A Roadmap to Commercialization: Meeting Investor Needs With Discovery & Validation

Martin Kleckner III PhD MBA
University of San Diego, the Brink SBDC
June 13, 2019
Winning SBIR & STTR Grants: The Basics

SBIR & STTR Grant – Phase II (Beyond the Basics)

Funding Your Innovation

Roadmap to Commercialization (I-Corps)
Where I’m Coming From

1) Six Launches; Two Exits

- RegeneMed
- InSilicoMed
- SpyFinder (Sold)
- Sal-Flex (Sold)
+ RefluxMD, U P Labs

2) Not-For-Profit 501 (c) 3 life science research

3) SBIR/STTR: NSF, NIH, DoD, DOE, DOT, DoEd, USDA, Coulter, Drexel; University of California; Cal State; L. A. BioMed Research Institute

4) General Electric, Roche, Toshiba, Honeywell (Europe, Asia, Americas)

5) $55.8 MM in Capital & Grants Q2 2016 – Q2 2019

6) Tech Innovation & Commercialization (BRINK SBDC) Univ of San Diego
Where We’re Going

Seed Fund – Accelerator Cohort
National Science Foundation I-Corps
San Diego Investor Angel Conference
## “Taking Your Phase I SBIR to the Brink”

Curt Becker – NIH September 5 Submission

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 6</td>
<td>Finding “FOA“s; Instructions; Begin Writing</td>
</tr>
<tr>
<td>June 13</td>
<td>Webinar: Registration - DUNS, EIN</td>
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<tr>
<td>June 20</td>
<td>Specific Aims, Team, Budget</td>
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<tr>
<td>June 27</td>
<td>Webinar: Registration - SAM, eRA Commons, et al.</td>
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<tr>
<td>July 11</td>
<td>Workplan, Innovation &amp; Impact</td>
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<tr>
<td>July 25</td>
<td>Research Plan, Budget</td>
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<tr>
<td>August 1</td>
<td>Review Research Plan, Commercialization Plan</td>
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<tr>
<td>August 15</td>
<td>Review Commercialization Plan, Final Document</td>
</tr>
<tr>
<td>August 22</td>
<td>Wrap-Up; Closure</td>
</tr>
</tbody>
</table>
Your Discovery & Validation Odyssey
Essential Rules

1. Ask Questions

2. “Jump In”

3. Contribute
Different Perspectives/Comparable Needs
SBIR/STTR Agencies
- Customers ("Early-vangelist")
- Strategic Partners
- Investors (Angel Groups, Corporate, Venture Philanthropy)

Different, but all asking the same questions
“The Great Uncertainty”
(followed the Great Recession, 2008, & the “dot.com burst”, 2000)

Disruptive (or “Discontinuous”) Innovation or Creative Destruction: What is an unknown may be a barrier

Downsizing, Unemployment, M & A, Intense Competition Failed Ventures

“Power Laws”

Makes gaining “Market Traction” a tough door to go through
(1) What is your [Evidence-Based] Business Model?

(2) How was your Model developed?

(3) What Traction have you gained?
1) Not enough good people: “There is a huge number of people starting companies who have no business at all doing (it).”

2) (They cannot execute effectively in a start-up environment.)
We’re turning the industry upside down
The Angel (VC) Conundrum

[Power Laws]: “It’s common to make money from your single best angel investment than all the rest put together. The consequence of this is that the real risk is missing out on that outstanding investment.”

Sam Altman (March 25, 2013)
http://blog.samaltman.com/upside-risk
What Angel Investors Value Most When Choosing What to Fund

Nicole Torres, Harvard Business Review – August 6, 2015
https://hbr.org/2015/08/what-angel-investors-value-most-when-choosing-what-to-fund

Angel List Experiment: Three Factors: (1) The Founding Team, (2) Traction, & (3) Existing Lead Investors

The \textit{(Not So) Puzzling Behavior of Angel Investors}\textsuperscript{1}

1. Angel investing is not necessarily a purely financial exercise

2. Angels “usually develop an emotional attachment to the business venture.”

3. Motivators: the chance to participate; to be active in the venture; “psychic income”, “for-profit philanthropy”\textsuperscript{2}

\textsuperscript{1} Darian M. Ibrahim, William & Mary Law School, http://scholarship.law.wm.edu/facpubs/1685
Investors Lost
Also
NO DISRUPTORS ALLOWED!
THIS MEANS YOU!
OK, well maybe we do like some disrupters
Loss Aversion

The Pain of Loss is stronger than the Joy of Gain

January 27, 2017
Written by Ashley Hamer
People Buy Emotionally, Rationalize After

It’s very personal

C³:
Capable
Credible
Concerned

OPEN-MINDED

Rationalize
Justify
Confirm

NO BUY-IN

RE-CONFIRM

Source: The Innovation Group (www.tigi.net)

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1) Decisions typically occur in precise, psychological order
   - About us
   - About our company
   - About our product or service
   - About our ask/price
   - About the time to invest/buy

2) Two Key Issues: (a) Our Integrity, (b) Our Judgment
   - How well does our product knowledge match our understanding of their needs?
   - **WE Will Be Assessed**
I have a cool new tissue product for you!

Me

I don’t care!

My product is a disruptive innovation!

Get lost!

(I don’t know you, but)
I know what you need!

No you don’t, I
don’t trust you
& I don’t care!

ACK!! What
do you want?

FINALLY!! I am
glad you asked . . .
Our Aim

Frequency

Outcome (ROI)

Strikeouts
Base Hits
Home Runs

Mode
Average
Can Our Dog Hunt?
(How do we get there?)
Evidence-Based Pathway

1) Start-ups v. Companies
2) Strategy, Process & Organization
3) Business Plans v. Models
4) Business Model Generation
5) Customer Discovery & Validation
What We Used To Believe
Startups are a **Smaller Version of a Large Company**
What We Now Know
Startups Search
Companies Execute

“Execution is a systematic way of exposing reality and acting on it.”
What We Used to Believe

Strategy

NEW PRODUCT INTRODUCTION MODEL

Concept/Seed  Product Development  Alpha/Beta Test  Launch 1st Shipment
Waterfall / Product Management Execution on Two “Knowns”

Customer Problem: Known

Product Features: Known

Requirements → Design → Implement → Verification → Maintenance

Source: Eric Ries
http://startuplessonslearned.blogspot.com

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What We Now Know

It’s a Process
(of Discovery & Learning)
What We Used to Believe

Education
Entrepreneurial Education was *About* Execution
What We Now Know

Entrepreneurial Education Begins with the Search for a Business Model
Putting Search First is a Radical Change

It’s Not Just One More Methodology
Experiential Immersion

48 COMPANIES
70+ CONVERSATIONS
Total Customers Contacted: 86

127 Interviews (“Experiments”)

Spoke to: firms covering 60%-80% of the global radiopharmaceutical market, 15 clinical PET users, and 7 GMP PET manufacturers, 5 officials of state economic development (>90 people total)

# of customers: ~85 people
We talked to >60 physicians, patients, entrepreneurs, potential OEM partners, and many others

Investors Want Evidence

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What We Used to Believe

Start With a Business Plan and Financial Model
EVERYONE has a plan until they get PUNCHED IN THE MOUTH.
No battle plan survives first contact with the enemy.
- Helmuth von Moltke¹

No Business Plan survives first contact w/ customers.
- Steve Blank²

We haven’t read a business plan in over twenty years.
- Brad Feld/Jason Mendelson³

(1) 19th-century head of the Prussian army; (2) Stanford & U C Berkeley (I-Corps); (3) Foundry Group, Boulder, CO
Five - Year Plans

Venture Capitalists

Soviet Union
## Balance Sheet

<table>
<thead>
<tr>
<th></th>
<th>1999</th>
<th>2000</th>
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<th>2002</th>
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<tr>
<td><strong>Total assets</strong></td>
<td></td>
<td></td>
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<tr>
<td>Cash and cash equivalents*</td>
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<td>$6.38</td>
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<td>Accounts receivable*</td>
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<td>$24.39</td>
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<td>Inventories*</td>
<td>$26.73</td>
<td>$30.45</td>
<td>$36.75</td>
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<td>Deferred income taxes*</td>
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<td>Total current assets</td>
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<td>Fixed assets</td>
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<td>Cost*</td>
<td>$311.64</td>
<td>$423.92</td>
<td>$503.87</td>
<td>$613.28</td>
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<td>Accumulated Depreciation*</td>
<td>$58.72</td>
<td>$105.09</td>
<td>$112.40</td>
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<td>Net fixed assets</td>
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<td>$318.83</td>
<td>$391.47</td>
<td>$491.02</td>
<td>$535.00</td>
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<td>Goodwill*</td>
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<td>Intangible assets*</td>
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<td>Other assets*</td>
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<td>Total assets</td>
<td>$284.50</td>
<td>$380.05</td>
<td>$464.61</td>
<td>$577.23</td>
<td>$612.00</td>
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<tr>
<td><strong>Total liabilities</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Accounts payable*</td>
<td>$31.83</td>
<td>$63.43</td>
<td>$83.84</td>
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<td>Current debt*</td>
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<td>Other long-term liabilities*</td>
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<td>Total liabilities</td>
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<td>$151.38</td>
<td>$202.10</td>
<td>$247.47</td>
<td>$294.54</td>
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<tr>
<td><strong>Shareholders’ equity</strong></td>
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<td></td>
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<tr>
<td>Common Stock and Additional Paid in Capital*</td>
<td>$90.00</td>
<td>$130.00</td>
<td>$160.00</td>
<td>$220.00</td>
<td>$200.00</td>
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<td>Retained Earnings*</td>
<td>$91.81</td>
<td>$96.67</td>
<td>$102.51</td>
<td>$109.76</td>
<td>$117.46</td>
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<tr>
<td>Total Shareholders’ Equity</td>
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<td>$226.67</td>
<td>$262.51</td>
<td>$329.76</td>
<td>$317.46</td>
</tr>
<tr>
<td><strong>Total liabilities and shareholders’ Equity</strong></td>
<td>$284.50</td>
<td>$380.05</td>
<td>$464.61</td>
<td>$577.23</td>
<td>$612.00</td>
</tr>
</tbody>
</table>
Plans are worthless, but planning is everything.*

- Dwight D. Eisenhower

* National Defense Executive Reserve Conference, Washington DC, November 14, 1957
Instead of creating business plans...

Today we discover *business models*.
Through Discovery We Engage so that we can develop an understanding of (their) needs, desires, behaviors, characteristics, beliefs, influences, motivations, (dimensions) . . .

“Excellent strategy, General...Though I fear the enemy might be full size...”
What we Used to Believe

Organizations
A founder does not run sales, marketing or business development...

A founder runs a customer development team.
Startups operate as teams, not as hierarchies.
Companies vs. startups

A company is a business organization that sells a product or service in exchange for revenue & profit.

A startup is a temporary organization designed to search for a repeatable and scalable business model.
Organizations & Business Models

A company is organized to deliver value via its business model.

A startup organizes itself to discover opportunities and create a business model.
Startup’s Goal

To become a company!

A startup becomes a company AFTER its customer discovery leads to a repeatable, scalable, and profitable business model.
Why Do Start-Ups Fail?
Why Do Start-Ups Fail?

Based on an Analysis of 101 Startup Post-Mortems

- No Market Need: 42%
- Ran Out of Cash: 29%
- Not the Right Team: 23%
- Get Outcompeted: 19%
- Pricing/Cost Issues: 18%
- Poor Product: 17%
- Need/Lack Business Model: 17%
- Poor Marketing: 14%
- Ignore Customers: 14%
- Product Mis-Timed: 13%

Why Do Start-Ups Fail?

I-Corps: 100 Interviews in 7 Weeks

Fortune.com/2014/09/25/why-startups-fail-according--to-their-founders/
More startups fail from a lack of customers than from a failure of product development.
Therefore, Investors, SBIR Reviewers And Our Customers Need Us To

DISCOVER & VALIDATE
Before Trying to Sell . . .
. . . Customer Development
Business Model Generation
(Customer Discovery & Validation)
WHAT is a BUSINESS MODEL?
**What is a Business Model?**

A company creates value for itself while delivering products or services for customers.

9 Components...

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Value Propositions</td>
<td>The core offering of the company.</td>
</tr>
<tr>
<td>2. Customer Segments</td>
<td>Target market segments.</td>
</tr>
<tr>
<td>3. Channels</td>
<td>Means to reach customers.</td>
</tr>
<tr>
<td>5. Revenue Streams</td>
<td>Sources of income.</td>
</tr>
<tr>
<td>6. Key Resources</td>
<td>Assets required to create value.</td>
</tr>
<tr>
<td>7. Key Partners</td>
<td>Partnerships or suppliers.</td>
</tr>
<tr>
<td>8. Key Activities</td>
<td>Value creation activities.</td>
</tr>
</tbody>
</table>

© 2012 Steve Blank (Steve Blank & Bob Dorf, The Startup Owner’s Manual)
The Logic of How We Will Make Money

Aka How “THEY” Will Profit
Pardon Our Disruption!

1. Value Propositions
2. Customer Segments
3. Channels
4. Revenue Streams
5. Key Resources
6. Key Activities
7. Key Partners
8. Cost Structure
Pardon Our Disruption!

1. Value Propositions
2. Customer Segments
3. Channels
4. Customer Relationships
5. Revenue Streams
6. Key Resources
7. Key Partners
8. Key Activities
9. Cost Structure
2. CUSTOMER SEGMENTS

Your customers do not exist to buy. You exist for them.

WHO are they?
WHY would they buy?

CUSTOMER ARCHETYPE...

- GEOGRAPHIC
- SOCIAL
- DEMOGRAPHIC

24 years old
Male
City dweller
And a social media user
Single inc
Customer Segments and Customer Types

A **Customer Segment** is a subset of the marketplace that makes decisions in a defined way.

A **Customer Type** defines a role within the customer segment.
Customer Types

- End User
- Influencer*
- Recommender
- Economic Buyer/Payer
- Decision Maker
- Saboteur

* Remember William Dawes?
1. **Value Propositions**

"It's not about your idea or product!"

It's about solving a **need** or **problem**.

**Hear you...**

It's about satisfying a customer **need**.

Yay! I'm delighted!

...and **who** are your customers?
Business Model Generation
START WITH A BLANK CANVAS
Launching the Canvas

We begin with Hypotheses
Also known as Educated Guesses

We urgently need Facts
Customer Development Process:

1. Here’s what I think (Hypothesis)
2. So, here’s what I did (Experiment)
3. What I found out (Discover)
4. So, here’s what I will do next (Test)
Customer Discovery: Four (Easy?) Steps
1. State Your Hypotheses
2. Test Your Hypotheses

Identify Customer Problems & Needs

Test hypotheses about CS and VPs...

... Iterate & Pivot

NO SELLING! EXPLORE & DISCOVER ONLY
Gather Data

- What are your needs?
- How do you learn about new products?
- Where (how) do you buy?
- What is the solution to your problem worth to you?
Pardon Our Disruption!

Audio Middleware Companies

Problem Solving
Refine and improve 3D audio algorithms

Better Performance
3D immersive sound
Higher gaming scores
More realism
Reduced ear fatigue
Pinpoint sounds

Personal Assistance and Self-service
Small support staff, emphasize web support

Intellectual Property
Proprietary knowledge, brand, patents, trade secrets,
Audio experts, software developers

PC Game Developers

Software development tools
IP License Fee to UMD

Game Engine Companies

SW License, Per Title, Per Seat for Plug-in

Note changes from last iteration

PC Gamers

SLIDE 75 ©MKleckner - 2019
Iterations: Pivot or Proceed
3. Test Your Potential Solution

Test potential Minimum Viable Product features: Do they satisfy problems or needs?
4. Pivot or Proceed

Value Propositions

Customer Segments

New Guess

FACT

New Guess

FACT

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Pardon Our Disruption!

**FACTS**

1. Value Propositions
2. Customer Segments
3. Channels
4. Customer Relationships
5. Revenue Streams
6. Key Resources
7. Key Partners
8. Key Activities
9. Cost Structure

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Different customer segments have different needs & may require different Business Models to serve them.
Customer Discovery . . .
in a Nutshell

We are learning about Customer Needs...
... not asking them to define a product....
... or asking them to buy!
The Most Important Skill

Your customers have needs . . .

They will be happy to tell you - if you give them the chance.
Interviewing Logistics
Interview efficiently –
(Define an Archetype, Persona)

Talk to strangers; go with your partner

Ask for 10 minutes

Be honest with yourself;

Listen, don’t talk
Finding Archetypes

Google

LinkedIn

Professional Societies
How Do I Make Contact?

- Target second-rank companies
- Target mid-level management
- Email, then call; then email, then call
- Play the “student” card *(No Company; No Product)*
- Cold call? – Research your target
- Network – get a warm introduction
Interviewing

- Make a goal: Test only 1-2 Hypotheses
- Group-Meet if possible: Face-to-Face > Skype > phone
- NO email interviews or surveys
- Focus on Their Pain Points, not yours
- Ask Open-Ended Questions
- Ask “Why?” (Listen and probe w/ a follow-up)
- Ask about current efforts (e. g. to solve the problem)
- Embrace bad news; Be humble and Ask for Help.

- DO NOT SELL!!
- DON’T TALK ABOUT YOUR TECHNOLOGY!!
Interview Questions

- What are they currently experiencing?
- How are they doing things right now?
- What do they think about the way things are now?
- What would they like to see or do differently?
- In an ideal world, how would things be?
- Have you tried to “fix” the problem? If so, how?

End User Story: “A Day in the Life”
“Don’t interview like a Journalist”
“Success starts with understanding your customers.”
“Seek First to Understand, then Seek to be Understood”

Stephen R. Covey, The 7 Habits of Highly Effective People
https://www.stephencovey.com/7habits/7habits-habit5.php
Seek First To Understand, Then Seek To Be Understood*

How We “Listen”:
1. Ignore
2. Pretend
3. Be Selective
4. Be “Active”
   ▪ Mimic (Rephrase or Reflect)
5. Be Empathic

* Stephen Covey, The Seven Habits of Highly Effective People
Seek First To Understand, Then Seek To Be Understood*

How We “Listen”:
1. Ignore
2. Pretend
3. Be Selective
4. Be “Active”
   ▪ Mimic (Rephrase or Reflect)
5. Be Empathic

* Stephen Covey, The Seven Habits of Highly Effective People
You've got to start with the customer experience and work back toward the technology - not the other way around.

(Steve Jobs)
Remember: Balance Your Vision w/ Reality

C³: Capable, Credible, Concerned

Do you really understand your customer(s)?

OPEN-MINDED

Rationalize, Justify, Confirm

Source: The Innovation Group (www.tigi.net)

NO BUY-IN

RE-CONFIRM
Cute Baby?
The last two questions

▪ What haven’t I asked you?

▪ Can you suggest another person for me to talk with?
Practice
The Trap

CONFIRMATION BIAS
Confirmation Bias
Where may your first customers come from?
Using Business Alliances as a Growth Strategy
Why?

- Increased Cash
- Keep Up w/ Market
- Viable Solution
- Fend off Competitor
- Market Share
- Cost
- Duration Varies

Disneyland
Coca-Cola, Eastman Kodak
Wal-Mart
Bristol Myers
KFC, Taco Bell, GrubHub
One World, Star Alliance
Paramount Pictures
20th Century Fox
(Titanic)
AT & T, MCI
Legislation, Regulatory Affairs
Sales, Distribution
Production, Manufacturing
Co-Branding
Examine Closely

MARKETING: BUDGET, PEOPLE

DESIRE, DRIVE

FINANCIAL

MARKET PRESENCE - BRAND

OPERATIONS

PERSONNEL

PRODUCT/ SERVICE QUALITY

CULTURE

CUSTOMER RELATIONS - SERVICE/ SUPPORT

SLIDE 99  ©MKleckner - 2019
Do I Fully Understand . . .

1) Financial Situation (Cash Flow, Balance Sheet)
2) Annual Revenue
3) Annual Growth
4) How the company is organized
5) Their experience and backgrounds
And their

6) Market Presence
7) Their Markets (Beachhead, Niche, Brands)
8) Growth Opportunities
9) Quality Standards, Controls, Values
10) Customer (Archetypes), Feedback
. . . Plus

11) Customer Relationships, Complaint Management
12) Marketing Process, Tactics
13) Prior Deals (with others)

Do you approve how they sell and develop their market(s); do they have the funds and personnel to handle this alliance; do they share your enthusiasm?
The Deal that you propose . . .

C³: Capable, Credible, Concerned

. . . benefits them as much as it does you

OPEN-MINDED

Rationalize, Justify, Confirm

NO BUY-IN

RE-CONFIRM
Preparation Checklist

• **Very Clear**: Business Opportunity at Hand; Value Proposition
• Financial Resources & Responsibilities
• Specific Steps to get Alliance (Ops, Mktg, Sales) Moving
• Technology, Service: Specific Steps
• Who Supplies What People
• Long-Term Commitment v. Specific Product/Service
• Possible Future Products, Services
Investors are interested in this

After 5, 10, . . . 100 Interviews:
What’s Your Story?
Why do our Stories Matter?

Brain Science: Insula

- Cortisol (Stress)
- Oxytocin (Connection/Empathy)
- Dopamine (Hope/Optimism)

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Why Do Stories Matter?

Used by:
Aristotle, Homer, Chaucer, Tolkien, CS Lewis, “Star Wars”, Disney, Budweiser ...

Osiris
Prometheus
Buddha
Moses
Jesus
Luke Skywalker
Woody
Budweiser Puppy

Exposition
Climax
Tension Rises
Tension Falls
Denouement

How important are those customer interviews?
Behind Every Great Product is a Great Story

The Start-Up Curve! (starring Us)

Source: Paul Graham, Y Combinator
Get Out of the Building!
Discover! Validate!

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