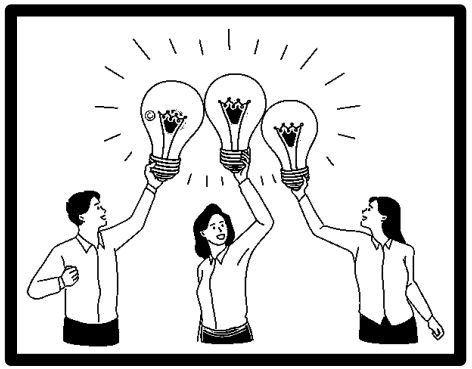
# Concept Development & Testing

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# Discussion

- What is a concept?


- From where the new concepts of product emerge?

- Why do we perform concept testing before product development?

# Product Concept

An approximate description of -

- Technology
- Working Principle
- Form of the product

Maybe a rough 3D sketch with a brief text description.


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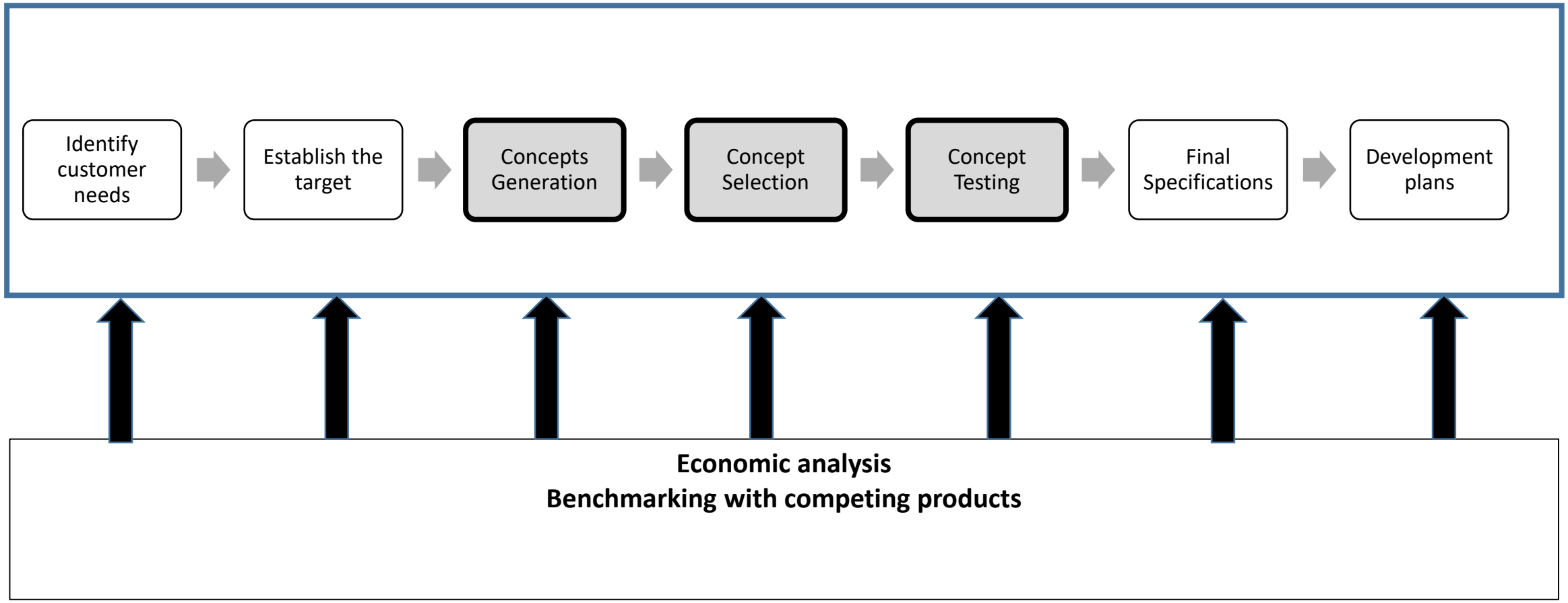
# Discussion

What are the important steps in product development?

# Concept Testing is part of Structured Product Development Schematics

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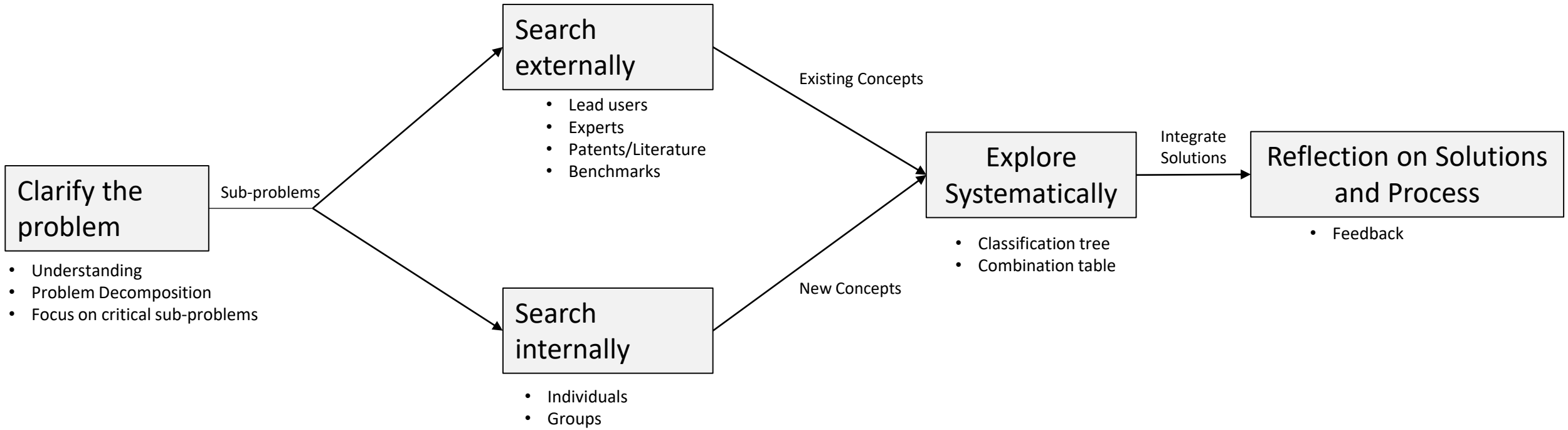
# Five steps of concept generation

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# Step1: Clarify the problem: Class Activity

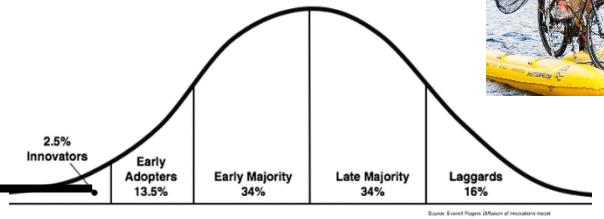
"Fresh milk" is often used by consumers to describe milk that is distributed under chilled conditions. This usually refers to pasteurized milk, which means the milk that has been heated at 72-74°C for 15-20 seconds. Pasteurization kills all pathogenic (disease causing) microorganisms in the raw milk. To limit the growth of the remaining spoilage micro-organisms, pasteurized milk needs to be kept under chilled conditions throughout the distribution and storage.

The shelf life of pasteurized milk depends on the initial load of microorganisms as well as storage temperature but is normally around 7 days. Raw milk refers to the milk produced by cows (or other animals) without processing. Drinking raw milk can cause serious diseases, as it can harbour dangerous microorganisms. According to the Food and Drug Administration (FDA), between 1993 and 2006 more than 1500 people in the United States became sick from drinking raw milk or eating cheese made from raw milk. For this reason, in many countries, all milk products sold in retail outlets must be pasteurized. In some markets, consumers buy raw milk and boil it at home. This makes the milk safe to drink but it is hard to control the process to maintain the quality. A recent consumer study indicates that the consumers living in metropolitan cities prefer not to purchase their milk daily but once in a month from the super markets. The alternative such as the spray-dried milk has poor acceptance. Also the packaging of traditional milk in plastic sheets is not appealing to the consumers. They prefer a more ergonomic packaging with information about end-to end traceability, nutrient profile and aesthetic appeal. There is a need to develop the concept of liquid milk with higher shelf life (up to 6 months). Amul, India is looking to arrive at an alternative milk product (in concept development stage) for these new age consumers.

**Identify the problem and split it into sub-problems**

Source:
https://www.tetrapak.com/en-in/solutions/aseptic-solutions/uht-faq#:~:text=The%20ultra%2Dhigh%20heat%20treatment,months%20without%20need%20of%20refrigeration.

# Step2: Search Externally




- Interview lead users:

  **Lead users** are innovators working to arrive at solutions. These user groups generally arrive at local solutions personally to fulfil their needs.

  They can offer valuable insights.

- Consult Experts
- Search for published patents and literature.
- Benchmarking closely related products.

**Diligent External searches help in gathering solution concepts.**

# Benchmarking Matrix: An Example

| | Features | Product Quality (5 being highest;1 being lowest) | Cost / Serving | After Sales Service | Customer Service (5 being highest;1 being lowest) | Price |
|---|---|---|---|---|---|---|
| | Our Company | 3.5/5 | $1.86 | yes | 3.5 | $3.72 |
| Benchmark | Competitor 1 | 4.5/5 | $1.16 | yes | $4.98 | $4.98 |
| | Competitor 2 | 3.5/5 | 1.68 | | 4.5 | $3.66 |

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# STEP 3: Search Internally

- Personal and team knowledge & Creativity to arrive at possible solutions.
- Team Brainstorming exercises. Set up a time limit.
- Open-ended discussions.
- Creating an Idea bank for sub-problems (Even seemingly infeasible ideas are welcome at this stage).
- Welcome the use of graphics and physical media like foam/clay/ cardboard models.

# Step 4: Systematic Exploration

**Concept Classification Tree**

In Step 3: We arrive at possible concept fragments.

Remember, we split **Problem → Sub-problems** before proceeding with an external and internal solution.

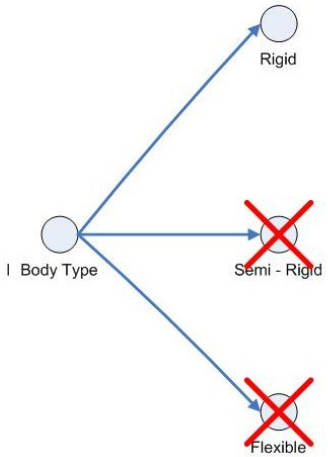
We need to classify these concept fragments into independent classes.

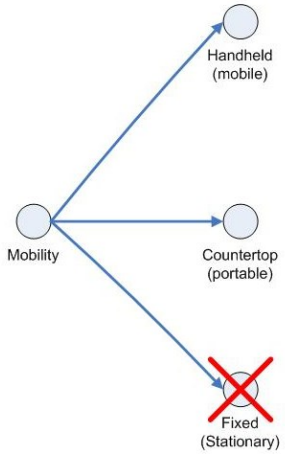
# Concept Classification Tree

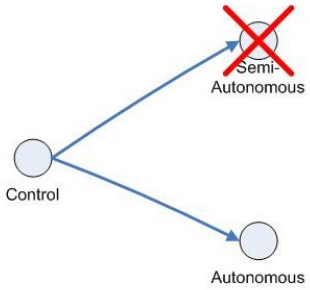
Automated Bottle Opener

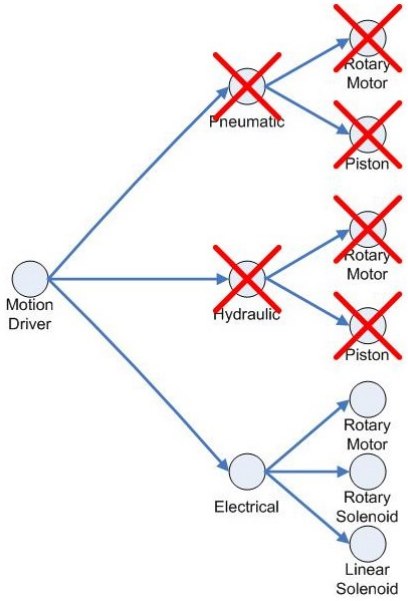
Sub-problems: **Power transmission, Controls, Motion devices, Mobility, and Machine body type.**

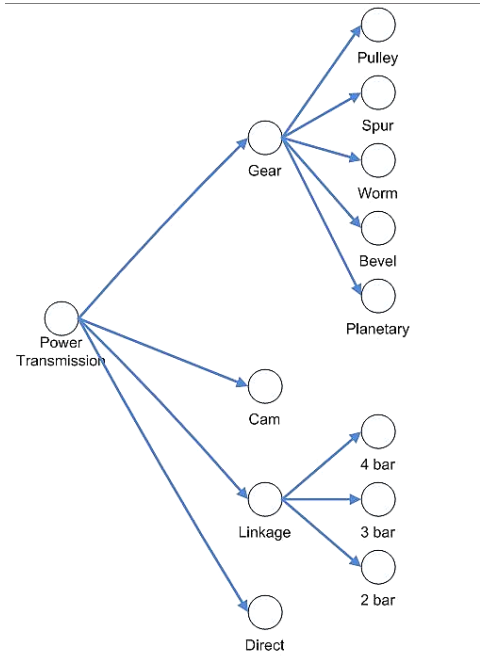
Concept classification trees are created to show the possible choices that can be utilised.
It makes the decision-making easier.




## Attributes


Sources:
https://web.stevens.edu/ses/me/fileadmin/me/senior_design/2007/group04/class.html

Eppinger, S.D. and Ulrich, K., 2020. Product design and development (7th Edition). McGraw-Hill Publication

# Case Discussion:

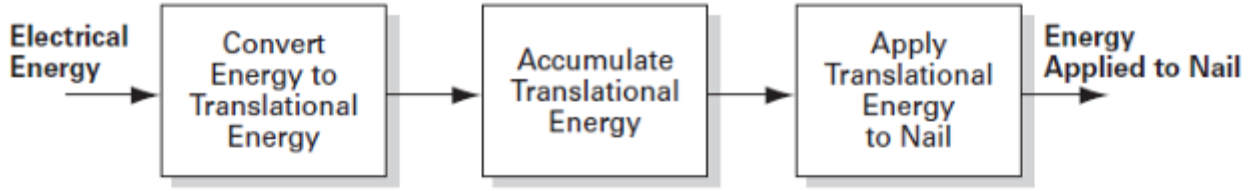
# Hindustan Oil Mills Limited

Can you develop the **Concept Classification Tree** for the **‘New Daisy’ Soap**? Based on the information provided in the case.

# Concept combination Table

Nail Gun Concept

**Identify the Logical sequence of event**



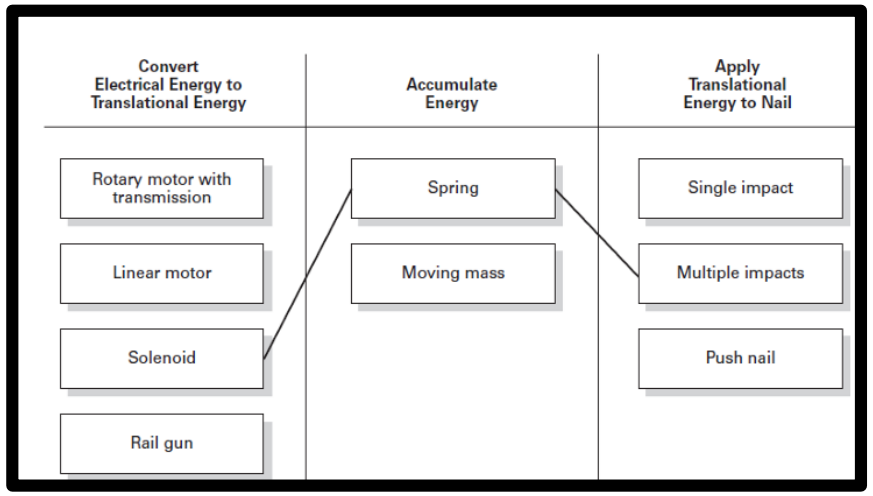

**Sub-concept alternatives**

| Convert Electrical Energy to Translational Energy | Accumulate Energy | Apply Translational Energy to Nail |
|---|---|---|
| Rotary motor with transmission | Spring | Single impact |
| Linear motor | Moving mass | Multiple impacts |
| Solenoid | | Push nail |
| Rail gun | | |

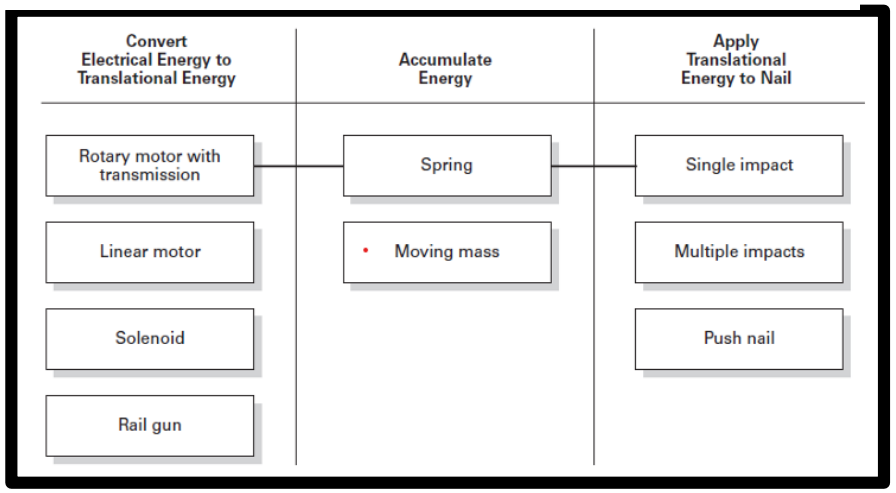
# Concept combination Table

**Identify the Logical sequence of event**

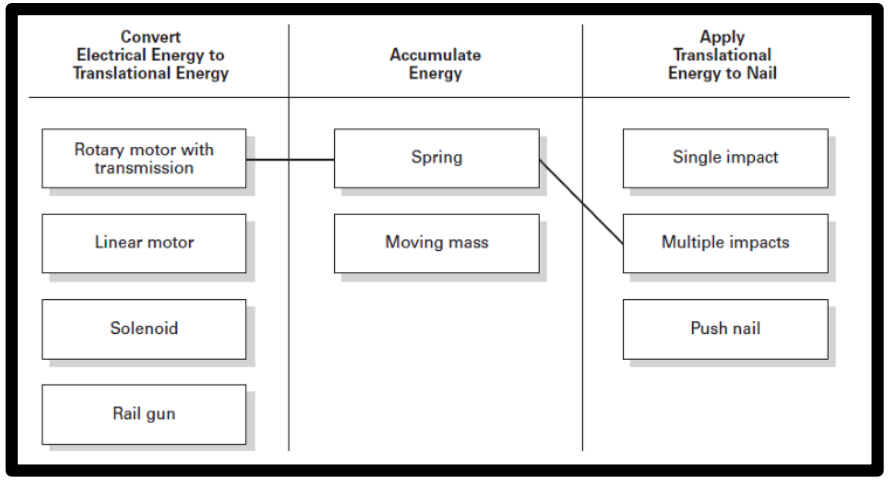
**Sub-concept alternatives**

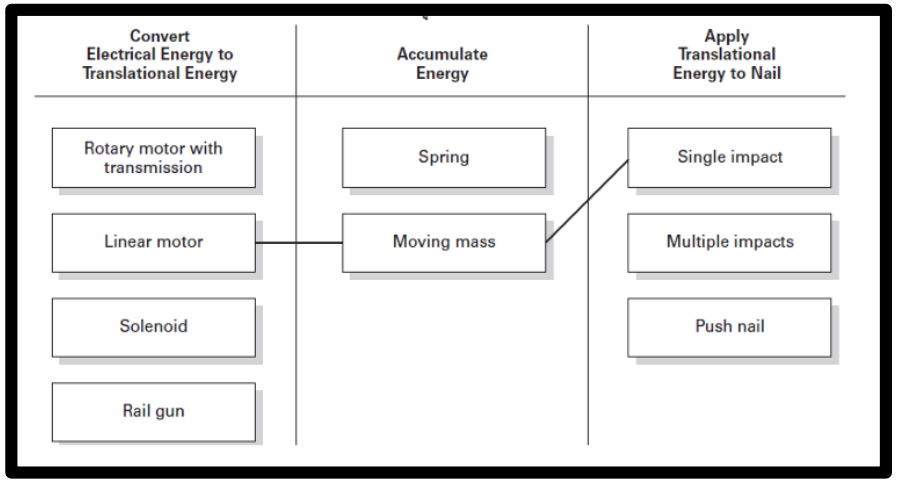



**Identify the Logical sequence of event**




**Sub-concept alternatives**




Nail Gun Concept

# Key Questions

- Is it feasible to develop the selected solutions?
- Can we make them in-house, or do we have external dependence?
- How quickly can we produce them?
- What advantages does it have over other alternatives?
- Cost/benefit analysis.
- Benchmarking.

# Step 5: Reflection on the solutions and the Process

Ask the following questions:

1. Is the team confident that the solution space has been completely thoroughly?
2. Whether we have ignored alternative solutions?
3. Are there alternative ways of decomposing the problem?
4. Have the external sources been thoroughly pursued?
5. Have Ideas from everyone in the internal discussion been accepted and integrated into the process?

# Case Discussion:

# Hindustan Oil Mills Limited

# Discuss

- What are the strengths of Hindustan oil mills limited?
- Discuss their product portfolio.
- Why develop a **‘New Daisy Soap’?**
- Is there any other soap developed by Hindustan oil mills?

# Hindustan Oil Mills Limited

Manufacturing vegetable oils, Soap, cosmetics and allied products.

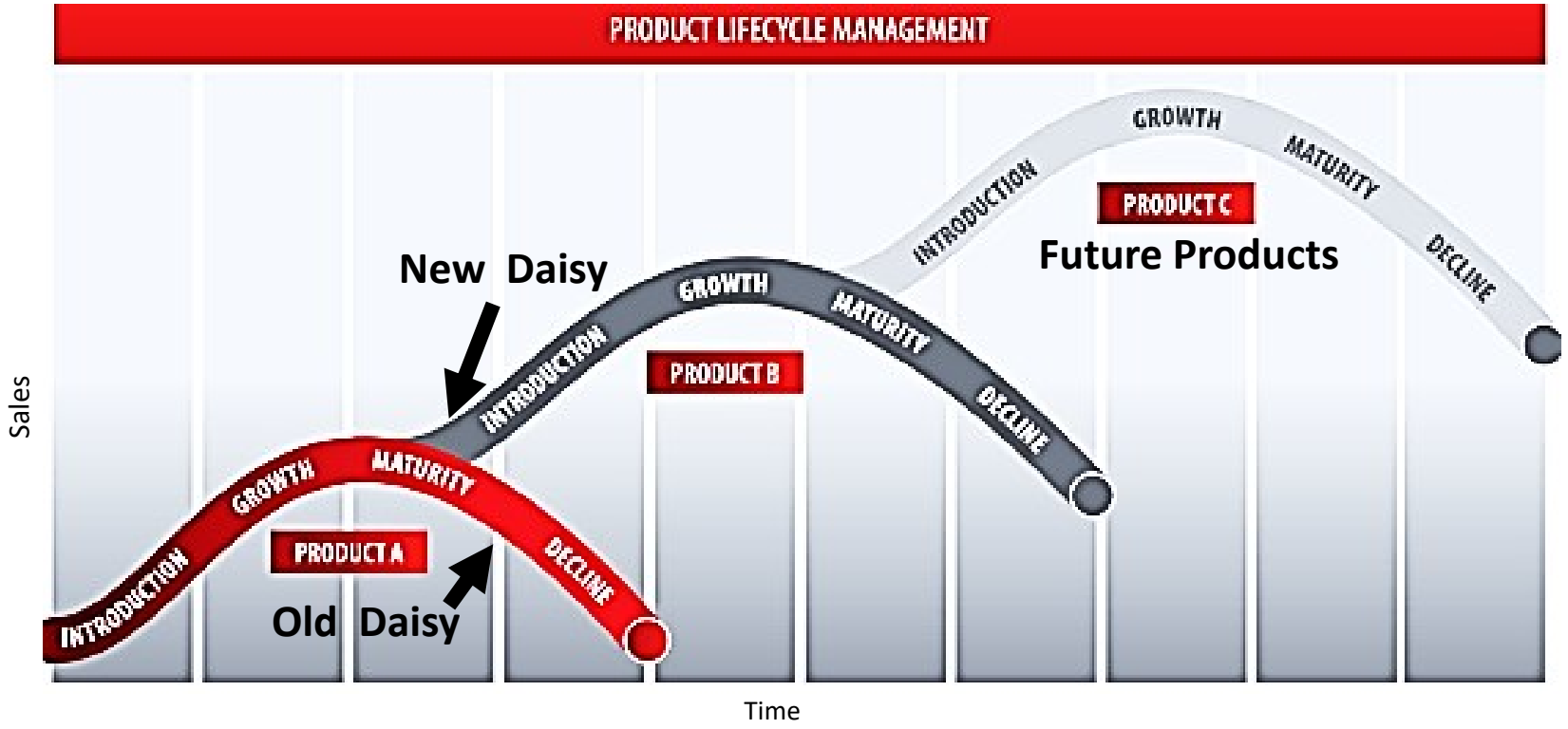
**Strengths**

1. Strong Distribution Network.
2. **Financial resources**
3. The capability of **rapid innovation** and **aggressively** introducing new products.

# New ‘Daisy’ replacing the Old ‘Daisy’

**Old Daisy**:
Launched in 1954.
To be phased out in 1962.

Concept development and testing for ‘New Daisy’ started in 1959.




Eppinger, S.D. and Ulrich, K., 2020. Product design and development (7th Edition). McGraw-Hill Publication

# Discuss

- Discuss the product attributes most important for developing the new Daisy Soap.

- Discuss about the bottleneck in production of ‘New Daisy’

# Attributes of Daisy Soap

**Intrinsic control**

Perfume

Colour

**Intrinsic control**

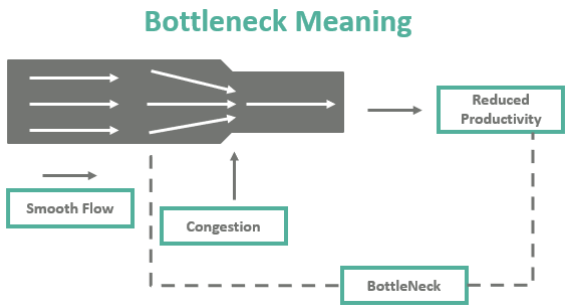
**Intrinsic control**

Shape

Wrapper (Bottleneck)

**High External Dependence**

- **Designers**
- **Printers**




- Delayed launching
- Reduced Production

Eppinger, S.D. and Ulrich, K., 2020. Product design and development (7th Edition). McGraw-Hill Publication

# 1959: New ‘Daisy’ Concept Development started simultaneously on all four attributes

## Perfume

Perfume fades: Strong perfume
Jasmine flavour
**Perfume is not stable. High Cost**

## Colour

Pink: Based on the survey
Matches the competitor ‘Dumex baby soap.’
**The problem of colour fade**

## Shape

Shape similar to **Samila Soap** (Inhouse)
with rounded corners

## Wrapper

**Earlier studies and experience: ‘Samila Soap’**

**‘Blinded product’ Test**
**Consumers prefer new Colour and perfume**

?

# Wrapper

**Decided by the chairman: Aluminum foil-based → Costlier (Acceptable)**
**Do we have the capability of printing Aluminum foil wrappers → ??**
**Are there any external aluminium foil printers → ??**
**Are we going to be excessively dependent on a single printer →YES**
**No ex-ante feasibility study: A major lapse.**

- The final design was finalised by the committee.
- External Design expert was recruited: **Design is Good.**
  - ✓ Design to be printed on a good rotary offset machine.
  - ✓ Glossy ink is to be used.
- **The ink supplied by the All India advertisers from Colourful Printers (Not sure if samples of Maroon colour are alkali resistant)**
- Size issues in the wrapper.
- **Colourful Printer** only printing firm in the market capable of printing on foil.

# Hindustan Oil Mills

**March 1962**
New ‘Daisy’ Soap
**production started.**

**June 1962**
New ‘Daisy’ Soap was **launched**

**June-July 1962**
New ‘Daisy’ Soap is received well by consumers.

- **Target of 16,000 Soap** Cases till June
- Due to lapses in wrapper supply: only **14,500 Soap cases** were produced.

**October 1962**
New ‘Daisy’ Soap

**Production problems.**
**Shape** : Dented
**Perfume**: Not as per standards
**Colour** : Not as per standards

- Is the new wrapper ink Alkali resistant??
- Poor Communication
- Overdependence on single printer.

**Good consumer demand but production issues in New ‘Daisy’ Soap.**

**Issues:**

The unique wrapping material (Aluminum based) was chosen based on Chairman's feedback without any market or manufacturing feasibility study.

As a result, there is only one printer in the market, the **'colourful printer'.**

Further, there are lapses in communication: whether the colour used is alkali resistant and other technical specifications:

- This affects all the other attributes of the soap: colour, perfume and shape.

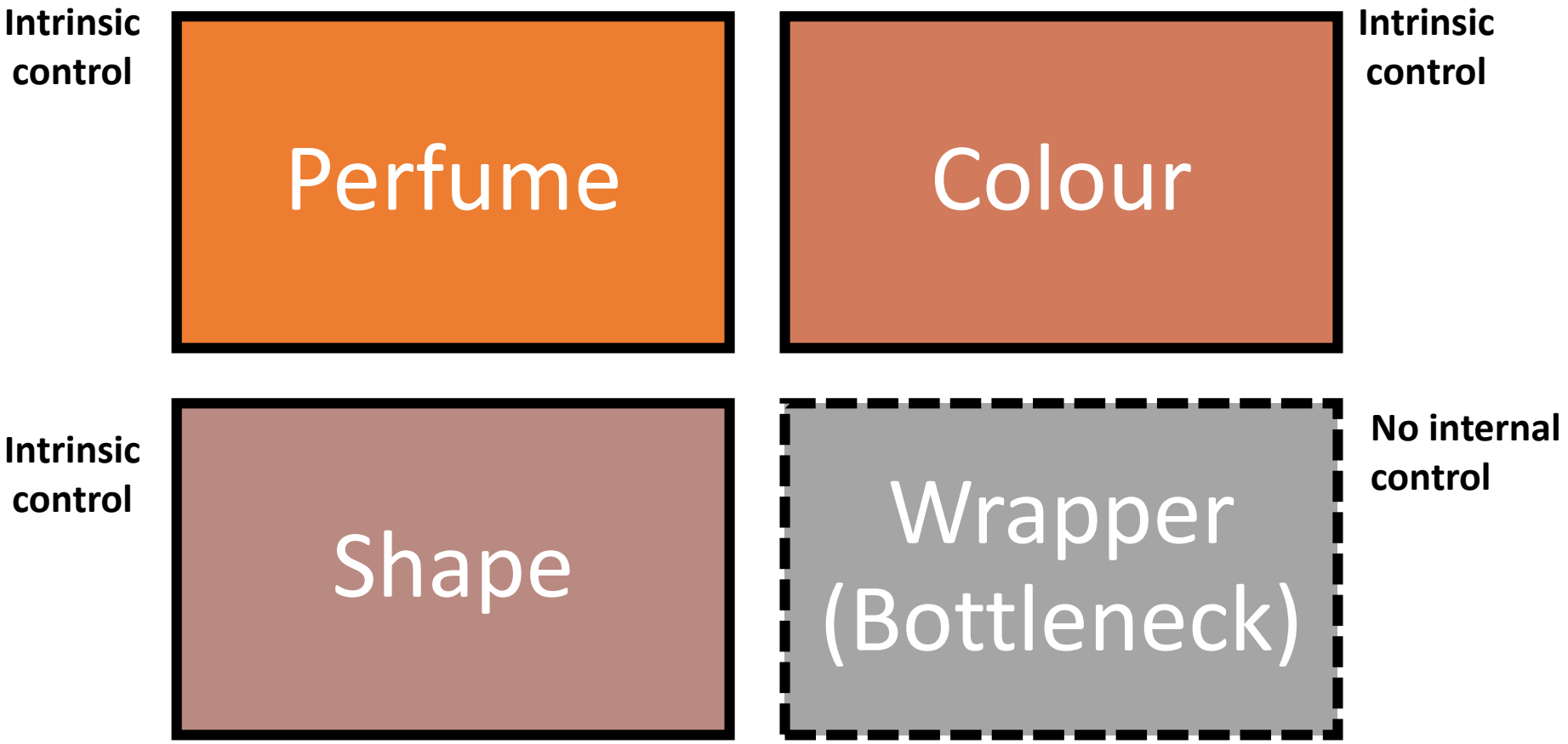
**Ineffective integration of promising partial solutions.**

# Course of action in October 1962

- **Short term**: Ensure the communication of technical specifications of the dye (same shades) that should be used for manufacturing the wrapper. (especially ensuring that it is alkali resistant).
- **Clear and timely communication** between Hindustan Oil Mills, All India advertisers and Colourful Printers.
- **Search for alternatives** to Colourful printers (removing the bottlenecks).

- In the future, develop in-house wrapper printing and manufacturing capacity and reduce the dependence on an external player.

  (The organisation is rapidly trying out new products, they already have another soap, 'Samila Soap,' and there are no financial constraints).


Intrinsic control
Perfume
Colour
Intrinsic control
Intrinsic control
Shape
Wrapper (Bottleneck)
No internal control

# Concept Testing

# Concept Testing

Managers screen new product concepts w.r.t **Internal Considerations**:

- ✓Can we **efficiently manufacture the product**?
- ✓Does it fit our **existing channels** of distribution?
- ✓Does it fit our **general corporate image**?

Once the internal checks are met, then the attention shifts towards market.

Dolan, R.J., 1989. *Concept testing*. Harvard Business School.

# Concept Testing

**Market viability assessment**

- ✓**Focus group discussion** with the consumers (open but moderated discussion).
- ✓**Quantitative market research**, consumer perception towards the proposed product dimensions: the likelihood of purchase, perceived importance of product, perceived quality of the product.
- ✓**Generate the sales volume forecast.**
- ✓**Diagnostic information** to guide the positioning in the marketplace.

Followed by the actual fabrication of the product.

# Concept Testing

- Many organisations develop a **standard procedure** for concept testing for **all their products (under the same portfolio)**.
- This help in creating a database of benchmarks.
- These **benchmarks** provide meaningful insights for concept testing exercises.

# Executing a Concept Test

Dolan, R.J., 1989. *Concept testing*. Harvard Business School.

# Concept communication method

Concept Communication can be **Factual** or **Persuasive**:

For example, General Mill's new low-calorie peanut butter

**Concept A: 'Core Idea'**

*"A low-calorie form of peanut butter that can be used in most diets."*

**Concept B: 'Positioning Concept'**

*"A marvellous new way to chase the blahs from your diet has been discovered by General Mills scientists- a low-calorie version of ever-popular peanut butter. As tasty as ever and produced by a natural process, our new light peanut butter will fit every weight-control diet in use today virtually without restriction."*

# Concept communication method

- **Statement A**: Advantage of **eliciting evaluation of the concept**. But does not take into account the concept plus communication strategy.

  Another disadvantage is that consumer is now reacting to something quite unlike what they will see in the marketplace.

- **Statement B**: Yield **better behavioral prediction** from consumers since there is a greater similarity to the actual purchase situation.

# Concept communication method

- Whether to use words only or to add illustrations (rough sketch/ photograph/ video).

| Mode | Tone | |
|---|---|---|
| | A. Factual | B. Persuasive |
| 1. Words only | | |
| 2. Visual Only | | |
| 3. Words + Visual | | |

# Concept communication method

- It is important to recognize the impact of concept type on respondents, reactions-particularly, the “purchase intention score.”
- Generally, if we move from a **factual to a persuasive tone**, there is an improvement in the purchase intention among consumers.
- Similarly, words plus visuals produce better scores than either alone.

**Table A** Purchase Interest Percentage for Concepts with Different Executions

| | | Factual | Persuasive | |
|---|---|---|---|---|
| | | Pfizer A | Pfizer B | Clairol |
| 1. | Words only | 20% | 35% | 33% |
| 2. | Words plus visual | 46 | 52 | 50 |
| 3. | Difference (Row 2 minus Row 1) | 26 | 17 | 17 |

Dolan, R.J., 1989. *Concept testing*. Harvard Business School.

# Determining the Data to collect for Concept Testing

Three categories:

1. Purchase Intention
2. Overall Product Diagnostics
3. Special Attribute Diagnostics

# Purchase Intentions and Frequency

- Purchase measures are part of all concept tests.
- It covers **Purchase intentions** and **Expected frequency.**
- The questions may be formulated on a **5/7 point Likert scale**.

# Form

*==========Product Description==========*

*“Based on the product description, how likely would you be to buy this product if it were available at a store in your area?”*

(Check one)

- Definitely would buy
- Probably would buy
- Might or might not buy
- Probably would not buy
- Definitely would not buy

# Frequency of purchase: For Non-durables

- This tests whether the product is likely to become part of daily/regular consumption habits or is it a special occasion item.

*“ Which statement best describes how often you think you would buy this product if it were available?”* (Check one)

- Once a week or more often
- Once every two or three weeks
- Once a month
- Once every two to three months
- Once every four to six months
- Once or twice a year
- Less often
- Never

*“How many units you are likely to purchase at one purchase event”*

# Estimated Sales Volume

Estimated sales volume per household in given time period= **f(n,a,b,c)**

n= **An estimate of target population (socio-demographic estimates)**.

a= **Fraction of households in the market who will try the product.**

b= **Expected #purchases in the period for triers.**

c= **Expected #units per purchase.**

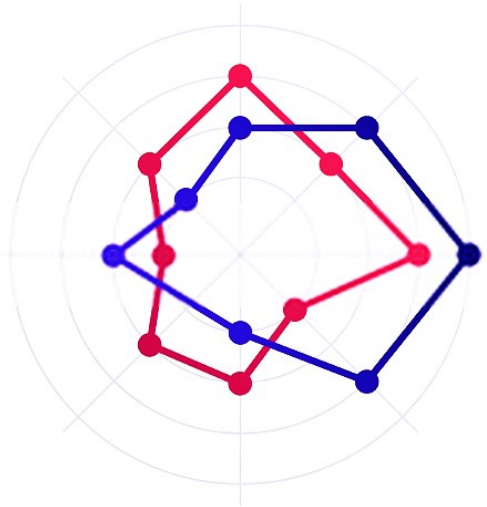
# Concept Diagnostics

- Managers want to obtain data to understand why the purchase measures are **low/ high**.
- Concept diagnostics are of two types:
  1. *Diagnosing the overall idea.*
  2. *Diagnosing specific product attributes.*

# Concept Diagnostics: Overall idea diagnostics

Standard battery of questions addressing following item:

1. Uniqueness or differentiation from other products.
2. Believability.
3. Importance in solving a consumer's problem
4. Inherent interest among the consumer about the idea.
5. Value for the money.



# Specific Attribute Diagnostics

**Product Attributes:**

- Product attributes are the properties that describe a product.
- They include specific details that are tangible and intangible, subjective and objective.
- This information enables consumers to find, compare, and choose products.

The consumers need to be probed on the individual attributes of concept.

Utility estimates on product attributes: Conjoint Analysis/ Discrete Choice Experiments
Consumer preferences towards the product individual attributes.

# Specific Attribute Diagnostics

- Open-ended questions probing the respondents on attributes of the product.

  For instance

  “ You said that you [state the response of respondent]. What is it specifically about the product which makes you feel this way.”

# Specific Attribute Diagnostics

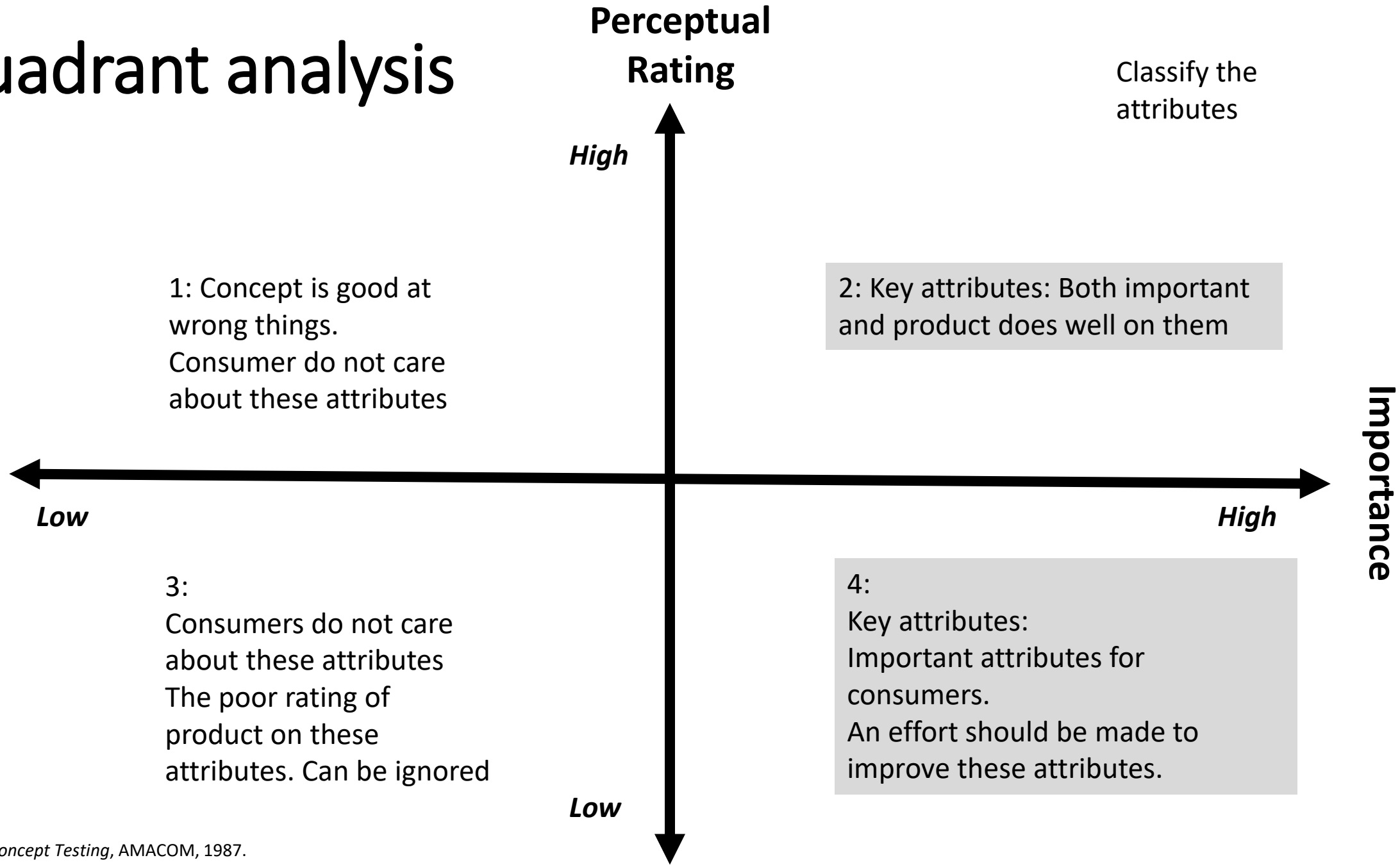
- Collect data on perceptions of specific attributes and their importance to the consumers.
- For instance, for a ‘Heat and Eat’ food item concept

| **Attributes** | **Perception** | | | | |
|---|---|---|---|---|---|
| | Poor<==========>Excellent | | | | |
| Ease of preparation at home | | | | | |
| Calorie level | | | | | |
| Suitability for serving guest | | | | | |

# Specific Attribute Diagnostics

| Attributes | Attribute importance | | | | |
|---|---|---|---|---|---|
| | Low <==========> High | | | | |
| Ease of preparation at home | | | | | |
| Calorie level | | | | | |
| Suitability for serving guest | | | | | |

# Quadrant analysis




Classify the attributes

1: Concept is good at wrong things.
Consumer do not care about these attributes

2: Key attributes: Both important and product does well on them

3:
Consumers do not care about these attributes
The poor rating of product on these attributes. Can be ignored

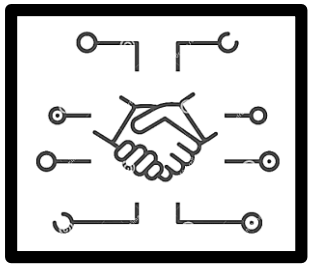
4:
Key attributes:
Important attributes for consumers.
An effort should be made to improve these attributes.

Schwartz, D. *Concept Testing*, AMACOM, 1987.

# Concept Development & Testing

- We can predict the demand estimates for a product concept.
- Which product configuration (attributes) is more likely to be preferred by the consumers?
- A **pool of potential concepts** is then selected for **further specification** and **development**.

# Business Model Canvas



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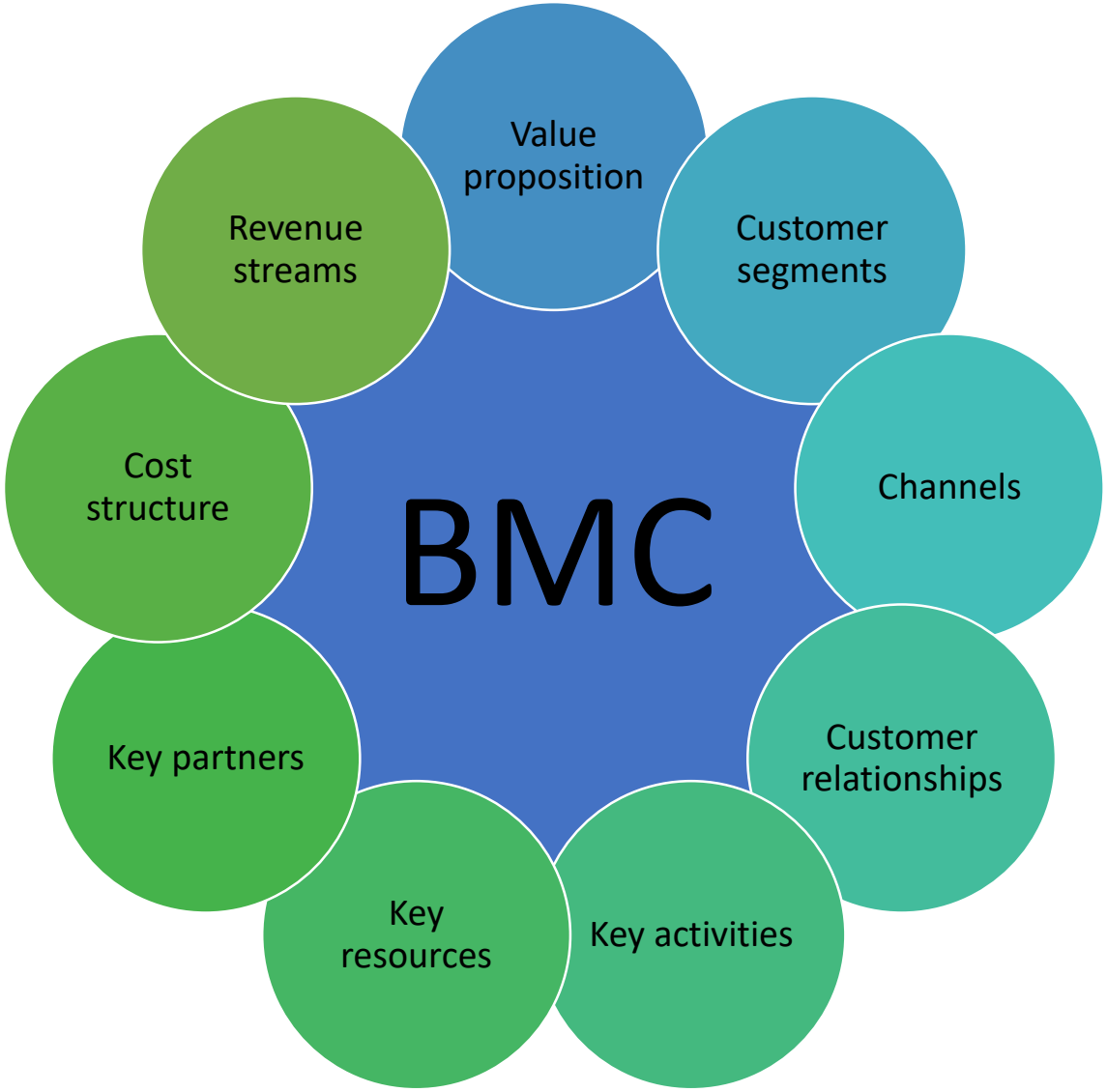
# The Business Model Canvas

- **Alexander Osterwalder** proposed the business model ontology as part of his Ph.D. thesis in 2005. Later, this **business model** ontology was refined to become the **business model canvas (BMC).**
- The BMC is based on describing **nine central building blocks** of a business and modeling the relationships between these building blocks.
- **Value proposition** is the **core building block** of the BMC.
- **Value turnover** includes **four building blocks**: ***customer segments, channels, customer relationships, and revenue stream***. These building blocks describe how the organization disseminates its value proposition to the customers and how the customers generate revenues for the company



## Key Partners

Who are our Key Partners?
Who are our key suppliers?
Which Key Resources are we acquiring from partners?
Which Key Activities do partners perform?

**MOTIVATIONS FOR PARTNERSHIPS:**
*Optimization and economy*
*Reduction of risk and uncertainty*
*Acquisition of particular resources and activities*

## Key Activities

What Key Activities do our Value Propositions require?
Our Distribution Channels?
Customer Relationships?
Revenue streams?

**CATEGORIES**
*Production*
*Problem Solving*
*Platform/Network*

## Key Resources

What Key Resources do our Value Propositions require?
Our Distribution Channels? Customer Relationships?
Revenue Streams?

**TYPES OF RESOURCES**
*Physical*
*Intellectual (brand patents, copyrights, data)*
*Human*
*Financial*

## Value Propositions

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

**CHARACTERISTICS**
*Newness*
*Performance*
*Customization*
*"Getting the Job Done"*
*Design*
*Brand/Status*
*Price*
*Cost Reduction*
*Risk Reduction*
*Accessibility*
*Convenience/Usability*

## Customer Relationships

What type of relationship does each of our Customer Segments expect us to establish and maintain with them?
Which ones have we established?
How are they integrated with the rest of our business model?
How costly are they?

**EXAMPLES**
*Personal assistance*
*Dedicated Personal Assistance*
*Self-Service*
*Automated Services*
*Communities*
*Co-creation*

## Channels

Through which Channels do our Customer Segments want to be reached?
How are we reaching them now?
How are our Channels integrated?
Which ones work best?
Which ones are most cost-efficient?
How are we integrating them with customer routines?

**CHANNEL PHASES**
*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?*

## Customer Segments

For whom are we creating value?
Who are our most important customers?

*Mass Market*
*Niche Market*
*Segmented*
*Diversified*
*Multi-sided Platform*

## Cost Structure

What are the most important costs inherent in our business model?
Which Key Resources are most expensive?
Which Key Activities are most expensive?

**IS YOUR BUSINESS MORE:**
*Cost-Driven (leanest cost structure, low price value proposition, maximum automation, extensive outsourcing)*
*Value-Driven (focused on value creation, premium value proposition)*

**SAMPLE CHARACTERISTICS:**
*Fixed Costs (salaries, rents, utilities)*
*Variable costs*
*Economies of scale*
*Economies of scope*

## Revenue Streams

For what value are our customers really willing to pay?
For what do they currently pay?
How are they currently paying?
How would they prefer to pay?
How much does each Revenue Stream contribute to overall revenues?

**TYPES:**
*Asset sale*
*Usage fee*
*Subscription Fees*
*Lending/Renting/Leasing*
*Licensing*
*Brokerage fees*
*Advertising*

**FIXED PRICING:**
*List Price*
*Product feature dependent*
*Customer segment dependent*
*Volume dependent*

**DYNAMIC PRICING:**
*Negotiation (bargaining)*
*Yield Management*
*Real-time-Market*

## Key Partners

Who are our Key Partners?
Who are our key suppliers?
Which Key Resources are we acquiring from partners?
Which Key Activities do partners perform?

## Key Activities

What Key Activities do our Value Propositions require?
Our Distribution Channels?
Customer Relationships?
Revenue streams?

## Value Propositions

Value Form

## Customer Relationships

What type of relationship does each of our Customer Segments expect us to establish and maintain with them?
Which ones have we established?
How are they integrated with the rest of our business model?
How costly are they?

## Customer Segments

For whom are we creating value?
Who are our most important customers?

How Value is Created ?

## Channel

Through which Channels do our Customer Segments want to be reached?
How are we reaching them now?
How are our Channels integrated?
Which ones work best?
Which ones are most cost-efficient?
How are we integrating them with customer routines?

How the Value is Delivered ?

## Cost Structure

What are the most important costs inherent in our business model?
Which Key Resources are most expensive?
Which Key Activities are most expensive?

## Revenue Streams

How the Value is Captured ?

# Spotify

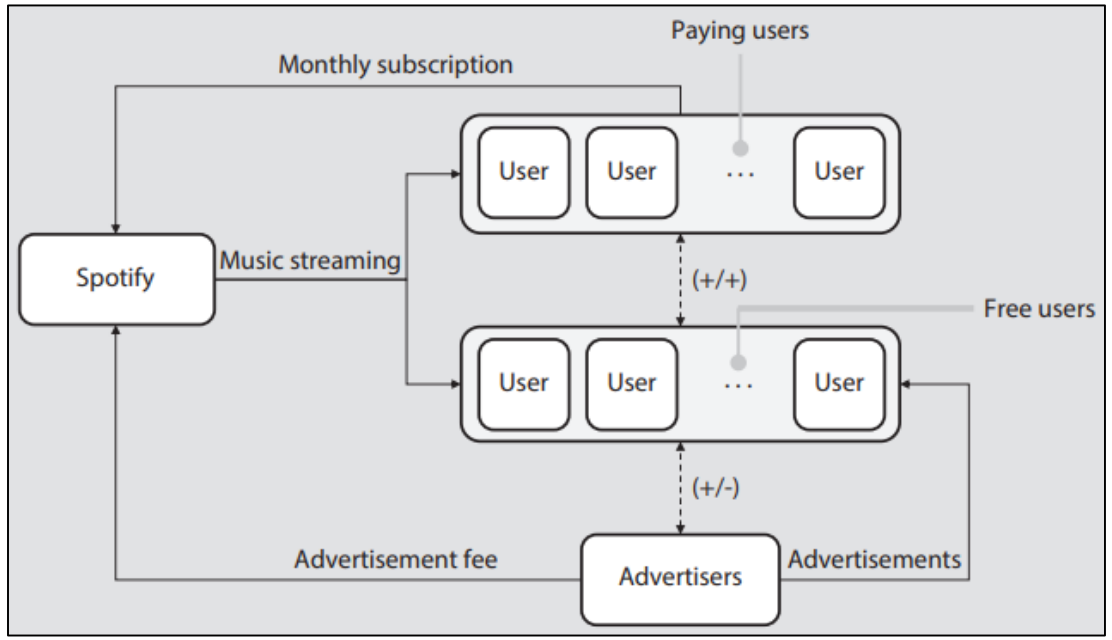
Discuss what is Spotify.

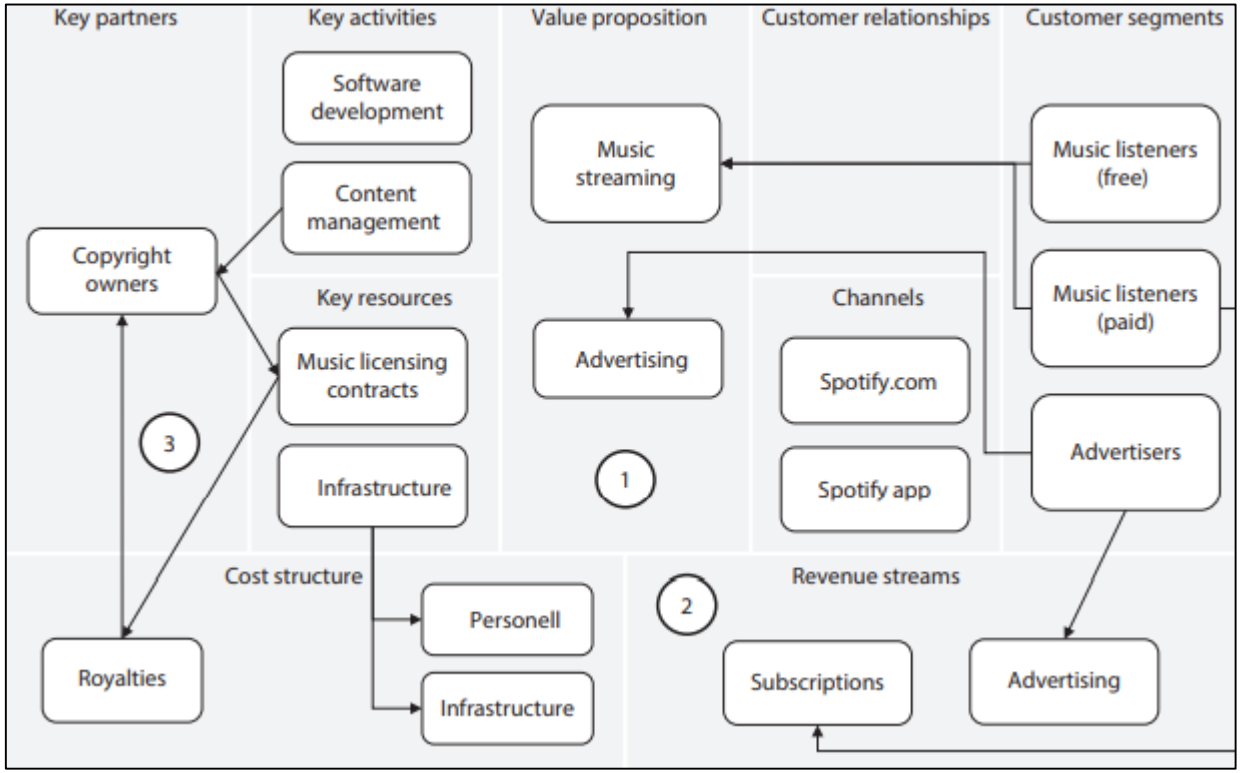
What value proposition it offers?

# Case Study-II Spotify

- Spotify is an example of a digital service that uses the freemium business model. Here, the digital service is offered to two different consumer segments: One gets the service for free and other pays for the service
- Spotify has two value propositions
    1. one for music streaming services and one for advertisements. The subset of listeners paying for the service contributes to the revenue of Spotify
    2. This corresponds to about 90% of the revenue (2017). The other source of revenue—advertisements—constituted about 10% of the income (2017).

Spotify modeled using the SRM




Spotify modeled using the BMC

# Airbnb

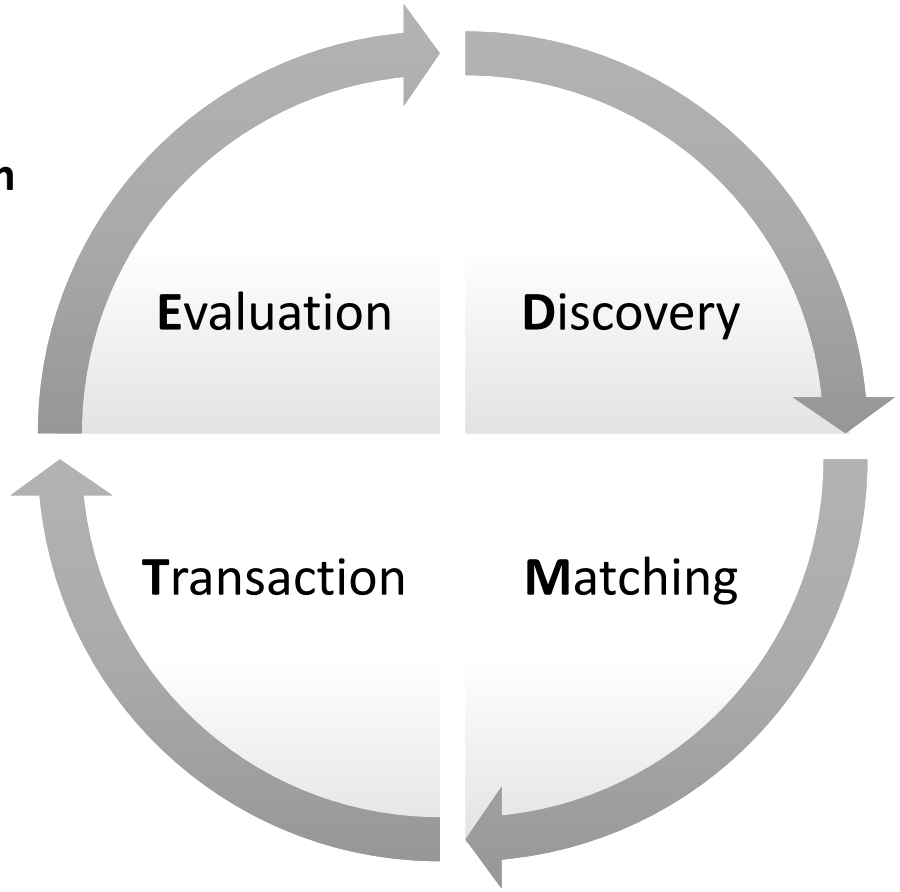
Discuss what is Airbnb.

What value proposition does it offer?

# Value proposition of platform

**DMTE as a cycle**

**4. The platform provide mechanism for evaluation and feedback of product and services offered**




**1. Reduce search cost for one entity, transaction may not occur on platform.**

**3. The transactions are subsumed in the platform**

**2. Reduce search cost for both interested entities, transaction may not occur on platform**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2. Kanoria, Y., & Saban, D. (2021). Facilitating the search for partners on matching platforms. *Management Science*, *67*(10), 5990-6029.
3. Hänninen, M. (2020). Review of studies on digital transaction platforms in marketing journals. *The International Review of Retail, Distribution and Consumer Research*, *30*(2), 164-192.
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# Airbnb

Discuss what Airbnb is?

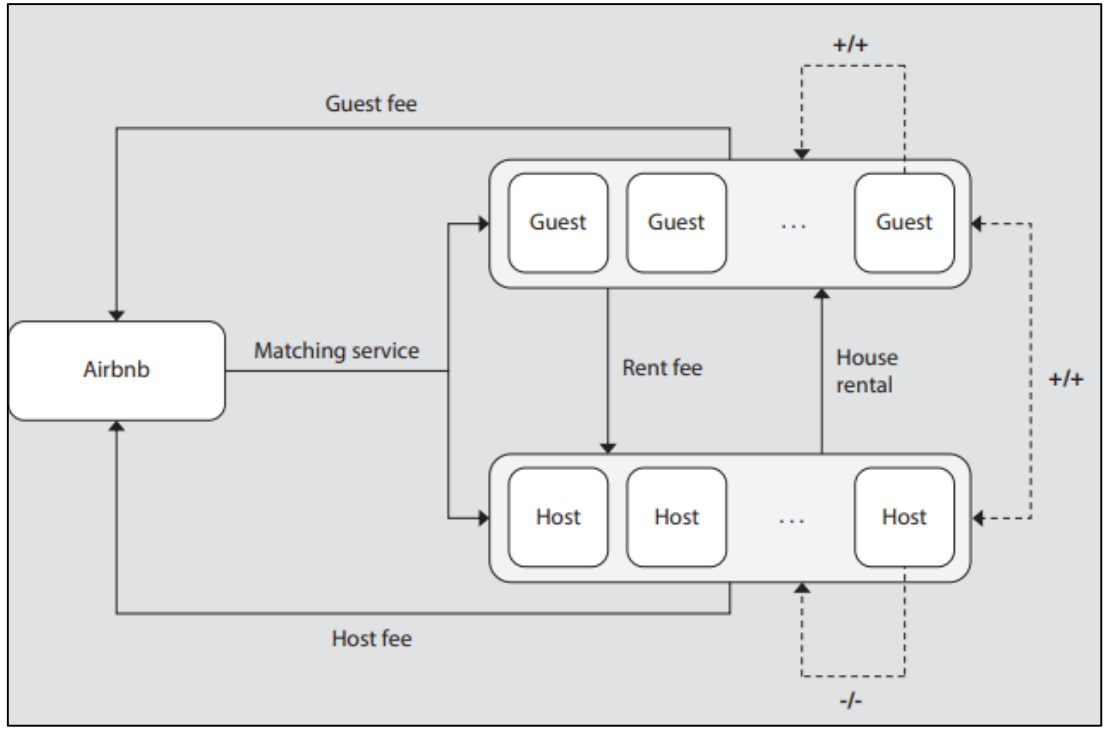
What value proposition does it offer?

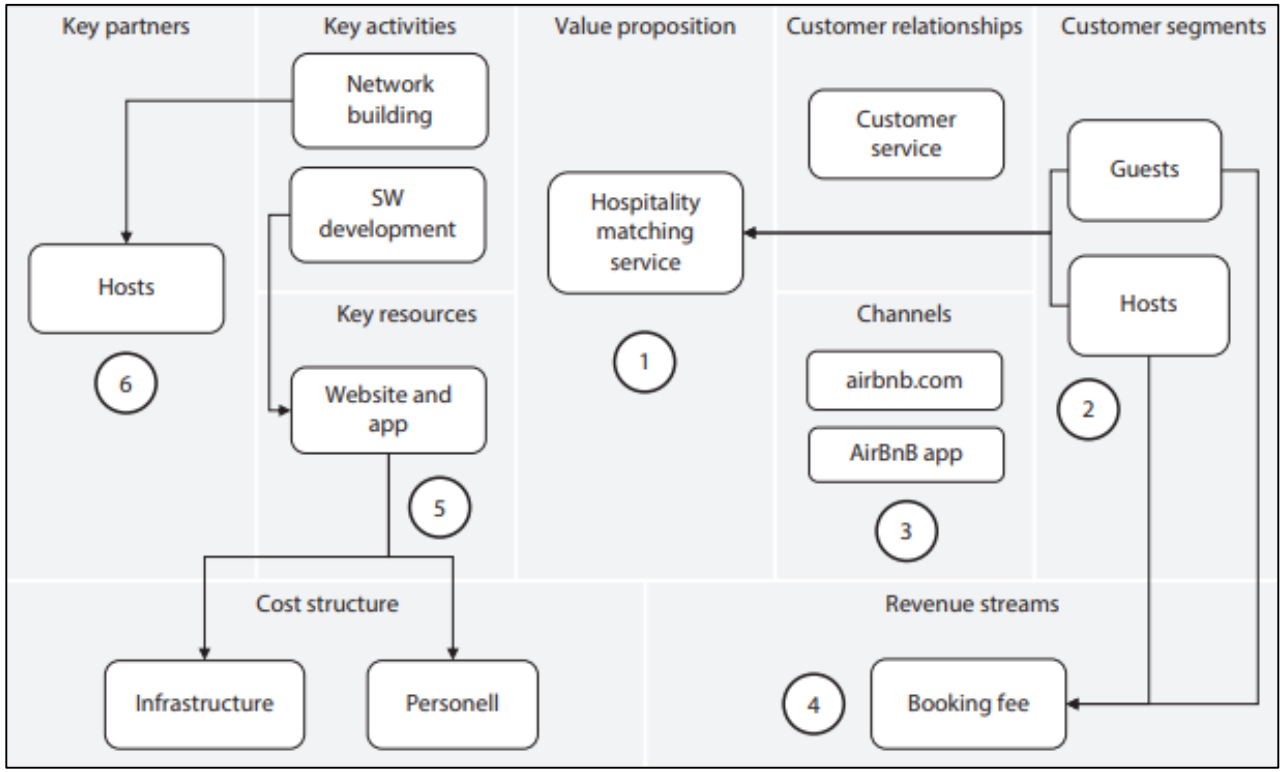
Business Model: 3 questions?

# Case Study-V Airbnb

- Airbnb is an example of an organization using the multisided platform business model
- The main value proposition of Airbnb is to offer a mediation service between the two customer segments hosts and guests . This is done on the website or mobile app

Airbnb modeled using the SRM




Airbnb modeled using the BMC

Thank you