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# Fundamental of Design Thinking and its Phases

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***Abstract:*** ***The practice of solving issues by putting the requirements of the customer first is known as "design thinking." Its foundation lies in the compassionate observation of people's interactions with their surroundings and the use of an experiential, iterative process to generate creative solutions. The "human-centered" nature of design thinking refers to the utilization of data showing how customers interact with a good or service, as opposed to how a company or other party anticipates such interactions. A product or service must be continuously improved by designers seeing how users interact with it in order to be really human-centered. In design thinking, this is the "iterative" phase. In place of incessant study or ruminating, it encourages moving fast to test prototypes. Unlike traditional problem solving, which is a linear process of identifying a problem and then finding solutions, design thinking only works if it is iterative. It's less of a way to arrive at a single solution, and more of a way to continually evolve your way of thinking and respond to consumer needs.***

***Keywords: Design thinking, Phases***

## I. WHAT IS DESIGN THINKING?

Why is design thinking necessary? Innovation is defined as a product, process, service or business model that has two critical characteristics: new and useful. However, there is no point in creating something fresh and new if people don't use it. Design thinking gives innovation the refresh it needs to inspire meaningful and effective solutions. Design thinking is a mindset and approach to problem solving and innovation anchored around human-centered design.

The key difference between design thinking and other innovative and ideative processes is that design thinking is solution-oriented and user-oriented, rather than problem-oriented. This means that the focus is on finding a solution to a problem rather than the problem itself. For instance, if your team is having difficulty making the transition to remote work, design thinking will encourage them to think about how they can increase employee engagement instead of focusing on the problem itself.

## II. HOW DOES DESIGN THINKING WORK?

By using design thinking, we combine what is humanly desirable with what is technically feasible and economically feasible. It also enables non designers to apply creative techniques, approaches and mindset to solve a wide variety of problems.

1) *Desirability:* What is desirable and for consumers ?
2) *Feasibility:* What can be done technically in the near term ?
3) *Viable:* What is expected to be included in a scalable business model.

The design thinking process begins with taking action and understanding the right questions. It's about embracing a simple shift in thinking and tackling the problem from a new direction.

## III. PHASES OF DESIGN THINKING

Understanding, observing, defining problems, finding ideas, creating prototypes, and testing are the six iteration loops that make up the Design Thinking process. The first three stages, often known as the "problem space," Which solutions are possible and how they might be implemented are described in the next three phases, also referred to as the "solution space." Below is a quick summary of the process phases, which are then broken-down step by step for greater clarity. The process is highly iterative, meaning that each phase includes multiple feedback loops to earlier phases, even though the process representation is presented sequentially.

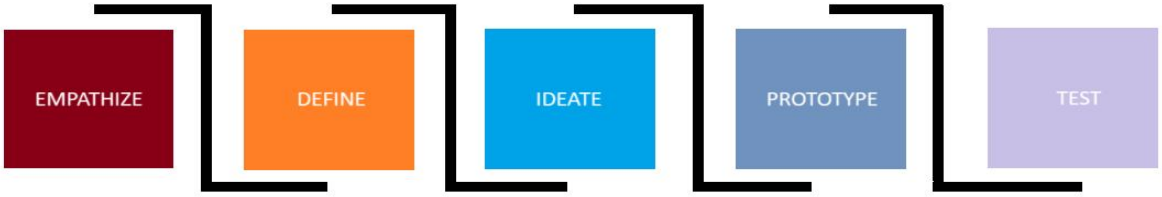



Fig. 1. Phases of Design Thinking

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*A. Phase 1 - Understand*

The first step is to first develop an understanding of the problem. Need to clarify who to integrate process and especially what technical perspective) is needed. Finally, it is necessary to find out how the question can be best formulated so that the customer's need/problem is specifically defined.

*B. Phase 2 – Observe*

This stage involves doing in-depth study and on-site observations regarding the need or issue raised by the client. This can be accomplished using a variety of techniques, including written surveys, interviews, and observational studies that are documented with images or even films. As a result, the general circumstances have been made clear, the target group has been precisely defined, and the customer's demands and behaviour have been thoroughly understood.

*C. Phase 3 - Point-of-View (Define the problem)*

After the observations, the observations should be summarized for one user of the prototype, whose problem/need should be summarized in a clearly defined question.

*D. Phase 4 – Ideate (Finding and selecting ideas)*

The real brainstorming happens only at this point. Strictly separated from this, ideas can be analysed in a customer-centric way to identify weak points and make a selection decision based on idea evaluation. At this stage, you want to get obvious — or downright impossible! solutions out the way first. Ideally, you'd end this phase with a number of possible ideas and opportunities to prototype and take into testing.

*E. Phase 5 – Prototype (Develop the prototype)*

Prototypes are distributed among the design and development team. The goal is to demote the no-goes based on ergonomics, functionality, practicality or construction cost, and advance ideas with real potential to the fifth and final stage. In this very important phase, ideas should be visualized, concretized, sketched, planned, modelled/simulated, etc. as soon as possible. In addition to the technical field, you can talk anduoite; rapid prototyping ", where prototyping doesn't really apply not only for products but also for services. Several prototype methods are available for this purpose.

At this time, the prototypes are circulated around the design and development team. The mission is to discount any no-goers, based on ergonomics, functionality, practicality or cost to build, and progress ideas with real potential into the fifth and final stage

*F. Phase 6 - Test*

In this last stage, thoughts are additionally evolved and tried with additional examinations and client criticism. What's more, significant issues in regards to improvement, creation and showcasing should be explained.

In the process stream introduced here, the genuine execution stage with the advancement of the thought into a marketable item/administration would follow just later. Notwithstanding, it is vital to direct client research under controlled conditions, without biases and suppositions, and to recall that the benefit of testing is to create your item all that it tends to be. Once in a while you get to that last stage and acknowledge you need to return to the planning phase.

## IV. IMPORTANCE OF DESIGN THINKING IN TODAY'S WORLD

In recent decades, it has been critical to build and redefine the abilities that enable us to comprehend and adapt to rapid changes in the environment and behaviour. The world has gotten more linked and complicated, and design thinking provides a chance to deal with this shift in a more humane manner. Design thinking is used by design teams to tackle ill-defined or unknown challenges because it reframes them in a human perspective, allowing designers to focus on what is most important to consumers. Design thinking allows us to look beyond the box and go deeper into issue resolution. It enables designers to do appropriate research, build prototypes, and test goods and services to discover innovative approaches to fulfil consumer demands. The design thinking process has become increasingly popular in recent decades as key to the success of many high-profile global organizations. This extraordinary thinking is now taught at leading universities around the world and encouraged at all levels of business.

Design thinking improves the world around us every day because it can create disruptive solutions in disruptive and innovative ways. Design thinking is more than just a process, it opens up a whole new way of thinking and provides practical methods to help you implement that new way of thinking.

## V. THE BENEFITS OF DESIGN THINKING

A design thinking methodology based on an alternative problem-solving perspective offers many advantages.

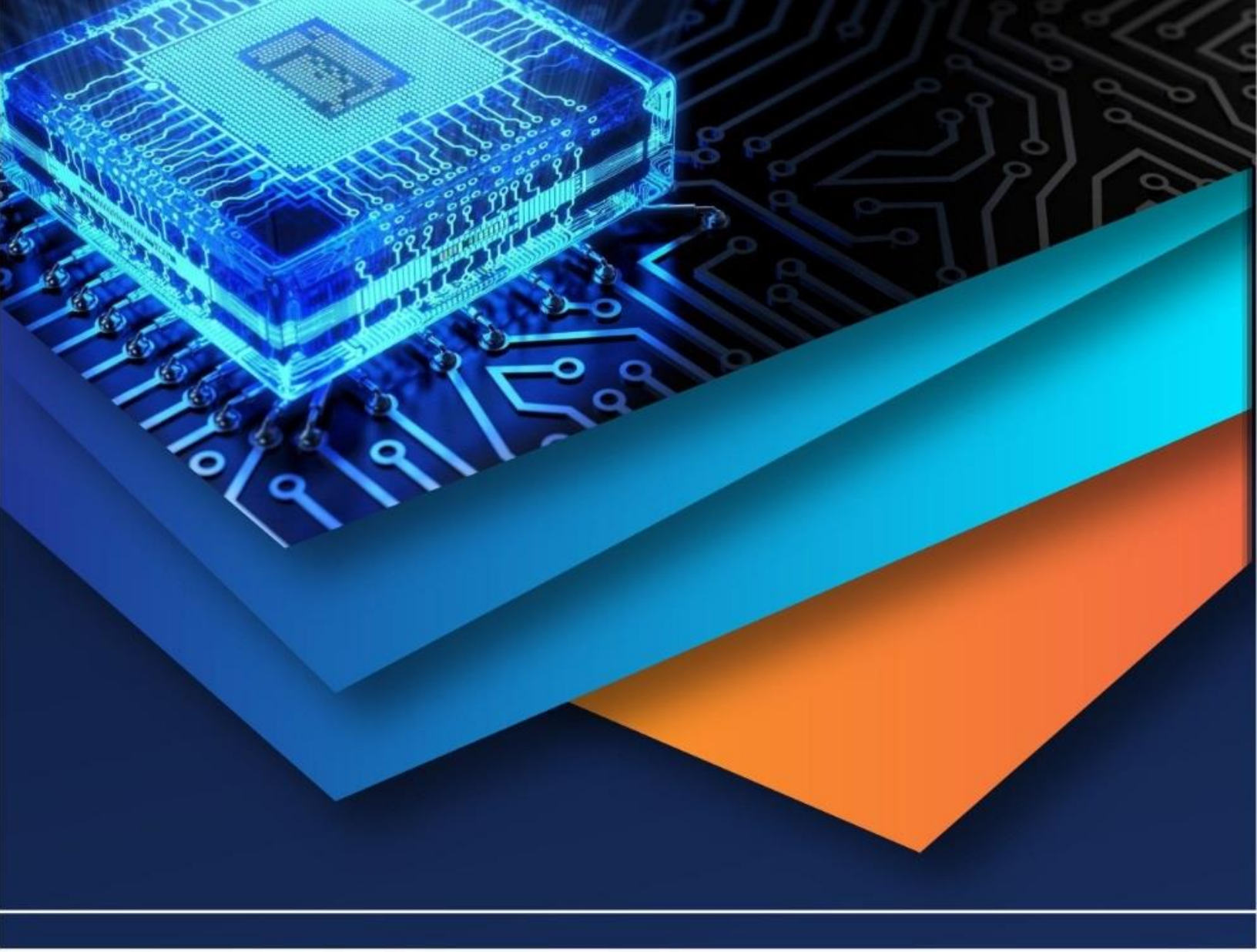
1) *User-cantered:* The user is at the center of design thinking. The golden thread in the whole process is the user; their needs, to better understand them, to create a real solution to the user's problem, in other words, people first.
2) *Understanding:* The user focus approach goes well beyond simply asking clients what they hope their product will accomplish for them. Understanding the mindset and experience of the end user is crucial to design thinking. When someone uses design thinking effectively, they connect with the user on an emotional level, empathise with them, and then personally invest in coming up with the greatest solution. The procedure pushes practitioners to have greater interpersonal awareness.
3) *Community-Based:* In design thinking, individuals collaborate. The organisation and quality of the collaboration directly benefit when a diverse collection of roles gets together multiple times to work towards a shared goal
4) *A Focus on the Practical:* Design thinking is not theoretical in the slightest. It needs to be targeted at a real-world problem with a particular goal of adding value in order to be effective.
5) *Tried and Tested:* Sticking with the applied concept, design thinking incorporates a real-world Development procedure. Assembly of prototypes, which frequently address and test a single feature or aspect of a potential solution, yields prompt feedback that informs the next design and test. Owing to its non-linear structure, the design thinking process frequently permits the creation of numerous prototypes at the same time, promoting faster—though occasionally chaotic—working and idea cross pollination.
6) *Constantly Enhancing Collaboration:* Longer term, internal benefits of design thinking for organisations include training employees in concepts like empathy, user-first thinking, and quick idea testing. This methodical investigation and exposure to the needs and experiences of others fosters a collaborative and open-minded mindset that may set off an upward spiral of continuously increasing teamwork.
7) *A Learning Organisation:* The fact that design thinking is a process that is centred on learning need to be another clear feature. In fact, looking for what you don't yet know about the scenario (for users, the client, or yourself) and starting to ask questions is generally, a solid re-ignition method if the process ever starts to slow down. A creative organisation is one where learning is ingrained in its culture.

## VI. CONCLUSION

Iterative and non-linear is how Design Thinking works. The design team continuously evaluates, challenges, and refines its original assumptions and conclusions. The last step of the original work process offers results that assist define the problem and parameters, as well as providing fresh insights. insights that allow us to envision alternate solutions that would not have been conceivable with our previous level of awareness.

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