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# YES, of course!!!

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## Technologies have grown much more complex

- Great hopes that the natural sciences will contribute to innovation
- Competition at an increasingly international and global scale
- Shorter product life cycles
- Increasing awareness among firms and analysts of innovation as a potential source of competitive advantage
- Etc.

## Recognizing the importance of science and technology for economic development...

- **Francis Bacon (1620):** Printing, gunpowder and the compass 'have changed the whole face and state of things throughout the world...'
- **Adam Smith (1776):** 'Improvements in machinery' go hand in hand with the division of labour, and 'very pretty machines . . . facilitate and quicken' production...
- **Karl Marx (1848):** 'The bourgeoisie cannot exist without constantly revolutionizing the means of production!'

- **Alfred Marshall (1897):** 'Knowledge' is the chief engine of progress in the economy
- **Bush (1945):** Science and basic research as incredibly powerful sources of future economic and societal development...
- **Joseph Schumpeter (1911):** The entrepreneur and his search for 'new combinations' is the driving force in all economic development...
- **Freeman & Soete (1997):** 'In the most fundamental sense the winning of new knowledge is the basis of human civilization'...
- **Etc.**

**So, no one doubts that innovation is crucial  
for our modern economies...**

**... but how can innovation be 'analysed'**

**and how can it be 'managed'?**

**Innovation  
Management  
=  
Technology  
Management  
???**

## What is technology management?

- **The product and delivery of new technologies**
  - how to bring products to market?
- **Capturing value from new technologies**
  - how to make sure you are the one who profits from your innovation, and how to evolve your technology in the face of imitators, competitors and new innovations?

## Key concepts of technology management

- **Different types of innovation: incremental vs radical**
- **Sustaining vs disruptive Technology lifecycle**
- **Generating competitive advantage**
- **Diffusion of technology: diffusion curves and dominant design**
- **Market entry**
- **R&D exploration and exploitation**

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# Is innovation only about technology?

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**NO!!!**



nt - \$11 Billion  
illion

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**INNOVATION & R&D**

**70% of the expenses associated with in-house R&D activities are devoted to commercial failures**

Source: Cabinet Booz, Allen et Hamilton

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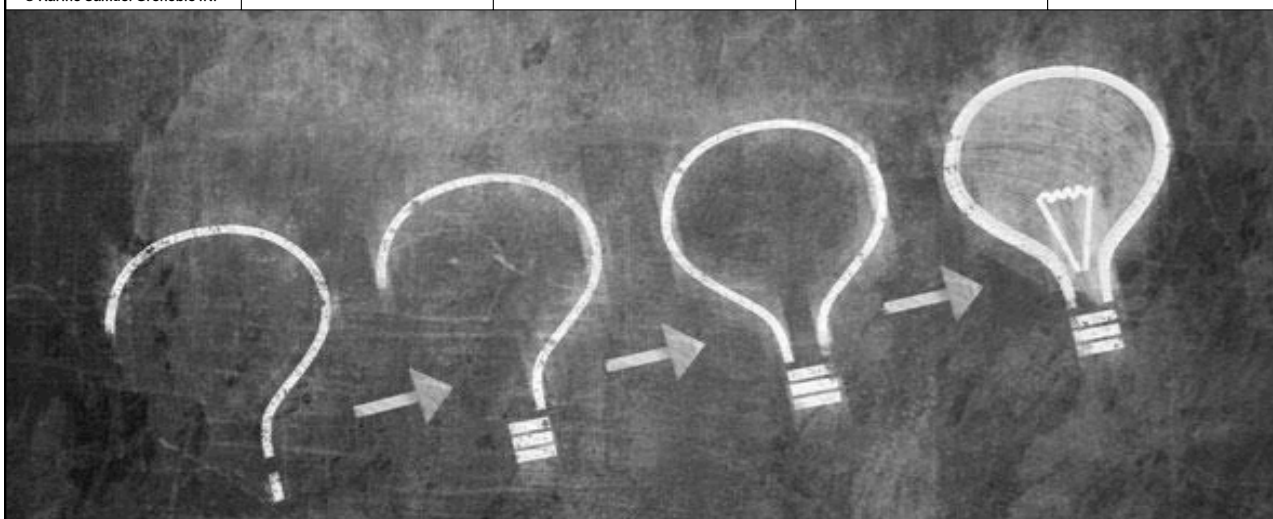
**REASONS FOR FAILURE**

- Reason 1. The customer does not exist
- Reason 2. There was no value proposition
- Reason 3. The product didn't work
- Reason 4. The path to market was not clear

Source: Fastcompany.com



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### REASONS FOR FAILURE

**25% of failures in the high-tech are attributable to technology**  
**75% of the failures remain due to a lack of knowledge of the users**

Source: Millier (2012)

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**« An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations. »**

Source: OECD, Oslo Manual

GUIDELINES FOR COLLECTING AND INTERPRETING INNOVATION DATA

***Innovation is an invention that has found its market***

## Schumpeter's distinction between "Invention" and "Innovation"

- An 'invention' is an idea, as sketch or model for a new or improved device, product, process or system. It has not yet entered to economic system, and most inventions never do so.
- An 'innovation' is accomplished only with the first commercial transaction involving the new product, process, system or device.
- *It is part of the economic system.*

**Innovation is also  
about markets...**

## Markets are about economics

'... The problem that is usually being visualized is how capitalism administers existing structures, whereas the relevant problem is how it creates and destroys them. As long as this is not recognized, the investigator does a meaningless job...'

(Schumpeter, 1942, p. 84)

## Economics of change!

'Production capacity' = capital goods, knowledge and labour skills to **PRODUCE**

'Technological (innovative) capabilities' = skills, knowledge and institutions that make it possible to generate and manage **CHANGE** in technology

(Bell & Pavitt 1997)

## What innovation management is about...

How can firms (and other organizations) exploit innovation in pursuit of their differing goals – in particular their own survival, profit and growth?

How does innovation threaten their existence?

How can entrepreneurs use S&T as a basis for the creation of new firms?

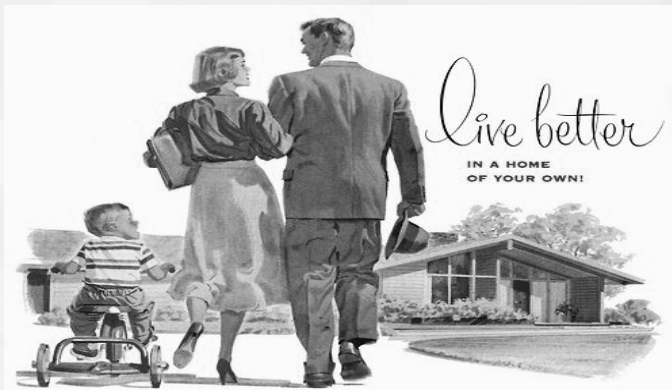
Innovations can be of very, very different kinds!

Firms are often good at one or two types of innovation...

... but there are enormous opportunities if a firm is able to explore and exploit the *entire* innovation space!



## How to innovate ?



*What do people dream about?*

### **WHAT DO PEOPLE DREAM ABOUT?**

1. To be safe from need
2. Be well surrounded (friends, family)
3. Securing the future of his children
4. Be well housed
5. Live a beautiful love story

Source: Giget, 2016

**« Innovation is technologically neutral,  
it starts from the individual to return to the individual »**

Steve Jobs

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**49% Simplifies my life**  
**42% Preserve the environment and the planet**  
**41% Is accessible to the greatest number**  
**34% Improves the relationship between individuals**  
*Source: Opinionway*



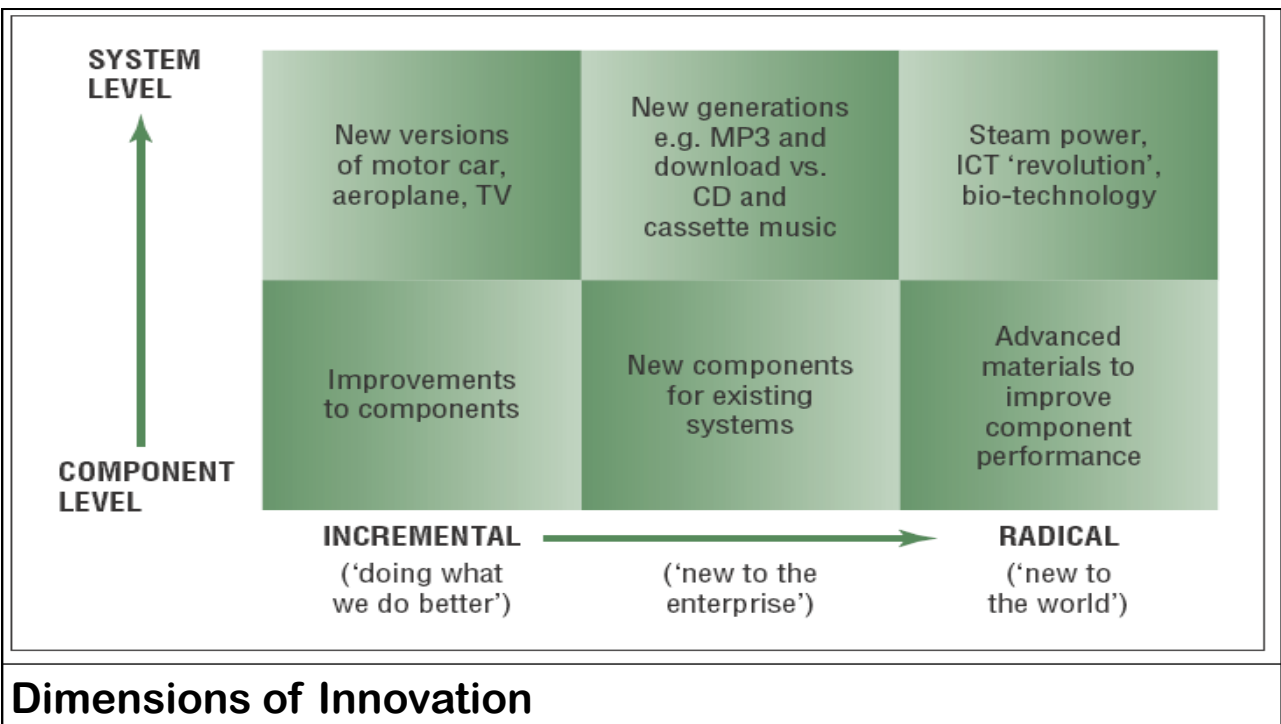
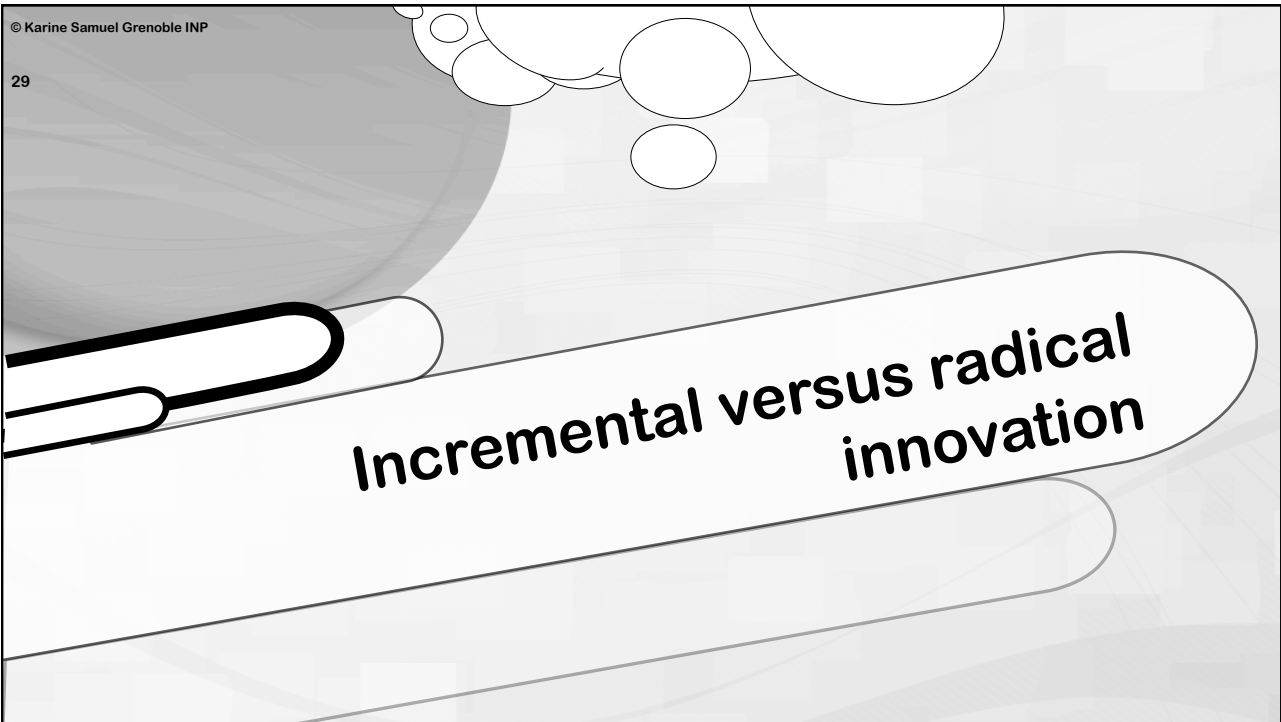
**QUALITIES EXPECTED FOR INNOVATIONS**

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## Characteristics of successful companies

- Innovative companies typically achieve stronger growth or are more successful than those who do not innovate
- Enterprises that gain market share and increasing profitability are those that are innovative.
- Innovation is consistently associated with success



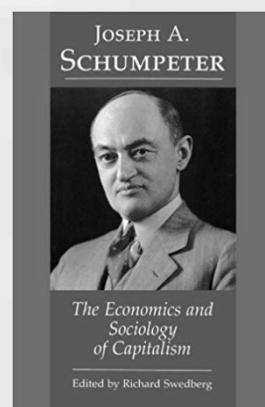
## Incremental innovation

- **Doing what we do but better**
  - > It is the perceived degree of novelty that matters: novelty is in the eye of the beholder
  - > Most innovation is incremental
- **Since Bic introduced the ballpoint pen in 1957 lots changed in materials, ink, ball technology, safety features**



## Discontinuous (radical) innovation

- **Changes the rules of the game**
  - **Redefine the space and boundary conditions- they open new opportunities and challenge existing players to reframe what they are doing.**
  - **Schumpeter called this 'creative destruction'**





## « Creative destruction »

- **"Before"**: "A long period of relative stability during which a continuous stream of variations around a basic innovation theme take place. Essentially this is product/process improvement along the lines of 'doing what we do, but better'..."
- **"After"**: Harmonic, stable innovation conditions are "punctuated by occasional discontinuities – and when these occur, one or more of the basic conditions (technology, markets, social, regulatory, etc.) shifts dramatically. In the process the underlying 'rules of the game' change and a new opportunity space for innovation opens up. 'Do different' conditions of this kind occur..."

## Discontinuous change...

**...can be brought about in many ways:**

New market emerges, new technology emerges, new political rules emerge, running out of road, change in market sentiment or behaviour, deregulation or reregulation, fractures along 'fault lines', unthinkable events, business model innovation, shifts in techno-economic paradigm, architectural innovation...

## Important contextual factors that have an impact on innovative opportunities

- Type of sector
- Size of your firm
- The country and region where you are active
- The stage in the industry life cycle
- Political regulations
- Etc.

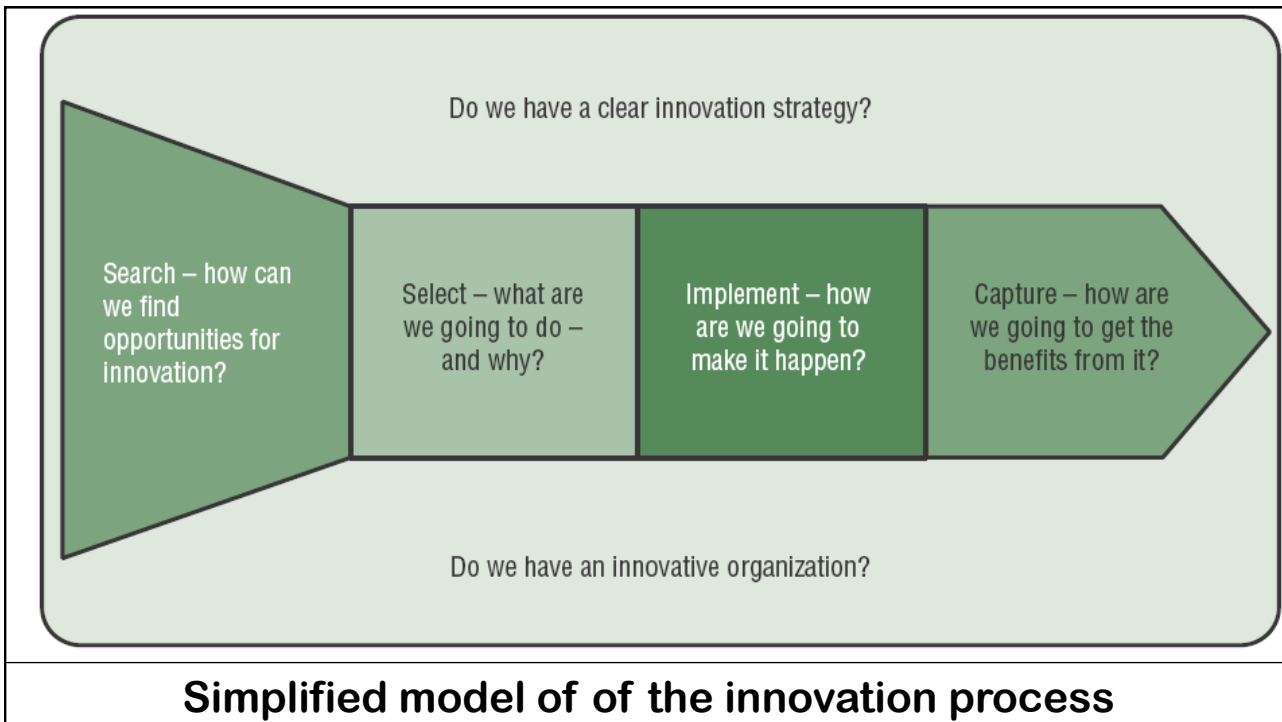
## The innovation management process

Searching – scanning the environment (internal and external) for, and processing relevant signals about, threats and opportunities for change.

Selecting – deciding (on the basis of a strategic view of how the enterprise can best develop) which of these signals to respond to

Implementing – translating the potential in the trigger idea into something new and launching it in an internal or external market.

Learning – enterprises have (but may not always take) the opportunity to learn from progressing through this cycle so that they can build their knowledge base and can improve the ways in which the process is managed.



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## Implementation

- Acquiring the knowledge resources to enable the innovation (for example, by creating something new through R&D, market research, etc., acquiring knowledge from elsewhere via technology transfer, strategic alliance, etc.).
- Executing the project under conditions of uncertainty which require extensive problem-solving
- Launching the innovation and managing the process of initial adoption
- Sustaining adoption and use in the long term – or revisiting the original idea and modifying it – reinnovation.

## Innovation is not easy...



Renault Espace 1984

9 units sold the first month  
Clients eventually warmed up to the car and became popular



Renault Avantime 2001

Concept built on Espace  
Less than 9000 cars sold total

*Innovation is a question of timing*



Nothing that concerns me, which is conceived without me, is really made for me



**HUMAN CENTRIC (TECHNO INSIDE)**

# Innovation is not about just ideas

- Innovation is increasingly about teamwork and combination of different disciplines and perspectives.
- Correlation between how people are managed and business performance. The question is how to create an organisation where such innovative behaviours can flourish

Innovation by Google



<https://www.youtube.com/watch?v=KwwdtQHqd9g>

# Innovation is not about just ideas

- In the 1990s, IBM has difficulty responding to the emerging 'client-server' and network shift and almost went out of business



General Motors did not correctly interpret and appreciate Japanese competition

Polaroid had issues transitioning to digital imaging

- ...



## Innovation is not about just ideas

- **Top management must be committed and have a long horizon vision as opposed to seeking short term returns.**
- **Since much of innovation is about uncertainty, returns may not emerge quickly and there may be a need for 'patient money'.**
- **Shareholders though may want short term gains. Therefore the short term gains request by shareholders should be balanced with long term technology plans.**

**Marketing of innovation**

## Integrating effort requires people to believe in solving big problems

“You are doing something that doesn’t exist and hasn’t ever been done before, and thus doesn’t make sense to people”



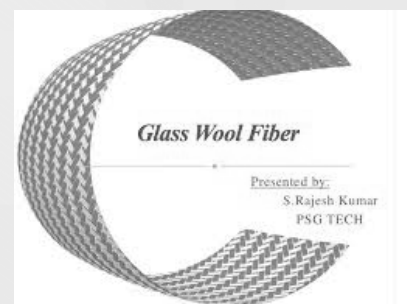
Marten Mickos/ MySQL

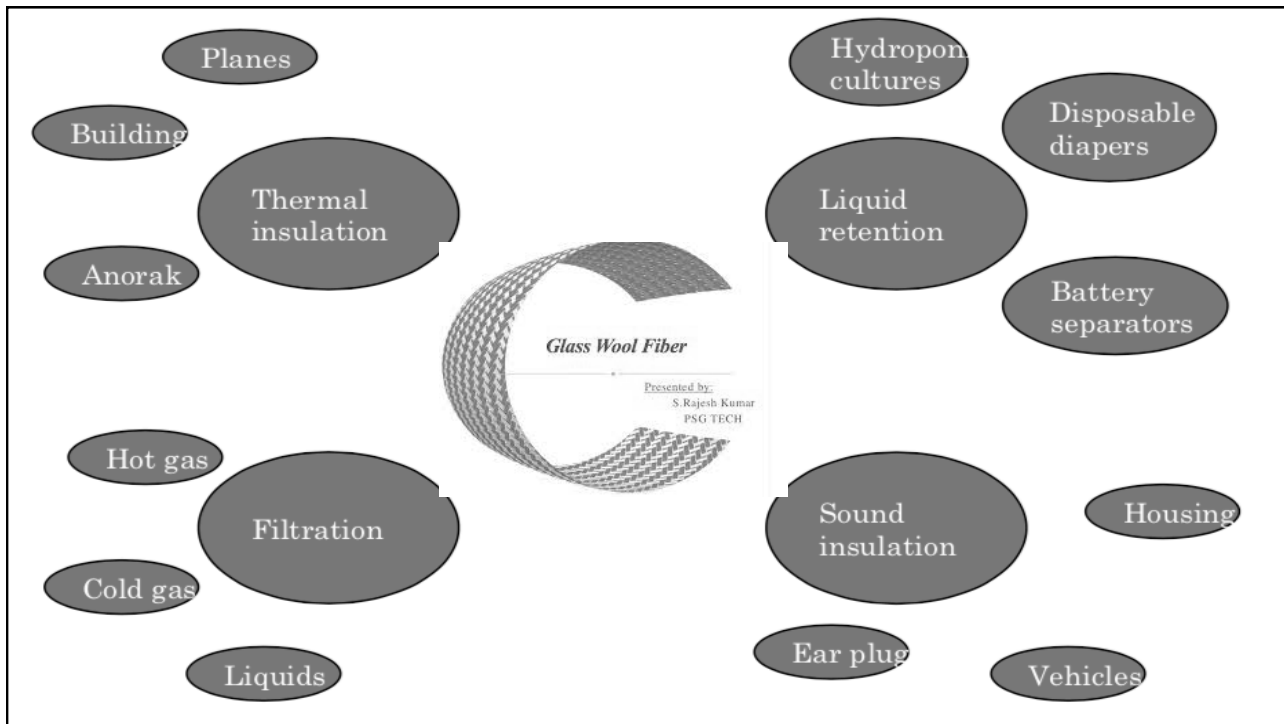
## Example: fine glass wool

- ‘We are currently developing the next great technology’
- ‘Many applications are possible’
- ‘We will become rich!’
- ‘R&D spendings are high, we have to define a path for innovation...’

**So, where do we begin?**

**What are the R&D priorities?**





## Marketing process

- Step 1 – Marketing problem
  - Failure on the market – why ?
- Step 2 - Market analysis
  - Customers (types, behaviors, needs, fears...)
  - Competition (close and far)
  - Suppliers/ Intermediaries/ Sellers
  - Environment (PESTEL)



## Marketing process

### Step 3 - Marketing strategy

#### ◆ Targeting

- Evaluating market segments
- Choose a target

#### ◆ Positioning

- Product position-the place the product occupies in
- consumer's minds relative to competing products
- Positioning must be decided, installed in the customers' mind and defended by the firm

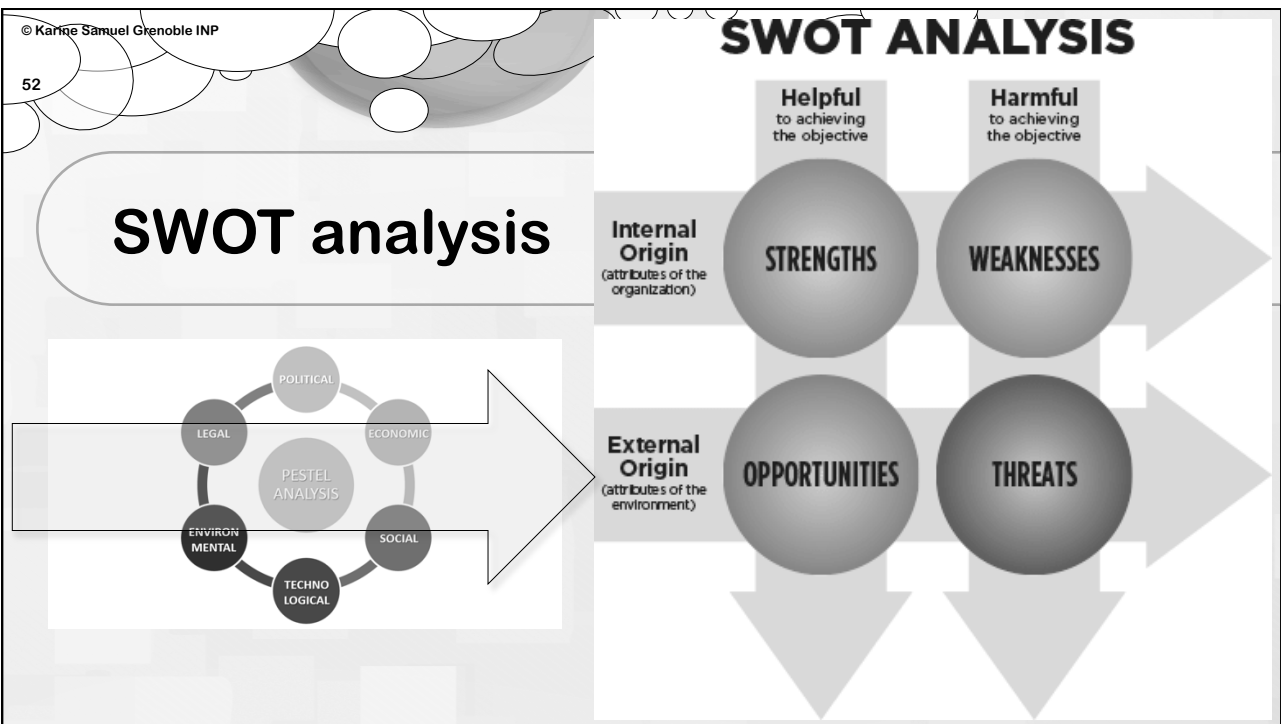
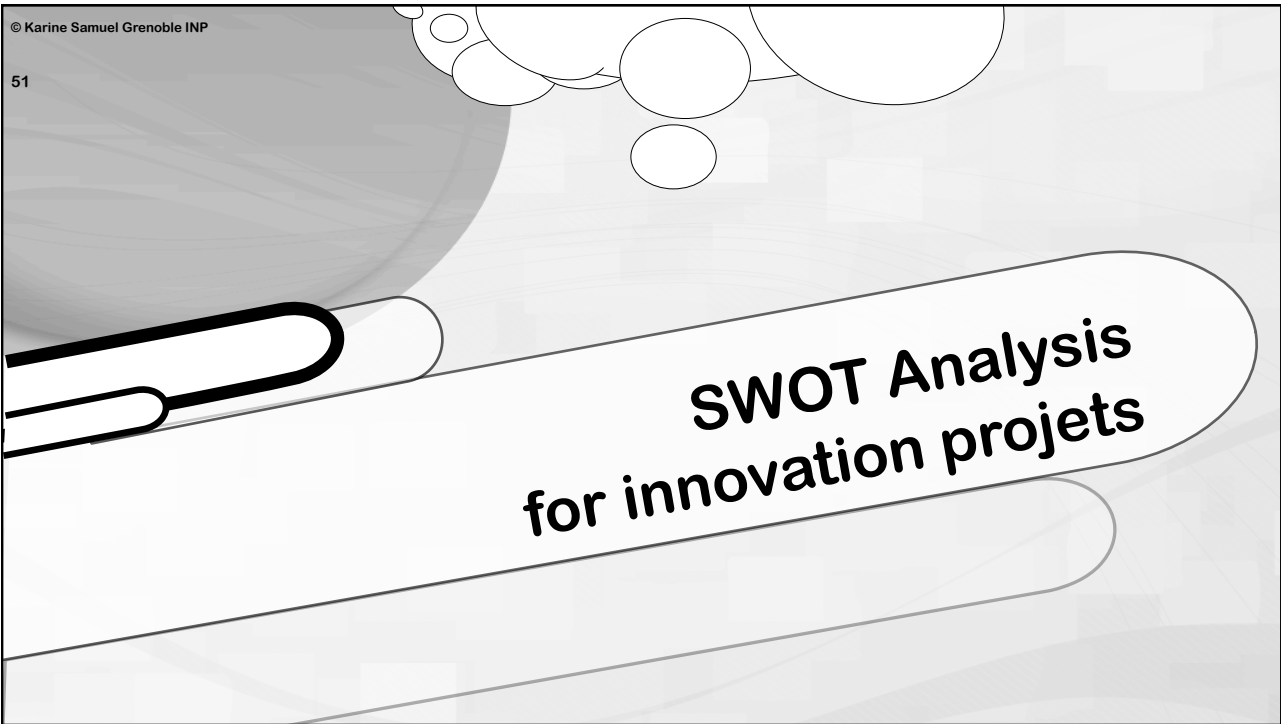
## Marketing process

### Step 4 – Marketing mix

#### Implementation - 4 P's

- Product
- Price
- Promotion
- Place





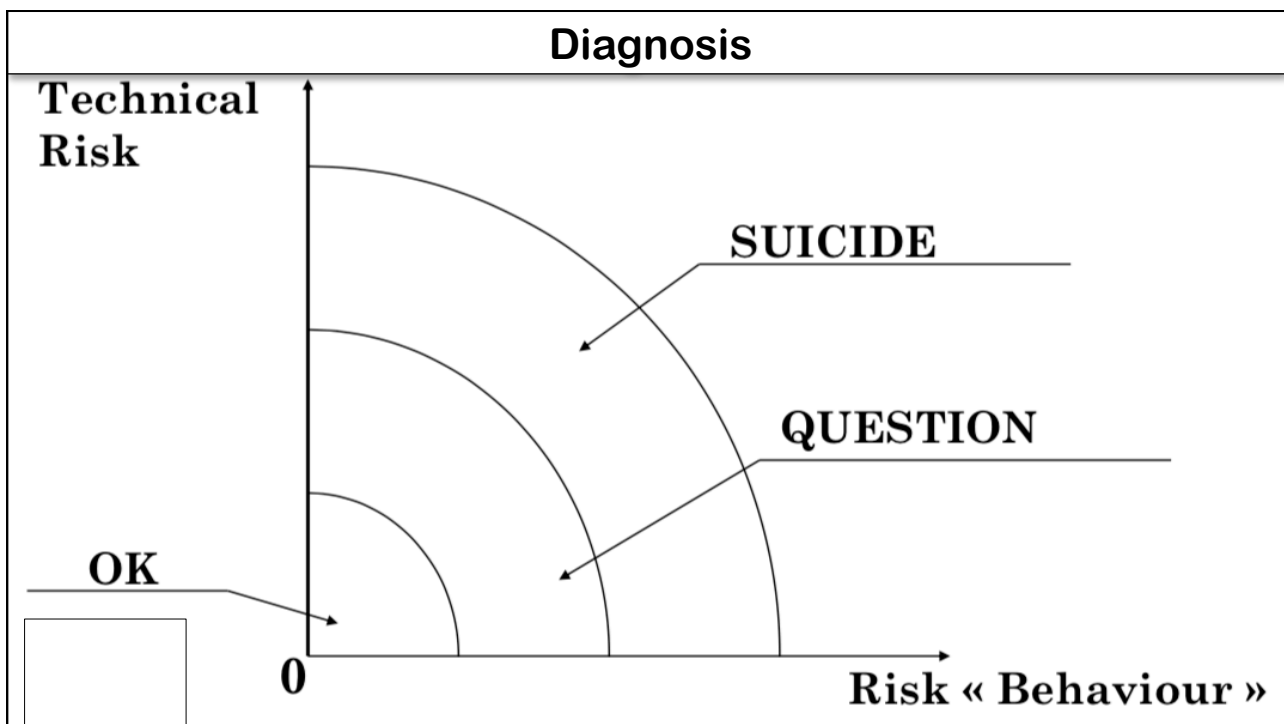
## SWOT analysis for innovation projects

Step 1 - Evaluation of the technical risk (for each segment)

- Evaluation of the risk due to the technology
- Evaluation of the risk due to the technological environment

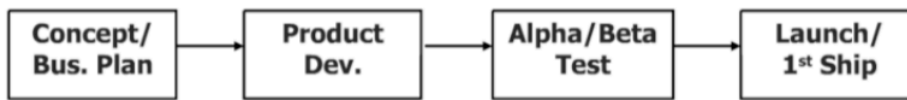
Step 2 - Evaluation of the commercial risk (for each segment)

- Strengths/Weaknesses
- Opportunities/Threats

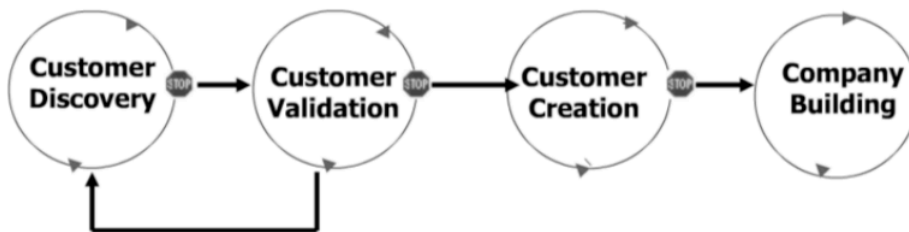


## Product and customer development processes

### Product Development



### Customer Development



A startup is a temporary organisation formed to search for a repeatable and scalable business model

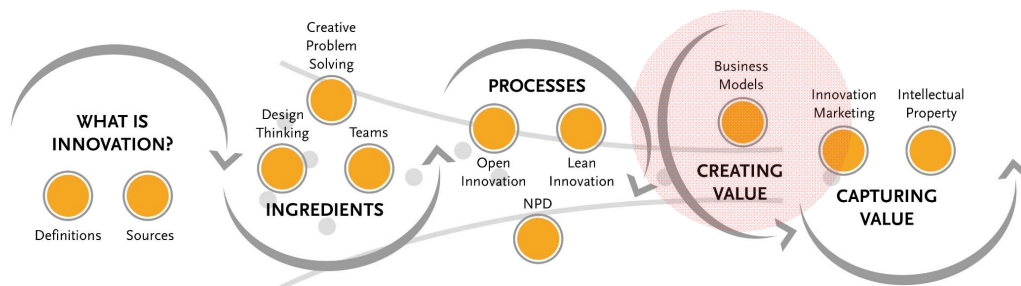
**Key takeaways**

## Real-world aspects of the innovation process

- ✓ Shocks trigger innovations – change happens when people or organisations reach a threshold of opportunity or dissatisfaction
- ✓ Ideas proliferate – after starting out in a single direction, the process proliferates into multiple, divergent progressions
- ✓ Setbacks frequently arise, plans are overoptimistic, commitments escalate, mistakes accumulate and vicious cycles can develop;
- ✓ Restructuring of the innovating unit often occurs through external intervention, personnel changes or other unexpected events;
- ✓ Top management plays a key role in sponsoring – but also in criticizing and shaping – innovation;
- ✓ Success criteria shift over time, differ between groups and make innovation a political process;
- ✓ Innovation involves learning, but much of their outcomes are due to other events which occur as the innovation develops – making learning often 'superstitious' in nature.

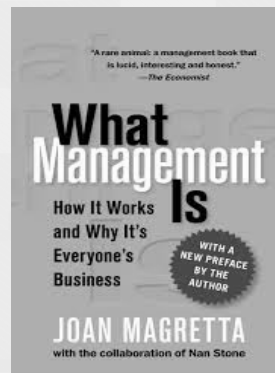
**Building Business Models**

## WE HAVE A PRODUCT - BUT WHAT ABOUT VALUE?



**« Business models are, at heart, stories, stories that explain how enterprises work »**

**Joan Magretta (2002)**

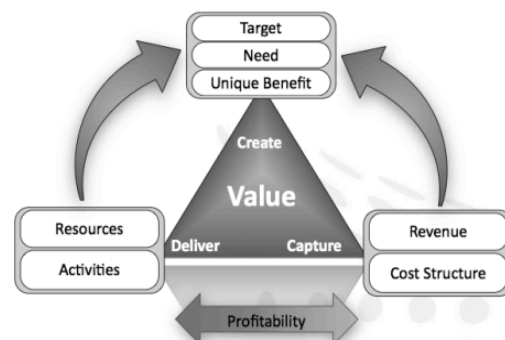


## Business model

- A Business Model consists of three major elements and several sub-elements:
  1. Value proposition
  2. Value architecture
  3. Revenue model – an economic equation developed from the value proposition and architecture

### Successful Business Models

*The real power is when each element works in concert*



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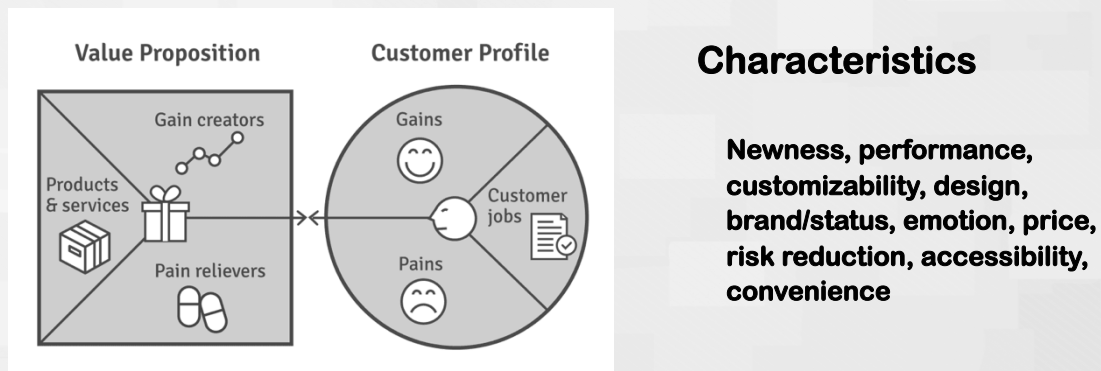
## Value proposition

- What value do you deliver to your customers?
- Which one of your customer problems are you helping to solve?
- What products/services are you offering to each customer segment?
- Which customer needs are addressed?

### Characteristics

**Newness, performance, customizability, design, brand/status, emotion, price, risk reduction, accessibility, convenience**

## Value proposition



**A business model describes all the parts of the business that contribute to making money for it**

**Which are these parts?**



# Business Model Canvas

Source: Osterwalder & Pigneur, *Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers*, 2010

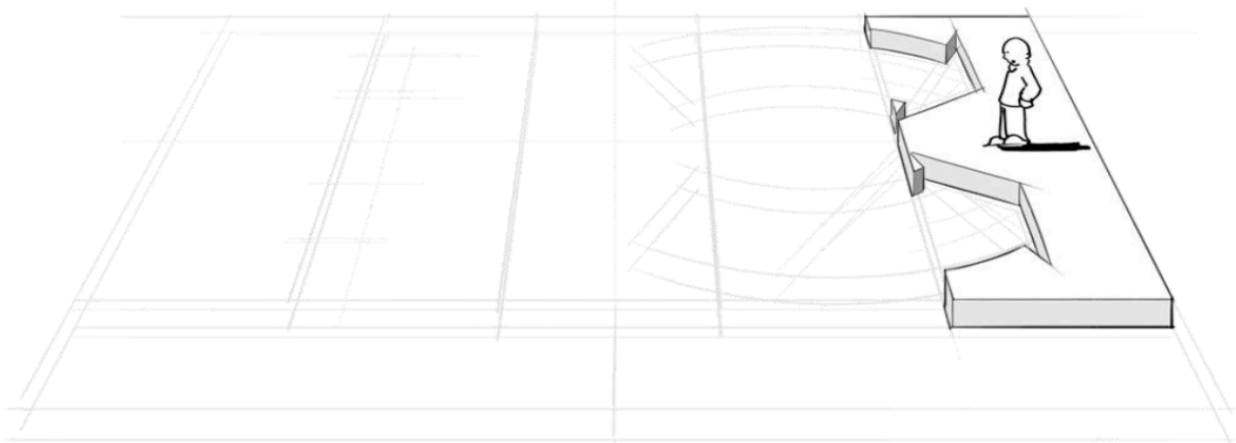


**describe, design and  
invent more  
systematically business  
models**

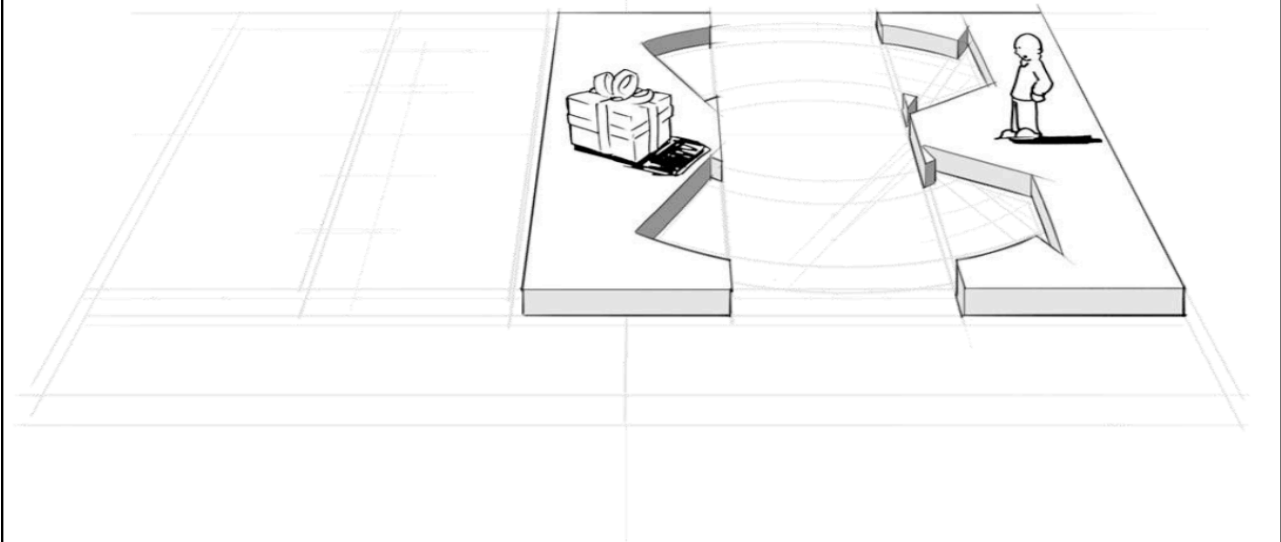
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composants

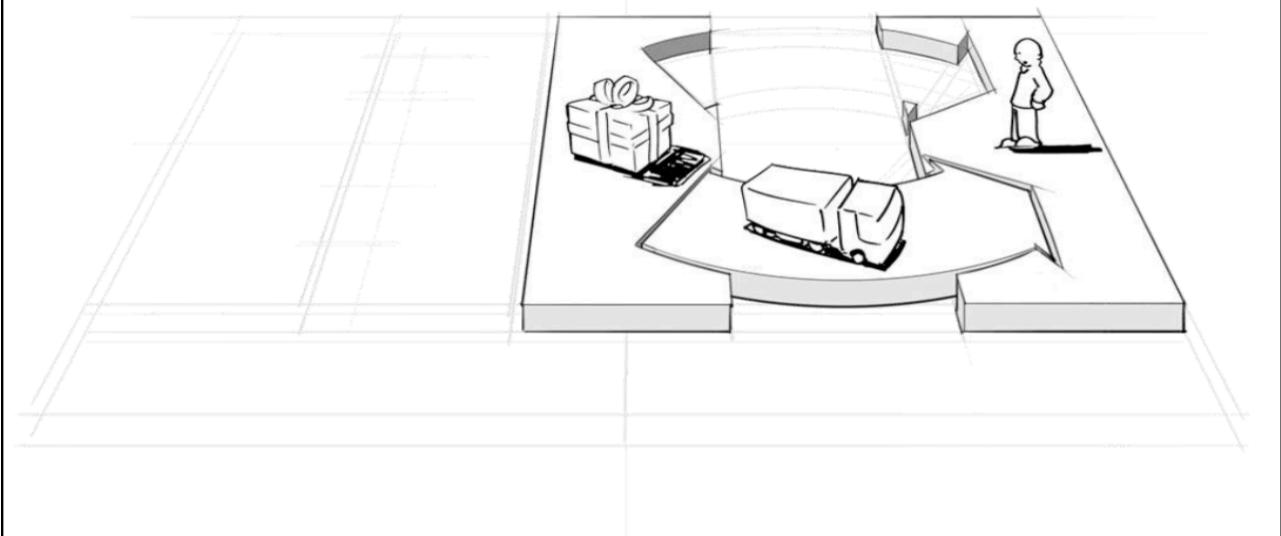
## CUSTOMER SEGMENTS



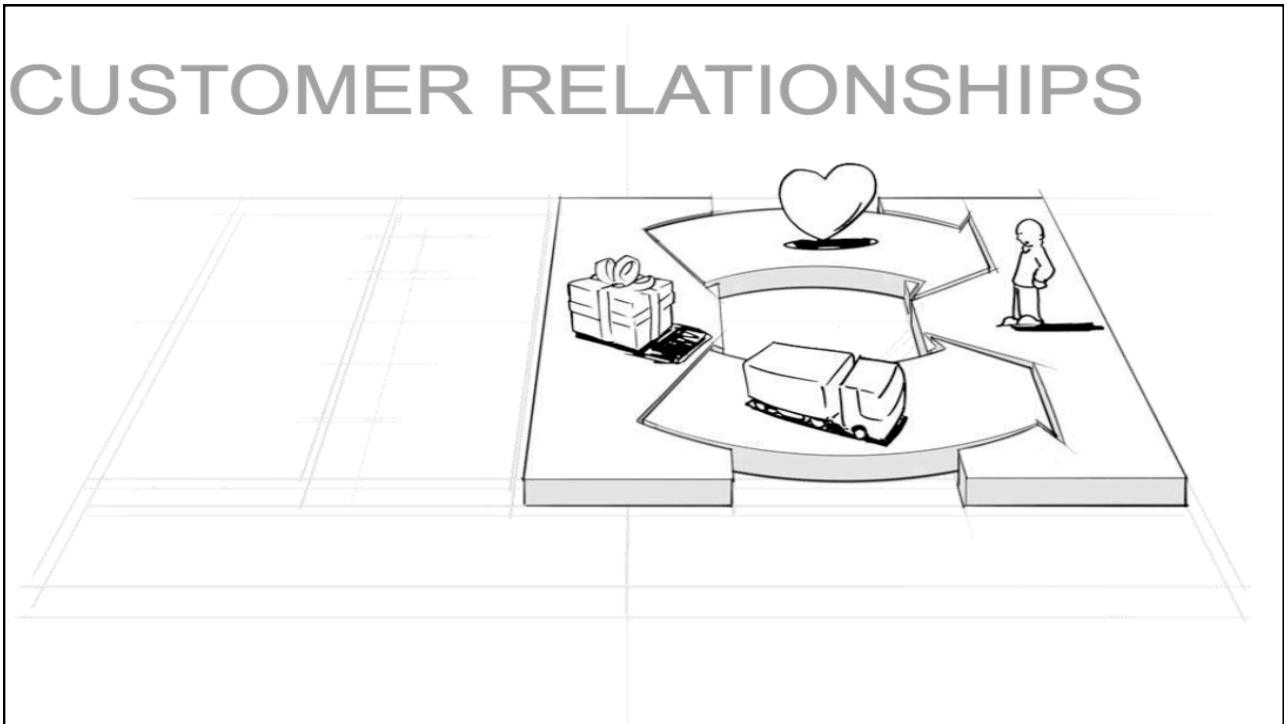
# VALUE PROPOSITIONS



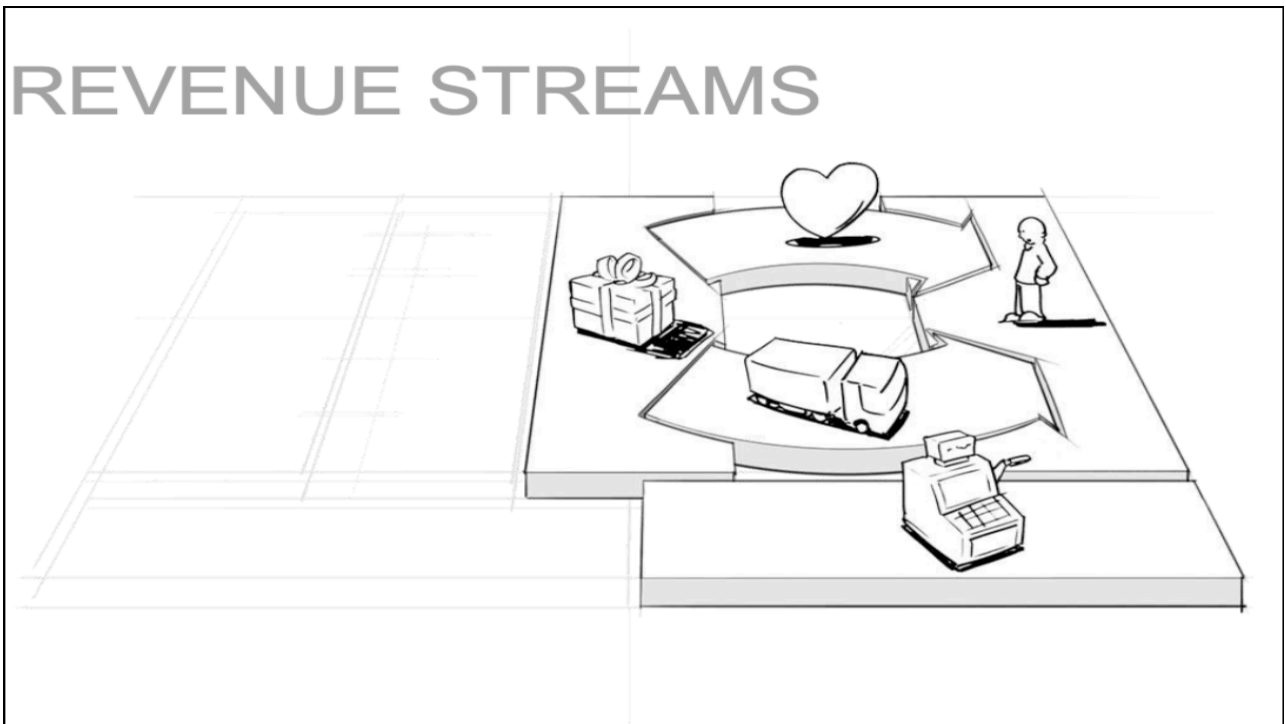
# CHANNELS



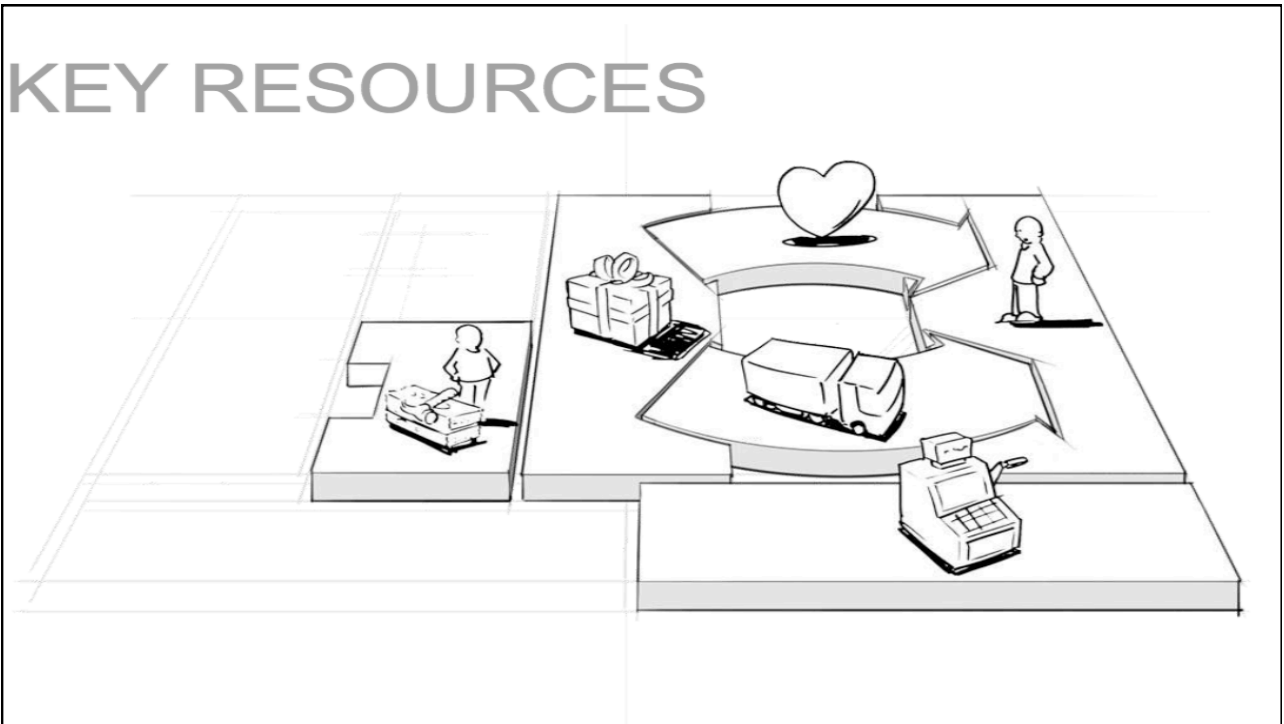
# CUSTOMER RELATIONSHIPS



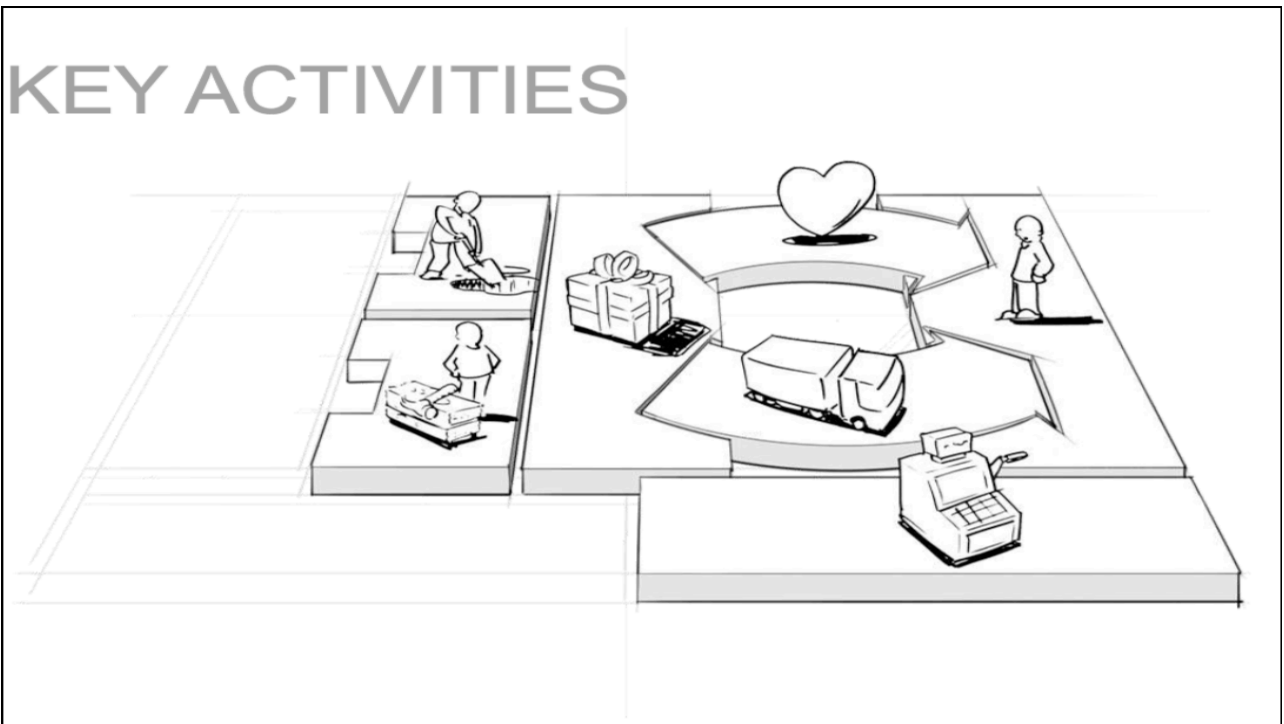
# REVENUE STREAMS

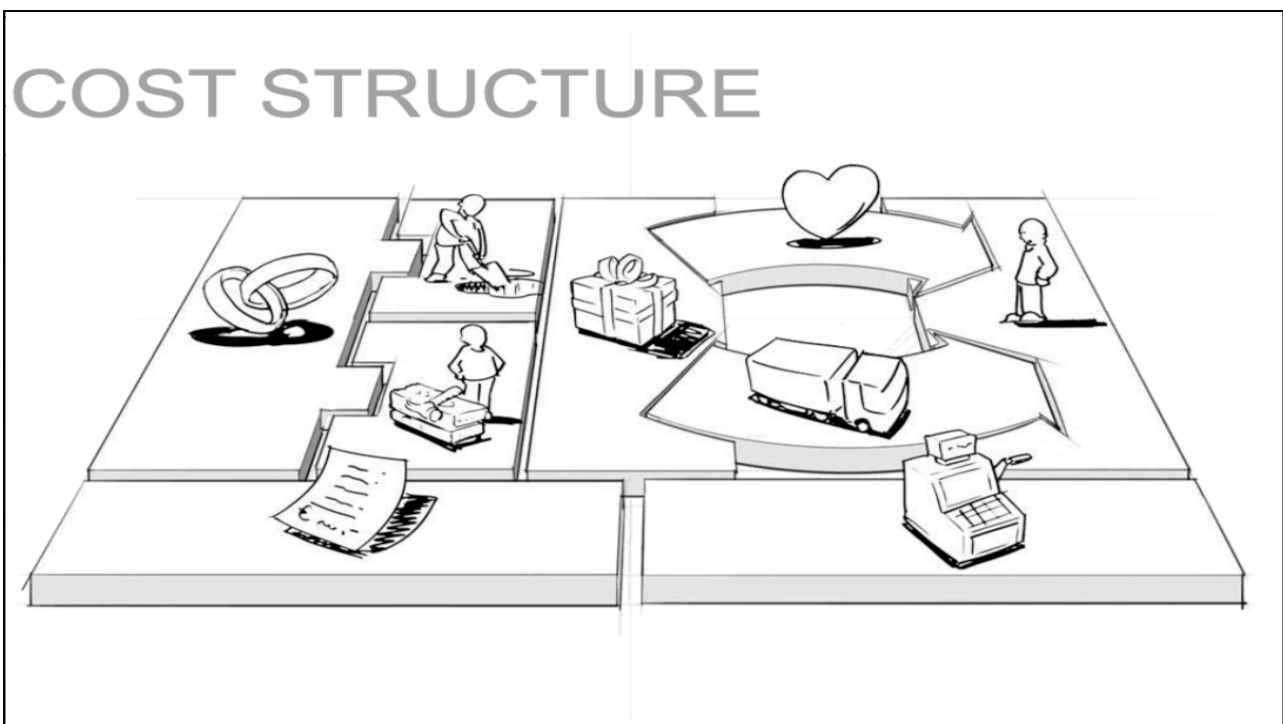
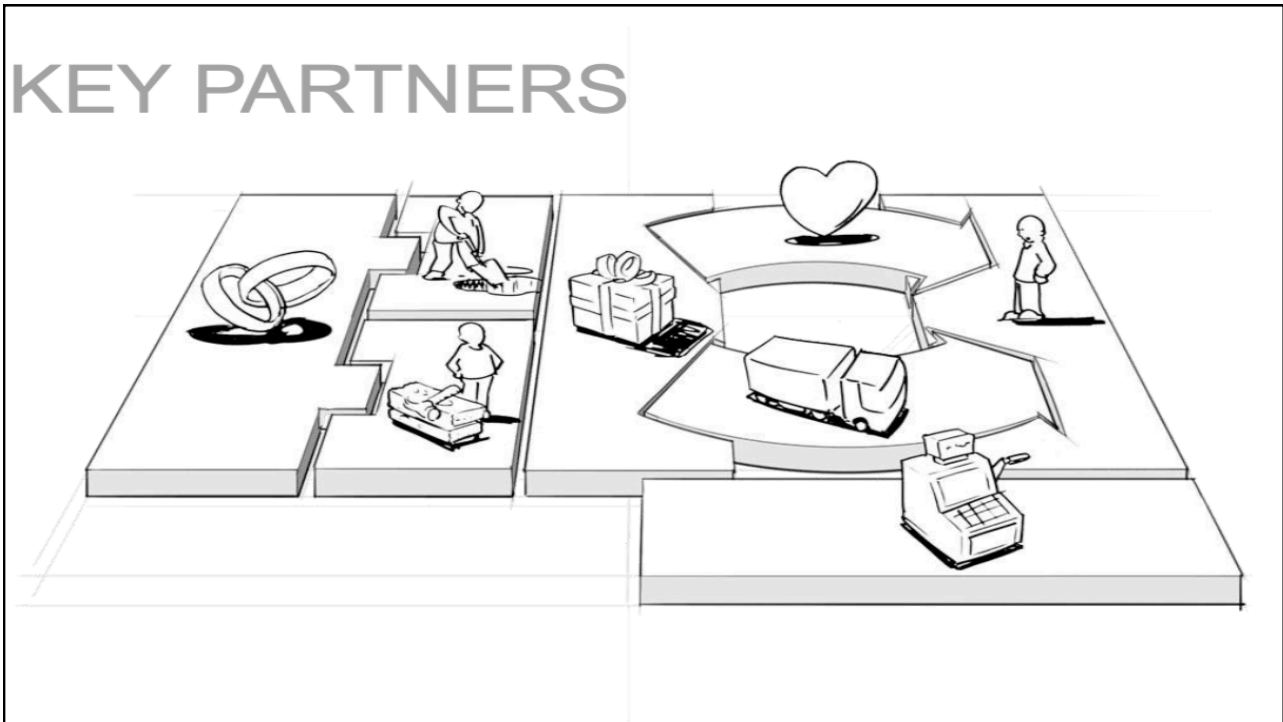


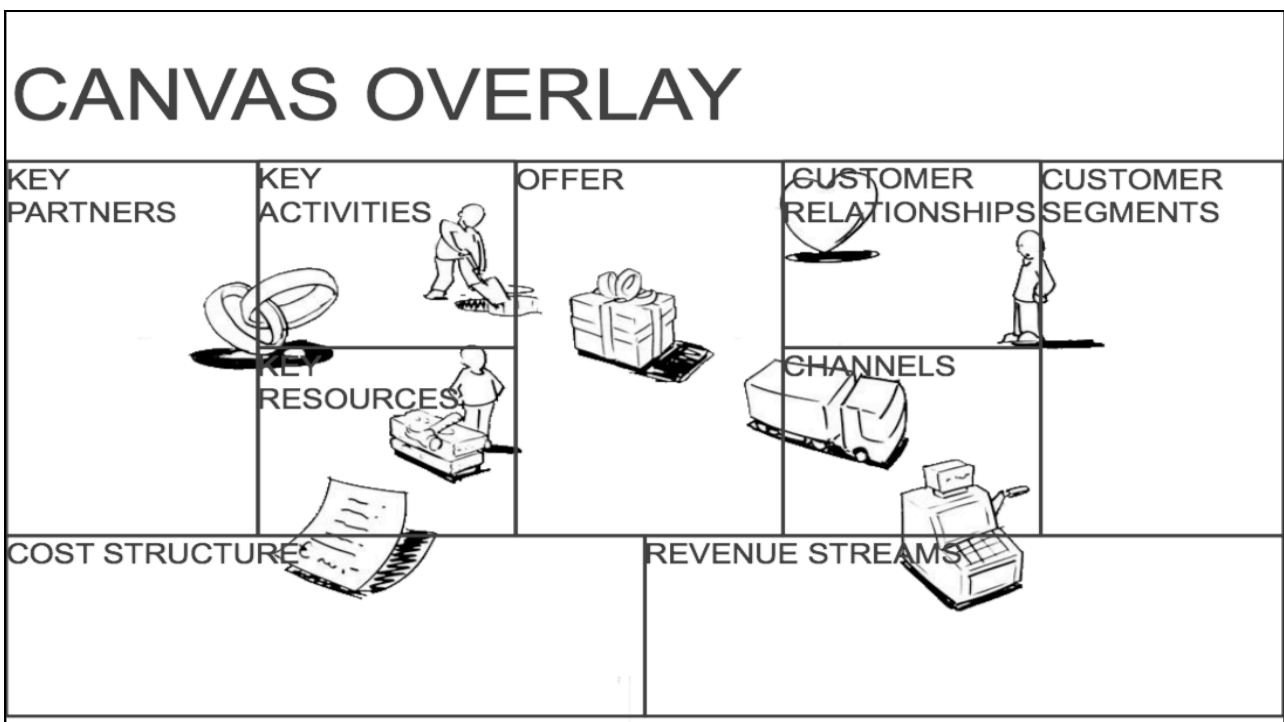
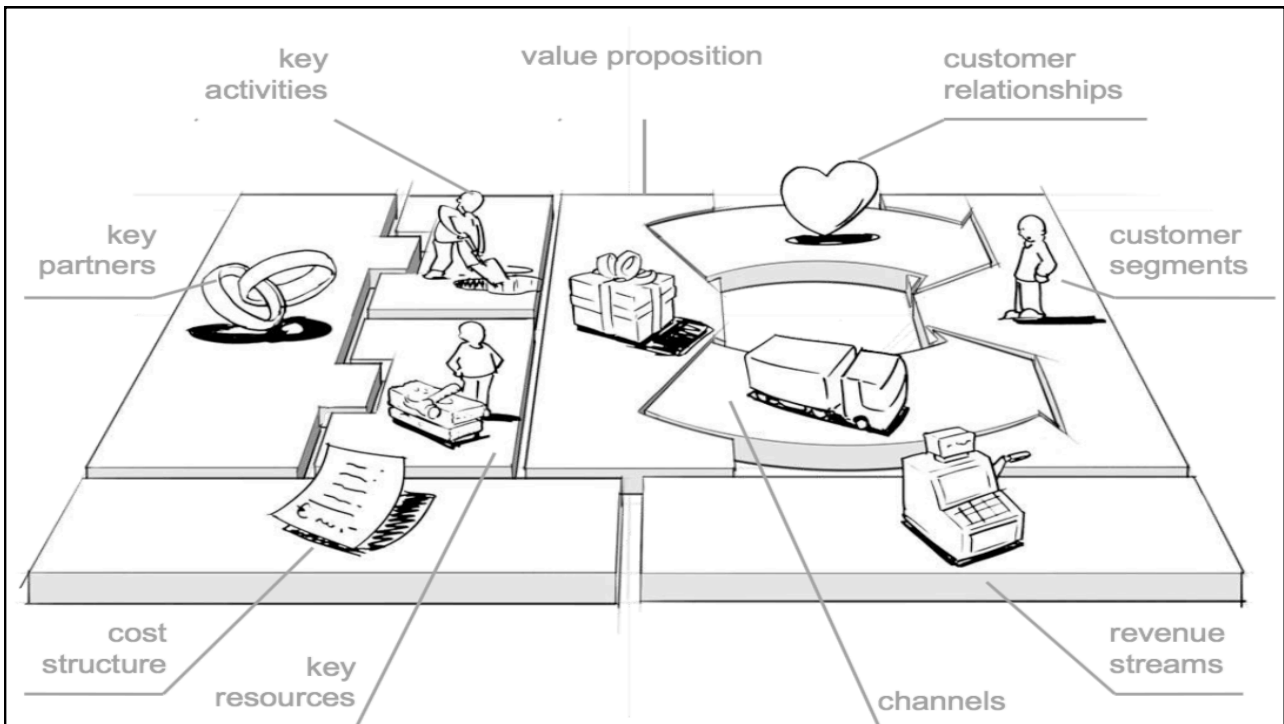
# KEY RESOURCES

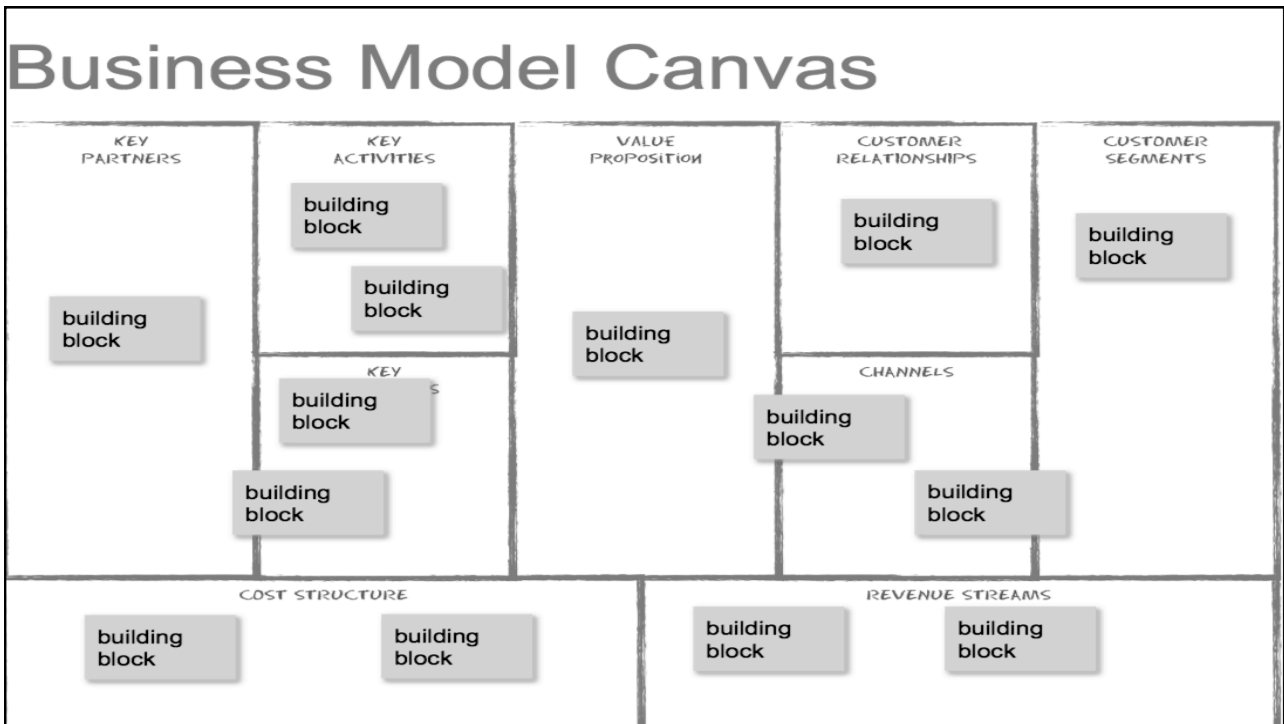


# KEY ACTIVITIES







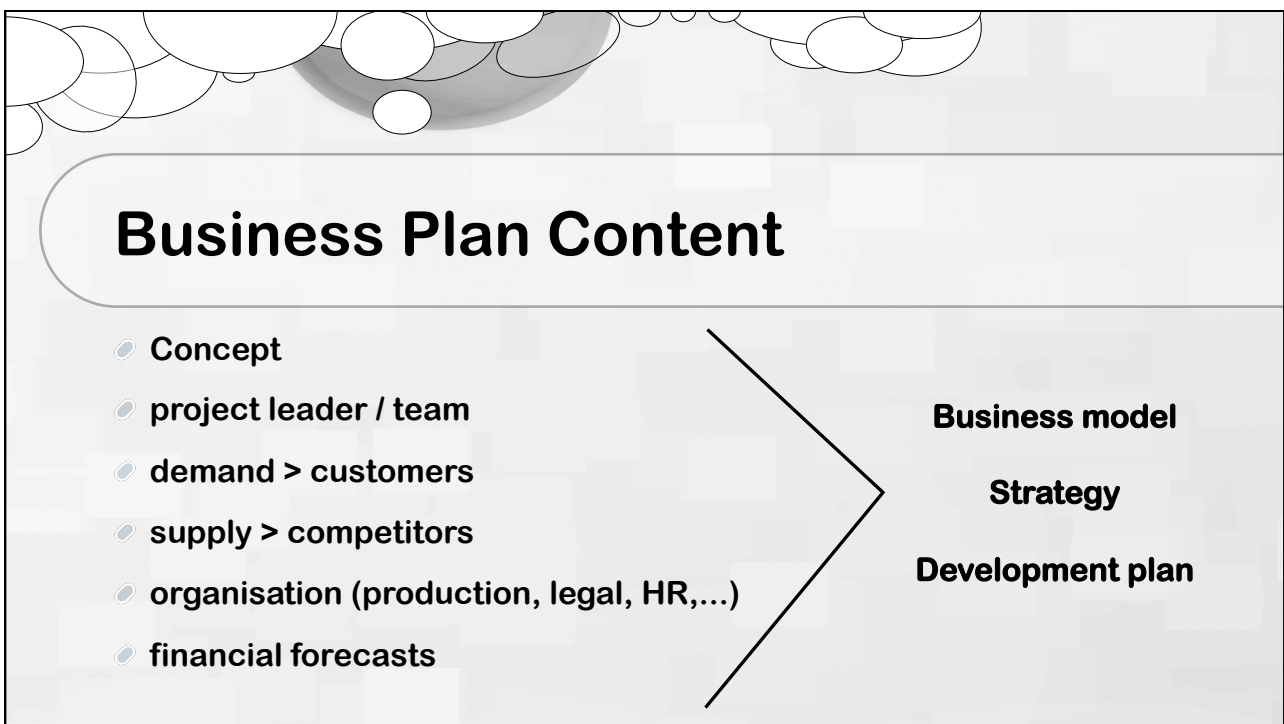


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## Things to consider

- Have you identified the value chain?
- Is your innovation radical?
- Is it possible to create multiple revenue streams?
- Will you cannibalize your current products?
- If “switching costs” are high, how will you overcome customer resistance?
- How do you avoid the inertia of a current business model?





## Why writing a business plan ?

- ◊ **Management tool for the CEO**
  - ◊ Forecast = anticipation
  - ◊ Be prepared at all times and measure your commitment
  - ◊ Measure consequences of an opportunity or unforeseen circumstances
  - ◊ Be able to identify risks and show that you are in control of the situation
- ◊ **Persuasion tool towards investors**
  - ◊ Has to follow a codification (with compulsory elements), a precise format
  - ◊ Has to convince, and make sure that your team will follow you
  - ◊ Has to show that the risks are under control

## What is a business plan ?

- ◊ **A document to argue and persuade**
  - ◊ A communication tool ✎ format adapted to the reader
  - ◊ A personalised document ✎ 20 pages + appendixes
  - ◊ Proof
- ◊ **A strategic plan**
  - ◊ A personal work document for the project holder
  - ◊ A document that organizes the project holder's ideas
  - ◊ A plan in the sense of « forecast »

## Key ideas in the executive summary

- ◊ 1 to 2 pages
- ◊ **Attractive, realistic, dynamic, the summary shows the potentiel of the project (easy to read with key words, charts,...)**
  - ◊ **What the project, values and mission of the firm are**
  - ◊ **Capacities, competencies and skills of the project holder (or team)**
  - ◊ **Market description**
  - ◊ **Competitive advantage(s)**
  - ◊ **Sales forecast**
  - ◊ **Profitability**
  - ◊ **Financial plan and funding plan**



## The concept

- ◊ mission, values
- ◊ concept,
- ◊ key points / customer's needs
- ◊ development stages
- ◊ technology (patents)
- ◊ target market
- ◊ deadlines of the project

### In the appendix:

- ✎ **Technical specifications**
- ✎ **Proof of pending and accepted patents**
- ✎ **Proof of customers' reactions**

## Project holder (or team)

- Competencies, education and professional experience
- Distribution of roles
- Legal structure / partnership contract (be careful and protect your husband/wife/partner by establishing a marriage contract)
- Distribution of capital / business partners (team)
- Executive committees, composition of boards of directors
- Advisors

### In the appendix:

- \* **Organization charts**
- \* **CV**
- \* **Audit skills**

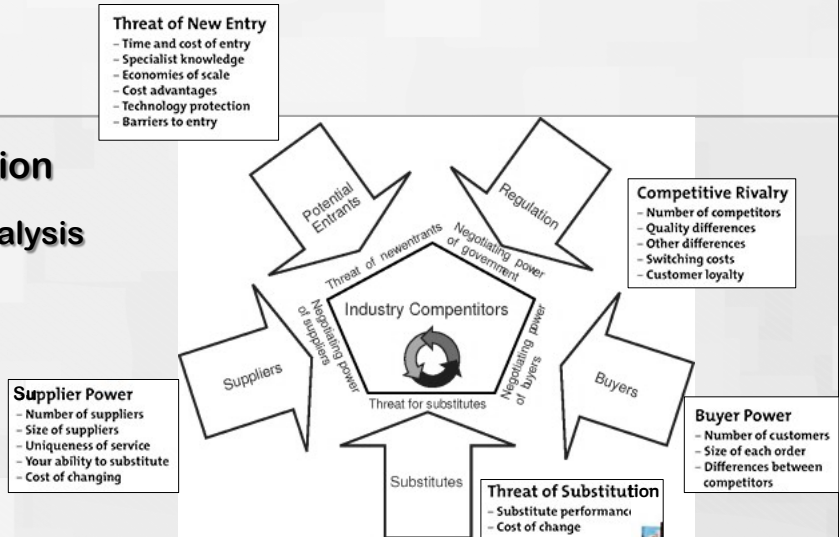
## Demand

- **Target market (business context) : Who?**  
(customers/users/beneficiaries)
  - Evolution of industrial sector
  - Regulations
  - Geographical catchment area
  - Social, cultural, demographical demand profiles
  - Market trends
- **Your demand segmentation**
  - **Key success factors of the product/market mix**
    - market survey results in appendix



# Supply

- Market competition
- Porter's six forces analysis



# Financial forecast

- Financial plan: (beginning costs and exploiting costs)
  - Cash plan
    - Balance sheet / Profit and loss account over 3 to 5 years
    - Ratios / break even point

**In the appendix:**

- \* Details of the forecasts appendix
- \* Explanation of the sales forecasts

## In the appendix

- Charter of the company (mission, values)
- Stakeholders agreement
- CV or project leader
- IP
- Market survey
- List of customers
- List of suppliers
- Technical descriptions (plans, draws, building process,...)

## Summary

- Key success factors regarding the customers
- Competitive advantages regarding competitors and related to the key factor of success
- SWOT
  - \* How to counteract or reduce Threats and Weaknesses?
  - \* How to evaluate the success of the projet?



## Build your business model

## DESCRIBE YOUR OFFER

### Products and services

- What is your product?
- What is the value of your offer?
  - Quantitative?
  - Qualitative?

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*Why no one else can do it?*

*How can you create a story to share about your solution?*

## Value Map

The Value (Proposition) Map describes the features of a specific Value Proposition in your business model in a more structured and detailed way. It breaks your value proposition down into products and services, pain relievers, and gain creators.

A list of all the **Products and Services** a value proposition is built around.

**Gain Creators** describe how your products and services create customer gains.

**Pain Relievers** describe how your products and services alleviate customer pains.

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## TARGET CUSTOMER ANALYSIS

### Who are your customers?




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## TARGET CUSTOMER ANALYSIS

### What pain do you solve?

**Explain the pain the customer have...**

**Explain how to cure the pain...**

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*How will they use it?*

*Where will they use it?*

*When will they use it?*

## Customer Profile

The Customer (Segment) Profile describes a specific Customer Segment in your business model in a more structured and detailed way. It breaks the customer down into that customer's jobs, pains, and gains.

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## VALUE PROPOSITION

- ✧ What value do we deliver to the customer?
- ✧ Which one of our customer's problem are we helping to solve?
- ✧ Which customer needs are we satisfying?
- ✧ What bundles of products and services are we offering to each Customer Segment?

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## Value Proposition Canvas

**Product**

Benefits	
Experience	
Features	

**Customer**

Company:


Product:

Ideal customer:

Substitutes

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**Write your business plan**

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## PESTEL ANALYSIS

<b>P</b> olitical factors	
<b>E</b> conomical factors	
<b>S</b> ociological factors	
<b>T</b> echnological factors	
<b>E</b> nvironmental factors	
<b>L</b> egal factors	

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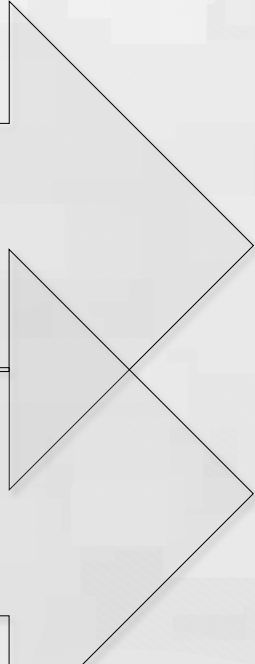
## COMPETITION ANALYSIS

<ul style="list-style-type: none"> <li><input type="checkbox"/> You are competing &lt;.....&gt;</li> <li><input type="checkbox"/> You are beating the competition &lt;.....&gt;</li> <li><input type="checkbox"/> You are exploiting an existing demand &lt;.....&gt;</li> <li><input type="checkbox"/> You have made the value/cost trade-off &lt;.....&gt;</li> <li><input type="checkbox"/> You have differentiation or low cost &lt;.....&gt;</li> </ul> <div style="text-align: center; margin-top: 20px;">  <p><b>RED OCEAN</b></p> </div>	<ul style="list-style-type: none"> <li><input type="checkbox"/> You are a complement &gt;.....&lt;</li> <li><input type="checkbox"/> The competition is irrelevant to you &gt;.....&lt;</li> <li><input type="checkbox"/> You are creating a new demand &gt;.....&lt;</li> <li><input type="checkbox"/> You have broken the value/cost trade-off &gt;.....&lt;</li> <li><input type="checkbox"/> You are solving a problem in a new way &gt;.....&lt;</li> </ul> <div style="text-align: center; margin-top: 20px;">  <p><b>BLUE OCEAN</b></p> </div>
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## SWOT ANALYSIS

	<b>STRENGTHS</b>	<b>WEAKNESSES</b>	
<b>INTERNAL ANALYSIS</b>			
<b>EXTERNAL ANALYSIS</b>	<b>OPPORTUNITIES</b>	<b>THREATS</b>	

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## PRICING STRATEGY

**Is your pricing strategy cost based...**

**Explain why:**

**... or value based?**

**Explain why:**

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## SHOW US THE NUMBERS!

	Year 1	Year 2	Year 3
<i>Number of customers</i>			
<i>Price/sold unit</i>			
<i>Total revenues</i>			
<i>Variable cost/unit</i>			
<i>Customer Acquisition Cost</i>			
<i>Fixed costs</i>			
<i>Total costs</i>			
<i>Total Revenues - total Cost = Earnings before interest and tax (EBIT)</i>			