How do I know if my idea is a good one?

Kit Needham
Ask your Customer!
Top 5 Reasons Startups Fail

1. No Market Need - 42%
2. Ran Out of Cash - 29%
3. Not the Right Team - 23%
4. Get Outcompeted - 19%
5. Pricing / Cost Issues - 18%

https://www.cbinsights.com/research/startup-failure-reasons-top/
Wrong Way

“Death by Demo”

“Here’s my idea. What do you think?”

“How would you solve the problem?”
Right Way

This is called

Customer Discovery
What is Customer Discovery

- **What** is the **pain/problem**
- **Who** is having the pain/problem
- **How bad** is the pain
- **How** are the “who” currently dealing with it
- **How** is that solution working for them
Why this is Important

Your idea is........

a

Hypothesis

at this stage
Best Way to Validate your Hypothesis

“Get out of the Building!”

Steve Blank

- Face to face interviews – Best
- Skype
- Shadowing
- Telephone

On line surveys
The technique

15 Minutes

5-7 questions
Rule: You are not allowed to talk about your idea!
How to do this

• Identify key hypotheses/assumptions
• Brainstorm possible questions to prove/disprove hypotheses/assumptions
• Prioritize **5-7 questions** and at least 5-10 backup questions (see Customer Interview Guide)
  – Use questions that are **measurable**
    • E.g. “on a scale of 1-10…”; “how many times in the past three months…”
  – Include questions that are **qualitative**
    • “What do you like most about ….; Least about…..”
Sample Hypotheses

What assumptions do we have that if proven wrong would cause us to fail.

• The problem my customer wants to solve is .....?
• My target customer will be.....?
• Why can’t my customer solve this today?
• The measurable outcome my customer wants is….? 
• I will make money/revenue by doing….? 
• I will beat my competitors because…….? 
• My biggest financial/technical/engineering ….risk is….?
Sample Questions

• What are the top 3 challenges related to _____? How often do they occur?
• How much time do you spend on those challenges?
• Can you tell me a story about the last time that challenge happened and what you did?
• What, if anything, have you done to solve these challenges?
• What don’t you like about the solutions you tried? OR On a scale of 1-10, how would you rate each solution? Why did you give it that number?
• Who has to approve purchases? Do you need any approval to try them?
• Who else should I talk to?
Customer Interview Guide

Segment:

Title/Job:

Key Hypotheses to test (what assumptions do we have that if proven wrong would cause us to fail)

Key Questions to ask (to prove/disprove the hypotheses)

1 – 5 questions per hypotheses
Where the magic happens #1

**Always ask**

“How are you solving it now (or tried to solve the problem in the past)”

“On a scale of 1-10, how would you rate that solution?”

“Why did you give it that number”.

Write down

- everything they say,
- In the order they are saying it
- In their words.
Here’s Why

• They are giving you the feature list – what they view as really important.
• They are giving you the feature priority
• They are giving you marketing language
• They are giving you deeper knowledge of the competition
Where the magic happens #2

Listen for the **unexpected**.

- If they said something you weren’t expecting but seems relevant, ask “tell me more”.

- If there seems to be substance
  - Include it in future interviews
  - Go back and ask past interviewees
Here’s Why

This is where * pivots * happen!
(before you’ve wasted time and money)
How to interview

• Plan who you want to interview
  – Demographics that describes your stakeholders
    • Buyers/Decision-makers
    • Users
    • Influencers (including possible saboteurs)
  – Who are they
  – Where will you find them
Who Is Your Customer?

Ecosystem of people you need to understand, satisfy and appeal to in order to buy your product.
## Military
- Boeing
- Honeywell
- BAE Systems
- Sikorsky
- Textron
- General Atomics
- Northrop Grumman

## Commercial
- AgEagle
- Aerytec
- Ascending Technologies
- Sky Futures
- Aerobo
- Skyfront
- Aeron
- Skydio
- Zano
- 3DR

## Consumer
- DJI
- Parrot
- UBSAN
- Syma
- Ghost
- Walkera

### Auto-Follow
- Percepto
- Lily
- Hexo+
- Prenav
- Skydio

### Transportation / Delivery
- DHL
- Amazon Prime Air
- Alibaba
- UPS
- SF Express
- Flirtey
- Vayu

### Drone Marketplace
- Skycatch
- Airstoc
- Dronebase
- Bookadrone
- Droners

### Insurance / Tracking / Safety
- State Farm
- Aig
- Skyward
- UAV Protect
- Verifly
- Aviation Insurance
- Botlink

### OS / Deploy Systems / Programmable
- DroneDeploy
- Airware
- Goruda Robotics
- SW
- PixePath

### Education / Training / Certifications
- Dartdrones
- Udacity
- Udemy
- Sastrae Air Pic
- Rotorfx
- Unmanned Vehicle University

### Drone Data / Analytics / Mapping
- Dronedata
- Plantrance
- Industrial Skyworks
- AgPixel
- ArcGIS
- 2d3
- Mavrx
- MapBox
- MineSight
- Dassl Mapper
FASHION

The Fasttech Ecosystem

[Diagram showing various brands and technologies related to fashion and technology, including Provenance, Maersk Line, JD.com, BONAFI, IBM, Ethereum, VeChain, Valtech, Modiface, BlippAR, Obsess, InContext Solutions, Holition, Zara, Takeleap, Avametric, Virtusize, Loomia, Avery Dennison, Farfetch, Everything, Echo Look, Rebecca Minkoff, IVYREVEL, Stitch Fix, True Fit, Finery, HeuriTech, and VUE.AI.]
CHEMICALS

The chemical industry value chain

The chemical industry enables our modern living standards through the conversion of basic energy into consumer products. The underlying factors that lead to success for companies in the chemical value chain are low-cost feedstocks, high levels of operational efficiency, continuous innovation of products and processes, and robust growth in the end markets the industry serves.

Natural resources

- Oil
- Gas
- Coal
- Minerals
- Renewables

Basic Chemicals

- Olefins (ethylene, propylene, butylene)
- Aromatics (benzene, toluene, xylenes)
- Chlor-Alkali (chlorine, caustic soda)
- Methanol
- Others (e.g., ammonia, phosphorous)

Chemical intermediates

- Commodities
- Differentiated commodities
- Technical specialties

Formulated products & product materials

- Plastics & Engineering Resins
  - Extruded films, pipes, profiles, coatings, sheets, foams
- Blow-molded parts
- Injection molded parts
- Composites
- Synthetic Fibers
- Rubber Products
- Paints & Coatings
- Adhesives & Sealants
- Lubricants
- Water Treatment Products
- Cleaning Products
- Industrial Chemicals
- Flame Retardants
- Many others...

Customers of the chemical industry

- Automotive/transportation
- Consumer products
- Packaging
- Building & construction
- Recreation/sport
- Industrial
- Medical
- Pharmaceuticals
- Personal care
- Textiles
- Electrical/electronics
- Aircraft/aerospace
- Business equipment

Source: IHS
SELF-DRIVING AUTOS
# Renewable Fuels Association

## Producer Members

+ Absolute Energy, LLC  
+ Ace Ethanol LLC  
+ Adkins Energy LLC  
+ Aemetis, Inc.  
+ Al-Corn Clean Fuel, LLC  
+ Badger State Ethanol, LLC  
+ Big River Resources West Burlington, LLC  
+ Butamax Advanced Biofuels, LLC  

## Associate Members

+ Advanced Fuel Dynamics  
+ AgMotion, Inc.  
+ Applied Material Solutions Inc.  
+ Barchart  
+ BASF Enzymes LLC  
+ BetaTec Hop Products, Inc  
+ Bion  
+ Buckman
INSTRUCTIONS
Use this page to search for advanced battery-related products and services in which you have an interest from among NAATBatt member companies. You may search by any or all of the following methods:

1. In Part 1, check any or all of the Product Category boxes that are relevant to your search.
2. In Part 2, enter in what you are looking for. You may leave Part 2 blank.
3. Hit the "Submit Search" button at the bottom of the page.

Check any or all of the following boxes that may be relevant to your search:

- Materials and Composites
  - Zinc
  - Lithium Brines
  - Spodumene
  - Lithium Carbonate
  - Lithium Hydroxide
  - Graphite-Natural
  - Graphite-Synthetic
  - Silicon Anodes

- Advanced Battery Concepts
- American Battery Solutions
- American Manganese Inc.
- Aután
- BIC
- Bitrode Corporation
- American Battery Solutions
- Amphenol Advanced Sensors
- Eclipse Energy
- DuPont
- Durr Megtec
- Electric Applications Incorporated
- Everledger
- Forge Nano Inc.
- Global Battery Solutions LLC
- Indiana Economic Development Corporation
- JAKERTECH
- King County - Metro Transit
- Li-Cycle Corp.
- Lithion Recycling
Get Started

“I am doing some research for XXX. “Do you have 15 minutes to answer a few questions” or I have 5-7 questions…”

– May need to say “this is not a sales call”
– ‘Student Card’ works well

• Start with a few Friends/Friendlies to practice
• Then go after people you don’t know
  – For B-B, C-level is not always the best
• Consider asking
  – Who else should I talk to?
  – What else should I have asked?
Hints for Questions

• Try to avoid “Have you ever…..?” Use Better - ”How often in the past (pick a relevant time period) have you….?”

• Careful of “Would you ever….?” type questions. Instead, try to frame your question on past behavior which is a much more reliable predictor of how the customer will actually act. “When was the last time…? How many apps do you have that you have paid for…? 

• The questions are not a checklist. They are a prompt to possibly explore another aspect.

• Be open to iterate or follow up and explore more deeply on what the interviewee is saying.
Hints for Questions

• Asking job title/position and how long someone has been in the job/position or status helps you to judge the level of experience (and doesn’t count in the ‘5-7 question’ quota).

• You will need a different set of questions for the different stakeholders.
How Many?
Recommended

100+

Stakeholders
Making it Work

- **Keep notes** – you’ll forget.
- **Stop and assess periodically**
- **Adjust** questions and plan as needed
Benefits

• Avoids unnecessary ‘pivots’ (lost time and money)
• Potential customers are ‘giving’ you the compelling sales pitch
• Helps prioritize what is most important
• Learn more about the competition
More Benefits

• Get **first hand knowledge** of your target audience

• Can measure degree of **enthusiasm and interest** through observation

• Starts to build the **relationship**

• Helps identify potential **reference customers/pilot participants** (for Customer Validation Phase)

• **Investors** will want to know…..
Words to Live By

Fall in love with the problem....

....not your solution!
DON’T SELL WHAT YOU MAKE
MAKE WHAT YOU CAN SELL

- Steve Blank
Best Resource

“Talking to Humans”
“Testing with Humans”

Giff Constable
Ask yourself......
...Is it a REALLY Big Problem?
...Is it a Really Big Problem?

- **How many** people or companies have this problem? (Is it a big target market?)
- **How much time or money is spent (or lost)** each year because of this problem? (The more it costs them, the more they are motivated to pay for your solution)
- **How well is their current solution working** for them? (They will happily switch to your solution because their current one isn’t working very well.)
Ask Yourself.....

• Is your solution **10X better** than the alternatives or **3X cheaper**?
• Is it a “**Need-to-Have**” vs “**Nice-to-Have**?”
• Will it be a big opportunity that **will attract investors**?
Ask Yourself.....

“...... will it scale?”
Ask Yourself….

- Do your product/service margins increase with volume?
  - COGs
  - Installation/Customization
  - Service/maintenance
  - Staff ratio to sales
Examples of Businesses/Products that Scale Well

- **Software** (MS Word, Excel, Quickbooks)
- **Apps** (Pandora, Twitter, BudgetSimple)
- **Mass Market** items (My Keepon, FitBit)
- **Hardware** that is standardized or uses standard parts (Air conditioners, remote controls)
Ask Yourself….

….. How will I sell this?
• **How** will this be done?
• **Who** will do this?

Start thinking about this on **DAY 1**
Customer Segments

Phase 1  Customer Discovery
Is this a big problem that a lot of people have where the current solution isn’t working e.g. am I solving the right problem?

Phase 2  Customer Validation
I am solving the right problem. Am I solving it the right way?

Phase 3  Customer Acquisition
Strategy and methods for getting customers to buy your product or service at a price where you can be profitable.
Customer Validation

• Go back to those you interviewed who were the most interested or helpful
• Ask for their feedback on your proposed solution

At least one will ask if they can try it!
Business to Consumer (B to C)
Case Study
Users earn real-life prizes in a gamified, augmented reality, Easter egg hunt.
How we add value

Consumers (targeting students)

- Find discounts
- Discover new businesses
- Have fun while saving via gamified incentives

Businesses

- Leverage an efficient marketing scheme
- Bring new faces through the door
- Receive analytics with respect to user habits and coupon efficiency
Customer Discovery Survey Results

Key Demographics for Student Stakeholders

CMU: 100 Interviewed – 56 male, 44 Female

Pitt: 50 Interviewed – 25 Male, 25 Female

Chatham: 50 Interviewed – 3 Male, 47 Female

(Later interviewed 100+ more at Carlow, Duquesne and Point Park Universities)
Sample questions

“On a scale of 1-10, how likely are you to deviate from your go-to restaurant for a better deal at a competing restaurant?”

“On a scale of 1-10, how difficult would you say it is for you to organize a bunch of your friends in a group activity or outing?”

“How many apps on your phone have you paid for?”

“When was the last time you played CTF?” (why not more often?)

“Would you play CTF if it were an IM here?”
Key Findings

“On a scale of 1-10, how likely are you to deviate from your go-to restaurant for a better deal at a competing restaurant?”

• Takeaway: College students are more likely to seek a deal than commit to a restaurant.
• Product Design: Make sure a key component to the game is interaction with businesses.
• Marketing Message: “Capture the flag, but also capture great deals”
Key Findings

“On a scale of 1-10, how difficult would you say it is for you to organize a bunch of your friends in a group activity or outing?”

Takeaway: Organizing groups of friends is a pain point for college students

Product Design: The game setup in the app needs to be intuitive so it is a helper, not a pain.

Marketing message: “You make the friends; we’ll make sure they are organized.”
“How many apps on your phone have you paid for? What are they? (if answered yes).”

Results:
No females at CMU, Pitt or Chatham paid for any apps.

22% of males at CMU and Pitt had any paid apps on their phones – all were for games

Takeaway: Fees from app is not part of the revenue model. (nor were they planning on it – just wanted to check.)
Key Findings

“When was the last time you played CTF?” (why not more often?)

Takeaway: Students had not played recently and the reason was because of lack of time.

Product Design: Spread game over longer time period where you don’t have to commit a block of time.

Marketing Message: “Play on your own schedule.”
Key Findings

“Would you play CTF if it were an IM here?”

Responses: CMU: 80% - yes, 10% - maybe
Pitt: 48% - yes; 24% - maybe
Chatham: 2% - yes, 98% - no

Conclusions:
- Key was Time, Friends, .... And Incentives
- Chatham was not an active group
Customer Discovery

What they did right:
- Interviewed a large number of students from a variety of campuses
- Results helped to significantly restructure initial game design
- Derived key marketing messages from the interviews that were successful in getting students to download the app
Where they missed the mark
- Misinterpreted the concern for time to mean ‘design a shorter game time’ rather than less time for games at all.
- Asked an ‘aspirational’ question i.e. “Would you play……?” Responders meant well but simply didn’t act as they said they would.
What They Learned

After going through AlphaLab and launching the app:

- **Students:**
  - Very willing to download the app and open it
  - Mostly interested in capturing the flag for the discounts but not at all in the game aspect.
  - A little slow to redeem the coupons (flagtag is paid a bonus for each redemption)

- **Businesses**
  - Very well received
  - Most effective of all the coupon options they had tried by 3X
End Result

Fall 2016
- Verified the business model
- Revised the app
  o Simply capture coupons – no game aspect
  o Provided an incentive to redeem the coupons more quickly

Relaunched Spring 2017
Folded Summer 2017
Business to Business
(B to B)
Case Study
Proposed Product

• Add-on hybrid system for tractor trailers
  – Uses regenerative braking to capture power when the vehicle is slowing down that can be reused to accelerate.

• Value proposition to the customer: Reduces fuel consumption by over 30% with an ROI of less than 1 year.
Sample Questions

• **How much** on average do you spend on fuel? % of annual budget?

• Have you done **analysis on fuel usage** that you can share?

• What are you **currently doing now** to reduce your fuel costs?

• On a **scale of 1-10, how well** are those techniques working?

• **Why** did you give each that number?
Interviewed

• Fleet managers
• Fleet truck drivers
• Independent truck drivers
• Trailer manufacturers
• Mechanics that service the fleet
• Companies with proprietary fleets
• Industry association staff
Where did they find them

- Industry conventions
- Truck stops
- Fleet owners’ headquarters
- Trailer sales offices
- Telephone
Findings

- **6 million** trailers in the USA
- Each trailer averages 6.5 mpg = **$85,000** fuel costs per year per trailer
- **52 Billion gallons** of fuel consumed yearly
- **31%** = **$46 B** in potential fuel savings
- **$25k per unit** x **6M trailers** = **$150B** potential market
Findings

• Largest value/ROI for **long-haul fleets**
• 15% of fuel is used to **run the cab at night** for heat/AC and electronics
  – Shaking cab results in **poor sleep** – which can lead to accidents
  – (This was the ‘outlier’) that helped sell management

• **Less wear and tear** on the diesel engine
• **Reduced emissions**
Big Problem
Big Market
Great Product
Great Business
Pivot from B to B
to
B to C
Case Study
BeatBots
BeatBots

Initial Hypothesis

- Therapy tool for therapists who work with severely autistic children
- Price: $25k (includes hardware and software)
- Target audience: Clinics that specialize in therapy for severely autistic children
BeatBots

Product worked extremely well as a therapy tool to engage highly autistic children

However…..

Size of Target Market: 100 clinics worldwide

Great Product
Lousy Business
BeatBots

**Pivoted** to a retail product for mass market for $50 and licensed it to a toy company that would manufacture, package and get BeatBots on the shelves of major retailers.
What investors are looking for
Why *noWait* was a good investment

“We want to **invest in large markets**, …if you have a fantastic team with fantastic products but …… it’s in a small market, there’s a smaller type of outcome that can happen e.g they’re swimming in a smaller pond. If you have a big and expanding market, it’s great to have a great team and product, but if you don’t, you still have a chance. “

“…..We focus on **investing in trends shaping the landscape** over the next 10 years. **Casual dining is a multi-hundred-billion business in the U.S. alone.** Everybody’s got to eat.”

“……What they’re doing **solves an acute point**, waiting to get in line, waiting to get a check. They have a very elegant solution.”

*Nick Solaro of Drive Capital, a Columbus, Ohio-based $250M VC fund on their $10M investment in NoWait in May 2014 (Source: Pgh Business Times)*
Sold to Yelp for $40M
# Programs
- **Project Olympus Incubator Program** (students, faculty, alumni, staff)
- **Innovation Scholars** (undergraduates)
- **James R. Swartz Entrepreneurial Fellows** (graduate students)
- **Innovation Fellows** (senior PhD students and postdocs)
- **NSF I-Corps Site** (research commercialization)
- Venture Bridge Accelerator program in S.V (all)

## Workshops & talks
- **CONNECTS** (all students)
- **Inside-Out: Research Commercialization** (faculty, PhDs and postdocs)
- **Swartz Entrepreneurial Leadership Series** (all)

## Events & competitions
- **Bootcamp** (September every fall)
- **LaunchCMU** (showcase for investors and entrepreneurial alumni)
- **Project Olympus Show & Tell** (showcase for community)
- **Global Entrepreneurship Week** (November before Thanksgiving)
- **McGinnis Venture Competition** (March every spring)

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**How to connect with us:**
- [cmu.edu/olympus](cmu.edu/olympus)
- [cmu.edu/entrepreneurship/](cmu.edu/entrepreneurship/)
- [@ProjectOlympus](https://twitter.com/ProjectOlympus)
- [@CMU.Entrepreneurship](https://www.facebook.com/CMUEntrepreneurship)
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