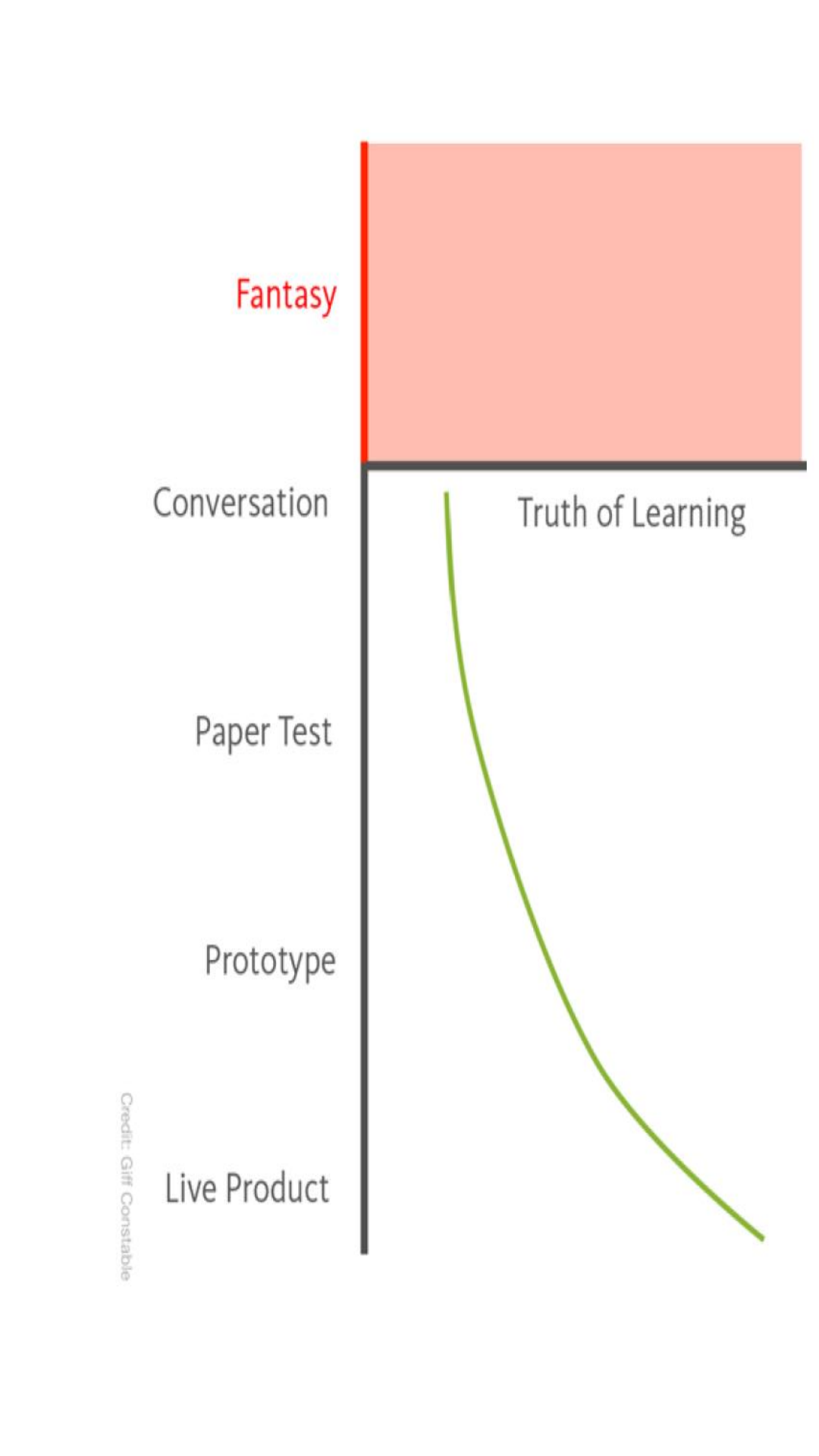
Beekeepers are desperate for a solution

NSF I-Corps (National Science Foundation Innovation Corps)

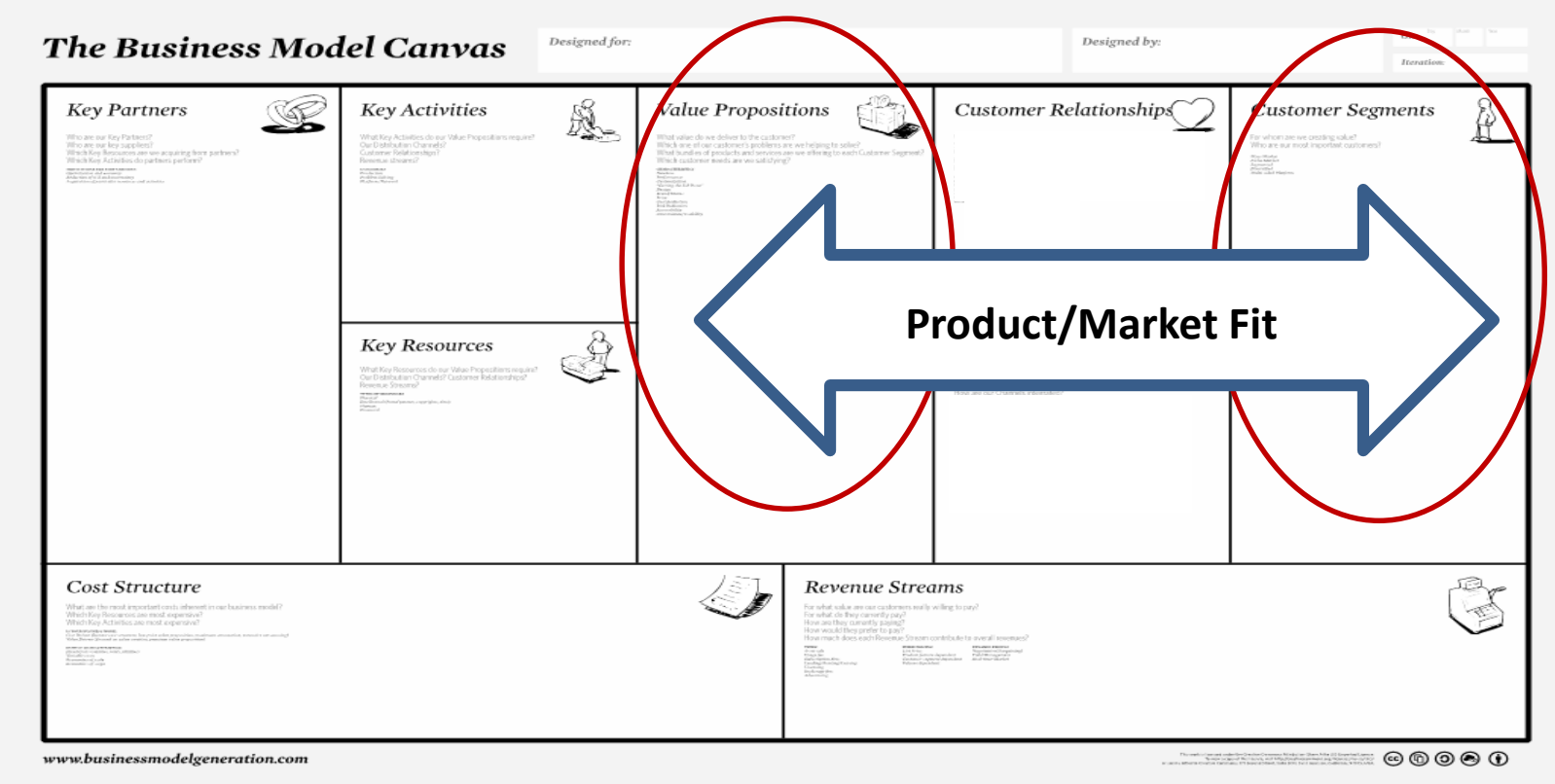
234 in-person interviews with beekeepers across NY, ND, SD, WI, MN, ID, UT, TX, CA, & SC

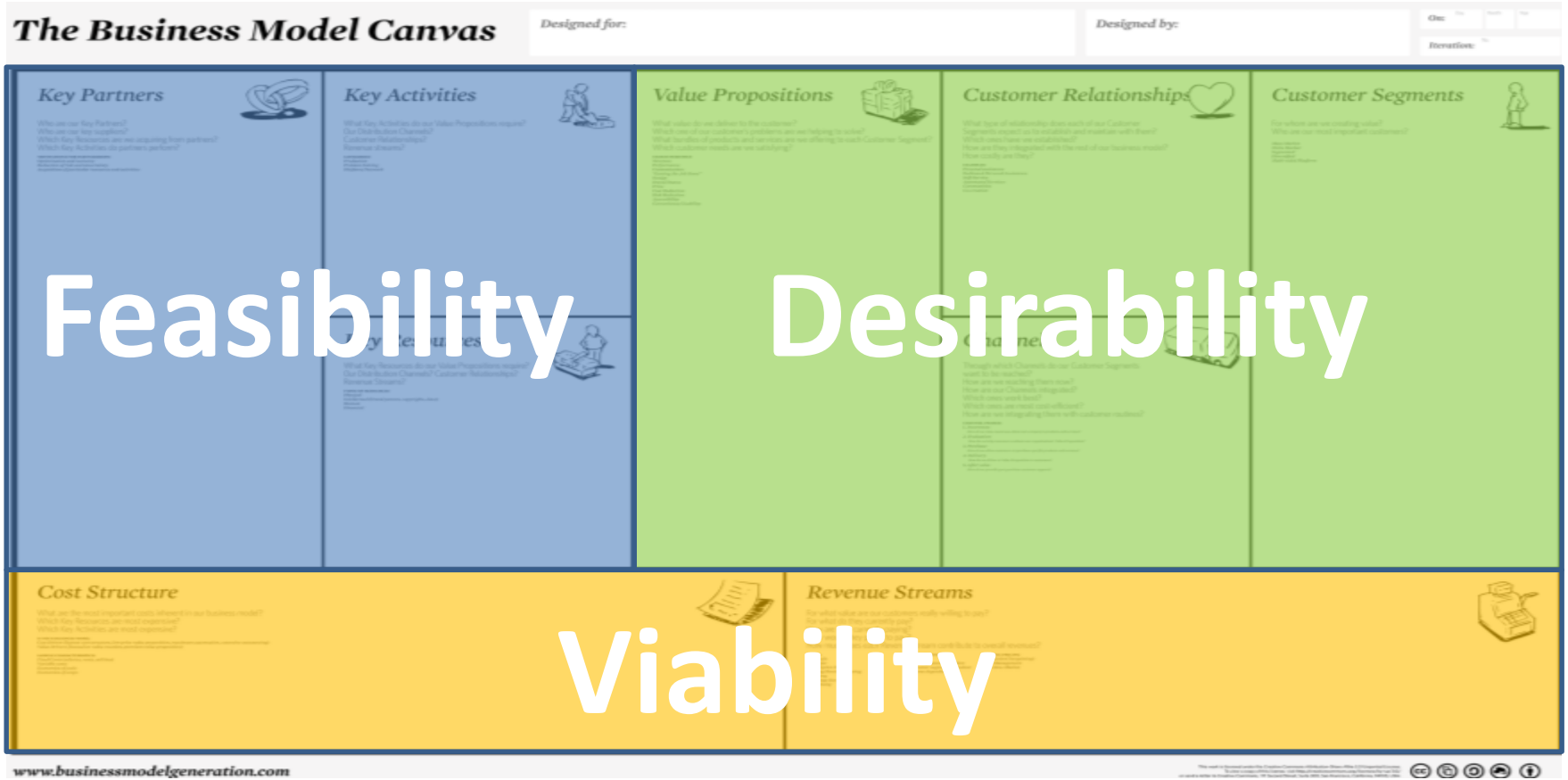
Co-Founder Nathan Oakes trading labor for interview time in ND, summer 2018

Varroa mites are repeatedly identified by beekeepers, researchers, and stakeholders as **the #1 problem facing the beekeeping industry.**


Fantasy
Conversation
Truth of Learning
Paper Test
Prototype
Live Product
Credit: Giff Constable

Be in a ***Sizeable Market*** with a ***Product*** that satisfies a Compelling Need ***Before*** you invest in ***Scaling Up***





http://blog.strategyzer.com/posts/2016/6/20/why-companies-fail-how-to-prevent-it

Don’t sell what you make

Make what you can sell

- Steve Blank

Customer Discovery

Good Reference Materials

- **Talking To Humans** by Giff Constable
  www.talkingtohumans.com
- **Testing Business Ideas** by D. Bland & A. Osterwalder
- **Bad Interview Questions (blog post)**
  http://kevindewalt.com/2013/01/21/bad-customer-development-questions-and-how-to-avoid-my-mistakes/
- **Startup Owner's Manual** by Steve Blank
- **The Art of the Start** by Guy Kawasaki

Hardware Scaleup Program

An immersive training and
product development program, with funding from
NYSERDA, that accelerates innovative hardware
products to mass production through a process
based on Manufacturing Readiness Levels
with matching to appropriate resources
at the appropriate times

Hardware Scaleup Program

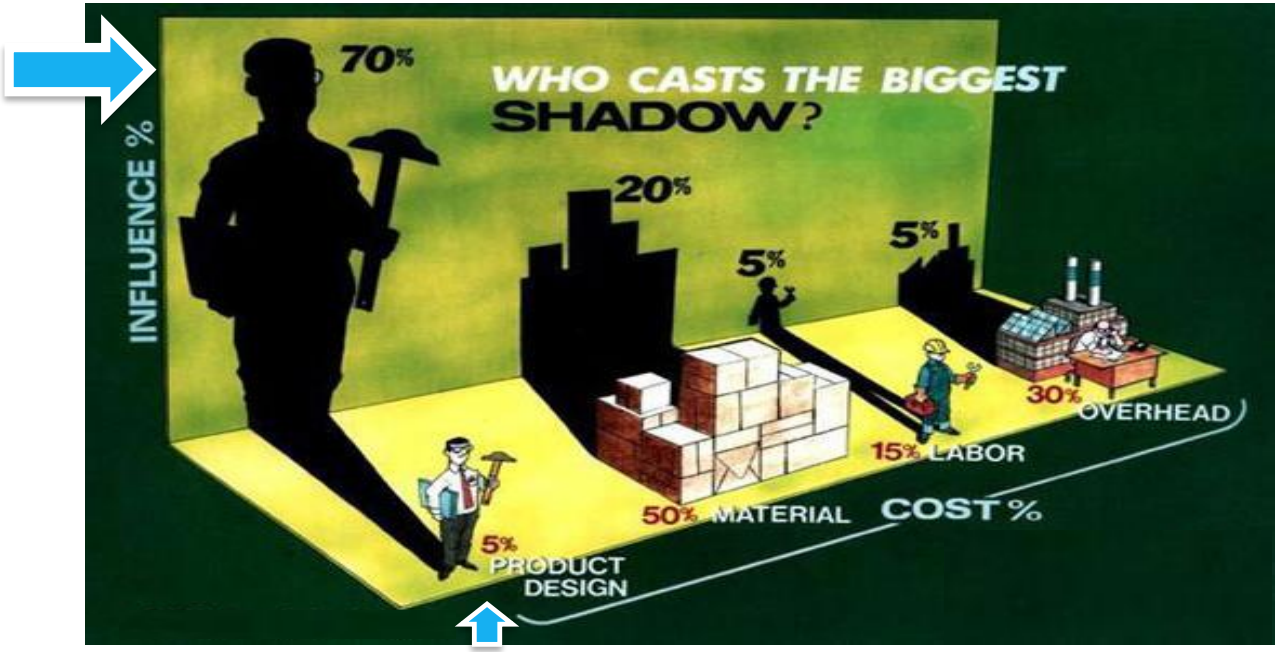
For “CleanTech” hardware entrepreneurs
In New York State
that have completed “Customer Discovery”
and have a prototype product that
works-like/looks-like the envisioned product

Program Goals

Minimizing resource waste
by startups, manufacturers and investors
while accelerating time-to-market
for Cleantech innovations

Motivation

*Decisions made during the **design process***
significantly affect the success (or failure) of products



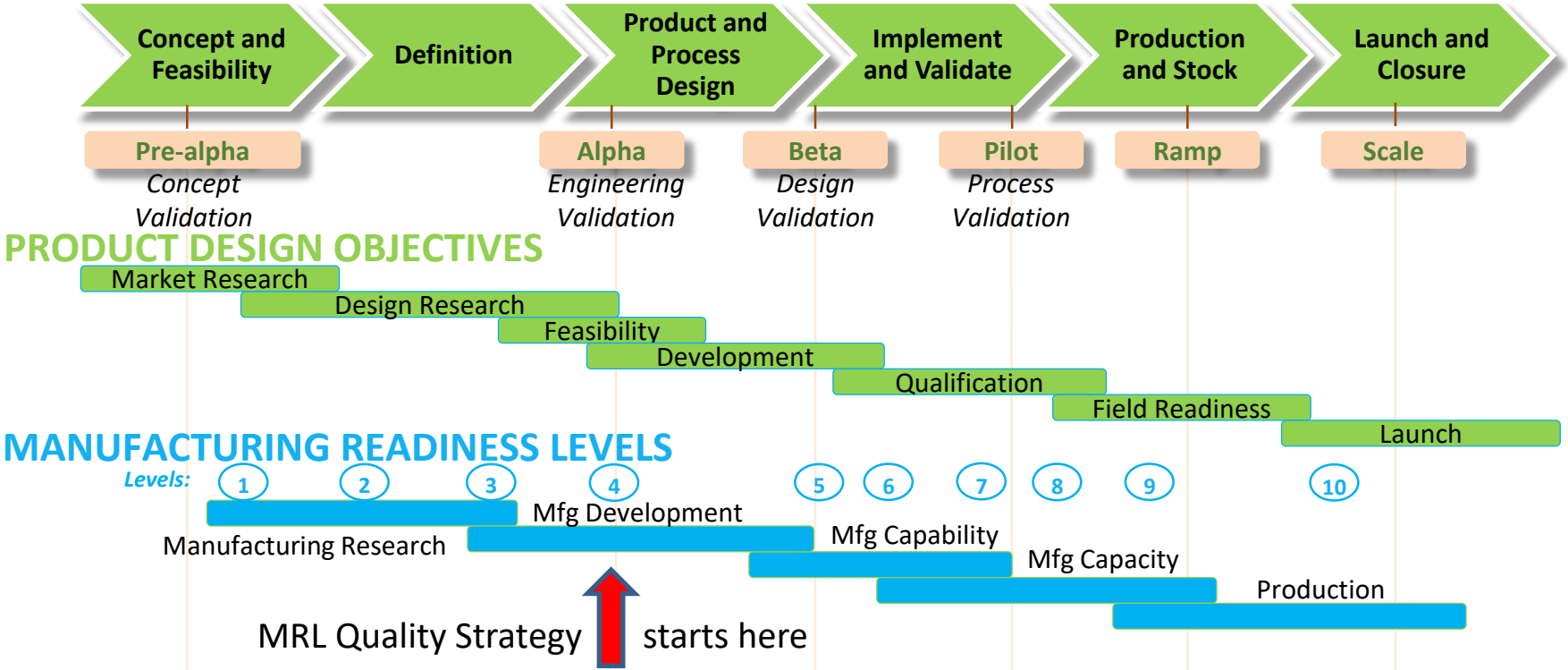
Source: Copyright 1989 Munro & Associates, Inc.

Now that they've built a successful prototype, they want to begin mass producing their product

Source: Don Resisinger April 2016 Fortune Magazine
Inside a Flextronics factory in Fort Worth, Texas. Courtesy of The Wall Street Journal

Product And Design Process

Versus manufacturing readiness levels (MRLs)



What Are Your Thoughts On This Topic?