



# Prototyping Part 1

Design Thinking & Innovation  
Process

Section: A11, Week 11



D'source Project



Open Design School



MoE's Innovation Cell



**THINK!  
DESIGN**

# **Design Thinking & Innovation (DT&I)**

Section: A11

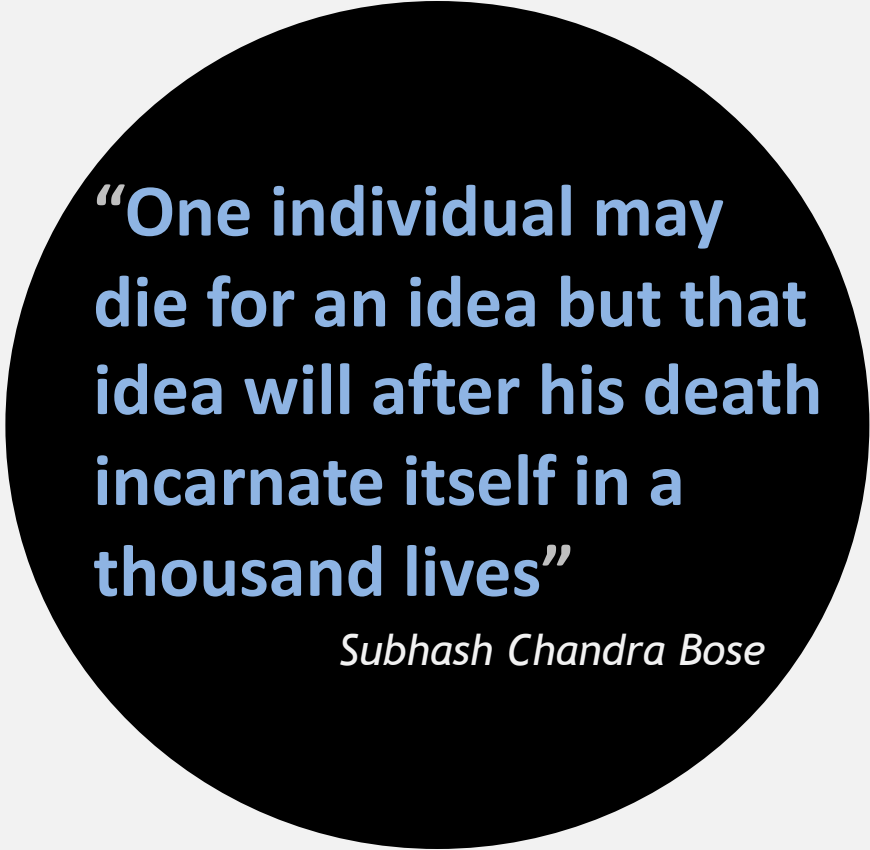
Week 11



**THINK!  
DESIGN**

# **Design Thinking & Innovation (DT&I)**

**Prof. Ravi Poovaiah**  
IDC School of Design, IIT Bombay



**“One individual may  
die for an idea but that  
idea will after his death  
incarnate itself in a  
thousand lives”**

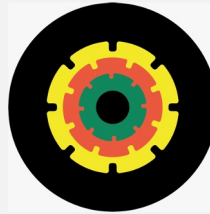
*Subhash Chandra Bose*

# DT&I Course – Week 11:



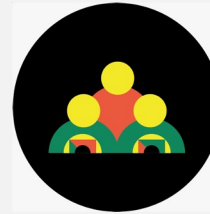
## DT&I Process (20%)

- > Prototyping Part 1
- > Soft Prototype
- > 'Rough Sketches',
- > Paper Prototype
- > Scenarios/ Story-boarding



## DT&I Tools (20%)

- > 'Rough Sketches',
- > Paper Prototype
- > Mock-Ups
- > Scenarios
- > Story-boarding



## DT&I Project (50%)

- > Apply 'Rough Sketches', Paper Prototype, Mock-Ups, Scenarios and Story-boarding



## DT&I Cast Study (10%)

- > Case Study Project:  
**Marbo – sharable data units**



# DT&I Process

A11

## Prototyping – Part 1

Module A11:

THINK!  
DESIGN



A11.1

# DT&I Process: Prototyping - Part 1



# Prototyping – Part 1:

## Content

- A10.1: What is Prototyping Part 1? What is Soft Prototyping?
- A10.2: What are Rough Sketches, Wireframes and draft layouts?
- A10.3: What are Paper Prototypes and Mock-ups with Clay, Cardboard, Soft wood?
- A10.4: What are Scenarios and Storyboards?
- A10.5: Further Study and References

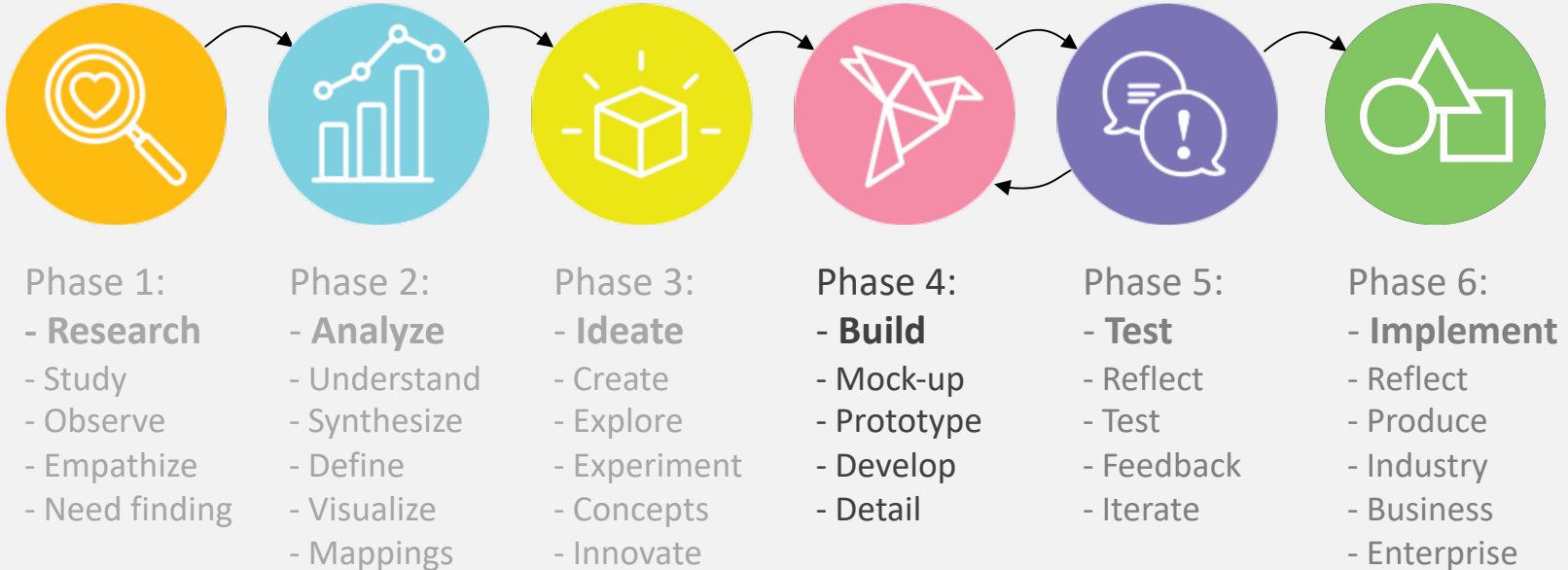


THINK!  
DESIGN



# DT&I Process and Prototyping:

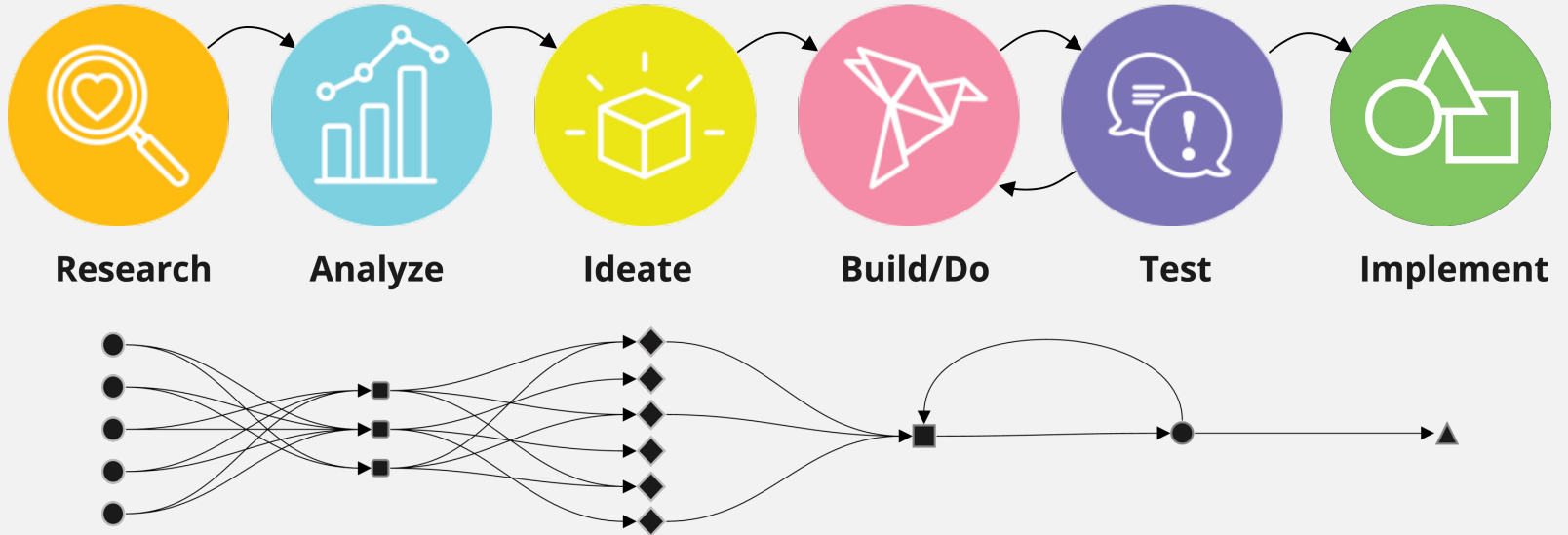
Prototyping is the Fourth phase of the DT&I process.





# DT&I Process and Ideation:

Let's summarize:



THINK!  
DESIGN



A11.2

# What is 'Prototyping' Part 1?



# What is 'Prototyping' Part 1?

**Prototyping Part 1 involves Soft prototyping.**

**Soft prototypes are rough, sample, draft versions of the ideas or concepts and helps one to visualize, make it tangible, test, get feedback and change/iterate before the design is finalized.**

**Soft prototyping is fast, saves time, saves cost and can be a reasonable representation and understanding of what the final design would be like both in terms of its form and function.**



# Where is 'Soft Prototyping' done?

All creative and innovative domains whether it is architecture, arts, music, film, science, technology, product/communication design or animation do soft prototyping as part of the design process.

- Architecture
- Arts
- Films
- Animation
- Graphic Design
- Product Design
- Digital Design
- Science & Technology



# 'Prototyping' in Creative Domains:

## **Architecture:**

- Quick Sketches,
- 3D Renderings,
- Scaled Models

## **Arts:**

- Rough Sketches,
- Draft Drawings,
- Scaled Models

## **Film:**

- Rough Script,
- Scenario Sketches,
- Setting,
- Character Sketches

## **Animation:**

- Rough Script,
- Scenario,
- Character Sketches,
- Animatics

## **Graphic Design:**

- Rough Layouts,
- Paper Prototypes

## **Product Design:**

- Rapid Sketches,
- Rough Renderings,
- Paper/ Foam/  
Plaster Prototypes

## **Digital Design:**

- Rough Sketches,
- Wireframes
- Architecture
- Low-fidelity  
Prototypes

## **Science/Technology:**

- Equations/formulas,
- Sketches, Drawings
- Scaled Models
- Experimental set-up
- Pilot Test

THINK!  
DESIGN



A11.3

What are Rough  
Sketches,  
Wireframes &  
Draft Layouts?

THINK!  
DESIGN

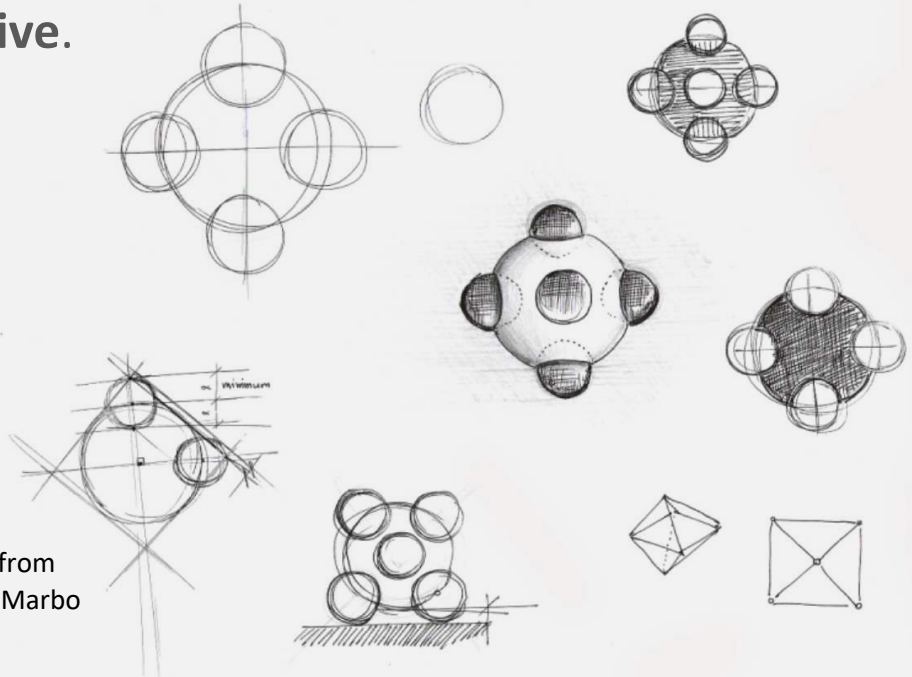


# What are Rough Sketches?

Rough Sketches as the name suggests are rough, quick and enables being iterative.

Rough Sketches are sample, draft versions of the ideas or concepts and helps one to quickly visualize, test, get feedback and change/iterate before the design is finalized.

Reference: from  
dsource.in (Marbo  
Ideation)

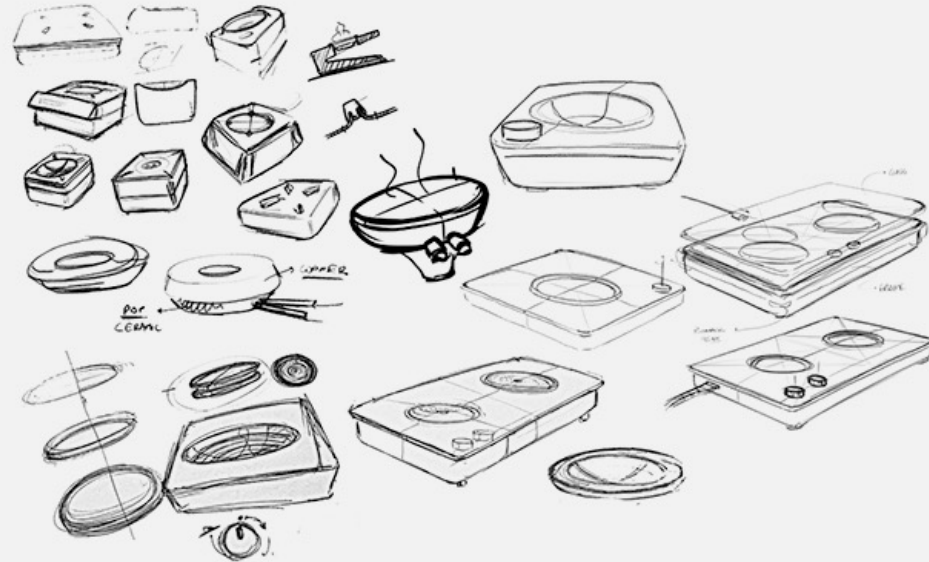






# What are Rough Sketches . . .

Rough Sketches as the name suggests are rough, quick and enables being iterative. Here are shown some rough, quick sketches.



Reference: from  
dsource.in (Solar  
Powered stove by  
Rohan Kumar)

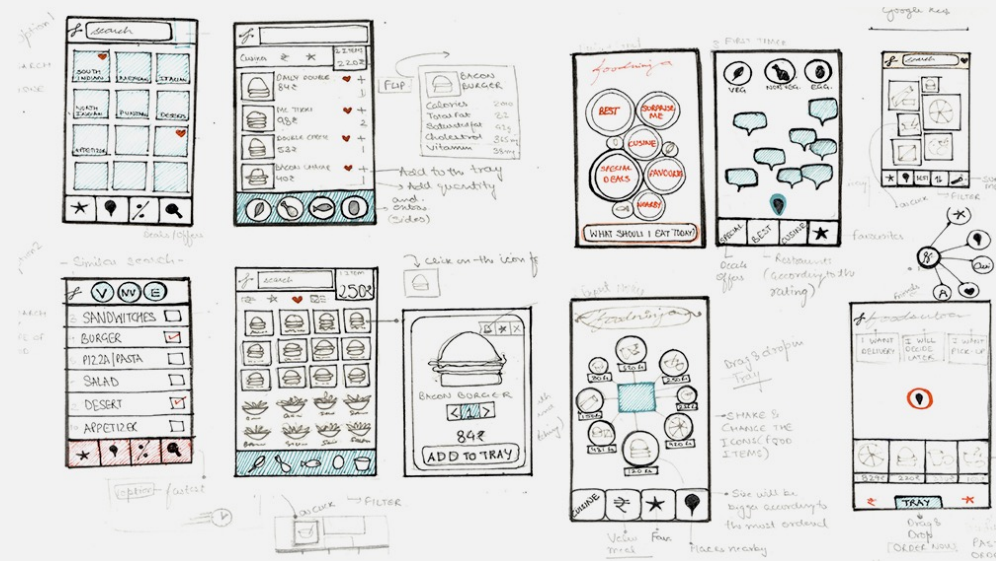
THINK!  
DESIGN



# What are Wireframes?

Wireframe Sketches are simple, quickly drawn outlines of the interface elements that are part of the digital environment especially for screen based interfaces.

These wireframes help one to quickly visualize the layout, composition, test, get feedback and change/iterate before the design is finalized.



Reference: from  
dsource.in (Food  
menu interface by  
Astha Kabra)



# What are 'Draft Layouts'?

Draft layouts are rough, quickly drawn outline of the elements of a page showing different elements of the composition like text, images, interface elements, grids, etc.

Layouts ideation are useful for both the digital as well as the physical layouts.  
- a web page, Mobile interface or that of a poster, magazine or a storybook.

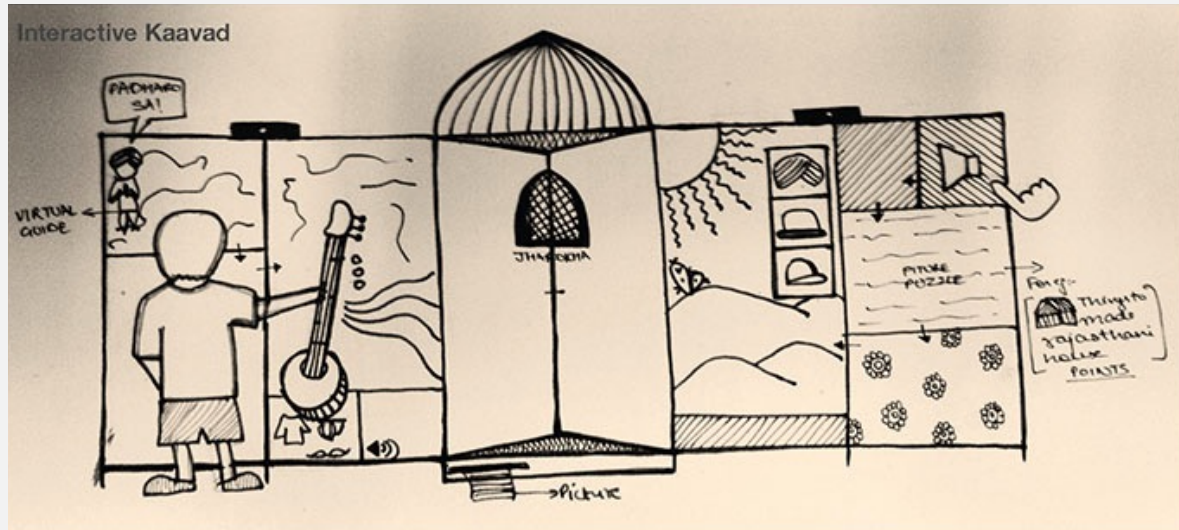
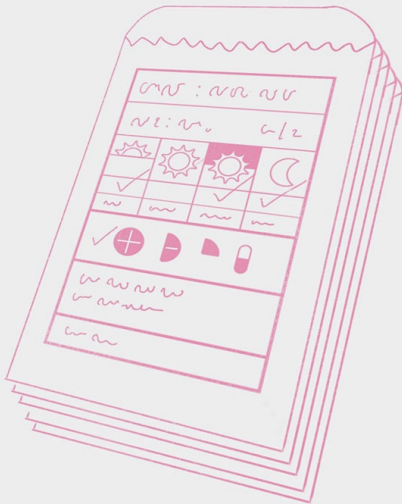
**These Draft Layouts help one to quickly visualize the layout, test, get feedback and change/iterate before the design is finalized.**

THINK!  
DESIGN



# What are 'Draft Layouts' . . .

Shown here are draft initial ideation layouts for a packaging for medicine by the Pharmacy and design of the layout for an interactive exhibition on culture.

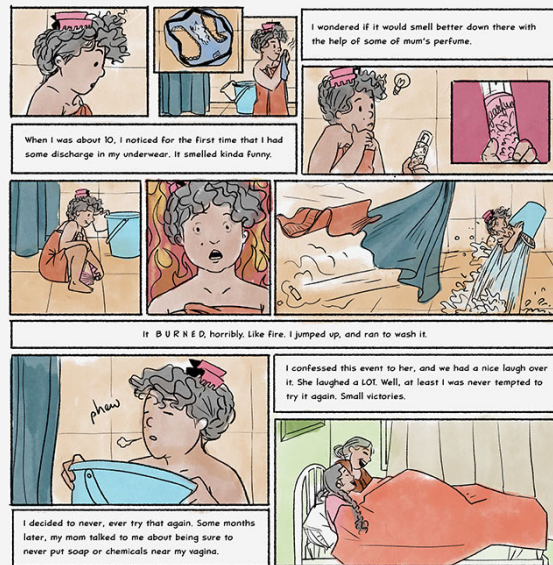


THINK!  
DESIGN



# What are 'Draft Layouts' . . .

Shown here are draft initial ideation layouts (3 versions) for an picture driven storybook. The 3 variations are done to get feedback and based on the feedback to chose one of them as the final template.



THINK!  
DESIGN



A11.4

# What are Paper Prototypes & Mock-ups?



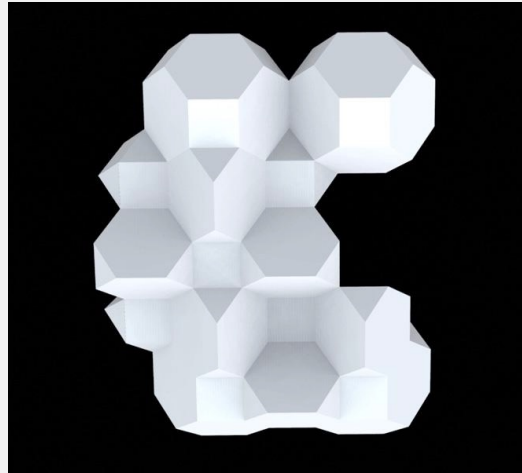
THINK!  
DESIGN



# What are Paper Prototypes?

**Paper Prototypes** are a rough, hand sketched layouts of the ideas suited for Digital interface layouts, Graphic Publications as well as 3D objects done using paper.

**Paper Prototypes** are simple, easy, draft versions of the ideas or concepts and helps one to quickly visualize, test, get feedback and change/iterate before the design is finalized.



*Reference: from dsource.in (Geometry in Designn by Prof. Ravi Mokashi Punekar and Prof. Avinash Shinde)*



*Reference: from dsource.in (Pop Up design by Mugda Kale)*

THINK!  
DESIGN



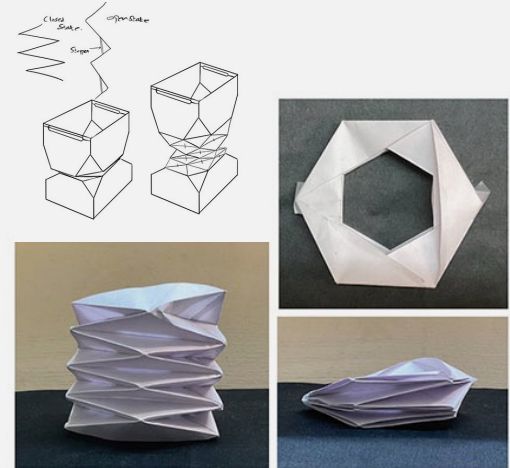
# What are Mock-ups with Card-board?

Card board Mockups of the idea can be made quick and iteratively to come out with several versions using a thick paper or cardboard.

**Card-Board Mockups** are sample, draft versions of the ideas or concepts and helps one to quickly visualize, test, get feedback and change/iterate before the design is finalized.



Reference: from [dsource.in](https://dsource.in)  
(Packaging Design Course by Prof  
Mandar Rane and Purba Joshi)



Reference: from [dsource.in](https://dsource.in)  
(Vegetable Storage unit by  
Arunprakash Ezhilarasan)



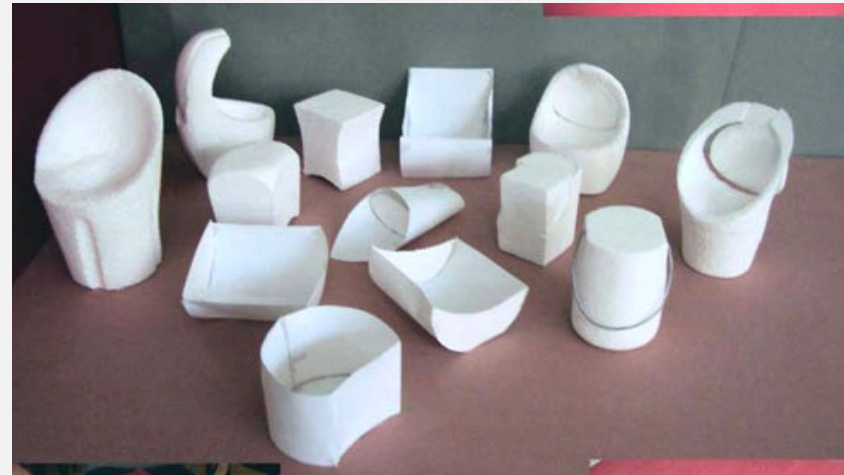


# What are Mock-ups with Clay?

Clay Mockups of the idea can be made quick and iteratively to come out with several versions. Clay is also suitable for organics shapes.

Instead of Clay, Plaster of Paris could also serve to make rapid 3D draft models to try out ideas.

Here are shown plaster and paper prototypes for redesign of a bucket.



*Reference: from dsource.in  
(Product Design Course by Prof  
Bapat and Purba Joshi)*

THINK!  
DESIGN



# What are Mock-ups with Wood?

Wood Mockups of the idea can be made and are suitable for making a mock-up of organic shapes and including details.

The wooden mock-ups can be painted.

And soft wood is easier to work with.

**Wooden Mockups** are sample, draft versions of the ideas or concepts and helps one to visualize, test, get feedback and change/iterate before the design is finalized.



Reference: from dsource.in  
(Case Study 'Smaran')

THINK!  
DESIGN



A11.5

What are  
'Scenarios' &  
Story-boards'?



# What are 'Scenarios' and 'Story-board'?

Scenarios are the sequence of events or actions the user takes in interacting with the designed idea. The scenario can be fictional demonstrating the use of the idea/concept. The scenario can make use of personas.

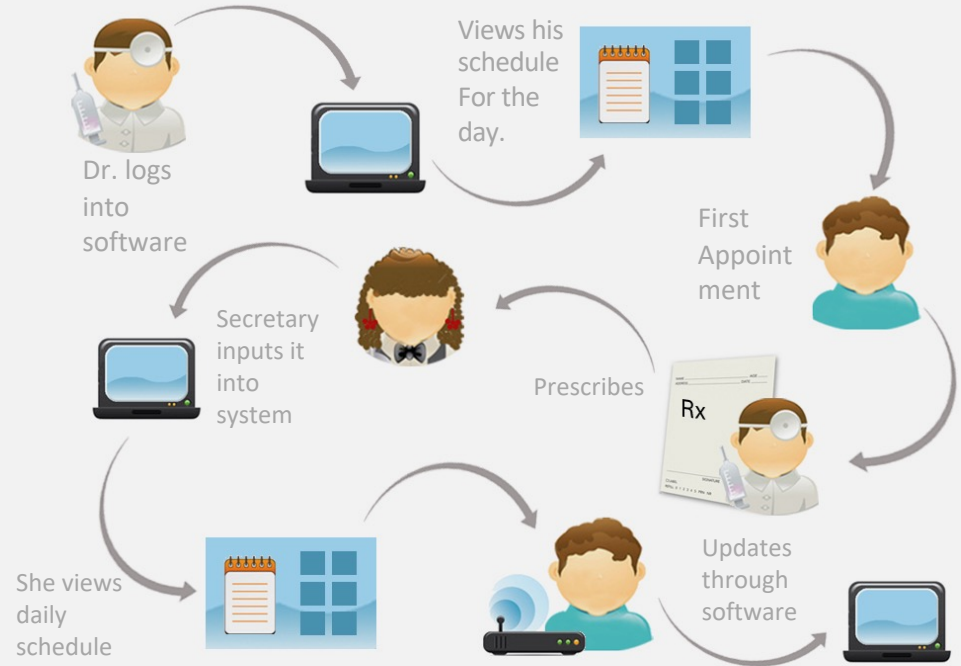
The different ways the scenario or storyboard can be narrated are:

1. Written in text form
2. Illustrated with visuals
3. Storyboard with step by step visuals and text
4. As a video with narration



# What are 'Scenarios' & 'Story-board' . . .

Here is shown an interaction between the patient and the doctor along with the secretary as a scenario.



THINK!  
DESIGN



A11.6

# Why is Prototyping part 1 Important?



# Why is 'Prototyping part 1' important?



- Prototyping part 1 shows several ways that one can represent their initial ideas as 2D and 3D mock-up models.

- this is great for getting feedback and iteratively making changes to the design.

THINK!  
DESIGN



A11.7

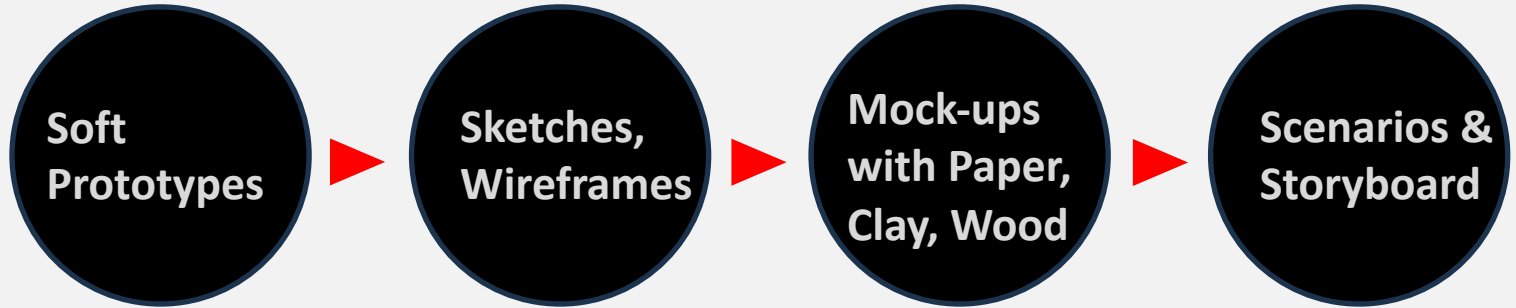
What does  
Prototyping Part 1  
involve?





# Prototype part 1:

(Soft Prototypes > Ketches > Mock-ups > Scenarios and Storyboards)



THINK!  
DESIGN



A11.8

# Further Study and References



# Further Study and References:

- [www.dsource.in](http://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>
- Product Design and Development  
by Karl T. Ulrich and Steven D. Eppinger, McGraw-Hill, 2004
- Vision of the Future  
by Stefano Marzano, Publisher: Uitgeverij V + K 1996
- Designing the 21st Century  
by Charlotte J. Fiell, Peter M. Fiell, Publisher: Taschen, 2001

THINK!  
DESIGN



Design Quote:

“Play becomes Joy,  
Joy becomes work,  
Work becomes play.”

*Johannes Itten*



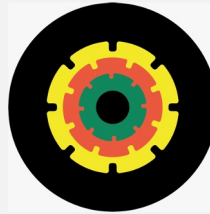
THINK!  
DESIGN

# DT&I Course – Week 11:



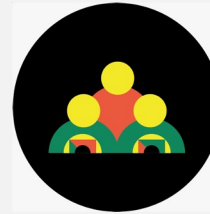
DT&I  
Process  
(20%)

- > Prototyping Part 2
- > Soft Prototype
- > 'Rough Sketches',
- > Paper Prototype
- > Scenarios/ Story-boarding



DT&I  
Tools  
(20%)

- > 'Rough Sketches',
- > Paper Prototype
- > Mock-Ups
- > Scenarios
- > Story-boarding



DT&I  
Project  
(50%)

- > Apply 'Rough Sketches', Paper Prototype, Mock-Ups, Scenarios and Story-boarding



DT&I  
Cast Study  
(10%)

- > Case Study Project:  
**Marbo – sharable data units**



## Supporting Organizations:



D'source Project



Open Design School



MoE's Innovation Cell



**Credits:**

**Presented by:**  
Prof. Ravi Poovaiah



D'source Project



Open Design School



MoE's Innovation Cell



## Credits:

**Camera & Editing:**  
Santosh Sonawane



D'source Project



Open Design School



MoE's Innovation Cell





## Credits:

Think Design Animation:  
Rajiv Sarkar



D'source Project



Open Design School



MoE's Innovation Cell



## Credits:

**Graphic Icons:**  
Shweta Pathare



D'source Project



Open Design School



MoE's Innovation Cell



## 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



D'source Project



Open Design School



MoE's Innovation Cell

