Lecture 2: Your Idea and the Business Opportunity

Office of the Vice President for Research Technology Commercialization Partners

Also with permission from: Babson College
I have an idea/invention
- Can it really be a business?

So… You’ve received a grant, you have some successful research, and possibly written an invention disclosure.

This presentation will help you think outside of the academic box and help you decide:
- If you can be a founder of a company
- If this invention can/should be commercialized

Your invention has to be a solution to a real problem
I have an idea/invention

- Can it really be a business?

Your first job as an founder is to take your technology and look at it from a business perspective (commercialization analysis).

The analytical process required to develop a plan with its implementation steps (roadmap) will help focus your thought process to:

• define the problem in very concrete terms
• explain why your proposed solution will be better than anything currently in use
• lay out all the steps needed for implementation
• validate priorities and resources
There is a LOT to think about!

- What are you going to produce?
- What market will it serve and size of market?
- Why does the market need this (push-pull)?
- Who are the first adopters?
- Competitors?
- Manufacturing (how will you produce)?
- IP – is there any IP? Protection of that IP? Defense?
- The Right Team?
- Resources (do you have them? Do you need to look for them)?
- Who are you going to partner with along the way?
- What is your business model for generating revenue/profits?
- What are the risks in your plan and how to mitigate?
- What is your exit plan?

Courtesy of Fred Patterson, SBIR Coach
But there are tools to help you in the process

Market Analysis tools
- A SWOT Analysis
- Porter’s 5 forces
- Business Model Canvas

Planning tools
- A Product Commercialization Plan & Roadmap
- A Business Plan

You do not have to perform every aspect of the above tools, but regardless of who the ultimate end-user is you still have to defend your proposed technology to get the requisite resources for development

(You need a plan to get funded!)
SWOT Analysis

- Strengths (Advantages, Capabilities, Unique selling points, Resources, Price, Management, etc)
- Weaknesses (Disadvantages, Gaps in capabilities, lack of competitive strength, Time scale, Effects on core activities, etc)
- Opportunities (New markets, Technology innovation, New partnerships, collaborations, New business etc)
- Threats (Political, Legal, Environmental, etc)
Porter’s 5 Forces

Porter's Five Forces Model of Competition

**Determinants of Supplier Power**
- Supplier concentration
- Availability of substitute inputs
- Importance of suppliers' input to buyer
- Suppliers' product differentiation
- Importance of industry to suppliers
- Buyers' switching cost to other input
- Suppliers' threat of forward integration
- Buyers' threat of backward integration

**Rivalry Among Existing Firms**
- Number of competitors (concentration)
- Relative size of competitors (balance)
- Industry growth rate
- Fixed costs vs. variable costs
- Product differentiation
- Capacity augmented in large increments
- Buyers' switching costs
- Diversity of competitors
- Exit barriers
- Strategic stakes

**Determinants of Buyer Power**
- Number of buyers relative to sellers
- Product differentiation
- Switching costs to use other product
- Buyers' profit margins
- Buyers' use of multiple sources
- Buyers' threat of backward integration
- Sellers' threat of forward integration
- Importance of product to the buyer
- Buyers' volume

**Threat of Substitute Products**
- Relative price of substitute
- Relative quality of substitute
- Switching costs to buyers

**Threat of New Entrants**
- Barriers to entry
  - Economies of scale
  - Product differentiation
  - Capital requirements
  - Switching cost to buyers
  - Access to distribution channels
  - Other cost advantages
  - Government policies
- Incumbents' defense of market share
- Industry growth rate
Market Analysis

• You will have to talk to potential customers to validate a product/business—more importantly a NEED.
• What is everyone saying? Listen to the customers! Don’t think you can change their mind on the need.
• Use those tools and decide if a market exists and if it has been invented before.
• Perhaps modify your product to their real need/pain.

DECIDE if you should STOP or if you really can go ON!
Product Commercialization Plan

Product Specific

- Tool – shows how the technology is going to move to the market
- Covers a specific product or technology
- Identifies milestones and risks
- Provides financial information related to the product (cost, price, sales projections, margin)
- Examples:
Commercialization Plan

Roadmap

- A ‘roadmap’ is used to track progress through the commercialization process, often tracked to time and budget.
- A ‘roadmap’ identifies in a single document the activity outcomes outlined in a detailed model.
- Customized to the technology’s typical pathway.
- Examples:

![Commercialization Scenario for FCVs and H2 Stations](image_url)

<table>
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<th>Internal Commercialization</th>
<th>T1</th>
<th>I1</th>
<th>I2</th>
<th>I3</th>
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<td>External Commercialization</td>
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Phases:
- **Phase 1**: Technology Demonstration [H2FC-2]
- **Phase 2**: Technology & Market Demonstration [Post-H2FC]
- **Phase 3**: Early Commercialization
- **Phase 4**: Full Commercialization

- **2010-2011**: Solving technical issues and promotion of review regulations (Verifying & reviewing development progress as needed)
- **2016-2018**: Exceeding production and sales of FCV users while maintaining convenience of FCV users
- **2020-2025**: Promoting FCV and H2 stations from socio-economic viewpoint

**Year 2015**
- Target commercialization starts of FCV to general public
- Increase numbers of FCV and H2 stations based on profitable business
- Period in which exceeded H2 station building is necessary
- Increase of FCV numbers through introduction of more vehicle models

**Year 2020**
- Contribute to diversity of energy sources and reduction of CO2 emissions

Source: Fuel Cell Commercialization of Japan (FCCJ)
The Business Plan

The Business Plan is a tool whose purpose is to

1. Collect all of your hypotheses and your rational for them.

2. Communicate to others:
   - The business opportunity
   - The market
   - The competitive environment
   - The business model
   - The strategy
   - The resources

Unlike the Product Plan, this can tie together multiple products, the leadership, and funding needed.
Business PLAN

Typical Information

Cover page
Table of contents
Executive summary
Business description
Business environment
Competitor analysis
Industry background
Market analysis
Marketing plan
Operations plan
Management
Summary
Financial plan
Attachment
Milestones
So then, just write a business plan, finance the plan, and execute, right?

- No- in many ways business plans are dead.
- Business plans are key to helping you think and plan (SWOT, etc.)
- And especially useful when you have a business that needs lots of money before revenue (drugs, devices, etc.)
- BUT! You can be sure your business won’t match your business plan.

Drunkard’s Walk: Random events will make your plan obsolete.

(Source: Bob Capse @ Babson College)
Now let’s break things down and investigate some of the core thinking for success
Common Pitfalls of Startups

#1 cause of startup “death”

premature scaling

spending money beyond the essentials*
and on growing the business
before nailing the product-market fit.

* hiring sales personnel, expensive marketing, perfecting the product, leasing offices, etc.
Example: Premature Scaling

Common approach is to raise $, then have sales. But if you can make money first, you are better off.

Common approach is to optimize & finish product before you get user feedback. But if you can get something to the user earlier, much better.
Premature Scaling (cont.)

Why is Premature Scaling the downfall of so many start-ups?

Because everything is 2-3x more expensive than you plan, and takes 2-3x longer!!!
Incorporate Entrepreneurial Qualities for your Success

• Great entrepreneurs focus on:
  o What resources are available to me?
  o Who do I know?
  o What do I know?
  o What can I achieve?
  o What small steps can I take?

• Effectual Reasoning: Use resources that you know and have, and get user feedback early. If you are going to fail, at least it will reduce the costs of failure by enabling failure to occur earlier and at lower levels of investment.

(Source Saras P. Sarasvathy research article “What makes entrepreneurs entrepreneurial?”)
## Reasoning: Effectual vs. Causal

<table>
<thead>
<tr>
<th>Effectual</th>
<th>Causal (Common thinking)</th>
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<tbody>
<tr>
<td>Focuses on emphasizes affordable loss (what can you do with no resources?)</td>
<td>Focuses on expected return</td>
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<td>Built upon strategic partnerships (often with customers early on)</td>
<td>Depends on competitive analysis</td>
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<td>Stresses leveraging contingencies (turn the unexpected into profitable)</td>
<td>Focuses on exploiting pre-existing knowledge &amp; prediction</td>
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<tr>
<td>“To the extent that we can control the future, we do not need to predict it.”</td>
<td>“To the extent that we can control the future, we can control it.”</td>
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Startup Priorities

• Survival! You need cash flow- need to survive long enough to have success
  o “Cash is KING!”
• Progress $\Rightarrow$ profit

Success consists of going from failure to failure without loss of enthusiasm.
- Winston Churchill
A startup is an organization formed to search for a repeatable and scalable business model.

-Steve Blank
(serial entrepreneur in Silicon Valley)
State of Art Thinking in Evaluating Business

Business Model Canvas

- More visual
- Can put a lot of ideas down in a box and cull through them
- Originally designed to use with sticky notes that you can move around
THE BUSINESS MODEL CANVAS

speech bubble:
Click above on picture or goto
http://www.youtube.com/watch?v=2FumwkBMhLO
Your job as a founder of a startup:

**Vision**

- a product with
- a set of features

**Hypotheses**

- who are the customers?
- how do we price it?
- how do we create demand?
- what is the sales channel?
- where do we build it?
- how do we finance it?

iteratively create business models and test / refine your hypotheses
Build a business model

startup -> early -> growth

execution of business model

Business model found
Product / Market fit
Repeatable sales model
Managers hired

Cash-flow breakeven
Profitable
Rapid scaling
Senior mgt. hired
Business MODEL

the rationale of how an organization creates, delivers, and captures value
How to Develop a Business Model

Just like a scientific experiment!

1. Identify the Best Customer
2. Identify the best product by understanding pain
3. Identify the best transaction
4. Create prototype
5. Test Transaction Value
6. Mitigate risk
7. Test universality of transaction
Ideal, easy-to-sell-to Customer has lots of $  

- In a growing market  
- Is rational about purchase process  
  - Business to Business (all about profit)  
  - Business to Customer ($ for sales)- not always rational  

- Has a problem  
  - They might not know they have a problem!  
- Has a solution that doesn’t quite meet their need  
- Is representative of lots of customers (replicate)
Peel the Onion (Dig deeper)

- Learn the business model
- Identify the opportunity
  - Is there Obvious Pain
    - Why does it hurt?
    - What does it cost?
    - What have you tried?
  - Or a way to help the customer (easier, faster, simpler, save cost)
- Is the problem real?
Define Ideal Product

• Whatever customer wants that eliminates their PAIN
• Or help identify whatever can make their life easier, faster, more productive, etc.
• How do you add value?

Business model 80/20 Rule
• 80% of revenue will come from 20% of customer
• 80% of cost will come from 20% of materials
• So focus on the 20%...
Define the ideal Transaction

- Large deal value (big transaction)
  - Where customer acquisition is hard
- Large volume
  - Where customer acquisition is easy with a low price
- Ideally large profit margin
- Simple delivery
- Ideally- Repetitive purchase
  - Example: consumable probe cover to go with machine
Propose Transaction

• Transaction test “If I can propose … for $”
  o See what comes back.
  o If customer has concerns- **mitigate their risk**
    • Example- They can pay afterwards
    • Don’t just assume your price is too high

• Understand your Risk vs. Value
  o Risk: Can you deliver?
  o Value: Too expensive?

• Then replicate transaction
Minimum Viable Product (MVP)

• Often to test the transaction (reaching out to customer), you will need to show/demonstrate a product first.

• Too many companies get caught in making/refining a perfect product (remember the #1 cause of death: premature scaling which includes optimizing product before customer buy-in).

• A MVP is the simplest shell of a product (not complete), sometimes just an interface, just enough to test some aspect of your model. This reduces the uncertainty.
Example: Finding the MODEL

1. Student interviews a rancher with 5000 cows
2. Finds out there is an employee problem because workers can’t tell a sick cow from healthy one. (Can spread disease.)
3. Understands pain more by talking to experts (vets), brainstorms, etc.
4. Presents a solution/value proposition, and transaction- how much is it worth?
5. Rancher was hesitant, didn’t think student could deliver (risk).
6. Student mitigated his risk by accepting payment after delivery & trial (did not lower price, because problem was not value).
7. Sold solution to other ranchers.
Sources of Capital

- Family and Friends
- Bank Loan
- Own $
- Government
- Venture Capital
- Customer
- Partner
  - Vendors
  - Reseller

Can judge your value, and tell if it is compelling

What if not compelling? Abandon ship!
Next Steps

• Network
• Perform Interviews and find opportunity
• Create transaction models that monetize value of eliminating pain
• Find a solution that fixes it
• Confirm transaction model can be replicated
Exit

• How do you plan to exit the company?
  o Acquisition
  o Pass down to relative
  o IPO - Sale to public
  o License or sell technology before or after product complete
  o Sale to financial or strategic buyer

• What’s the timing?
• After how much revenue?
• Think about these things earlier rather than later!
• Your exit strategy shapes your path.