DESIGN THINKING

DIPLOMA WALLAH

CSE

Jharkhand University Of Technology (JUT)

Unit- 1

1.1 What is Different About Design Thinking

Introduction

Design Thinking is not a single method or formula; it is a **mindset**, a **philosophy**, and a **systematic process** for solving complex human problems creatively.
In today's world, most problems are not straightforward — they are ambiguous, interconnected, and deeply human. Traditional problem-solving methods rely on logic, analysis, and past experiences. These work well for technical or mathematical problems but fail when human emotions, behaviors, and motivations are involved.

This is where Design Thinking stands apart. It blends **empathy (human understanding)**, **creativity (idea generation)**, and **rationality (practical implementation)** to arrive at solutions that are not only efficient but also meaningful for people.

Meaning and Definition

Design Thinking can be defined as a **human-centered, iterative process** that uses empathy and experimentation to solve complex problems. It seeks to understand the user, challenge assumptions, redefine problems, and create innovative solutions that are tested and refined continuously.

In simple words, **Design Thinking is about designing with the user, not just for the user**.

Key Features that Make It Different

1. **Human-Centered Approach**
   Design Thinking begins with the people we are designing for.

Instead of focusing on what technology can do or what the market wants, it starts by understanding *how people think, feel, and behave*. The goal is to create solutions that improve the human experience.

2. **Empathy-Based Understanding**
   Designers step into the shoes of users to understand their challenges and aspirations. Empathy transforms how we define the problem and helps us design more relevant solutions.
3. **Iterative Process**
   Unlike traditional linear models (problem → analysis → solution), Design Thinking is circular. Designers continuously revisit earlier stages, refining ideas based on testing and user feedback.
4. **Encouragement of Creativity and Risk-Taking**
   It encourages experimentation and considers failures as learning opportunities. Instead of following set paths, teams are motivated to explore, test, and improve.
5. **Collaborative and Multidisciplinary**
   Design Thinking involves people from diverse backgrounds — designers, engineers, sociologists, business experts — all working together. Each contributes unique perspectives that lead to holistic innovation.
6. **Focus on Solutions, Not Problems**
   Traditional thinking often gets stuck analyzing the problem. Design Thinking moves quickly toward creating *possible* and *testable* solutions.

Traditional Thinking vs. Design Thinking

Aspect	Traditional Thinking	Design Thinking
Focus	Problem and analysis	Human needs and experiences
Approach	Logical and data-driven	Creative and empathetic
Process	Linear, step-by-step	Iterative and circular

Failure View	Avoided and punished	Accepted as learning
Outcome	Efficient solution	Meaningful and user-friendly solution

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Example

When developing a **mobile healthcare app**, a traditional approach may analyze data, technology, and cost to design a standard product. But in Design Thinking, the process begins with *empathy* — interviewing patients, doctors, and nurses to understand their struggles (e.g., older patients find small text difficult). This understanding leads to design choices like larger fonts, voice assistance, and simple navigation — truly addressing human needs.

Conclusion

Design Thinking is different because it blends *logic, creativity, and empathy*.
It is not limited to designers; anyone can apply it — engineers, educators, entrepreneurs, or policymakers — to create innovative, practical, and people-centered solutions.

1.2 Design Thinking Skills

Introduction

Design Thinking demands a unique set of **human and intellectual skills**. These skills help innovators think differently, challenge existing assumptions, and create solutions that truly connect with users.

A design thinker is not simply a creative person but someone who combines **empathy, curiosity, experimentation, and collaboration** to drive innovation.

Essential Skills for Design Thinkers

1. **Empathy**

- The ability to understand another person's emotions, needs, and motivations.
- Empathy enables designers to feel what users feel and discover hidden pain points.
- *Example:* Observing a visually impaired person use an ATM to understand accessibility issues.

2. **Observation and Listening**
   - Carefully watching how people interact with products and environments reveals unspoken challenges.
   - Designers must listen actively, not just to what users say, but what they mean.
3. **Curiosity**
   - A strong desire to ask "Why?", "What if?", and "How might we?".
   - Curiosity drives innovation by challenging old habits and assumptions.
4. **Creativity**
   - Thinking beyond obvious solutions.
   - Encourages imagination, open-mindedness, and the ability to see possibilities that others miss.
5. **Collaboration**
   - Design Thinking thrives on teamwork. Diverse groups bring multiple viewpoints and foster better outcomes.
6. **Critical Thinking**
   - Evaluating ideas logically and selecting the ones that are feasible, desirable, and viable.
7. **Visualization**
   - Communicating complex ideas using sketches, models, diagrams, or storyboards.
8. **Experimentation and Adaptability**
   - Trying new ideas and adjusting them based on results.

- Design Thinkers must be comfortable with change and uncertainty.

Conclusion

Design Thinking skills help transform abstract problems into tangible solutions.
They combine emotional intelligence, creativity, and analytical thinking — a rare mix that fuels true innovation.

1.3 Principles of Design Thinking

Introduction

The **principles of Design Thinking** act as guiding philosophies that define how to think, plan, and execute during the innovation process. These principles ensure that problem-solving remains user-focused, iterative, and experimental rather than mechanical and rigid.

Core Principles

1. **Empathy**
   - Understand the people for whom you're designing.
   - Through observation, interviews, and engagement, designers uncover hidden needs that users themselves may not articulate.
2. **Define**
   - Convert user observations into clear problem statements.
   - Helps frame challenges as opportunities — e.g., *"How might we improve patient comfort in hospitals?"*
3. **Ideation**
   - Generate multiple creative ideas without limiting imagination.
   - Encourages divergent thinking — exploring many directions before choosing one.

4. **Prototyping**
    - Turn ideas into physical or digital models.
    - These prototypes are rough, quick, and inexpensive ways to test assumptions.
5. **Testing and Iteration**
    - Solutions are tested with users. Feedback is collected and used to improve the design.
    - This continuous process ensures relevance and effectiveness.

Other Supporting Principles

- **Collaboration:** Teams of diverse members work together.
- **Action over Discussion:** Focus on doing and testing, not just planning.
- **Fail Fast, Learn Fast:** Mistakes are treated as steps toward success.

Conclusion

The principles of Design Thinking ensure that innovation stays human-focused, creative, and grounded in reality. They transform design from a mechanical process into an empathetic art of problem-solving.

1.4 The Basis for Design Thinking

Introduction

Every Design Thinking process stands upon three major foundations — **Desirability, Feasibility, and Viability**. These three pillars ensure that an idea is not only human-centered but also technically achievable and economically sustainable.

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1. Desirability (Human Factor)

- Focuses on what people *need, want,* and *value*.

- It ensures that solutions are emotionally and functionally meaningful to the user.

2. Feasibility (Technical Factor)

- Determines whether the idea can actually be built with current technology and resources.
- Involves engineering and practical considerations.

3. Viability (Business Factor)

- Evaluates whether the solution is financially sustainable.
- The design must align with business goals and generate value.

Intersection of All Three

The most successful innovations lie **where desirability, feasibility, and viability overlap**.
At that intersection, ideas are *humanly desirable*, *technically feasible*, and *financially viable*.

Example

For a **smart wearable health tracker**:

- *Desirability:* People want to track fitness easily.
- *Feasibility:* Sensors and Bluetooth technology make it possible.
- *Viability:* The company can manufacture and sell it profitably.

Conclusion

The foundation of Design Thinking ensures that innovation remains practical, valuable, and human-centered, bridging creativity and business logic.

1.5 The Design Thinking Team

Introduction

Design Thinking thrives in a team environment. A single person cannot embody all the diverse perspectives needed to understand human needs, design creative solutions, and test them effectively.

Therefore, Design Thinking teams are **multidisciplinary**, combining technical, creative, and analytical skills.

Typical Roles in a Design Thinking Team

1. **Designers:**
   Create visuals, interfaces, and experiences that connect emotionally with users.
2. **Engineers or Technologists:**
   Ensure that ideas can be built practically and are technologically sound.
3. **Business Strategists:**
   Assess the financial and market aspects of ideas.
4. **Users or Customers:**
   Provide feedback and real-life context for improvement.
5. **Facilitator or Team Leader:**
   Guides the design process, ensures collaboration, and keeps focus on goals.

Qualities of a Good Team

- Open-mindedness and respect for others' ideas.
- Equal participation from all members.
- Willingness to learn from feedback and failure.

Example

A company designing a new public transport app forms a team of:

- Software developers (feasibility)
- Designers (user interface)
- Commuters (user perspective)

- Business experts (profit analysis)

Together they create an efficient, human-centered app that works well for all.

1.6 Design Thinking Workshops and Meetings

Introduction

Design Thinking workshops are practical, hands-on sessions where participants explore real problems and create innovative solutions collaboratively. They are structured to encourage creativity, experimentation, and teamwork.

Purpose

- To generate ideas quickly.
- To align teams on user needs.
- To create prototypes and test solutions.
- To encourage cross-disciplinary collaboration.

Phases in a Workshop

1. **Empathy Phase:**
   Understanding user needs through discussions, surveys, or interviews.
   Example: Observing how people use ATMs.
2. **Define Phase:**
   Clearly stating the core problem based on insights.
3. **Ideation Phase:**
   Brainstorming multiple solutions without judgment.
4. **Prototyping Phase:**
   Turning selected ideas into physical or visual models.
5. **Testing Phase:**
   Presenting prototypes to real users and collecting feedback.

Best Practices

- Keep sessions short and focused.
- Use sticky notes, sketches, and whiteboards.
- Allow every participant to contribute.
- Document every idea.
- Encourage creative freedom.

Example

A workshop held to redesign school classrooms includes teachers, students, and architects.
They jointly identify issues (e.g., lighting, comfort) and prototype new layouts using paper models.
The tested designs lead to real improvements in classroom environments.

1.7 Exercises and Case-Based Discussions

Exercises

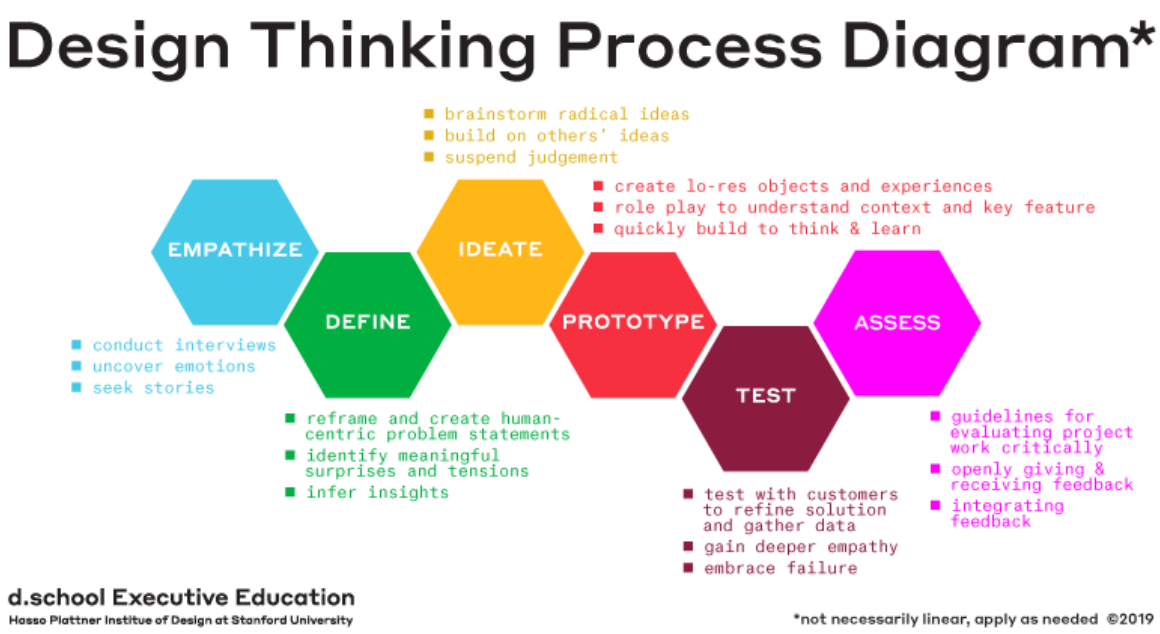
1. **Empathy Mapping:** Identify what users *say, think, feel,* and *do* during an experience.
2. **Idea Generation Challenge:** List 50 ideas to improve waste management.
3. **Prototyping Exercise:** Create a paper model for a new product.
4. **Testing Activity:** Present to users and record feedback.

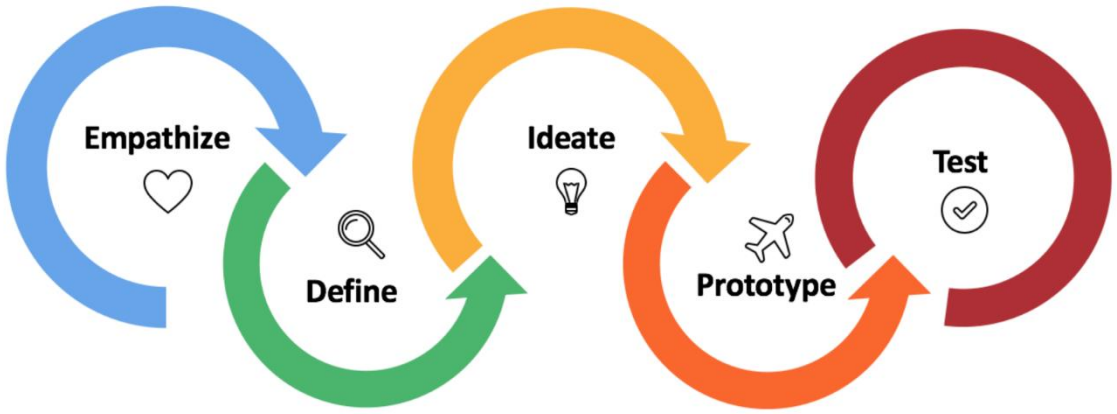
Case Study: Redesigning a Hospital Waiting Room

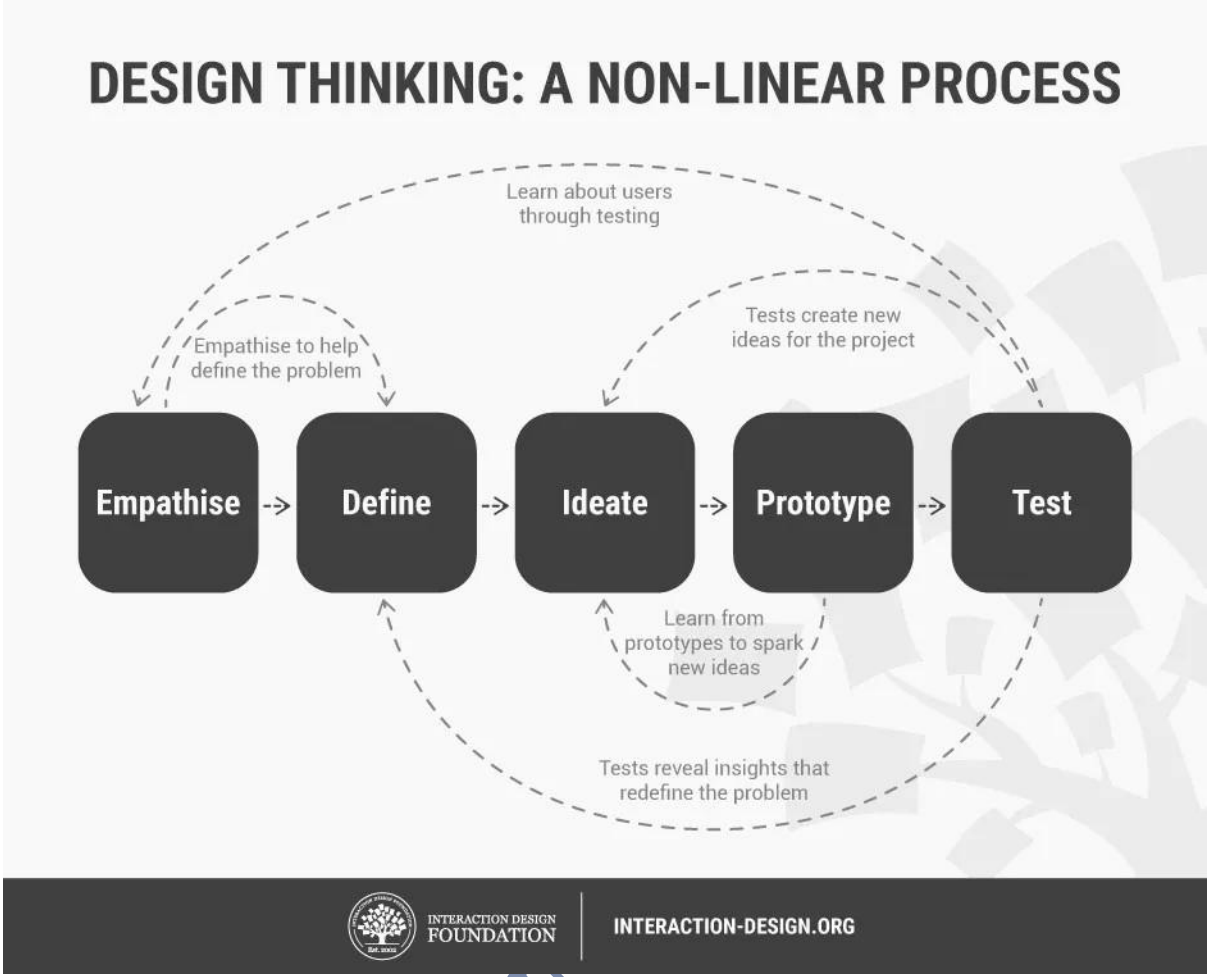
Problem: Patients feel anxious, uncomfortable, and uninformed during waiting times.
Empathy: Interviews reveal stress due to poor seating, unclear information, and long delays.
Define: "How might we make waiting time less stressful and more comfortable?"
Ideate: Ideas include digital queue systems, relaxing music,

comfortable chairs, and entertainment screens.
Prototype: A layout model with these improvements.
Test: Users report reduced anxiety and higher satisfaction.

Result: Enhanced patient experience through empathetic design.






DESIGN THINKING: A NON-LINEAR PROCESS
Learn about users through testing
Empathise to help define the problem
Tests create new ideas for the project
Empathise
Define
Ideate
Prototype
Test
Learn from prototypes to spark new ideas
Tests reveal insights that redefine the problem
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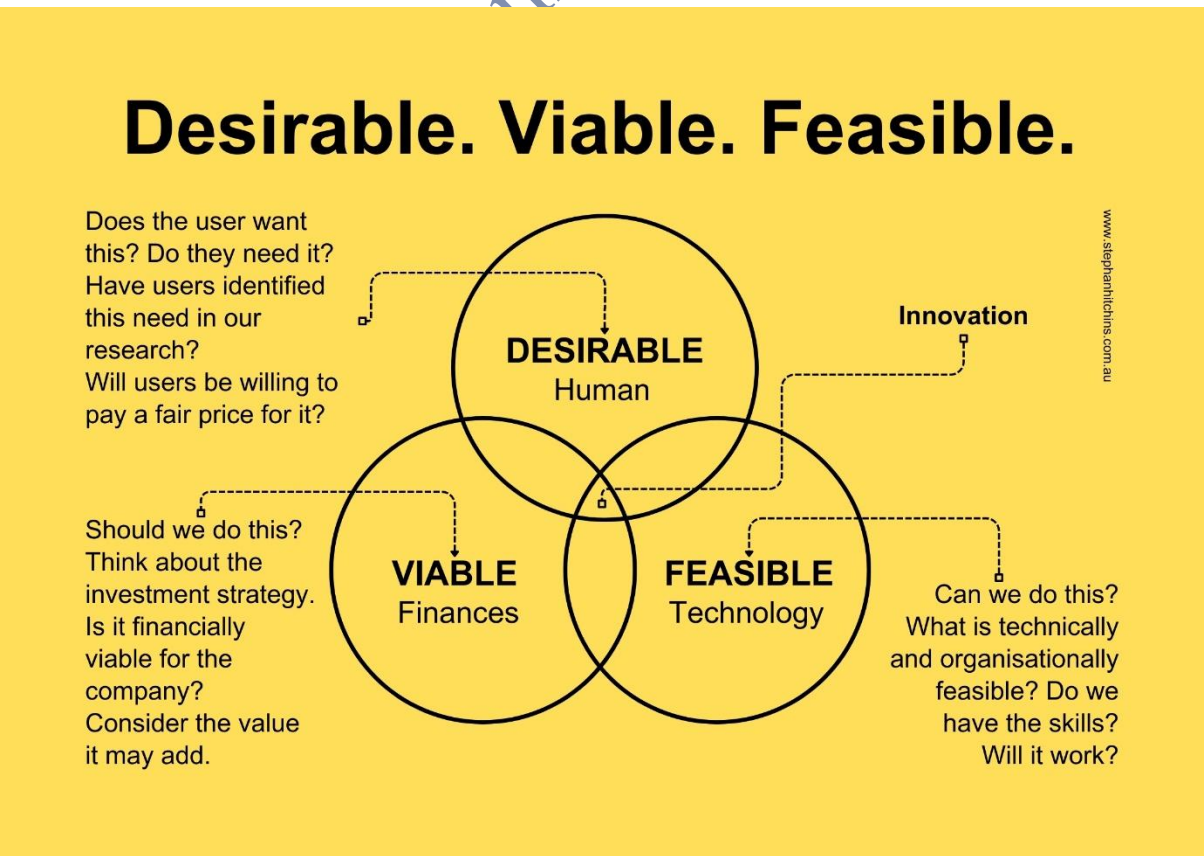
Desirable. Viable. Feasible.
Does the user want this? Do they need it? Have users identified this need in our research? Will users be willing to pay a fair price for it?
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Innovation
Should we do this? Think about the investment strategy. Is it financially viable for the company? Consider the value it may add.
VIABLE
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Can we do this? What is technically and organisationally feasible? Do we have the skills? Will it work?
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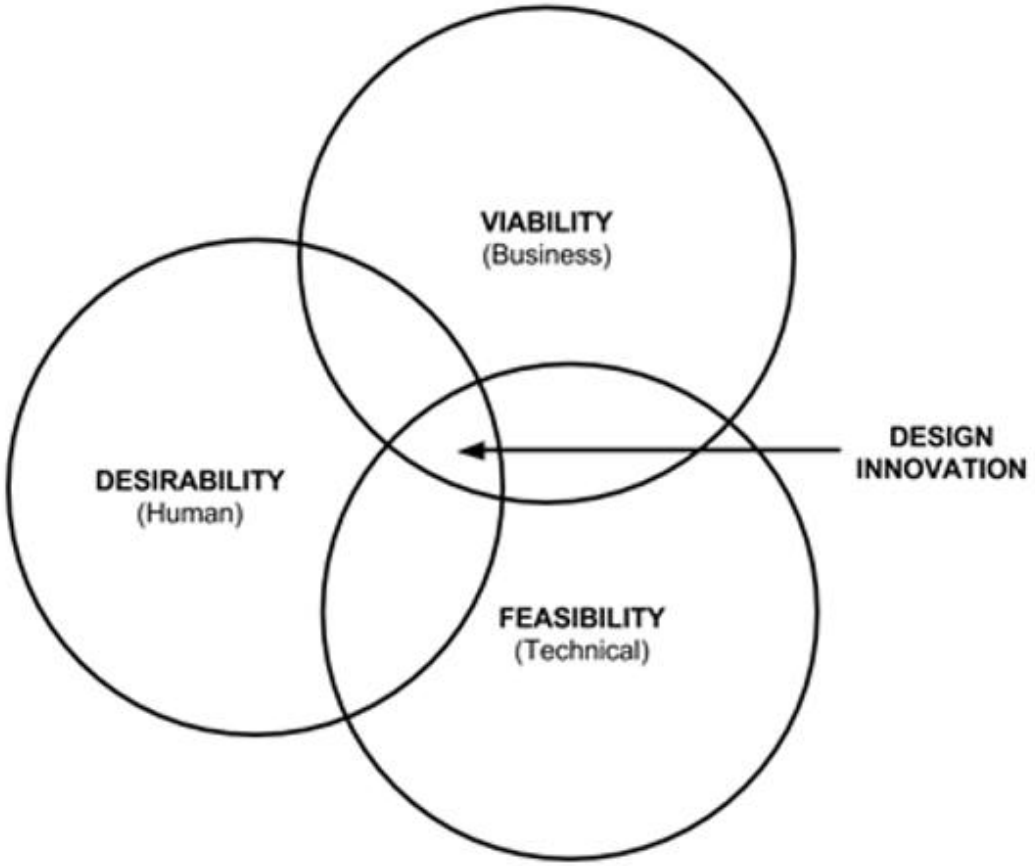

✅ Summary

Design Thinking is a **human-centered, iterative process** that focuses on understanding users, generating creative ideas, and building meaningful, feasible, and viable solutions.
It relies on empathy, collaboration, experimentation, and constant feedback to transform problems into opportunities for innovation.

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