D'source Project

Open Design School

MoE's Innovation Cell

Introduction to Design

Design Thinking & Innovation Process

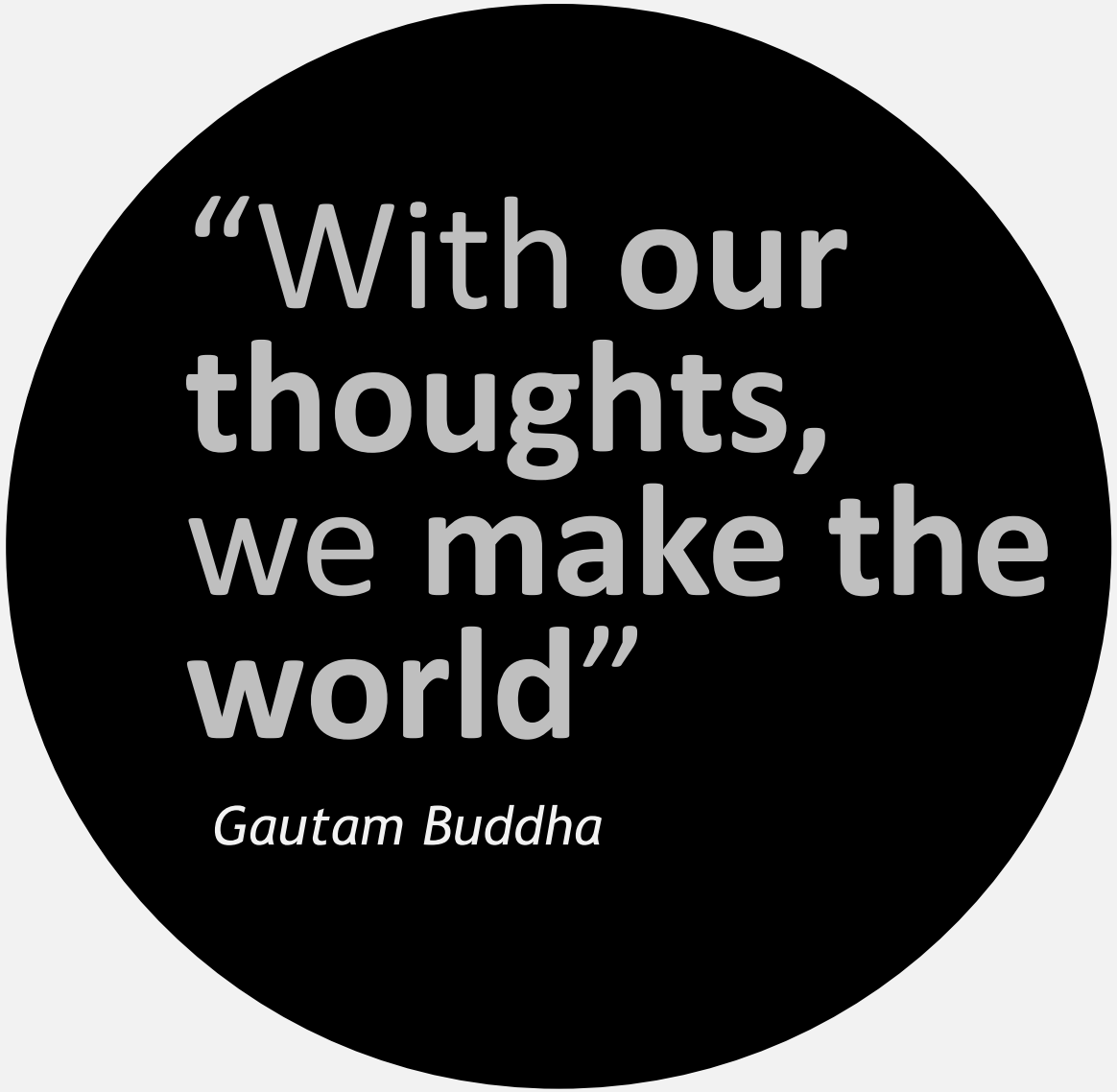
Section: A1, Week 1

Design Thinking & Innovation (DT&I)

Section: A1,
Week 1

Design Thinking & Innovation (DT&I)

Prof. Ravi Poovaiah
IDC School of Design, IIT Bombay


“With our thoughts, we make the world”
Gautam Buddha

THINK!
DESIGN

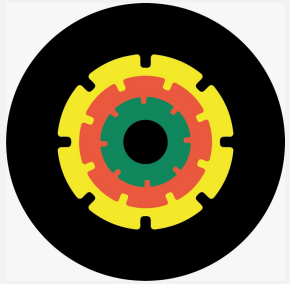
A1.0

DT&I Course Structure

DT&I Course Structure - every week

DT&I Process
(20%)

> Design Process
> Design Models
> Design Theory



DT&I Tools
(20%)

> Design Tools
> Mappings
> Visualization

DT&I Project
(50%)

> Live Project
> Do it & Learn
> Enterprise

DT&I Case Study
(10%)

> Best practices
> Professionals
> Contextual Ex.

DT&I Course = DT&I Process + DT&I Tools + DT&I Projects + DT&I Case Study

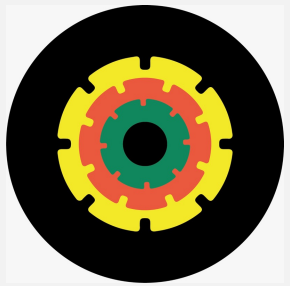
DT&I Course Structure - 16 weeks

DT&I Process

(20%)

	W1	- Understanding Design Thinking and Innovation Process
Problem:	W2	- Identification and selection of DT&I problem to solve
Research:	W3/4	- Secondary Research on Problem Space
	W5/6	- Primary Research Methods
Analysis:	W7/8	- Analysis of Problem Space through Visualization/Mappings
Ideate:	W9/10	- Ideation, Explorations and Creativity Techniques
Build:	W11/12	- Soft and hard Prototyping
Test:	W13/14	- Test, Feedback and Iterative Design
Implement:	W15/16	- Business Model and DT&I Project Presentation

DT&I Course Structure - Tools

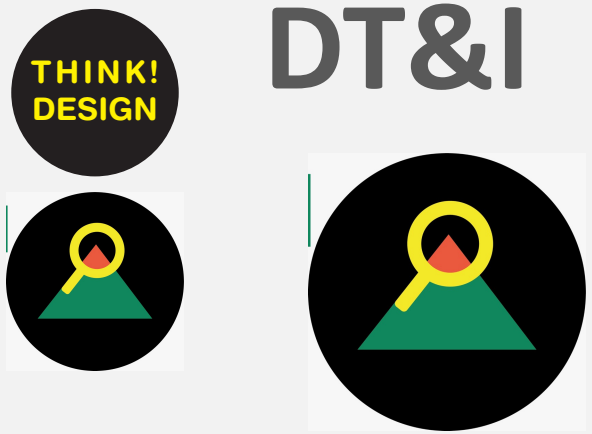


DT&I Tools

(20%)

Brain-storming
Affinity mapping
Mind-mapping
5W + H listing
User Mapping
Artifact Mapping
SWOT Analysis
Contextual Inquiry
Personas
User Narratives
Causal Diagrams
Ethnographic Tools
Opportunity Listing
Life Cycle Mapping
System Mapping
Activity/Journey Mapping
Synectics
Idea Sketching
Body storming
Lateral Thinking
SCAMPER
Paper Prototype
Scenarios and Storyboarding
Information Architecture
Hi-fidelity prototype
Proof-of-Concept
Usability Studies
Human Factors Analysis
User Feedback Methods
Business Model Template
Video Prototyping
Presentation Techniques

DT&I Course Structure – DT&I Project



DT&I Project

(50%)

- You need to select a topic of your choice from the given list of alternative problem areas.

- DT & I project is done during the duration of 16 weeks of this course making use of the different phases of the design process in solving the given problem.

- End of every 8 weeks, a project report along with presentation slides documenting the progress of the project needs to be submitted.

- The grading is 50% based on the report with the presentation slides.

DT&I Course Structure – Case Study

DT&I Case Study

(10%)

- **Case Studies** are examples of DT&I projects that follow the DT&I process and methods.
- They follow the design process in solving the given problem with the phases of research, understanding the problem, analysis, ideation and prototyping resulting in a final solution.

- Case Studies are from different fields and specialisations.

- Many of these case studies are presented by professional experts.

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A1.0

DT&I Course: for Whom? Why?

DT&I Course – for Whom?

Who will benefit?

Design Thinking can be applied to to solve problems in arts, social sciences, law, medicine, engineering, business, etc. so you could come from any of these backgrounds and be able to gain insights from the DT& I course.

- Students, Teachers/Faculty members, NGO's, Professionals, entrepreneurs

- with backgrounds in **Engineering, Technology, Sciences, Arts, Crafts, Design, Social Sciences, Medicine, Law, Business, etc.**

DT&I Course – Why?

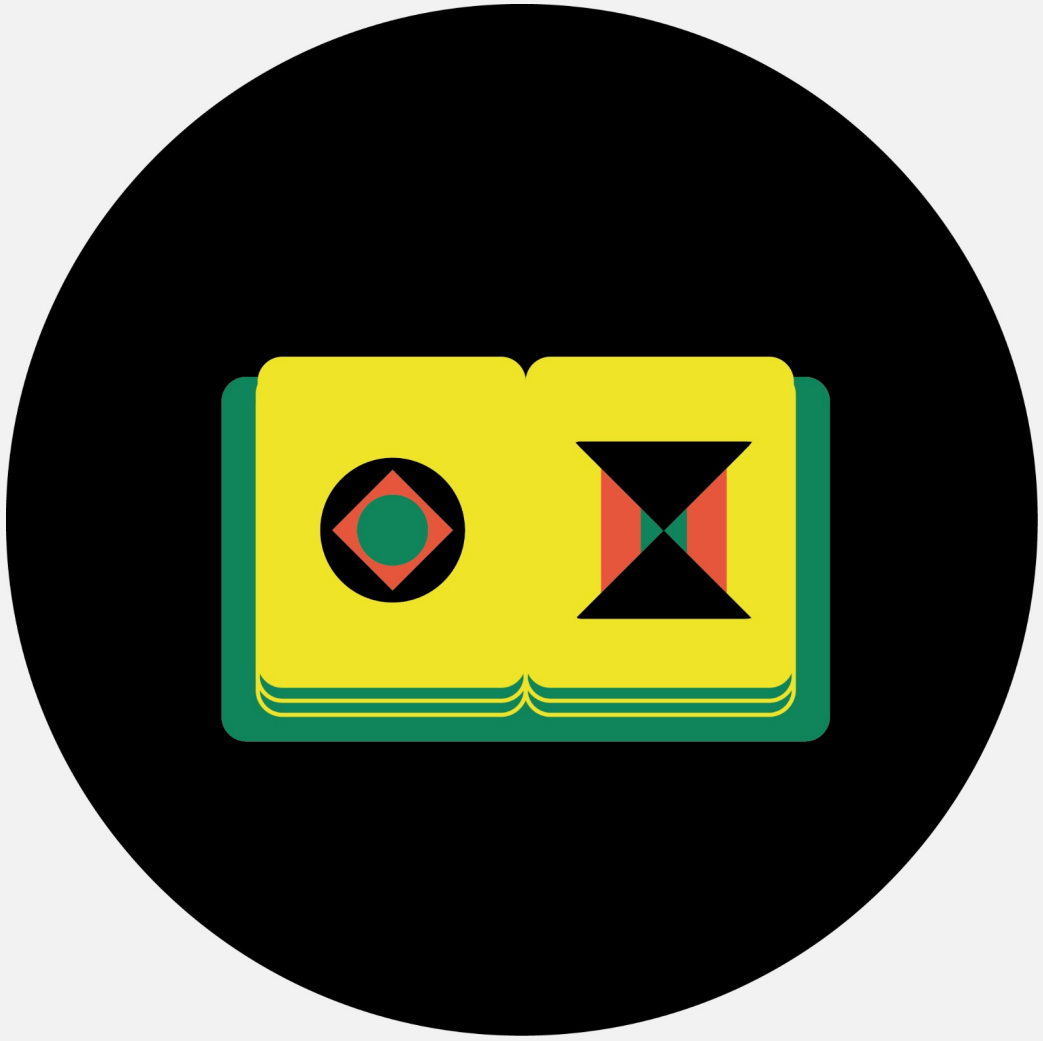
Why should one opt for this course?

This will help **address, identify and solve problems creatively** whatever the field of specialization.

It should be useful to find solutions to issues both within **one's own context** and to issues at **a national or global level**.

Design Thinking and Innovation will assume an ever more important role to play **in the future of our world** when we move towards a creative economy in the coming years.

So if you **would like to be part of this creative innovative practice**, do opt for this course.



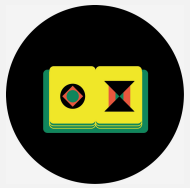
DT&I Process

A1 Introduction

Module A1:

DT&I Introduction:

Introduction Content



A1.2

Context for Design

Ministry of Human Resource Development
Government of India

mygov मेरी सरकार

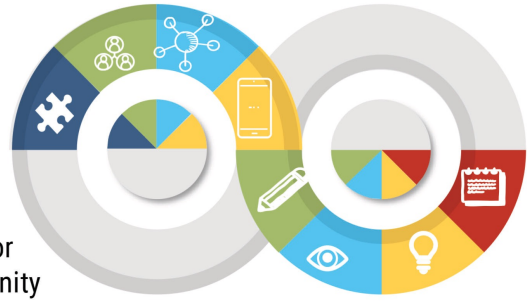
Key Principles of NEP

- **Respect for Diversity & Local Context**
  In all curriculum, pedagogy, and policy.

- **Equity & Inclusion**
  As the cornerstone of all educational decisions.

- **Community Participation**
  Encouragement and facilitation for philanthropic, private and community participation.

- **Use of Technology**
  In teaching and learning, removing language barriers, for Divyang students, and in educational planning and management.



- **Emphasize Conceptual Understanding**
  Rather than rote learning and learning-for-exams

- **Unique Capabilities**
  Recognizing, identifying them in each student.

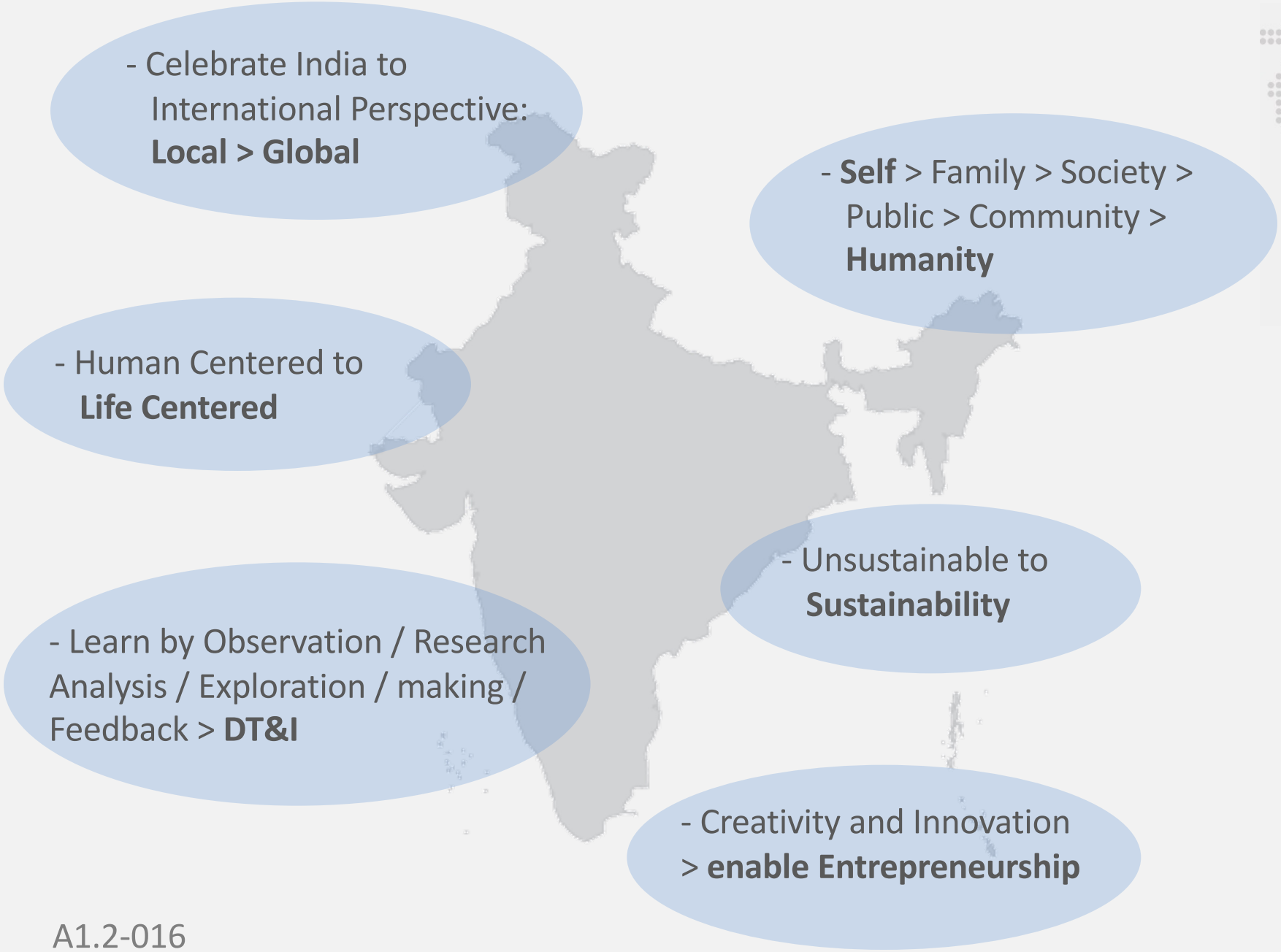
- **Critical thinking and Creativity**
  To encourage logical decision-making and innovation

- **Continuous Review**
  Based on sustained research and regular assessment by educational experts.

NEP2020

Keywords relevant to DT&I:

- Conceptual Understanding
- Critical Thinking
- Creativity
- Innovation
- Equity and Inclusion



The Context for Design Thinking & Innovation:

- **Local > Global**
- **Self > Humanity**
- **Human – Life**
- **Sustainability**
- **Observation > Solutions**
- **Creativity and Innovation**

Context in India

- Young & Energetic
- Rural & Urban
- Learning Skills
- Localization
- Entrepreneurship

India Population
1.4 billion

Languages
22 official
1576 others

Rural – 64%
Urban – 36%
6,41,000 villages

Literacy rates
74%
82% males
66% women

MSME's - 26 m
Rural Enterprises - 12.8 m
Engineering Grads – 1m/yr
Gifted Craftsmen - 30 m

-Ref:
varoius sources
-Census 2007

THINK!
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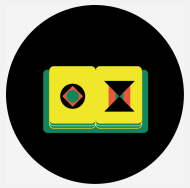


A1.3

What is Design?

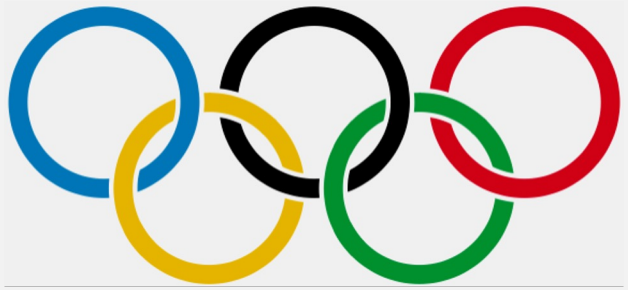
What is Design?

In a nutshell, design is about **understanding needs** and being **sensitive to issues**, **identifying problems** that need to be solved, and **creating innovative appropriate solutions** considering aspects of **context, social concerns, sustainability** and **technology** such that it makes a **positive difference to life in our universe.**

Is this Design?

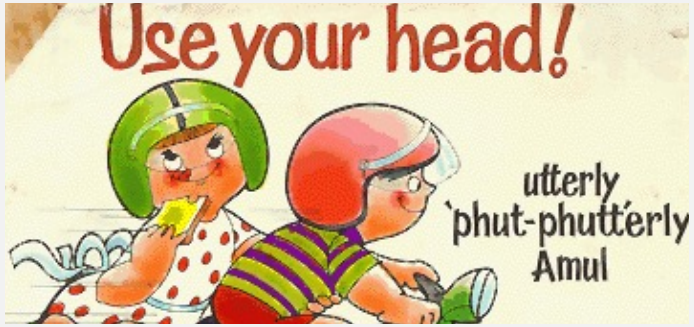
Titan logo:

Olympics Symbol:



Hardness testing machine

Amul Campaign:



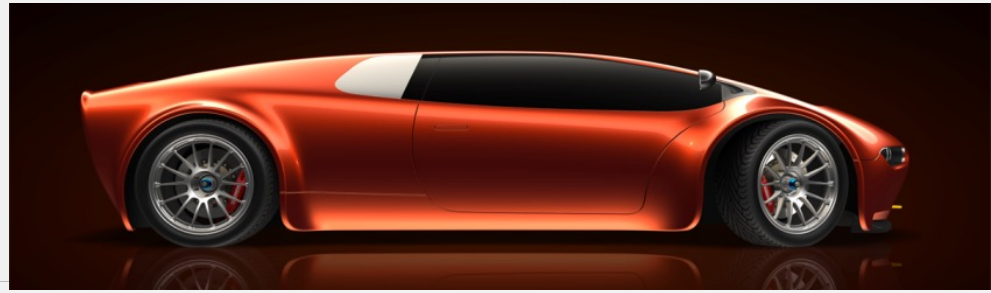
Folk Art:

Furniture:

Lota:

Tabla:

Kettle:



Sports Car:

User and Environment (Empathy)

Form and Function (Value)

Creativity and Innovation (Future)

Method and Process (Tools)

What is Design?

User and Environment

. Useful to the User
. Sustainable Solutions

Form and Function

. Good looking Shape/Form
. Works well

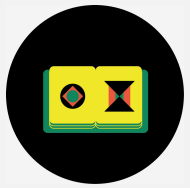
Creativity and Innovation

. Something new
. Innovative

Method and Process

. Solve Problems
. Phase by Phase

THINK!
DESIGN



A1.4

Who is a Designer?

Who is a Designer?

A designer is a highly **creative person** who **enjoys solving problems**. The reason why they enjoy being creative is that they are **sensitive to the needs of life** and understand the extent of the **issues in society and environment**. This sensitivity allows a designer to be **logical (analytical)** as well as **intuitive (creative)** and to think of **opportunities for creative design solutions** that enhance the **lives of people and other living beings**.

Professions for a Designer:

Design and Innovation being an important part of the industry, there are many options for you to pursue:

> Communication/Graphic Design, Product Design, Animation Design, Vehicle Design, Architecture Design, Environmental Design, Interface/Interaction Design, Textile/Fashion Design, Service Design, and such.

> Systems Design, Software Design, Engineering Design, Digital Design, Transportation Design, Structural Design, Equipment Design, Machine Design, and such.

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A1.5

What is Design Thinking?

What is Design Thinking?

Design Thinking is a method to solve problems using a process. It is one of the most effective ways to create something new.

A process that helps you understand users, research relevant information, identify and analyse the problem, explore creative ideas or concepts, then prototype, build, test and get feedback - to find an appropriate innovative solution to the problem.

Design Thinking as a process converts a problem into a solution, and an idea into something useful, whether it's a vehicle, a building, a graphic, an equipment, a service or a system.

THINK!
DESIGN

A1.6

Who is a Design Thinker?

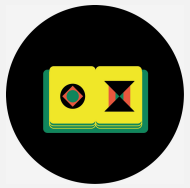
Who is a Design Thinker?

A Design Thinker is a person who applies the Design Thinking process to solve problems and find creative innovative solutions in any field or domain.

For example, you could apply Design Thinking to **solve problems in several fields**. It could even be applied to solve problems at **home** or in your **neighbourhood** or in your **place of work**.

Whether it is a **simple problem or a complex problem**, a design thinker finds creative ways to tackle them.

THINK!
DESIGN

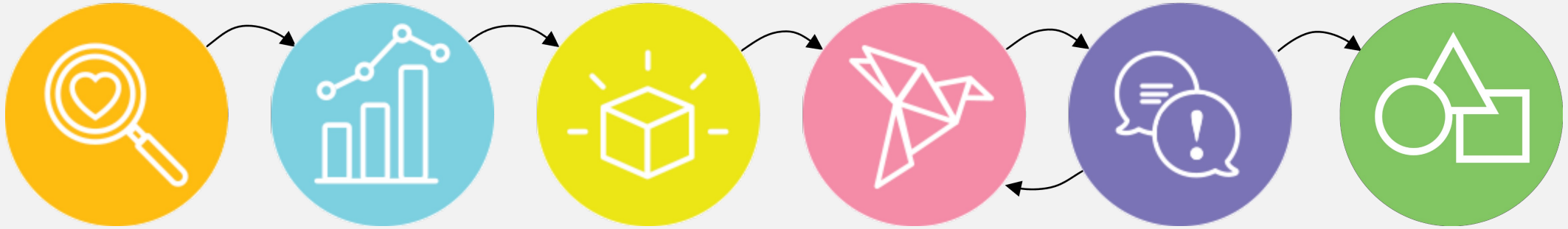


A1.7

What is the Design Thinking Process?

What is the Design Thinking Process?

It involves the following six phases in the process of solving a problem:



Phase 1:
- **Research**
- Observe
- Empathize
- Study
- Need finding

Phase 2:
- **Analyze**
- Understand
- Synthesize
- Define
- Visualize
- Mappings

Phase 3:
- **Ideate**
- Create
- Explore
- Experiment
- Concepts
- Innovate

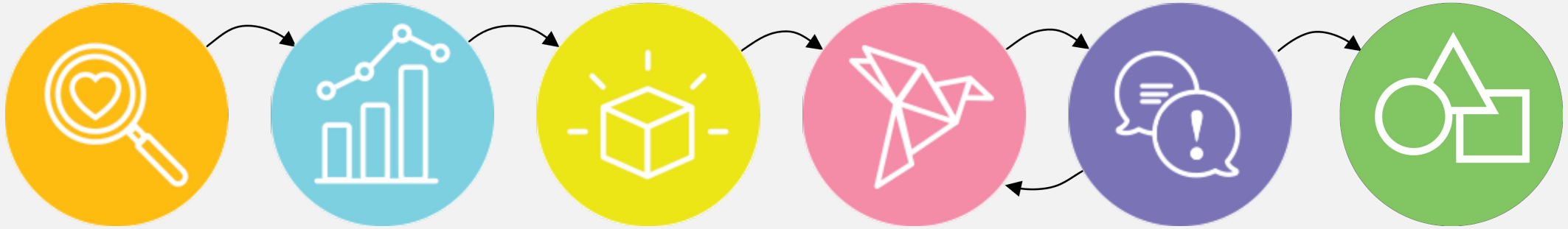
Phase 4:
- **Build**
- Mock-up
- Prototype
- Develop
- Detail

Phase 5:
- **Test**
- Reflect
- Test
- Feedback
- Iterate

Phase 6:
- **Implement**
- Reflect
- Produce
- Industry
- Business
- Enterprise

What is the Design Thinking Process?

Let’s summarise:



Phase 1:

- **Research**

- helps you to identify needs and locate issues to be solved through observation and research

Phase 2:

- **Analyze**

- helps you to understand, define and analyse the problem area

Phase 3:

- **Ideate**

- helps you to come up with several alternate creative innovative solutions to the problem

Phase 4:

- **Build**

- helps you to build mock-ups, creating scenarios, and then prototyping and detailing

Phase 5:

- **Test**

- helps you to get feedback through evaluation and testing

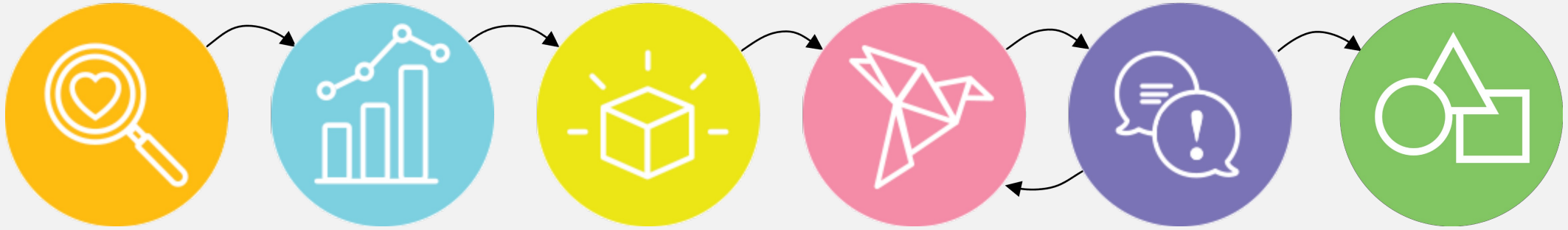
Phase 6:

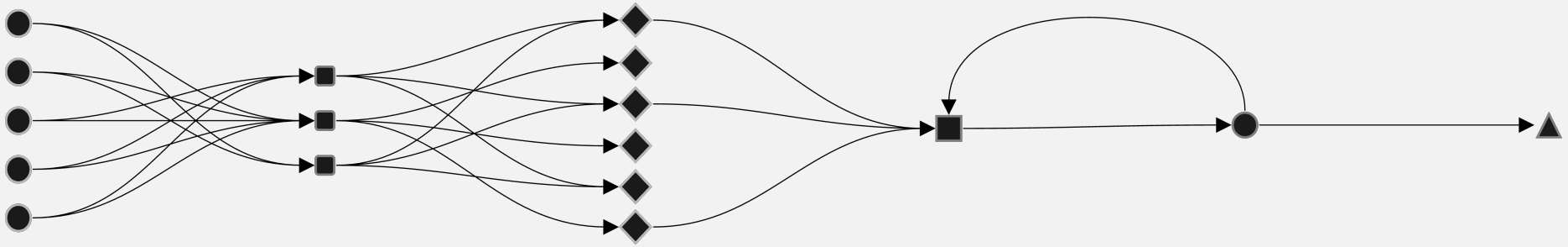
- **Implement**

- helps you to actualize and produce the solution so that it reaches and gets used by the users

What is the Design Thinking Process?

Let's summarise:





THINK!
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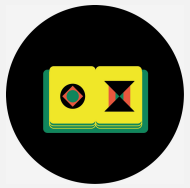

A1.8

What is Innovation?

What is Innovation?

Innovation involves the implementation of something new and replacing or reframing the existing mindset.

It is about **translating a concept, idea, thought, or invention into artefacts and services** that **create value in life**. It is the process of transforming ideas into commercial reality. Innovation plays a major role in society.
It helps us cater to the needs of people that arise from constant physical, social and emotional changes.

Design pursues Creativity of Innovation.

What is Invention?

As compared to Innovation, Invention happens once in a while.

However, each Invention may produce millions of Innovative Products - like the invention of Wheel has produced and continues to produce Innovative Products for the benefit of mankind.

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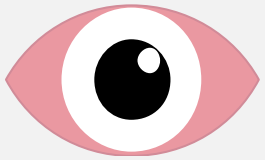
A1.9

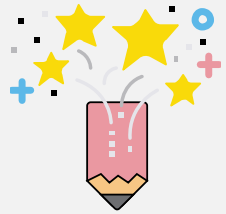
DT&I course Aims and Vision

DT&I Aims and Vision



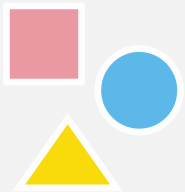
• Sharpen your **sensory** abilities, **cognitive** abilities and **social** abilities

• Nurture your **curiosity** and enhance your **explorative** abilities

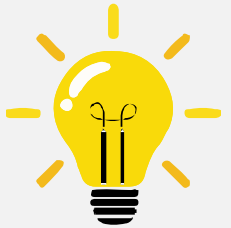


• Foster **creativity** and **innovation** in you

• Be able to locate, **Identify problems** at home, work or your neighbourhood **and solve it**



• Be able to apply **Design Thinking** process and methods to **solve** various **problems**



• Create awareness in you through **observation**, **discovery**, **analysis**, **experience**, **collaboration** and **reflection**

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A1.10

Further Study and References

Further Study and References:

- www.dsource.in
  DT&I, Case Studies, Courses, Tools, and Resources
  https://dsource.in/dti
  https://dsource.in/case-study
  https://dsource.in/course
  https://dsource.in/tools
  https://dsource.in/resource

- Design Thinking Process & Methods + Mapping Methods
  by Robert Curedale, Design Community College Publications, 2016 & 2018

- The Design of Everyday Things
  by Don Norman, Basic Books, 2014

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Design Quote:

“Simplicity is the ultimate sophistication”

Leonardo da Vinci

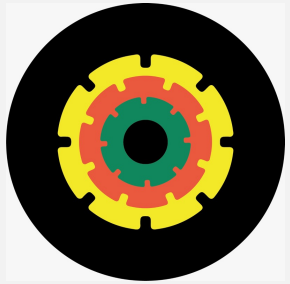
Thanks for Listening

DT&I Theory
Section: A1
Week 1

DT&I Course - Week 1:

DT&I Process
(20%)

> Structure
> Intro to DT&I



DT&I Tools
(20%)

> Brain Storming Key-words + Sorting + Linking

DT&I Project
(50%)

> Select your Topic for DT&I project + Do Brain-Storming & Sorting

DT&I Case Study
(10%)

> Case Study Project Jellow

THINK!
DESIGN

Supporting Organizations:

D’source

D’source Project

Open Design School

MoE’s Innovation Cell

Credits:

Presented by:

Prof. Ravi Poovaiah

D'source Project

Open Design School

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Credits:

Camera & Editing:
Santosh Sonawane

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Credits:

Think Design Animation:

Rajiv Sarkar

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Credits:

Graphic Icons:
Shweta Pathare

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Credits:

End Title Music:

C P Narayan

D'source Project

Open Design School

MoE's Innovation Cell

Credits:

Produced by:

IDC School of Design

IIT Bombay

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