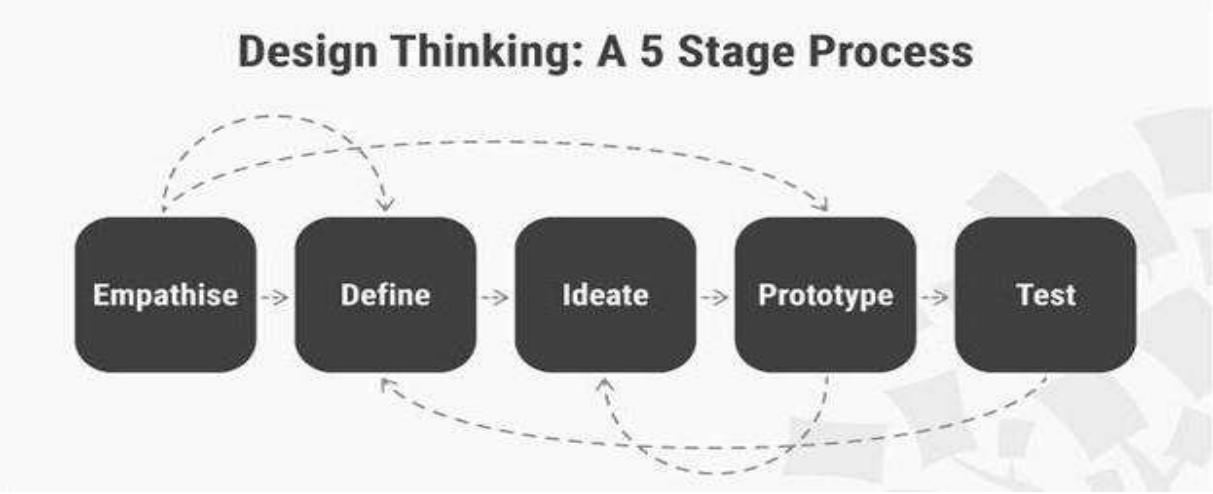
Design thinking process:

Introduction:

Design Thinking is a design methodology that provides a solution-based approach to solving problems. It‘s extremely useful in tackling complex problems that are ill-defined or unknown, by understanding the human needs involved, by re-framing the problem in human-centric ways, by creating many ideas in brainstorming sessions, and by adopting a hands-on approach in prototyping and testing. Understanding these five stages of Design Thinking will empower anyone to apply the Design Thinking methods in order to solve complex problems that occur around us — in our companies, in our countries, and even on the scale of our planet.

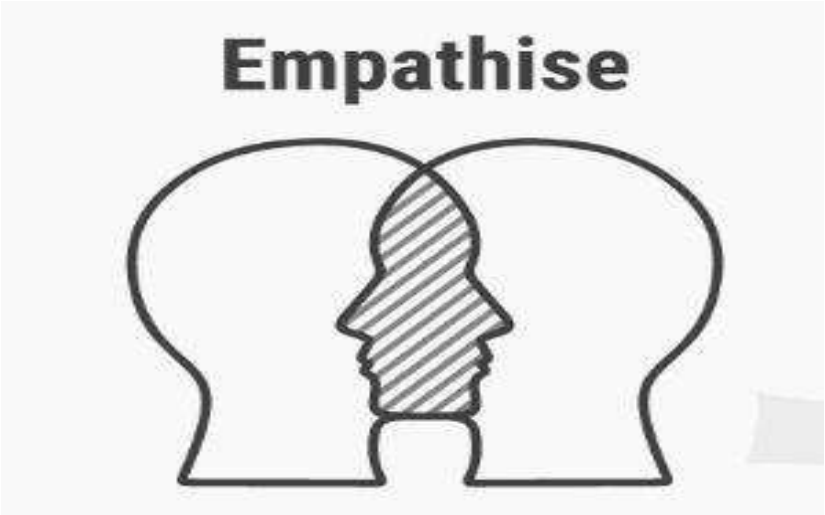
We will focus on the five-stage Design Thinking model proposed by the Hasso-Plattner Institute of Design at Stanford (d.school). d.school is the leading university when it comes to teaching Design Thinking. The five stages of Design Thinking, according to d.school, are as follows: Empathise, Define (the problem), Ideate, Prototype, and Test. Let‘s take a closer look at the five different stages of Design Thinking.



1.Empathise

The first stage of the Design Thinking process is to gain an empathic understanding of the problem you are trying to solve. This involves consulting experts to find out more about the area of concern through observing, engaging and empathizing with people to understand their experiences and motivations, as well as immersing yourself in the physical environment so you can gain a deeper personal understanding of the issues involved. Empathy is crucial to a human-centered design process such as Design Thinking, and empathy allows design thinkers to set aside their own assumptions about the world in order to gain insight into users and their needs.

Depending on time constraints, a substantial amount of information is gathered at this stage to use during the next stage and to develop the best possible understanding of the users, their needs, and the problems that underlie the development of that particular product.

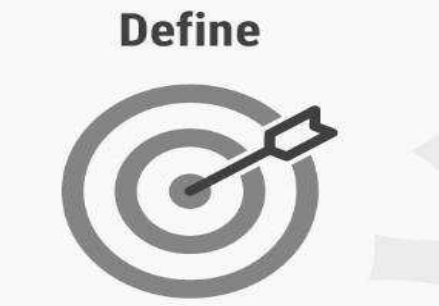


1. Define (the Problem)

During the Define stage, you put together the information you have created and gathered during the Empathise stage. This is where you will analyse your observations and synthesise them in order to define the core problems that you and your team have identified up to this point. You should seek to define the problem as a problem statement in a human-centred manner.

To illustrate, instead of defining the problem as your own wish or a need of the company such as, –We need to increase our food-product market share among young teenage girls by 5%,‖ a much better way to define the problem would be, –Teenage girls need to eat nutritious food in order to thrive, be healthy and grow.‖

The Define stage will help the designers in your team gather great ideas to establish features, functions, and any other elements that will allow them to solve the problems or, at the very least, allow users to resolve issues themselves with the minimum of difficulty. In the Define stage you will start to progress to the third stage, Ideate, by asking questions which can help you look for ideas for solutions by asking: –How might we… encourage teenage girls to perform an action that benefits them and also involves your company‘s food-product or service?‖



2. Ideate

During the third stage of the Design Thinking process, designers are ready to start generating ideas. You‘ve grown to understand your users and their needs in the Empathise stage, and you‘ve analysed and synthesised your observations in the Define stage, and ended up with a human-centered problem statement. With this solid background, you and your team members can start to "think outside the box" to identify new solutions to the problem statement you‘ve created, and you can start to look for alternative ways of viewing the problem.

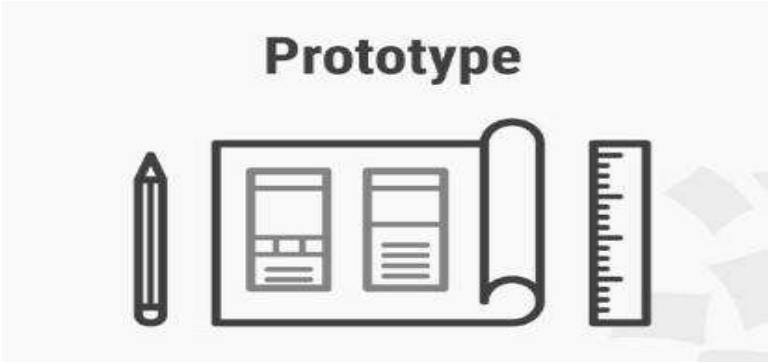
There are hundreds of Ideation techniques such as Brainstorm, Brainwrite, Worst Possible Idea, and SCAMPER. Brainstorm and Worst Possible Idea sessions are typically used to stimulate free thinking and to expand the problem space.

It is important to get as many ideas or problem solutions as possible at the beginning of the Ideation phase. You should pick some other Ideation techniques by the end of the Ideation phase to help you investigate and test your ideas so you can find the best way to either solve a problem or provide the elements required to circumvent it.

3. Prototype

The design team will now produce a number of inexpensive, scaled down versions of the product or specific features found within the product, so they can investigate the problem solutions generated in the previous stage. Prototypes may be shared and tested within the team itself, in other departments, or on a small group of people outside the design team. This is an experimental phase, and the aim is to identify the best possible solution for each of the problems identified during the first three stages.

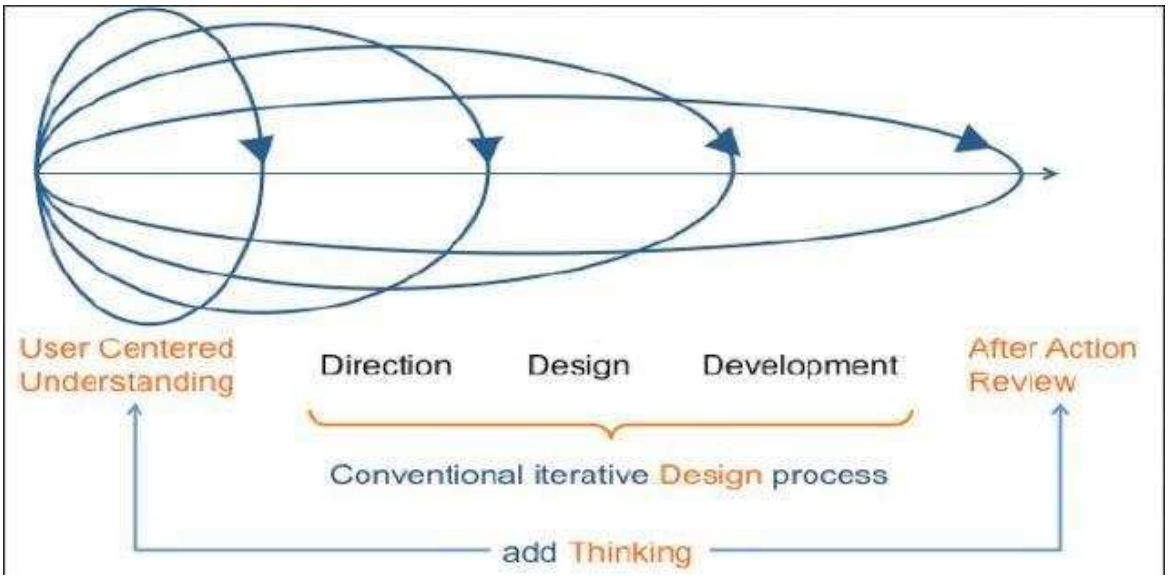
The solutions are implemented within the prototypes, and, one by one, they are investigated and either accepted, improved and re-examined, or rejected on the basis of the users‘ experiences. By the end of this stage, the design team will have a better idea of the constraints inherent to the product and the problems that are present, and have a clearer view of how real users would behave, think, and feel when interacting with the end product.



What makes up the design thinking process to help innovators?

Managing New Product Development (NPD) can be a daunting challenge and so it is critical to focus on what is important. Design thinking becomes a highly useful and effective collaborative strategy to identify and solve problems creatively. As it is a non-linear, iterative approach that focuses on user needs, articulating frameworks, and formulating a strategy its constantly addressing the direction, design, and development and encourages a ‒fast acting-learning‖ cycle.

Recognizing that the direction, design, and development needs are constantly looping back to validate against the user needs is central to design thinking. The earlier you involve design thinkers, and specifically in contributing to any product brief, the more you can provide valuable support in the NPD process.



A series of excellent posts by Peterson, such as ‑Design Thinking - What Is It in Practice,‖ Or ‑How to Manage Innovation With Design Thinking,‖ raise the importance of the value of design thinking within the innovation development process.

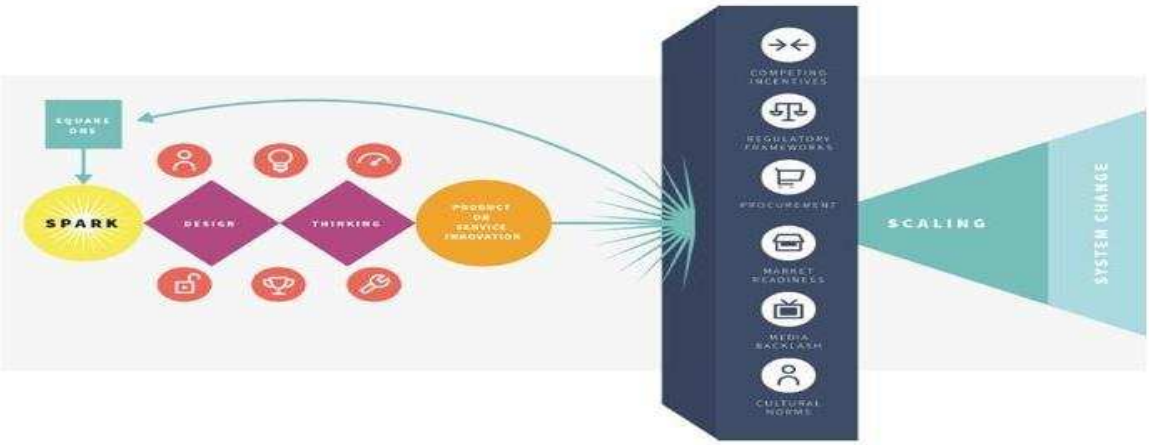
The value of design thinking hinges on how involved it becomes within any newdevelopment thinking

Establishing an inspirational design brief early on can help guide the process. Having partof any brief include the design strategy can assist in facilitating innovation strategy, diagnosis, formulation, and implementation.

Design thinking does have its limitations applied to innovation work.

Design thinking‘s primary use, to date, has been in developing incremental innovation or help resolve specific problems or challenges. There are often recognized needs established or can be quickly found out, but if the requirement has a more open brief then design thinking needs to shift from a tactical part to play into a more strategically designed one, where problem definition, placing it in the appropriate context sometimes becomes as complex to understand as the thinking that goes into achieving the potential solutions. There can be a lot of _push back‘ if the problem has not been fully framed, as the solution might only have many unintended consequences.

Figure 6: The system immune response



22. Ibid.

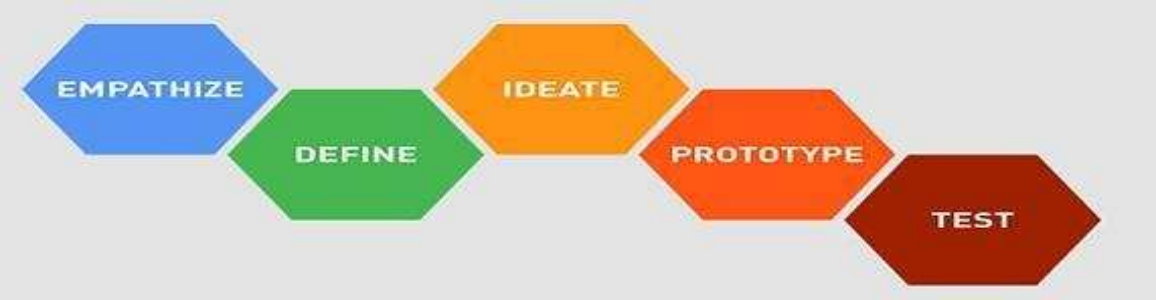
The critical point is that design thinking is human-centered

It stands in service of creating positive outcomes for people, then its value is through a series of activities to inspire the essential elements of creativity, to be able to take an abstract idea and create something with it. It helps you to actualize your concepts and results, to drive increased adoption, help design the behavioral change and ease in ongoing use. So, it becomes the tool to engage with people, find the purpose that _it‘ is meaningful and as a result, it should generate positive cash flow. Value, meaning, and profit.

The five phases of design thinking, according to d.school, are as follows:

- Empathize – with your users
- Define – your users‘ needs, their problem, and your insights
- Ideate – by challenging assumptions and creating ideas for innovative solutions
- Prototype – to start creating solutions
- Test – solutions

It is important to note that the five phases, stages, or modes are not always sequential.



Design thinking with services in mind

Design thinking is not just for products; it can help across services, and in designing new business models. As we combine product and service far more then design thinking is focusing

even further on meeting the user‘s and customer‘s needs for that service. Service design needs to _feed‘ into creating those great customer experiences.

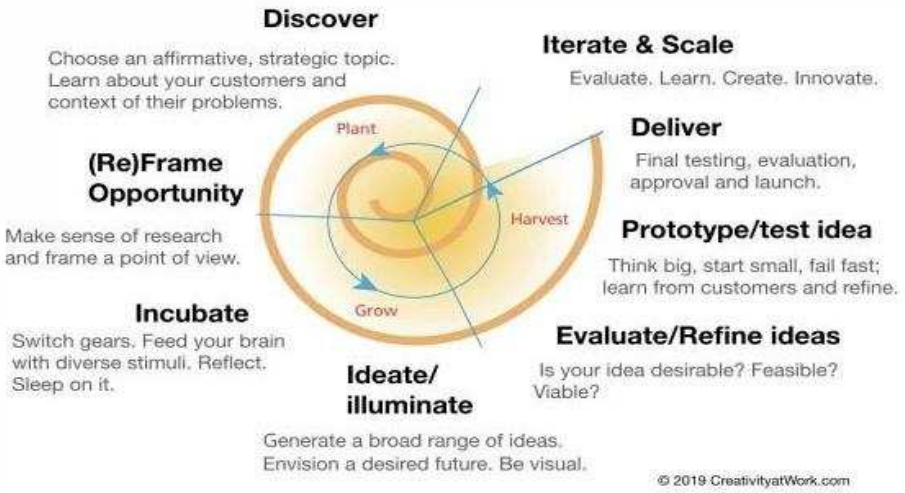
Today many organizations, capitalizing on technology are looking to build a comprehensive customer journey map, covering all the touch-points that a customer has with the organization. Each of these becomes a potential engagement point, but so often organizations struggle as they lack a complete understanding.

Design thinking can help and become as valuable to be part of any process, organizational information, and technology (re-)design. One of its critical roles to play is to keep the organization clear it is not internal design needs; it is customer needs as central. Often customer journey understandings become component-by-component built by the specific team engaged in that touch-point (customer service, spare or replacement part, billing) but the total delivery of any service-oriented solution needs a holistic approach, and design thinking can greatly help in this.

Service design tends to have a higher planning and organizing level. The focus is on understanding infrastructure, communications, and material components increases. The service design has a higher ‒quality, time, and interaction‖ emphasis for the response outcomes.

A constant questioning with any design thinking process revolves around ‒is it useful, usable, desirable, efficient, and effective?‖ The more you involve the customer, the more you design the solutions to match these requirements.

Frame work of Design Thinking:



1. Discovery

Choose a strategic topic to focus on and learn about. Design thinking starts with an end goal, a desired future, and approaches to how you can make it happen. The topic should be one you find compelling and motivating. Research your topic for insights. What do you need to understand? What are the opportunities embedded in problems? Ask ―why‖ questions to dig deeper.

Leverage stories to discover insights. What stories are your customers telling about their experiences? What are the hopes, fears, and goals that motivate them? What insights can you draw from their problems and aspirations?

2. Frame and reframe

Framing the right problem is the only way to create the right solution. Make sense of research by seeing patterns, themes, and larger relationships between the pieces of information. Uncover customer insights to reframe problem areas into opportunities.

3. Incubate

Creativity comes from a blend of individual and group ideation. Give people time to reflect on ideas and incubate on their own before running a group ideation session.

4. Ideate

Now that you have some deep insights about your customers or users, generate ideas for offerings that will deliver value to your customers. Build on ideas by asking ―What else?‖ The goal is to push beyond the obvious and generate a set of really good options for consideration.

5. Decide

Display your ideas on a wall and look for ideas that have "wow" power. This will save you from draining everyone‘s energy by debating every single idea. Vote for the best options based on criteria such as desirability, technical feasibility, and business viability. The team can then choose one to three ideas to prototype and test.

6. Prototype

Combine, expand, and refine ideas in the form of rough models or sketches. Invite users to test out and respond to your prototype. How do they feel about your ideas? What feedback do they have? Their responses will inform whether you move forward or kill your idea before investing additional resources.

7. Deliver

The prototypes you have tested, built and launched will have a better chance of succeeding in the marketplace.

8. Iterate

Design is not a linear. It is an iterative process. Use feedback to improve on your ideas and keep iterating until there is nothing more to add or subtract.

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Distinctions Between Design and Design Thinking:

Steve Jobs famously said, ‑Most people make the mistake of thinking design is what it looks like. People think it‘s this veneer – that the designers are handed this box and told, _Make it look good!‘ That‘s not what we think design is. It‘s not just what it looks like and feels like. Design is how it works.‖5

Tim Brown, CEO of IDEO, the design company that popularised the term design thinking, says ‑Design thinking can be described as a discipline that uses the designer‘s sensibility and methods to match people‘s needs with what is technologically feasible and what a viable business strategy can convert into customer value and market opportunity.‖6

Thinking like a designer brings together what is desirable from a human point of view with what is technologically feasible and economically viable. It also allows people who aren‘t trained as designers to use creative tools to address a vast range of challenges.

Design thinking draws on logic, imagination, intuition and systemic reasoning to explore the possibilities of what could be and to create desired outcomes that benefit the end user (the customer).

Design thinking is our best tool for sense-making, meaning making, simplifying processes, and improving customer experiences. Additionally, design thinking minimises risk, reduces costs, improves speed, and energises employees. Design thinking provides leaders with aframework for addressing complex human-centred challenges and making the best possible decisions concerning:

• Redefining value
• Re-inventing business models
• Shifting markets and behaviours
• Organisational culture change
• Complex societal challenges such as health, education, food, water and climate change

Problems affecting diverse stakeholders and multiple systems

Implementing the process in driving inventions

Implementing a process to drive innovation involves creating a structured framework that encourages the generation, development, and implementation of creative ideas. Here's a step-by-step guide to implementing an innovation process within an organization:

1. **Establish a Culture of Innovation**:
    - Foster an environment that values creativity, experimentation, and risk-taking. Encourage open communication, diverse perspectives, and a willingness to challenge the status quo.
2. **Define Clear Objectives and Goals**:
    - Determine the specific areas or aspects of the organization where innovation is most needed. Clearly articulate the goals and outcomes you hope to achieve through the innovation process.
3. **Identify Innovation Champions**:
    - Appoint individuals or teams responsible for driving the innovation process. These champions should be passionate about innovation and have the skills to facilitate creative thinking.
4. **Understand Customer Needs and Market Trends**:
    - Conduct market research and engage with customers to understand their pain points, preferences, and emerging trends. This insight will guide the direction of your innovation efforts.

5. **Idea Generation**:
    - Encourage employees at all levels to contribute ideas. Provide platforms for brainstorming sessions, idea contests, suggestion boxes, and collaborative workshops. Emphasize diversity of thought.
6. **Idea Evaluation and Prioritization**:
    - Establish criteria for evaluating and prioritizing ideas. Consider factors such as feasibility, market potential, alignment with organizational goals, and resource requirements.
7. **Prototype and Testing**:
    - Develop prototypes or proofs of concept for selected ideas. This allows for practical testing and refinement before full-scale implementation.
8. **Allocate Resources**:
    - Provide the necessary resources, including funding, time, and expertise, to support the development and implementation of innovative ideas.
9. **Create Cross-Functional Teams**:
    - Form multidisciplinary teams that bring together individuals with diverse skills and expertise. This promotes a holistic approach to problem-solving and innovation.
10. **Encourage Collaboration and Knowledge Sharing**:
    - Foster a collaborative work environment where employees freely exchange ideas and insights. Use platforms like intranets, team meetings, and collaboration tools to facilitate communication.
11. **Pilot Projects**:
    - Test innovations on a small scale before full-scale implementation. This allows for adjustments based on real-world feedback and minimizes potential risks.
12. **Measure and Evaluate Progress**:
    - Establish key performance indicators (KPIs) to track the impact of innovations. Monitor progress towards achieving the defined objectives and make adjustments as needed.
13. **Celebrate Success and Learn from Failures**:
    - Recognize and celebrate successful innovations to reinforce a culture of creativity. Additionally, view failures as learning opportunities and use them to refine future innovation efforts.
14. **Feedback and Iteration**:
    - Solicit feedback from stakeholders, including employees, customers, and partners. Use this feedback to refine and improve the innovation process for ongoing success.
15. **Institutionalize Innovation**:
    - Integrate innovation into the organization’s core values, strategic plans, and day-to-day operations. Ensure that it becomes a natural part of how the organization operates.

Design thinking in social innovations:

1.Empathy and co-creation

2Systems thinking and impact measurement

3Diversity and inclusion

4Ethics and responsibility

5Learning and adaptation

1.Empathy and co-creation

One of the key principles of design thinking is empathy, which means understanding the needs, emotions, and perspectives of the users and stakeholders. Empathy helps to identify the root causes of the problem and the opportunities for improvement. Co-creation is another important aspect of design thinking, which means involving the users and stakeholders in the design process and empowering them to contribute their ideas, feedback, and insights. Co-creation fosters trust, ownership, and participation, and leads to more relevant and sustainable solutions.

2.Systems thinking and impact measurement

Another trend in design thinking for social innovation is systems thinking, which means looking at the problem and the solution in the context of the larger system and the interrelated factors that influence it. Systems thinking helps to avoid unintended consequences, identify leverage points, and create systemic change. Impact measurement is also crucial for design thinking for social innovation, as it helps to evaluate the effectiveness, efficiency, and scalability of the solution, and to learn from the results and improve the design. Impact measurement can be done using various methods and tools, such as logic models, theory of change, indicators, surveys, interviews, and stories.

3.Diversity and inclusion

A challenge for design thinking for social innovation is diversity and inclusion, which means ensuring that the design process and the solution are respectful, accessible, and beneficial for all the users and stakeholders, especially those who are marginalized, excluded, or vulnerable. Diversity and inclusion require awareness, sensitivity, and action, and can be fostered by engaging diverse voices, perspectives, and experiences, addressing biases and stereotypes, and designing for equity and justice.

4.Ethics and responsibility

Another challenge for design thinking for social innovation is ethics and responsibility, which means considering the ethical implications, risks, and trade-offs of the problem and the solution, and taking responsibility for the impact and consequences of the design. Ethics and responsibility require reflection, dialogue, and accountability, and can be guided by ethical principles, frameworks, and codes of conduct, such as human rights, social justice, and sustainability.

Tools of design thinking - person, costumer, journey map, brain storming, product development

Journey Maps

In recent years *empathy maps* and *journey maps* have gained popularity due to the fact they are an upgrade and extension of *personas*. Personas are too empathy maps, what the internet is to our intellect. We have a base set of knowledge that we can store by default, but with the advent of the internet — and smartphones — we now treat the internet as a more detailed extension of our intellect. We may not know the exact answer, but we know how to find it, yet the intellect would be rendered useless without our intellect as we would no longer be able to use it in the slightest. That is the relationship personas have with empathy and journey maps. They are not a replacement and they serve no purpose without the personas in place.

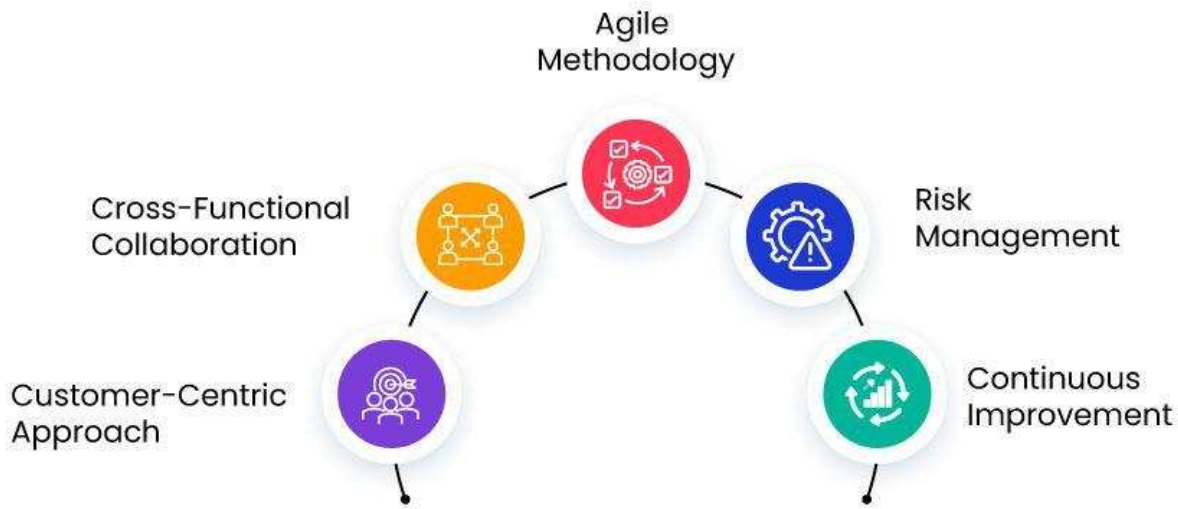
Brainstorming

Brainstorming is a process where you want to make sure that no idea is off-limits. Perhaps you're thinking, "This idea can't be executed, the technology just isn't there yet!" or "We definitely don't have the budget for this". While these are both valid concerns, *write it down anyway*. You never know what it may inspire. Perhaps after hearing your idea someone thinks of a way to tweak it so that it is feasible. Maybe someone is able to think of a way to water down the solution and make it executable. Never discount what human creativity and ingenuity can accomplish. *Just share it.*

Product Development:

Product development is a process of developing new product or service to market, from idea generation to launch. It constitute various activities, market research, product design, development, testing and launch. The primary objective of the Product Development is to create a product that meets customer needs and business objective.

Key Principles of Product Development:



Key Principles of Product Development

To ensure a successful product development process, several key principles should be followed:

1. Customer-Centric Approach:

It's critical to understand and satisfy customer needs and wants. Regular customer feedback and market research are essential for creating products that resonate with the target audience.

2. Cross-Functional Collaboration:

Effective product development involves close collaboration between various departments, including marketing, engineering, design, and quality assurance. A multidisciplinary team can bring diverse perspectives and skills to the project.

3. Agile Methodology:

Using agile development methodologies can help adapt to changing market conditions and customer feedback. Agile emphasizes flexibility, iterative development, and rapid response to change.

4. Risk Management:

Identifying and mitigating risks at each stage is crucial. This includes technical, market, and financial risks. Effective risk management helps prevent costly setbacks.

5. Continuous Improvement:

Product development is an ongoing process. Regularly revisiting and improving products is essential for staying competitive and addressing changing customer needs.

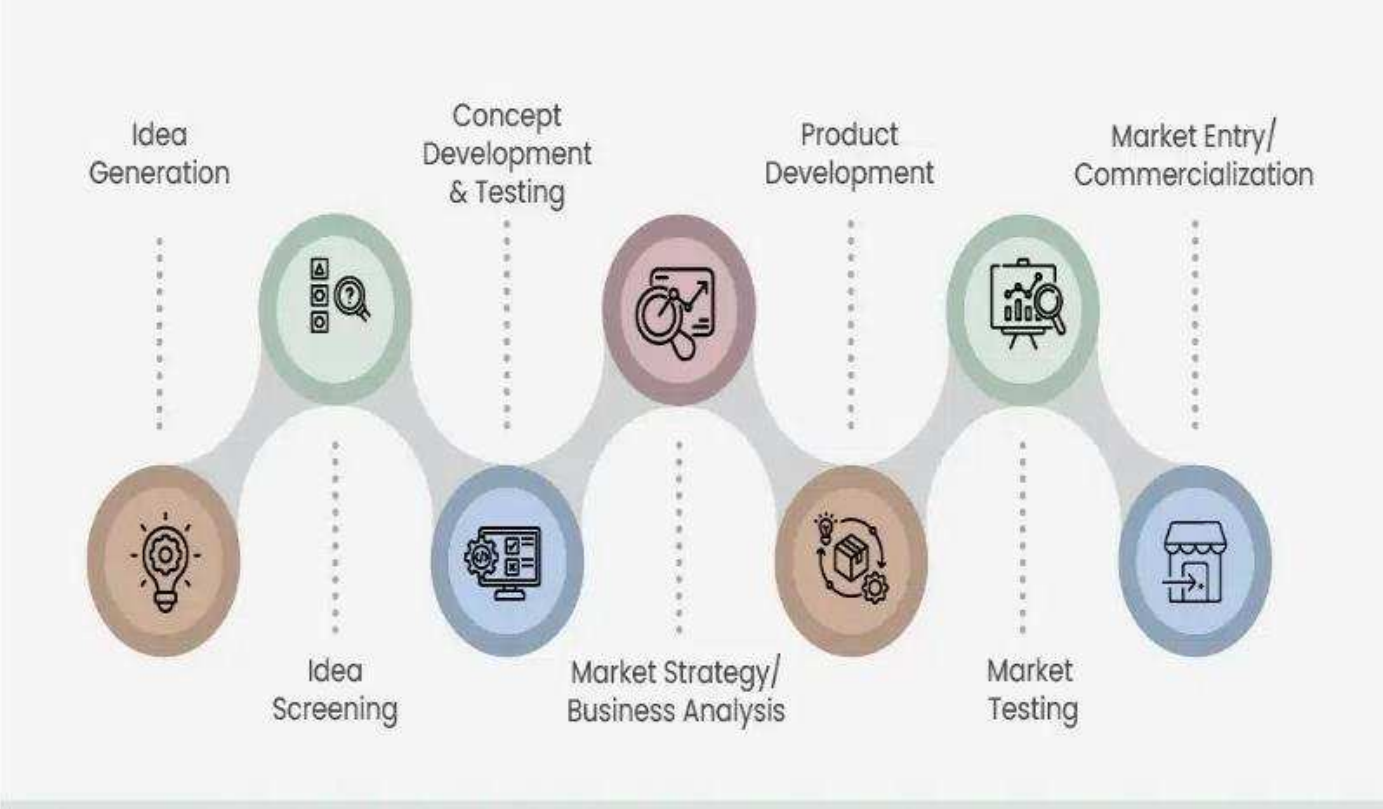
Steps involve in Product Development

Some of the major steps that are involved in product development are as follows:

1. **Idea:** This is where you come up with the concept for your new product. It's the initial spark of creativity.
2. **Plan:** After you have an idea, you need a detailed plan that outlines how you'll create the product. This includes design, materials, and how to put it together.
3. **Build:** Creating a prototype, which is like a test version of the product, helps you see if your idea can work in the real world.
4. **Test:** This step involves checking if the product functions as expected. Any issues or problems are identified and fixed.
5. **Make:** Once you're sure the product works well, you can start producing it on a larger scale.
6. **Sell:** Finally, you introduce the product to the market so that people can buy and use it.

The Stages of Product Development

Product development typically involves a series of stages, each with its own set of tasks and challenges. While these stages can vary in complexity and duration, they generally include:



Stages of Product Development

1. Idea Generation:

This is the first phase in which concepts for fresh products are created. Ideas can come from various sources, including customer feedback, market research, internal brainstorming, or industry trends.

2. Conceptualization:

After being chosen, an idea is developed into a concept. This stage involves defining the product's purpose, target market, and unique selling points. It helps shape the product's initial vision.

3. Design and Planning:

This phase involves creating detailed product specifications, design blueprints, and project plans. It also includes selecting materials, technology, and manufacturing methods.

4. Prototype Development:

A prototype or a minimum viable product (MVP) is created to test the concept's feasibility. This stage helps identify potential issues, refine the design, and make necessary adjustments.

5. Testing and Evaluation:

The product is rigorously tested for performance, safety, quality, and user satisfaction. Feedback from testing is used to make further improvements.

6. Manufacturing or Development:

The product design enters the production stage when it is complete. For software or digital products, this stage involves coding and development.

7. Marketing and Commercialization:

Preparing the product for market launch involves developing marketing strategies, setting pricing, and creating promotional materials. It also includes planning the distribution and sales channels.

8. Launch:

The product is introduced to the market. A successful launch involves managing supply chains, monitoring customer feedback, and addressing any post-launch issues.

9. Post-launch Support:

Product development doesn't end at the launch. Ongoing support, updates, and improvements are critical to maintaining the product's competitiveness and customer satisfaction.