
# Prototyping Part 2

## Design Thinking & Innovation Process

Section: A12, Week 12

D'source Project

Open Design School

MoE's Innovation Cell


# Design Thinking & Innovation (DT&I)

Section: A12

Week 12


# Design Thinking & Innovation (DT&I)

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

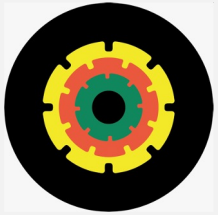
**“The way you design the world in your mind is the way you relate it to in the real world. And, when you design it with a deep recognition of interconnectedness, you will nurture those relationships”**

*Dr. Vandana Shiva*

# DT&I Course – Week 12:

## DT&I Process
(20%)

> MVP
> Proof of Concept (PoC)
> Info Architecture
> Experience Design



## DT&I Tools
(20%)

> MVP
> Proof of Concept (PoC)
> Info Architecture
> Experience Design

## DT&I Project
(50%)

> Apply MVP,
> Proof of Concept (PoC)
> Info Architecture
> Experience Design

## DT&I Cast Study
(10%)

> Case Study Project:
**Storage Design to reduce Post-harvest loss of Vegetables**

# DT&I Process

## A12
## **Prototyping** – Part 2

Module A12:

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A12.1

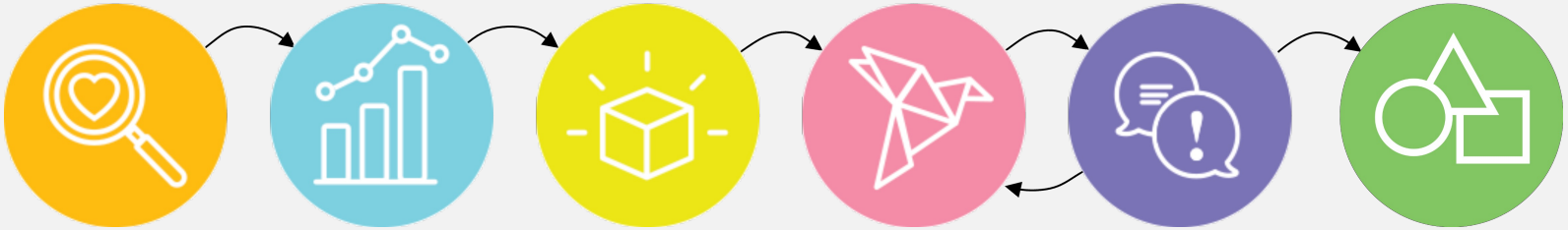
# DT&I Process: Prototyping - Part 2

# **Prototyping** – Part 2:

## Content

# DT&I Process and Prototyping:

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



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

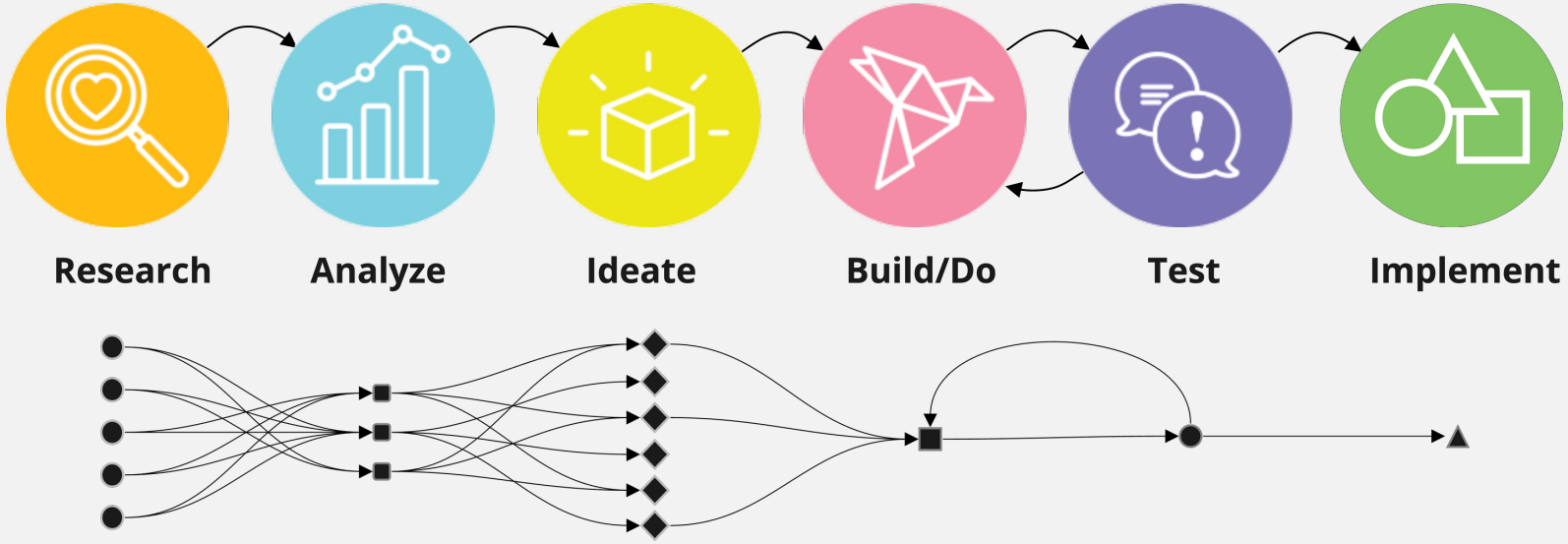
Phase 5:
- **Test**
- Reflect
- Test
- Feedback
- Iterate

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

- Prototyping helps you to visually represent and test your final ideas in 2 or 3 dimensions

# DT&I Process and Ideation:

Let's summarize:



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A12.2

# What is ‘Prototyping’ Part 2?


# What is ‘Prototyping’ Part 2?

**Prototyping Part 2 involves Medium Prototyping, the next version** of **ideas and concepts.** It also involves **trying out - Minimum Viable Product (MVP) or Proof of Concept (PoC)** as well as **understanding how the user would interact and experience the concept** along with **deciding appropriate choices of technology and media.**

Soft > Medium > Hard

**Prototyping part 2 takes you closer to the final version of the idea or concept. And, helps one to visualize, make it tangible, test, get feedback and change/iterate before the design is finalized**.

# Where is ‘Medium Prototyping’ done?

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

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

# ‘Medium Prototyping’ in Creative Domains:

**Architecture:**
- Form Sketches,
- 3D Renderings,
- Scaled Models

**Arts:**
- Draft Sketches,
- Draft Drawings,
- Scaled Models

**Film:**
- Draft Script,
- Scenario Sketches,
- Setting,
- Character Sketches

**Animation:**
- Draft Script,
- Scenario,
- Character Sketches,
- Animatics

**Graphic Design:**
- Draft Layouts,
- Paper Prototypes
- Printed Outputs

**Product Design:**
- Draft Sketches,
- Draft Renderings,
- Proof of Concept

**Digital Design:**
- Draft Sketches,
- Info Architecture
- Medium-fidelity Prototypes

**Science/Technology:**
- Equations/formulas,
- Drawings, Visualization
- Working Models
- Experimental set-up
- Testing and Validation


A12.3

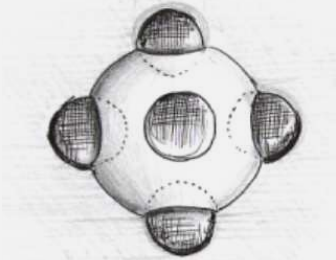
# What is Minimum Viable Product (MVP)?

# What is Minimum Viable Product (MVP)?

**Minimum Viable Products as the name suggests have just enough features or functionality in order to get feedback from its users.**

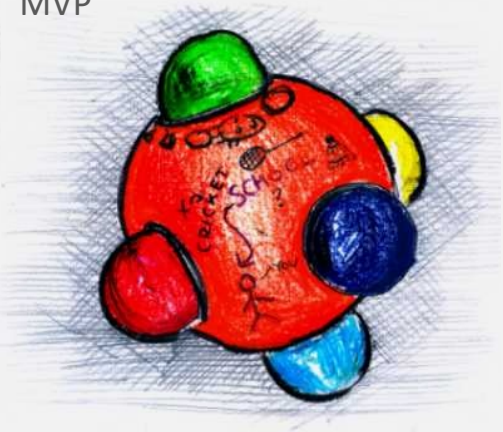
MVP can be seen as part of the lean startup process saving time, efforts and costs.

**MVP is a simple version and helps one to quickly visualize, test, get feedback and change/iterate in order to make the next iteration.**



Reference: from dsource.in (Marbo Ideation)

Idea Sketches of the sharable Marbo product as reference for making MVP



# MVP – getting feedback from children:

Shown here is an example of MVP made of foam with detachable units
- a tangible simple version to get feedback.

The MVP has just sufficient details to get feedback from children.

Oh we can scribble on it!

I can detach this marble and give it to my friend!!

We want it!!

Can I change the way it looks?

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# What is Proof of Concept (PoC)?

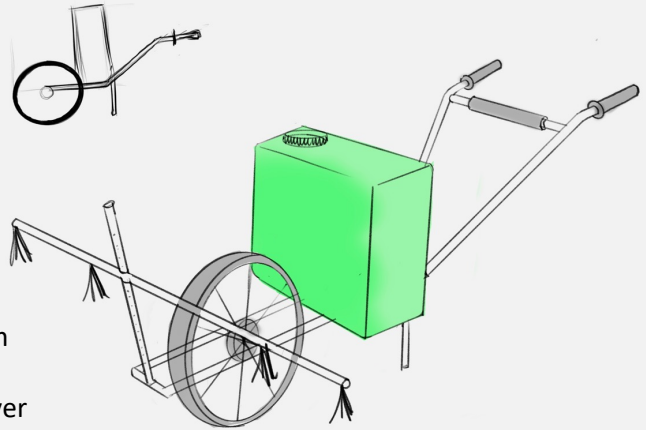
# What is Proof of Concept (PoC)?

**Proof of Concepts (PoC) is to demonstrate the feasibility of the core concept in order to get feedback from its users.**

PoC is great for testing the functional, technical, material aspects of the concept in turn saving time, efforts and costs.

**PoC much like MVP helps one to quickly visualize, test, get feedback and change/iterate in order to make the next iteration.**

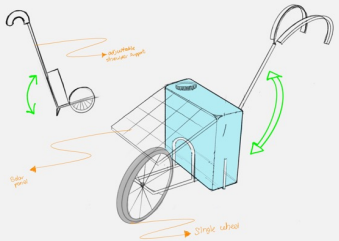
Idea Sketches of the Pesticide Sprayer Concept as reference for making PoC



Reference: from dsource.in (Pesticide Sprayer Ideation)

# PoC – used for testing the redesign of Pesticide Sprayer:

Shown here is another example of PoC mock-up of one of the concepts
- a tangible minimum version to test, get feedback and iterate.




A12.5

# What is Information Architecture


# What is Information Architecture

If **Communication of Information is of importance** in your design, then **Information Architecture is very helpful**.

**Information Architecture** refers to the **organization of information** in a manner that it makes **locating and navigating through information easy and understandable.**

Inf**ormation Architecture** is useful in **design of websites/digital environments, control panels, wayfinding systems for public places and roads, layout of a museum and markets, catalogues and directories**.


# IA in different domains:

**Digital Interfaces:**
- Navigation,
- Icons,
- Menu,
- Buttons & Hyperlinks

**Control Panels:**
- Buttons/Switches,
- Sliders,
- Rotary knobs
- Interface Displays

**Wayfinding Roads**
- Signages,
- Symbols + Text,
- Arrows,
- Colour

**Museum Layouts:**
- Layouts,
- Navigation,
- Signage Directory,
- Arrows

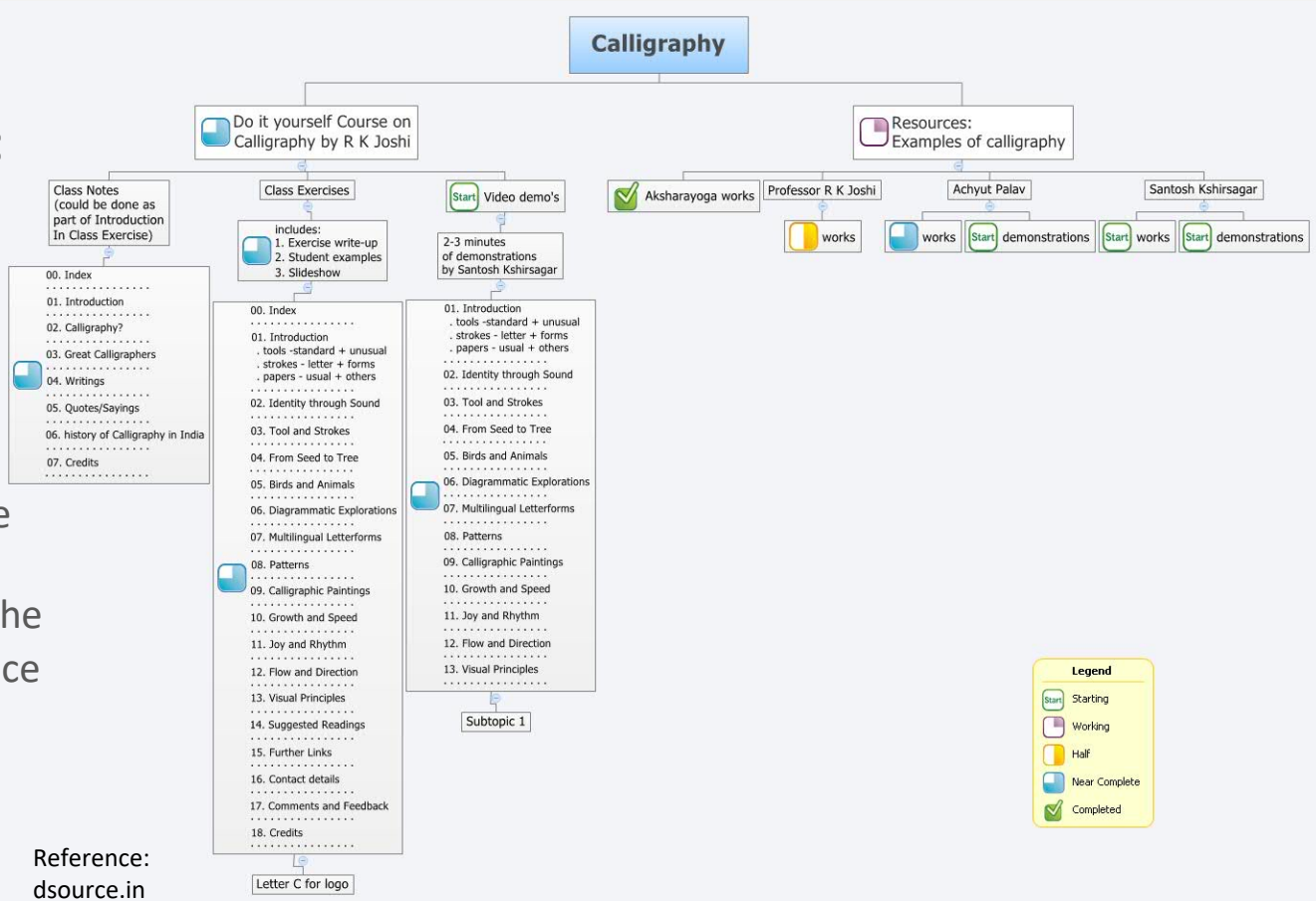
**Store Layout:**
- Directions,
- Signage
- Sections
- Facilities

**Public Places:**
- Facility listing,
- Signages,
- Directions
- Navigation

**Directories:**
- Index,
- Content Listing
- Page Numbers
- Use of Icons

**Library Layouts:**
- Layouts,
- Index/Catalogue
- Navigation,
- Indexed Shelves,
- Arrows for Direction

# Example of Information Architecture:




Shown here is the Information Architecture for the design of webspace for ‘Learning of Calligraphy’

Reference: dsource.in

# Example of Information Architecture:


Shown here is the Facilities Architecture useful for the Design of Wayfinding and Signage System for Mumbai Suburban Railway Stations

Reference: dsource.in

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A12.6

# What is Experience Design?


# What is Experience Design?

**Experience Design is the design of Products (both Physical and Digital), Services or Systems to facilitate easy understanding, satisfying engagement and good/emotional experiences.**

**Easy Understanding:**
> easy to locate, comprehend, navigate and use.

**Satisfying Engagement:**
> feels good to interact,
> Is functional, works well

**Good/Emotional Experiences:**
> feels comfortable,
> memorable involvement


# Examples of Experience Design

1. **A ceiling fan** that recognizes the presence, sets its speed according to ambient temperature, makes no noise and switches off when the person leaves the room.

2. **A grinder/mixer** that grinds silently, can mix in a range of fine to rough grinding and gives a signal when the grinding is done.

3. **An email application** that can reveal the mood of the message, shows the importance/urgency of the message and can identify if the message is from friends, colleagues and strangers. It would make use of space, size, colour, icons, etc. to visualize and organize the emails appropriately.


# An example of Experience Design:

Lets say that you wanted to go to a bank to apply on students loan to buy a laptop. Presented here are two scenarios:

**Scenario One:**

1. Locate the Bank and find out its operating timings
2. Go to the Bank
3. Ask the security, where the loan section is
4. Go stand in the Queue
5. You are given a form to fill and a list of signed documents to be produced
6. Repeat the same procedure after getting the documents.
7. If all documents are fine, loan is sanctioned after 15 days

**Scenario Two:**

1. Locate the Bank online and search for loan facility
2. Fill an online form and submit documents
3. Take an appointment for physical verification at the bank
5. Go to the bank at the appointed time, Documents are verified and the loan is sanctioned immediately.

(in addition, the bank is not crowded, no queues with comfortable seating + drinking water/tea on the house)

# What are your great Experiences?

1. **In a place of worship:**
   **Touch** – touch the ground with barefoot
   **smell** – of incense
   **taste** – of prasad, sweets
   **hearing** – sound of bells, chants, service

2. **In a Restaurant:**
   **Touch** – you touch the food, dress-up
   **smell** – of food
   **taste** – of food
   **hearing** – conversations, social, celebrations

3. **Celebrating Festivals:**
   **Touch** – you touch, dress-up
   **smell** – of incense
   **taste** – of sweets, food
   **hearing** – bells, chants

4. **? ? ? ? ? ? ?**

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A12.7

# Why is Prototyping part 2 Important?


# Why is ‘Prototyping part 2’ important?

Prototyping part 2 takes you further closer to the final version of the idea or concept. And, helps one to visualize, make it tangible, test, get feedback and change/iterate before the design is finalized.

Prototyping Part 2 involves Medium Prototyping, the next version of ideas and concepts. It also involves trying out - Minimum Viable Product (MVP) or Proof of Concept (PoC), Information Architecture (IA) as well as understanding how the user would interact and experience (XD) the concept along with deciding appropriate choices of technology and media.

Soft > **Medium** > **Hard**

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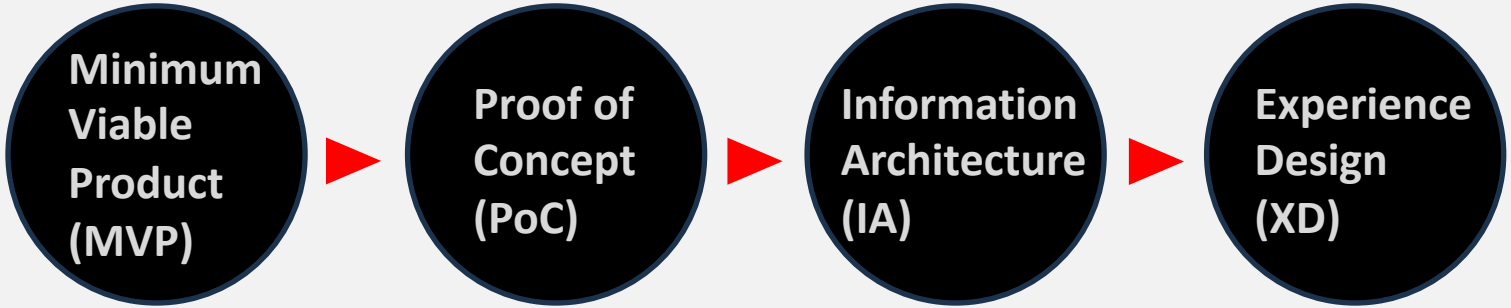
A12.8

# What does Prototyping Part 2 involve?

# Prototype part 2:

(MVP > PoC > IA > XD)



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A12.9

# 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

- Sketching User Experiences'
  by Bill Buxton

- Being Digital
  by Nicholas Negroponte of Media Lab, MIT

- Designing Interactions,
  by Bill Moggridge, The MIT Press, 2007 http://www.designinginteractions.com/

- Inventing the Future
  by Steward Brand, Penguin Books; Reprint edition (1988)

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## Design Quote:

"You can count the number of seeds in an apple. But you can never count the number of apples in the seeds."

*Stewart Brand,*
*MIT Media Lab, USA*

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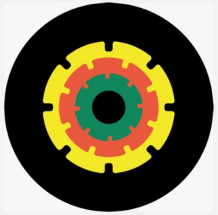

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**Storage Design to reduce Post-harvest loss of Vegetables**

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## Supporting Organizations:

D’source

D’source Project

Open Design School

MoE’s Innovation Cell


# Credits:

**Presented by:**

Prof. Ravi Poovaiah

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# Credits:

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Santosh Sonawane


# 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

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