CLEAN STARTUP

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:experiment:(Experiment!)

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More Information: cleanstartup.de

Introduction

Goals

- Understand startup terminology/jargon

- Generate and evaluate business ideas

- **Decide which ideas are worth your energy**

> ## Layout conventions
>
> ■ Concept
> ▶ Process, to be done with the concept
> Underlined words symbolize links to other definitions in this document.

This document ...

- is intentionally very dense and dry.

- is meant as a reference book. If you are new to entrepreneurship, read it two times, skipping all processes (marked with a "▶") first.

- explains how to systematically turn a number of ideas into a business model. The overall systematic business idea development-process is described at the end.

- is a beta version. Please comment, whenever something is not easy to understand.

The **core idea** is to actively get and produce data, which lowers the risk of anything going wrong. In Core Concepts, concepts used in the startup community, in a logical, not alphabetical, order.
The sections Step 1 up to Step 5 systematically look at critical aspects of a business idea, and try to help reducing the risks.
The appendix can safely be skipped. It tells you about team issues and venture capital.

Core Concepts

■ Business Idea

Often just a solution to an implicit problem for an implicit customer segment.

■ Customer

The most important part of a business model. A customer can be a person or an institution.

■ Startup

... is an expedition to find a repeatable business model. The goal of a startup is to stop being a startup. In contrast, an established organization (i.e. enterprise, or other institution) has chosen a certain customer segment, offers a certain range of solutions, and has a defined business model.

■ Mental Energy

No process, no metric can determine, when its time to give up on a startup idea. Running out of money might just be a temporary state. There are far more good ideas and investor money, than you think.

Mental energy, desire and passion for a project are the ultimate resources you need. **Mental energy is the most limited resource in the whole startup ecosystem.** Therefore, it is essential (for you, and for the society) to validate business ideas and pursue only promising ones.

■ Opportunity

Every idea has its **time**. For a long time, an innovative idea seems crazy and impossible. Then there is a short window in which the idea is realized and brought to market. Then the idea can quickly become the norm. E.g. think about: smart phones, microwave oven, augmented reality glasses, online banking.

Opportunities arise when **things change**. E.g. laws (⇒ busliniensuche.de), social norms (⇒ Facebook) , demographics (⇒ E-Bikes) , technology (⇒ GPS, navigation systems), marketing channels (⇒ Amazon), common fears (⇒ Gold, insurances).

■ Plan

You need a plan. A plan describes the future – and the present on which it builds. Such a **plan is great for identifying risks**. Great tools for planning are business model canvas (BMC) and a financial model.

■ Risk

There is always the risk that something you will do does not achieve the intended success. Or something you believed about the world turns out to be false. Risks can be described on a

number of dimensions:

- Impact: If the risk becomes a reality, what do you do? Is the whole plan useless, or can it be adapted? Very often, it can. How much work is it to adapt the plan? Example: Find a new customer segment for your business idea.

- Probability: How likely is the risk? Very likely? Rather unlikely? What do you think?

- Data: Why do you estimate the probability this way? What data is your estimation really based on?

■ Assumption (A)

In your plan, you implicitly have the assumption that the risks are not risky and all goes well. It won't: **Some of the risks will certainly cause problems – you just don't know yet, which.** Each risk is an assumption and each assumption is a risk.

Example:
- Risk: Students may not pay over 100 € for a secure bike lock
- Assumption: Students pay more than 100 € for a secure bike lock

▶ Identify your assumptions

1. Brainstorm, using ▶ Maximize the creative output of a group.
2. Next, ▶ Fill out a BMC. Every statement in any block is an assumption.
3. Finally, ▶ Create a Financial Spreadsheet. Every parameter, every formula can be a relevant assumption.

▶ Estimate probability

1. Estimate the **probability p(A)** of A being true. E.g.
   ◦ No idea = 50%; an assumption that is less than 50% likely is usually not an assumption upon which your business idea rests. At least initially :-)
   ◦ Probably = 80%;
   ◦ Pretty sure = 90%
2. Estimate your own **knowledge level**: What data do you have already, that shows A. is true?
   ◦ A) Gut feeling/instinct;
   ◦ B) some hints (reports "IHK Report 2008", alternative solution in the market);
   ◦ C) "indicators" from talking to potential customers (how many?);
   ◦ D) validated with data (experiments such as "5% conversion rate from 50 visitors")

▶ Estimate costs

- **What if A is not true (brainstorm)?** Describe the work needed to change your business idea to keep going.

- **Cost (quantify)**: How many days/weeks of work will it cost your team, if A. is wrong? Quantify in person-work-days, Use some very high value like 6 months for „finding a completely new business idea".

- **Ecost (calculate)**: This is the expected value of the cost, simply the probability of A being wrong (=1-p) multiplied with cost. This is on average the time your startup will lose on this hypothesis. Of course, this one hypothesis is either true or false. But the sum of Ecost values for all your assumptions is close to the expected delay due to failed assumptions. Result is measured in person-days.

▶ Rank assumptions

Which assumptions, if not true, really hurt your business idea? Which assumptions are maybe not true? → Turn those into real hypotheses.

Criteria for selection:

- High cost – simply relevant due to magnitude of effect

- Low probability – risky! Maybe true, maybe not.

- Low knowledge level – A little experiment could help a lot. If you know already a lot, it's less likely you can change the estimated probability.

This might be 20-50% of your assumptions.

■ Hypothesis (H)

Each assumption can be formulated as a falsifiable hypothesis = there exists an experiment, which proves or disproves the hypothesis. A hypothesis usually includes a metric and and a decision criterium (*"We are right, if..."*).

Example:

- H1: At least 20% of students (criterium) paid more than 100 € for their bike lock (metric: number of students with this answer).

▶ Turn assumptions into hypotheses

Write down **a single statement**, which you hope is true. The statement should contain a measurable/quantifiable part, which is expressing the same as your assumption. Cross-check: If the hypothesis would be true, is the corresponding risk gone?

■ Validation

Hypotheses can be validated. This is done by designing and running an experiment, then interpreting the results. If the data does not falsify the hypothesis, the hypothesis is validated. The main effect is, the probability of an assumption goes up (which you hope) or down (which you fear but should know the sooner the better).

■ Experiment {experiment}

An experiment is a way to collect data, which could falsify a hypothesis. If the amount of data is so large that it could falsify the hypothesis, but it doesn't, then the hypothesis is considered true. Or: How much data do you need to convince yourself, a team mate, or a VC of H of its contrary?
Most experiments measure user behavior, for which customer conversations is the main technique. Others kinds of experiments are data research and technology tests.

Example for "H1":

- Go to the central cafeteria of the university and ask 20 students how much they spent on their bike-lock.

▶ Calculate benefit of an experiment {experiment}

Validation also has its cost. Running the experiment should, in the statistical expected value, speed up your startup. Consider this:

- **Experiment (brainstorm)**: What could you do, to collect more (enough?) data, to accept or falsify the hypothesis?

- **P_V (guess)**: What is the probability of H being true after the experiment?

  ◦ number, usually between 50-100%; Often, this can be 100%

- **Cost_V (estimate)** - Validation cost: The expected time it will take you to carry out the experiment.

  ◦ number, measured in person-days

- **Ecost_V (calculate)** = Expected total cost, when doing the experiment. This should be less than Ecost, otherwise the experiment is too expensive for the benefit it provides.

  ◦ Ecost_V = (1 - P_V) * Ecost + Cost_V

■ Lean Startup

A process for systematically reducing risks in innovation projects.
The core idea of lean startup is to minimize risks by actively collecting data for risky parts of your plan. Lean startup is a process for any risky projects, not just startups.

■ Validation Pyramid
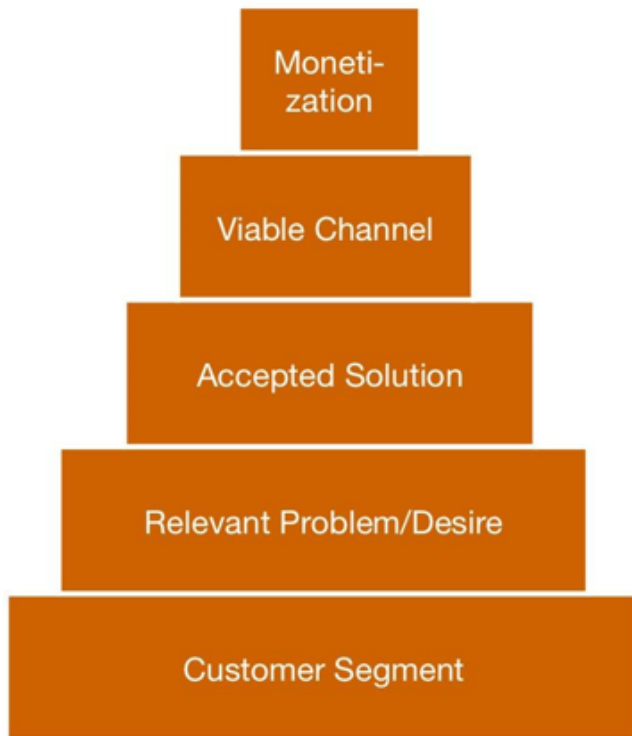
A sequence of 5 steps for validating business ideas/models. It is named pyramid, because each step builds upon the steps before. The steps are:

1. Customer Segment
2. Relevant Problem
3. Accepted Solution (called "Problem-Solution-Fit")
4. Viable Channel
5. Monetization (called "Product-Market-Fit")

Whenever a step is validated, all steps with a smaller number are validated as well. E. g.: if your customers can imagine to use your prototype in reality and pay money for it, they must have a relevant problem.

Step 1: Customer and Problem – *Who needs us*?

■ Customer Segment

For whom are we creating value? A customer segment is a group of people/institutions using your product/service. Grouping multiple customers together help us to do marketing efficiently. During early stages of a startup the terms user, customer, and potential customer are used interchangeably. That's OK, but in later phases the difference between someone who paid already and all others is vital.

Dimensions:

- B2C vs. B2B;
- Mass vs. Niche market;

▶ Describe by Attributes

List observable attributes, which predict with probability more than 50%, that the potential customer will buy the product.
E.g. age range, gender, job, profession, education, income, typical work day, family situation.
These attributes can then be used by marketing to target the customer segment. The better the targeting, the lower the CAC (see bottom-up market analysis).

▶ Analyze Attractiveness of a Segment

More attractive, if …

- Can be clearly described & exists (has the problem)
- Large (enough)
- Positive trends (growing segment)
- Budget for a solution is available

▶ Do a Data Research Experiment {experiment}

Good sources are: Statista.com, local industry reports (IHK, …)
→ Validates: customer segment, specific variables

■ Persona

A distilled, artificial person with an exact age, name (!), profession, interests, etc. Describe it in 10-15 bullet points. Should represent the ideal customer. Activates your belly feelings.
See also: [wikipedia w Persona_(user_experience)]

▶ Create a Persona

By combining the demographic data and results of several customer conversations. On how many existing people is your Persona based? I.e. how many people have you interviewed for this persona?
Goal: Activate your belly feeling; improve empathy with the customer segment.

■ Problem (Customer need, Desire)

The customer has a problem for which she wants to buy a solution. The problem can also be a *need*, e.g. the *desire* to own a status symbol like a car; an *emotion* like *fear*, which can result in buying insurance.

■ Customer Conversations

Source: *The Mom Test*, by *Robert Fitzpatrick*.
For validating problem and/or solution.

Summary

- Ask people about specific situations in the past, not generic opinions about the future

- Customer owns the problem, you own the solution

- Don't do what they say, but interpret what they do

You **must read**: *Truth Talking for Business Ideas*
http://www.slideshare.net/xamde/truth-talking-for-business-ideas
Published 2015-05-08 on SlideShare, 24 slides, English.

■ Experiments for Validating Problem Relevance

A relevant problem:

- Costs either a lot of money (saving money sells)

- Costs a lot of time (saving time should sell)

- Causes lots of negative emotions (emotions sell best)

- Happens in the context of a relevant (business or personal) goal

▶ Quick-validate problem: Look up the search volume on Google {experiment}

Using the Google AdWord Manager, pretending to launch an online ad, you can get pretty precise numbers for number of times a certain keyword combination had been asked in a certain region of the world. Amazing!
→ Validates: problem

▶ Do a Problem Interview {experiment}

Talk to potential customers using the techniques described in customer conversations. Do a face-to-face interview and prepare with ca. 10 bullet points. When and why does problem happen? Which emotions come with it?
Have they actively looked for a better solution?
Record basic demographics, emotions.
Best done with 2 interviewers (talking + taking notes).
→ Validates: problem

▶ Do a Shadowing Experiment {experiment}

Do an internship at the place where your customers are and where your problem happens – or where you want to look for problems.
Cheap variant: Just go there and watch.
→ Validates: customer segment, problem

▶ Do a Survey {experiment}

Surveys are great for validating data you learned from customer conversations. They are bad for finding things out initially. They miss the unexpected, the body language, and much more. On which channel are you recruiting your test subjects? E.g. for online surveys, where exactly are you inviting people? Ideally, the same channel as where you will later sell. Record: Ratio people asked / people responding (self-selection bias); time people spend with the survey
Delivers data about problem relevance and channel.

■ Design Thinking

A process for systematically deriving business ideas from a given customer segment.

- Observe people, distill personas and their problems

- Brainstorm solutions

- Build cheap prototypes, test them, refine them

Step 2: Solution – *Does this solution work for them*?

◾ Solution

The product or service, which you offer. There is no solution without a problem.

▶ Validate Accepted Solution: Solution Interview {experiment}

Create a cheap prototype and ask your customer segment for feedback. Use the techniques from customer conversations.
Can be done right after the problem interview.

◾ Value Proposition

What do we offer? The effect of your solution to the problem.

1. What bundles of products and services are offered to each customer segment?
2. How is the status quo changed for the user, where is the value? E.g. your solution is mainly …
   - cheaper
   - faster
   - higher quality (e.g. easier to use, less risky)
   - emotional (status, design, newness)

What you sell is not what the customer buys.

Example:
- Scientific advancement: satellites, theory of relativity, atomic clocks
- Technology: Global Positioning System (GPS)
- Component: GPS-chip for consumer electronics
- Product: iPhone with Maps app. App knows where you are
- Solution sold: White cardboard box with an iPhone and a charger
- Solution experienced: Went to shiny Apple store; now have a device in my pocket, which knows where I am; can tell me how to get to a place where I never was; and *for which many of my friends have a compatible charger*. The vendor could not directly engineer that last part.

Always think about the steps for the customer: Getting to know your solution exists, purchase process, **price**, packaging, unboxing and setup, daily use, dealing with problems, repairs, recycling.

◾ Competition

Every business idea has competition. It depends on how broad you specify the problem/market.

Always look for the closest (most similar), 3 big competitors. Or those companies than can easily, and are likely, to turn into a competitor.

▶ Search the Web Like a Customer {experiment}

As trivial as this sounds, many entrepreneurs skip this. Which is a huge mistake! Just pretend to be a customer and see if you can get the product you want via a web search. Look at the top 3 competitors and estimate their relevance.

▶ Lookup Competitor Information {experiment}

Using tools such as SpyFu.com you can see for each keyword combination, who posted which online ad.

■ Cheap Prototypes

A prototype can be much simpler, than you think. The goal is only to let the potential customer experience and imagine, how her world would be with the solution. Then she can give you feedback on her (imagined) reactions.

▶ Design a paper prototype for a software or content product {experiment}

For each screen, draw it by hand on paper. This allows the customer to question whole screens. If the prototype would be "photo-shopped" or programmed, feedback is often only "This button should be smaller" instead of "The whole feature does not make sense for me". See also Customer Conversations.

■ Landing Page Experiment {experiment}

Create a single web page, which describes the problem and your solution. Have a call-to-action to let people enter their email address to get notified, when the product becomes available. Pro: Try using one page for the problem with a link to a second page with the solution.
→ Validates: problem, solution (the more detailed you describe it, the more meaningful the reaction is)
Tools: Optimizely.com (content), bit.ly (short, customizable URLs), Facebook groups (to spread the link)

Step 3: Channel and Monetization – *Can we reach them? Do they pay*?

■ Business Model

This is the holistic picture of what you do and how you make profits along the way. It includes at least the customer and the problem, your solution, the monetization, your cost structure, and your idea how to orchestrate your activities.

A business model is *repeatable*, if for every time a certain marketing effort is done (e.g. show an ad on TV), it results in a certain revenue.

■ Channel (Communication, Distribution, Sales)

Through which channels do our customer segments want to be reached?
The logistics side of the relationship with customer.

Steps:

1. Awareness: How do we raise awareness about our company's products and services?

2. Evaluation: How do we help customers evaluate our organization's Value Proposition?

3. Purchase: How do we allow customers to purchase specific products and services?

4. Delivery: How do we deliver a Value Proposition to customers?

5. After sales: How do we provide post-purchase customer support?

Dimensions:

- Effective? Generates customers & revenue

- Efficient? Average customer acquisition cost (CAC) per customer is less than the expected lifetime value (LTV) of that customer. See metrics.

▶ Process: Calculate Customer Acquisition Costs (CAC)

For a sales channel:

- Price of marketing effort

- Number of people reached

- Number of people buying the product

- Conversion rate = #buying / #reached

- CAC = Price / #buying = Price * Conversion rate

▶ Validate Viable Channel {experiment}

Design sales material, e.g.

- A landing page with an "Order Now" button

- A flyer with a clear call-to-action (web, phone, email)

... and distribute it on the same channel, where you plan to get customers from. The initial response rate is influenced by many reasons, but the conversion rate from people visiting your web site and then clicking on some link or button tells you more. Try to simulate most of the sales process. Ideally, in the end the customer tries to order something (and then you have to tell them, it doesn't exist yet). That is the ultimate validation. See also: ▶ Do a Survey

■ Customer Relationships

What type of relationship does each of our customer segments expect us to establish and maintain with them?
Emotional side of relationship with customer.

Dimensions:

- Customer acquisition vs. Customer retention

- Personal assistance vs. Self-Service

■ Market

Markets can be analyzed and estimated in many ways, none of them is "right". What is the market for *Lufthansa*? Airlines? Travel? Transportation?

Two methods for analyzing the size of your market:

▶ Top-Down Market Analysis = "How big can this get?"

What is the...

- **Total addressable market (TAM)**? How many customers are there in total?

- **Serviceable addressable market (SAM)**? How many customers can we reach with our sales channels? Include competition.

- **Target market** = The initial customer segment. How large is it?

▶ Bottom-Up Market Analysis = "How fast will we grow?"

Example: If we can convince every 10th person on the phone to buy, and it takes 20 minutes to do a sales call (including finding a prospect), then we can make 8 (h in a workday) x 3 (calls per hour) x 0.1 (10% conversion rate) = 2,4 new customers per day, per sales person.

- Much more realistic than top-down market analysis

- Requires a number of parameters → assumptions

- Is the basis for a realistic financial model

Note: Take the actual buying process into account: For some products, the main user is not the buyer. Examples: Enterprise software, children toys.

◾ Channel Validation Experiments

▶ Run an Ad Experiment {experiment}

Design and run several online ads, which link to a landing page; measure which ad gets the highest click-through rates.
→ Validates: channel (does online work for your idea?), customer segment (depends on your ad targeting), problem & solution (depends on your ad copy)

▶ Do a Count Clicks Experiment {experiment}

For any web-based sales channel (or your landing page): Just add a button labeled "Try Now" or "Order Now" and count what percentage of visitors clicks the button.
→ Validates: problem, solution, channel

◾ Monetization

The way you generate revenue. The simple case is you selling a product and the customer directly paying for it. Many more sophisticated, indirect variants exist: E.g. free-to-play ad-supported browser games.
Note how having revenue is not the same as making profits   .

◾ Minimum Viable Product (MVP) – Validate Monetization

Sell a solution, which is very costly to provide. The idea is to do something, to let the customer buy and experience the solution, in order to maximize learning. The way you deliver the product can be quite expensive (e.g. manual), but it is not your plan to keep it that way. „First nail it, then scale it".
→ Validates: monetization (yeah!)

▶ Run a Concierge MVP experiment {experiment}

„I am your app" – you do all the work and the customer knows it. Yet, the customer experiences the value proposition and pays for it.

▶ Run a Wizard of Oz experiment

User: Send email to automatic service, gets smart response from artificial intelligence and clever system
You: Fake the system and produce the work manually.
E.g: User sends a message to a system. In the background you, the Wizard of Oz, create and send the response manually – but the user perceives it as coming from an artificial intelligent system.

◾ More Experiments to Validate Monetization

▶ **Run a crowd** *funding* **Experiment {experiment}**

Sell a solution, which does not exist yet. Tools: *Kickstarter, Indigogo, ...*
Don't confuse with crowd *investing* (like *Seedmatch*).
→ Validates: monetization (yeah!)

■ Revenue Streams

Dimensions:

- How much does each revenue stream contribute to overall revenues?

- Contract type: asset sale, usage fee, subscription, renting, licensing, brokerage fee, advertisement

- Segmentation for pricing: none, by feature, by customer segment, by volume, or dynamic pricing (e.g. market)

Step 4: Business Model – *Combining the Parts*

■ Key Resources

What do we need to own (or lease) in order to run our business model?

Dimensions:

- own vs. lease vs. acquired from key partners
- physical (machines, building), financial, intellectual (brand patents, copyrights, data), or human (untrained vs. specialists)

■ Key Activities

What do we need to do, to develop and run our business? Include managing resource and partners, if necessary.

■ Key Partnerships

Who are our key partners (e.g. suppliers)? Any partner that is hard to replace - or otherwise mission-critical - is probably a key partner. Sometimes there are none.

■ Cost Structure

What are the most important costs inherent in the business model?

Dimensions:

- Cost Driven (leanest cost structure, low price value proposition, maximum automation, extensive outsourcing) vs.
- Value Driven (focused on value creation, premium value proposition)
- Fixed Costs (salaries, rents, utilities)
- Variable costs
- *Economies of scale* or *Economies of scope*?

■ Technology Research Experiment

Feasibility study: Can feature X be realized at all?
Can feature X be realized at cost Y?
→ Validates: solution, cost structure

■ Business Model Canvas (BMC)

Source: *Business Model Generation, A. Osterwalder 2010.*
Nine building blocks on a single sheet of paper which describe the main parts of a business model.

The nine blocks also act as a kind of checklist.

"Back stage"				"On Stage"	
8. Key Partnerships	6. Key Resources	2. Value Proposition		3. Channels	1. Customer Segment
	7. Key Activities			4. Customer Relationships	
9. Cost Structure			5. Revenue Streams		

▶ Fill out a BMC

Often sticky-notes are put on a A4, A3 or even larger print-out template. Sticky-notes allow adapting the BMC quickly. Fill it out from 1 to 9.

"On Stage" – the revenue generating side:

- 1: Customer Segments
  If you have multiple customer segments (e.g. in a double-sided market), use one BMC for each segment.
- 2: Value Proposition

Your relations to the customer:

- 3: Channels
- 4: Customer Relationships

Financial result of your activities:

- 5: Revenue Streams – For what value are our customers really willing to pay? How would they prefer to pay?

"Back-stage" – the costly product realization side:

Next we have 3 key boxes describing how you realize your product/service. Key things are only those that are very relevant, hard to replace, and less common to find in any average company.

- 6: Key Resources
- 7: Key Activities
- 8: Key Partnerships

Each of these three "Key"-boxes causes costs, as detailed in:

- 9: Cost Structure

▶ Adapt a BMC

Change 1 or few of the 9 boxes; Data learned about other boxes remains true. Check for effects in other boxes.

■ Business Model Patterns

Relevant facts for young entrepreneurs:

- Ad-supported business models require a *very high number* of users (e.g. 1 million page impressions/month) and good targeting of ads (e.g. Facebook)

- Consumers often buy *cool, fashionable, trendy* things – which result in hard-to-predict sales (if any). Consider B2B business models, too

Many business models innovate foremost in one area, e.g.:

- Customer relationship – e.g. turn a personal relationship into an automated one, keep selling the same product

- Product innovation – Sell a better product over established channels

More patterns:

- Long tail – sell a large variety of different products, although you sell very few of each kind (e.g. Amazon books)

- Multi-sided market – establish a market place where offer and demand are matched and orchestrated (e.g. eBay)

■ Metrics

See also: *Startup Metric for Pirates, Dave McClure*, 2007, 20 slides, English
http://www.slideshare.net/dmc500hats/startup-metrics-for-pirates-long-version

Summary of steps to measure:

1. **Acquisition**: people come
   → Validates channel, customer segment
   Look closer which people come, where do they come from.

2. **Activation**: people experience your value proposition
   → Validates problem: People invest time in order to find a solution

3. **Retention**: step 2 was good, they use it again/come again
   → Validates solution

4. **Referral**: users refer it to other people
   → Validates solution

5. **Revenue**: you have income due to user behavior
   → Validates monetization

Step 5: Finances and the Future – *Animating the Business Model*

■ Financial Model

This is the "animated" version of the business model, a simulation based on estimated numbers. It includes key metrics and derived estimates for revenues and costs. From these, the key financial milestones are derived. When are you…

- Cash-flow positive? revenue ≥ variable costs

- Break-even? cumulated revenue ≥ cumulated costs

- ROI After 5 years, is the return on investment …

  - a) … better than a savings account? → VC & You care

  - b) … better than another startup idea? → VC & You care

  - c) … better than a regular day job at a big corporation? → You care

To convince a VC, a potential team member and – most importantly – yourself. You want to know if a business idea is worth your lifetime and [mental energy]. The exact result of the model is always debatable. The main goal is to understand the „mechanics" of the business model. **What are the (1,2,3) most important parameters?**
Also, you need *some* way to predict how much investment money you need and how much you might earn, in order to compare business ideas.

▶ Create a "Back-Of-The-Envelope" Calculation ("BOTEC")

Quickly estimate if a business might make money or not. We assume each customer buys one product.

- **#customers**: How many customers will you have per month, one year after you started selling. Let's assume the first year was ramp-up, and there will be little growth after month 13. Hence the total number of customers over 5 years is 60 times the number of customers in month 13.

- **$price**: for which you sell your product

- **$var_cost**: The variable costs per product. Include customer acquisition costs (CAC).

- **$fix_cost**: Over 5 years of operation, how much money do you need? E.g. how many person-days of full-time work do you have to invest to start selling? Assume 3400 €/month = 170 € cost per work day (BAT IIa plus 20% overhead = 22k € netto per year).

- $profit: after 5 years is then simply:

$$\$profit = \#customers * 60 * (\$price - \$var\_cost) - \$fix\_cost$$

Creating this data helps you to immediately learn what the key challenge of the business idea is:

- **Starting**: Initial fix costs are hard to earn back, considering the number of customers you will likely have?

- **Running**: Variable production costs are too high, compared to what customers are willing to pay?

Usually one parameter stands out as "the problem" of the business idea. Most business ideas have a problem. Get creative for a few minutes and brainstorm how that parameter could be changed.

▶ Create a Financial Spreadsheet (Financial Model)

Develop your model from scratch. Don't download an elaborate template – it includes many items that are irrelevant for your particular idea. Here are the steps for your financial model:

1. Brainstorm relevant **parameters** for your business model:
   numbers for key resources, from bottom-up market analysis, and the usual financial metrics like revenue, variable and fixed costs from your cost structure.

2. A VC wants to "play around" with the numbers in your Excel file → Put the constant parameters (they are assumptions) in an extra worksheet and document them.

3. Draw the *skeleton* of your financial model: Find dependencies between your parameters and draw a graph on paper.

4. Use the following high-level template in a spreadsheet app, using the parameter work sheet defined in step 2:

Template:
Typical columns: "Year 1-Q1", "Year 1-Q2", … up to "Year 5-Q4"

Typical rows:

- Revenue streams
  - For each channel:
    - Number of customers (via bottom-up market analysis)
    - Price of product
    - Revenue
  - Cost structure
    - Fix costs (personnel, rent, insurance, …)
      - Each founder (use as many as your idea requires, up to 6) costs 2500 €/month [1: This is the rate of the EXIST program of the German state, see exist.de]; No other payments to founders.
      - Other personnel at market rates, e.g. 70€/h for IT developers [2: According to the IT-portal gulp.de in 2015]
    - Variable costs
- Financial results
  - Cash flow per period

◦ Cumulated cash (or debt)

→ The maximal negative cash is the investment money you need.
→ The cumulated profit after 5 years can be used to calculate the ROI. For a realistic ROI, assume you can sell the company for a certain price, e.g. 2 x yearly revenue or 10 x yearly profits.

APPENDIX

■ How to find a business model?

There are different typical ways to arrive at a repeatable business model.

Way 1: Genius Inventor:

An idealized, unrealistic overnight success story: Hero stumbles upon a problem, invents and designs a solution for it; secretly refines it in his garage; starts selling and soon becomes a millionaire.
Modern variant: the lone app or game developer.
Does happen, but very, very rarely.

Way 2: Market pull:

1. Analysis of customer segments; Identify relevant problem or desire;

2. Co-design solution together with customer representative; Sell

Way 3: Technology push: "solution looking for a problem"

1. Years of research, technological advancement, protect intellectual property (patents);

2. Long search for potential customer segments and a matching problem; Create marketable product, Sell

Way 4: "Entrepreneurial"

1. Observe trends, problems, or any kind of relevant change in the world;

2. Brainstorm new ideas, problems, solutions;

3. Progressively develop promising ideas into business models, then startups

Summary

The real process is never the ideal process. However, knowing the ideal process helps you to **validate** things in an economic order to minimize costs and risks.

■ Team

Complex topic. Most startups die because of team issues. But then, the team issues might arise when things don't work out well.

- Size: Many successful startups have 2 or 3 founders. A single founder can simply become a single point of failure and there is a lot of work to do, a number of skills required. Larger teams tend to slow down decision-making and require more time for internal communication.

- Heterogeneous: If all team members have the same background, culture, education and age, the team will …

    ◦ Con: … be less creative; everybody wants the same roles

    ◦ Pro: … have a working internal communication

In reality, you won't have a lot of choices for people willing to work on the same idea. So be aware of potential problems, but don't try to fix them before they happen.
It is an advantage for a team to really know…

- the customer segment & problem
  - You should have this knowledge in your team
- the technology for the solution.
  - Outsourcing of this knowledge (to a supplier) is possible to a certain degree

■ Team Work

▶ Maximize the creative output of a group

1. Everybody works solo (crucial to avoid eliminating creative thoughts)

2. Results are merged, condensed, consolidated,

3. Group does another round of brainstorming on the current result.

▶ Planning poker (variant for numeric variables)

1. Every team member secretly writes down her estimate, then

2. all estimates are revealed and compared.
   If estimates differ a lot, a quick discussion can clarify if the question was understood differently or if team members have pre-existing knowledge. Estimates can be adapted.

3. As a final step, the estimates are averaged (wisdom of the crowds).

■ Bootstrapping

Financing the growth of a startup using the startups profits. Can be dangerous if competitors are VC-financed.

■ Venture Capital (VC)

VC financing is a complex subject, which you should neither completely exclude, nor rely on. Investors like ideas that could become really big. Most things can. Despite the name, *angel investors* (using their own money) and *venture capital* companies (using other people's money) don't like to invest in risky projects. Any analysis of risks in your startup will help to convince them.

- Pro: Venture capital can speed up your growth (they like that) or pre-finance your initial development of a marketable product (which is more risky).
- Con: VCs want to own a part of your company, so that they can sell it later with a profit. Either to other company ("trade-sale") or to the general public ("going public" on the stock market, also known as "IPO", initial public offering). Often a VC wants to own less than 20% for tax reasons.

■ Pitch for VC Investors

The 10 typical slides for a VC presentation: [3: Source: Art of the Start, Guy Kawasaki, 2004]

1. Title
2. Problem
3. Solution
4. Business Model
5. "Secret Sauce", Technology, Backstage-parts of BMC
6. Marketing and Sales = Channels + Go-to-market strategy
7. Competition
8. Team
9. Financial Projections, Key Metrics
10. Status of the project; next steps; where would the VC money go?

■ Systematic Business Idea Development (SBID)

This process was tested with 40 students. [4: SBID — pronounce: "speed"]

1. Generate 30-50 business ideas
2. Quick-validate the customer segment and problem part
3. Do a quick market overview to identify state of competition
4. Select best business problems

The following steps were done in teams

Validate things that are risky in every startup with Validation Pyramid.

1. Validate Customer segment — Refine, switch, narrow/broaden, describe, validate
2. Validate Problem relevance — Collect data, adapt, describe, understand
3. Validate Accepted Solution — Design solution, prototype it, test it, refine it, validate it
4. Validate Viable Channels — Find them, test them, compare to others
5. Validate Monetization — (hard to validate, but you should try)

Plan more and validate things that are risky in your business model.

1) Find risks
- Find, list and analyze your assumptions
- Combine the parts into a single business model, using BMC, to understand it better and to uncover more risky assumptions
- Create a financial model to understand how the model works over time and what the critical

parameters are → find more risky assumptions

- Identify key parameters and their connections
- Full financial model

2) Reduce risks

- Use Lean Startup methods to reduce the risks
- Formulate hypotheses
- Design and run experiments
- Collect data and draw conclusions
- Adapt BMC and financial model

A typical seminar ends here.

- Launch a company and run the business model.

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