



Models of Design Thinking Process

Design Thinking & Innovation
Process

Section: A2, Week 2



D'source Project



Open Design School



MoE's Innovation Cell



**THINK!
DESIGN**

Design Thinking & Innovation (DT&I)


Section: A2
Week 2



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Design Thinking & Innovation (DT&I)

Prof. Ravi Poovaiah
IDC School of Design, IIT Bombay



“The world has
enough for
everyone's **needs**,
but not everyone's
greed”

Mahatma Gandhi



DT&I Process

A2 Models of Design Thinking Process

Module A2:



Models of DT Process:

Content

- A2.1: What is 'Design Concern'?
- A2.2: Design for What?
- A2.3: Design for Who?
- A2.4: How is the Design Process?
- A2.5: What are the Models of Design Thinking Process?
- A2.5: What is the Environment for Design? What are the Takeaway's?
- A2.5: End Notes
- A2.6: Further Study and References

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A2.1

What is
'Design
Concern'?



What is 'Design Concern'?

- . Design is user concerned
 - . Design is society concerned
 - . Design is nature concerned
 - . Design is Life concerned
-
- . Design is appropriate use of communication
 - . Design is appropriate use of technology
 - . Design is appropriate use of material

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What is 'Design Concern'?

FORM
FOLLOWS
FUNCTION

Louis Sullivan

LESS
IS
MORE

Ludwig Mies van der Rohe

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A2.2

Design for What?



Design for What Functions?

- . Design for Function, Purpose
- . Design for Information and Communication
- . Design for Products or Services

- . Design for Context, Identity, Aesthetics
- . Design for Learning, Socialising, Experiencing
- . Design for Expression, Play

- . Design for Health and Well being
- . Design for Safety and Security
- . Design for Storytelling, Sustainability



Design for What Environments?

- . Schools/Universities/Institutes
- . Hotels/Hospitals/Offices/Homes/Hostels
- . Metros/Airports/Railway Stations/transport Hubs

- . Parks/Gardens/Hiking Trails
- . Foot paths/Roads/Bridges
- . Rural and Urban Sector

- . Digital/Communication/Physical
- . Social/ Sensory/Cognitive
- . Personal/Public



Design for What Purpose?

“Today’ s designers do much more than solve problems. They research social, cultural and commercial trends, analyze changing values, brainstorm ideas and convert their findings into new messages, artifacts and experiences. It is about defining what the problem is and where opportunities exist for new ideas”.

By John Waters in design observer 29-9-2010

“Design eases our relationship with the environment, linking creativity and innovation to human need and iterative thinking to sustainable solutions”

From ‘Introduction to IDC’

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A2.3

Design for Who?



‘Design’ for Who?

- . Design for Marketing/Promotion?
- . Design for Technology?
- . Design for Users?

Product centered > Human Centered > Life Centered Design*

(* Ref: Dr. Ajanta Sen)



'Design' by Who?

Profile of an
emerging
designer:

By Prof. M. P Ranjan





'Design' by Who?

Head > Intellectual
Heart > Emotional
and Hand > Practical

*by Richard Grefe,
published at aiga.org
(American Institution of
Graphic Arts (AIGA))*



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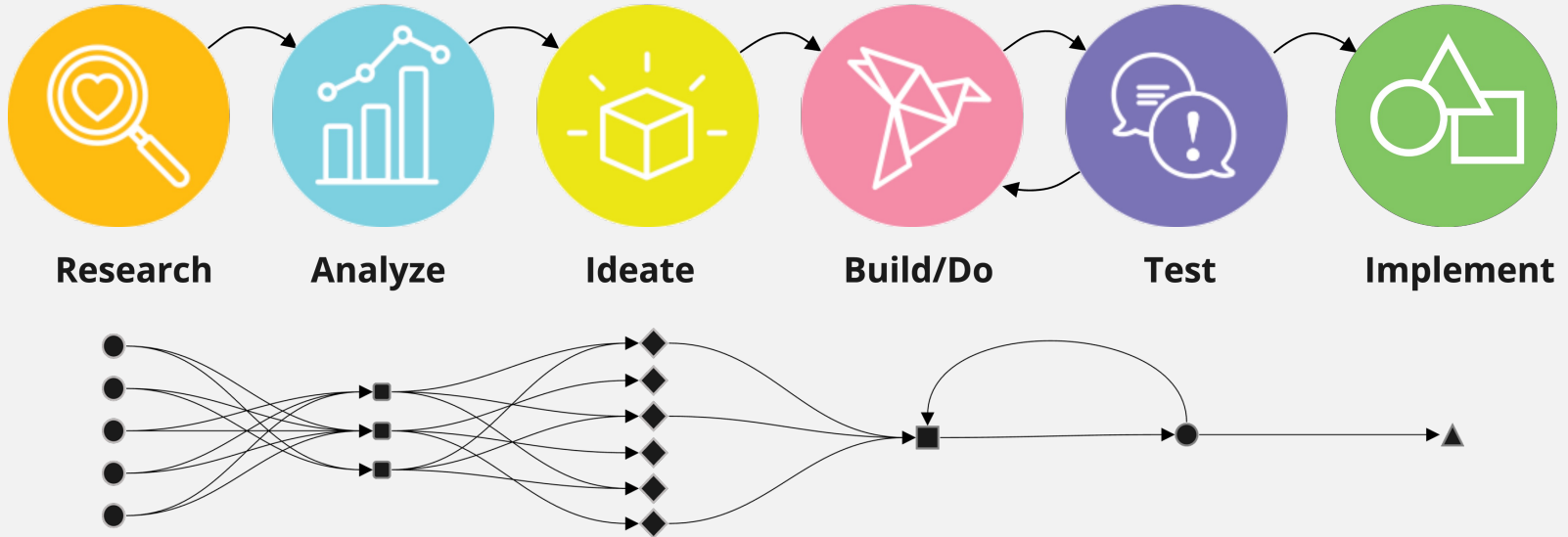
A2.4

How is the Design Process?



How is the Design Thinking Process?

Summary: DT&I involves the following 6 phases:



The Design Process

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. Identifying the Problem - **Need Finding/Brief**



. Researching the Problem Space - **data collection**



. Understanding the Problem Space - **data analysis**



. Explore Alternate Concepts - **creativity/ideation**

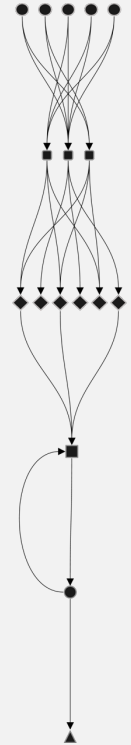


. Build Mock-ups/Form Giving - **prototype/develop**



. Testing and Feedback - **reflection/**

. Industry and Business - **Implement/**



The Design Process – Co-operative/Collaborative

Interdisciplinary + Group work

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. Research >

Brief/Researching the Problem Space
Users, Environment, Artifacts



. Analysis >

Understanding the Problem Space
Inferences & Design Opportunities



. Ideate >

Explore Alternative Concepts
Creativity and Explorations



. Build >

Prototype and Development
Detail and Development



. Test >

Test and User Feedback
Iterate and Reflect



. Implement >

Produce - Business and Industry

Participative + Iterative



The Design Process – User driven

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. Research >

Identify Needs



. Analysis >

Understanding the Problem



. Ideate >

Create Concepts



. Build >

Develop Technology



. Test >

Test and Verify



. Implement >

Build Business



The Design Process – Business driven

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. Research

>

Create Needs



. Analysis

>

Fit Users



. Ideate

>

Create Variations



. Test

>

Test and Verify



. Build

>

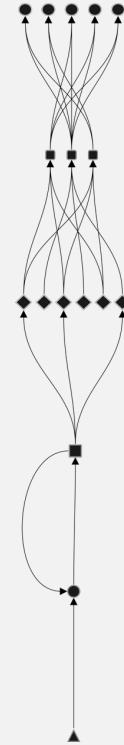
Develop Technology



. Implement

>

Business Plan





Terminologies:

Inter-disciplinary:

Inter-disciplinary team has **members with different backgrounds and skillsets**.

Co-operative:

Co-operative working means that you **share** the workload with your group team members.

Participative:

Participative design process is **involves users at different phases of the design process** and to seek their feedback.

Group-work:

Group work involves team members **working together as a team** usually without hierarchy.

Collaborative:

Collaborative working means that you **work-together** with your group team members at the same time.

Iterative:

Iterative design process is a cyclic process that involves **improving the design solution based on feedback**

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A2.5

Models of Design Process

Design Process – Squiggle

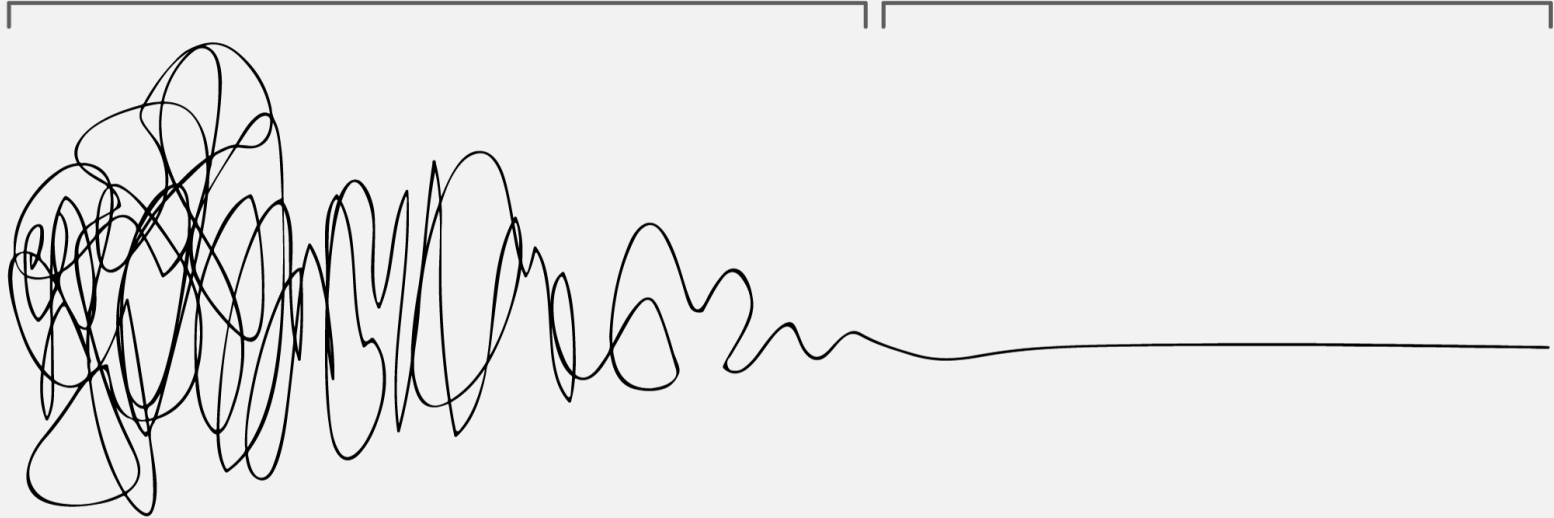
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UNCERTAINTY/EMERGING PATTERNS

focus of design-driven innovations (definition of new meanings)

CLARITY/FOCUS



STRATEGY/VISION

stakeholder engagement
situational analysis

INSIGHTS

design research
technological research

CONCEPT

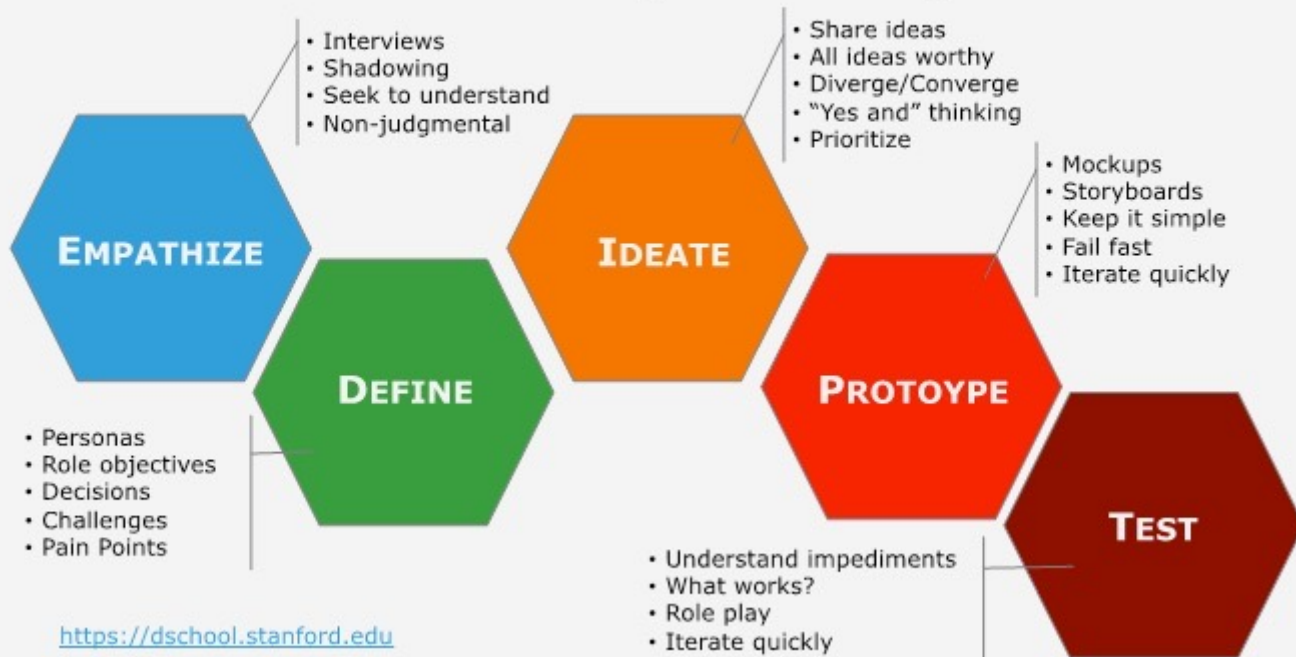
co-design
prototyping
customer validation

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product development
interface design, visual design
validation + metrics

Design Process – by d.school at stanford

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Design Process – by IDEO

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INSPIRATION

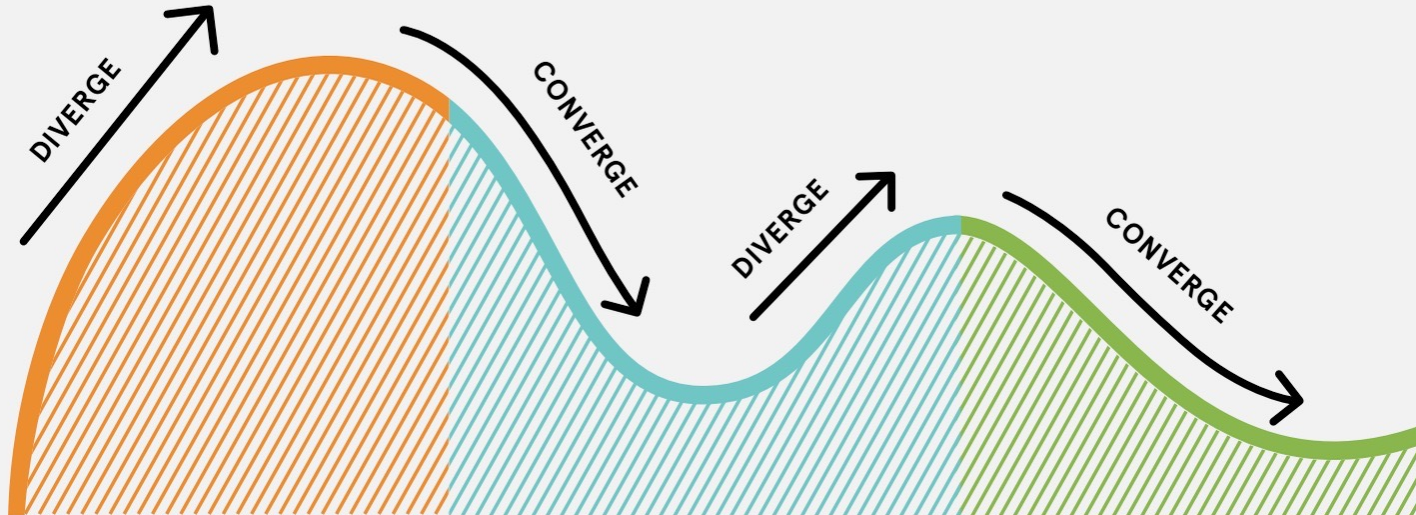
I have a design challenge.
How do I get started?
How do I conduct an interview?
How do I stay human-centered?

IDEATION

I have an opportunity for design.
How do I interpret what I've learned?
How do I turn my insights into tangible ideas?
How do I make a prototype?

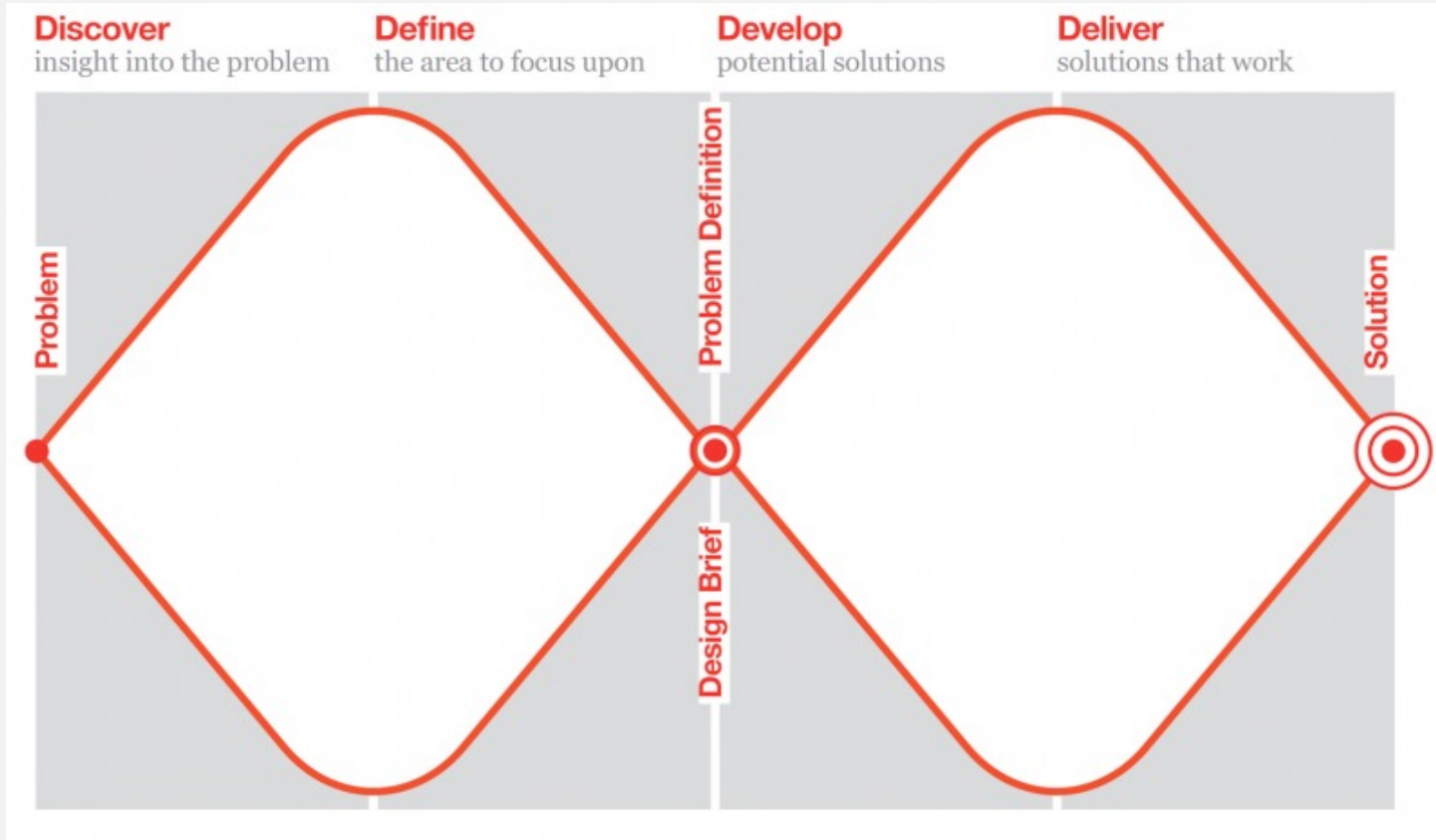
IMPLEMENTATION

I have an innovative solution.
How do I make my concept real?
How do I assess if it's working?
How do I plan for sustainability?



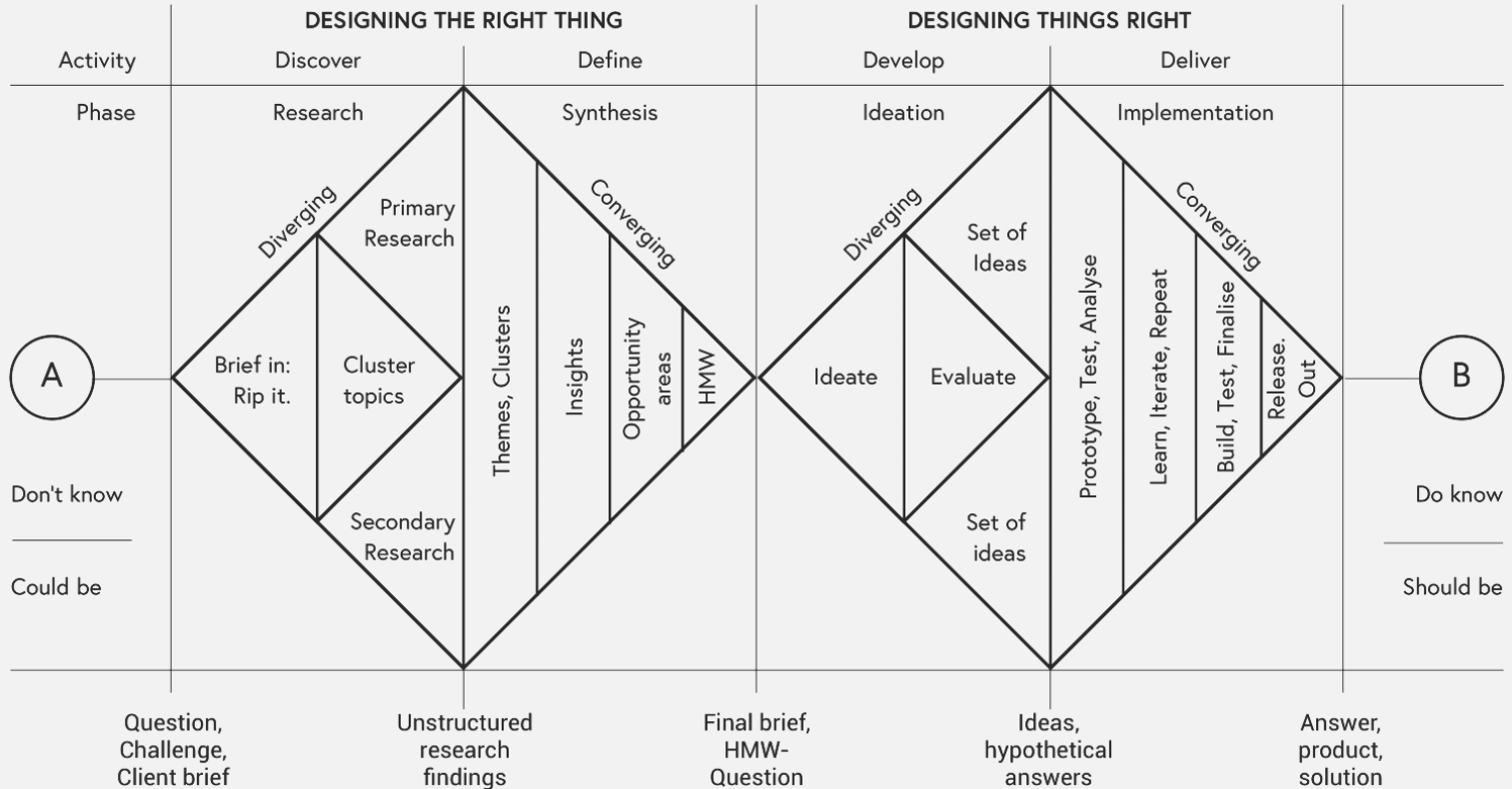
Design Process – by Design Council, UK

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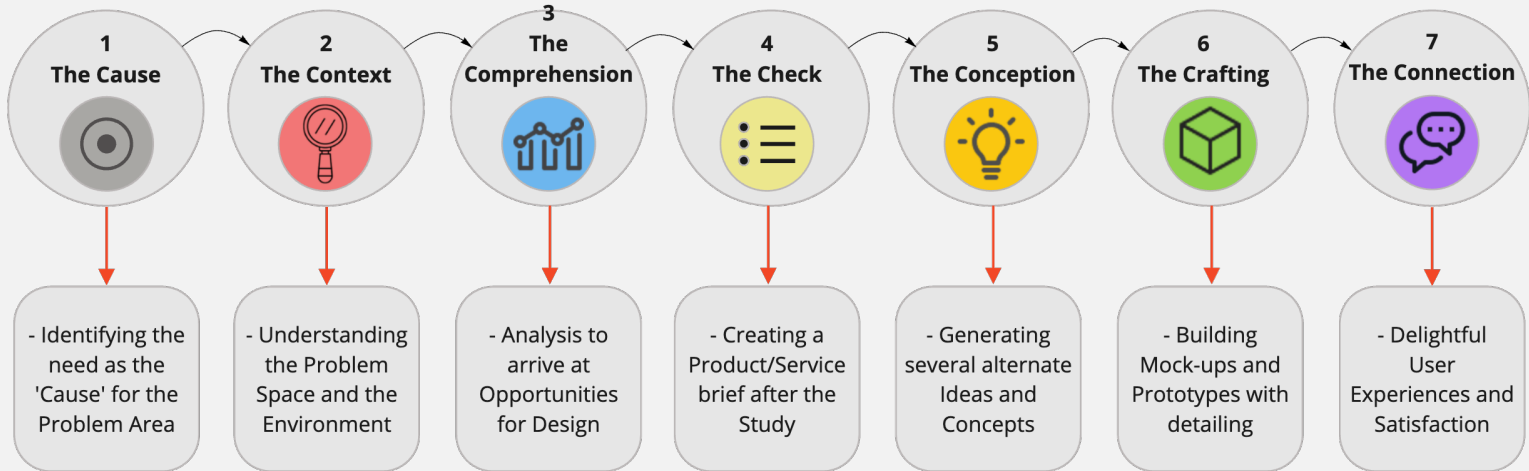
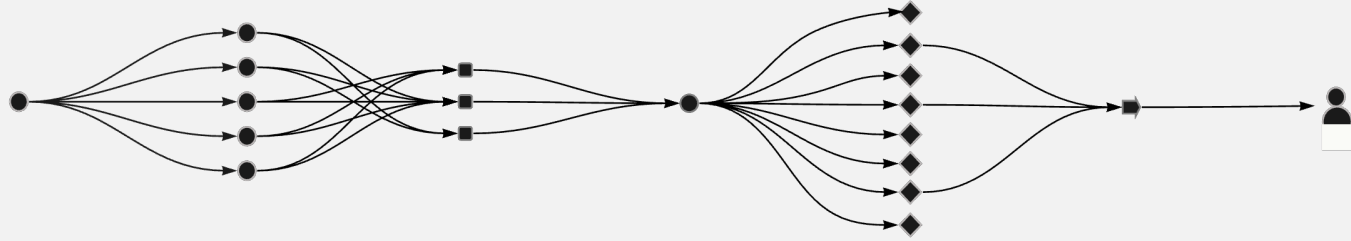
Design Process – by Dan Nessler

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Design Process – 7Cs by Prof. Chakravarthy

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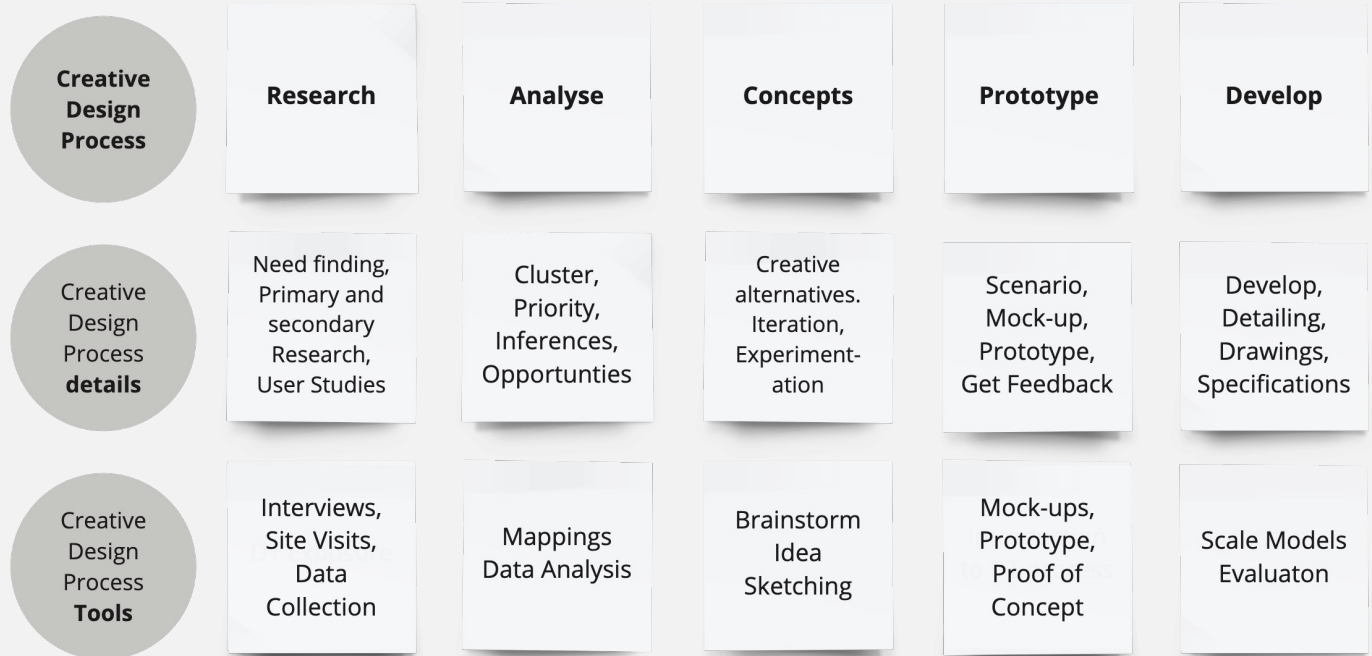


Design Process at IDC, IIT Bombay

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Design Process since 1970

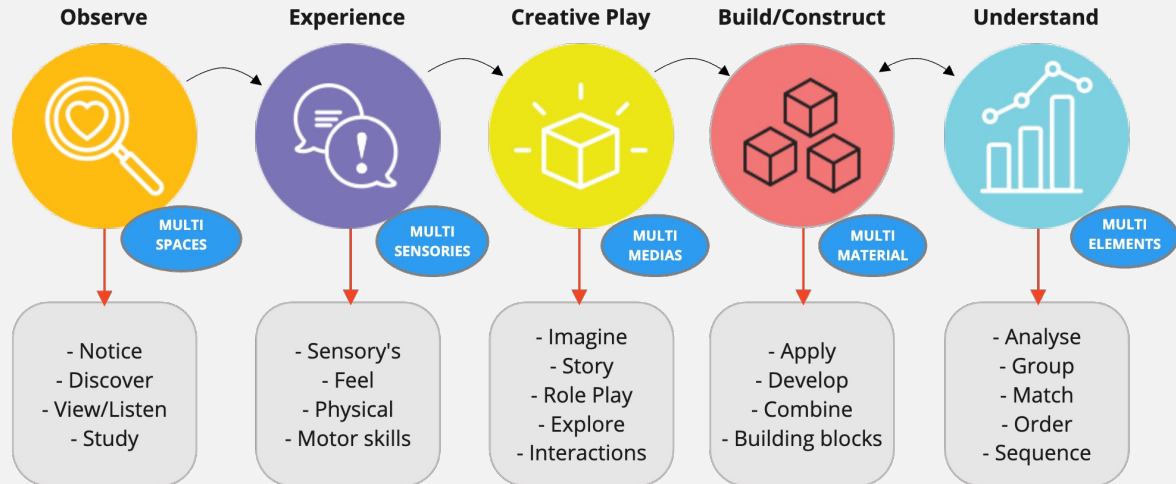
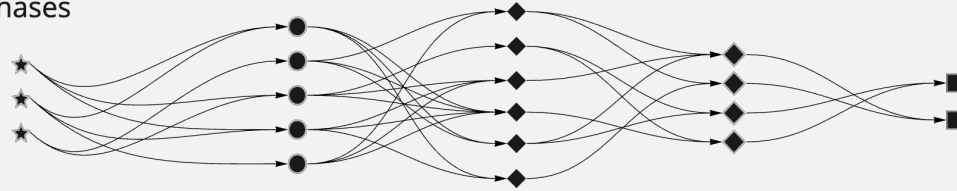


Design Process – for Schools

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Design Thinking and Learning Process
Foundation stages: Phases



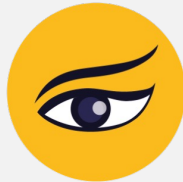
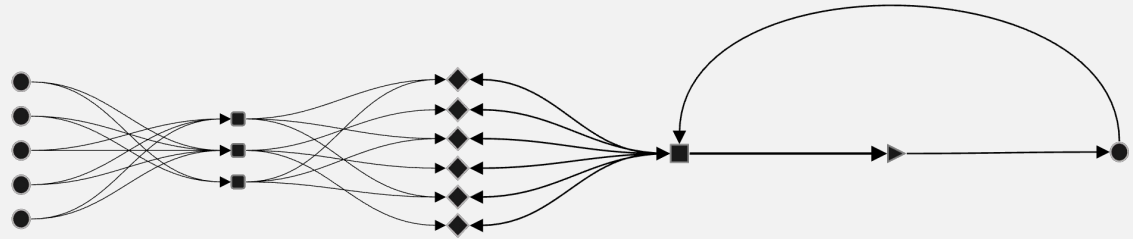
Design Process – Indian Knowledge System

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Design Thinking and Innovation as part of
Indian Knowledge System

- > **Shilpa Shastra**
- > **Vastu Shastra**
- > **Natya Shastra**



Observation

- Nature as Inspiration
- Study of Life



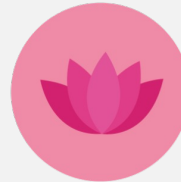
Critical Analysis

- Analysis of Life Cycles, Structures, Materials, etc



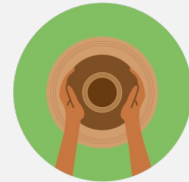
Creative Variations

- Explorations based on Structure and not Sameness



Learning

- Observe, Explore, and Mastering



Implement

- Perform, Create, Produce



Validation

- Sustained across centuries

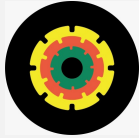


Summary of Different Models of DT&I:

- Squiggle by Damien Newman
- DT by d.school at Stanford
- DT by IDEO
- DT by Design Council, UK
- DT by Dan Nessler
- DT & 7Cs by Prof. Chakravarthy
- Design Process at IDC, IIT Bombay
- DT for Schools
- DT Process as part of Indian Knowledge Systems

Adoptable:

Adopt from any of these and make use of it suit your needs of Problem Solving



Person behind Design Thinking:

Herbert A. Simon:

Herbert Simon (1916-2001) proposed '**Design as a way of Thinking**' in his book, 'The Sciences of the Artificial' published in 1969.

According to Simon,

"The proper study of mankind is the science of design."

To design is **"to devise courses of action aimed at changing existing situations into preferred ones"**.



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A2.6

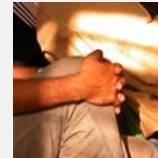
Design Environment and Takeaway's



Design Work Funda...s

- attitude behind 'design'

- . Experience the problem space
- . Interdisciplinary Team Effort
- . Group Enquiry and Ideation
- . User Participatory Design
- . Iterative Design Process
- . Problem Space Visualisation
- . Create Project Spaces
- . Involvement and Conviction





DT&I Course Takeaway's

- what will you learn?

- . Learn a new set of skills
- . be able to apply DT&I process, tools and methods to solve problems
- . have confidence in being creative and innovative and be able to think critically
- . be a conscious designer and be part of 'designing the future' community

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A2.7

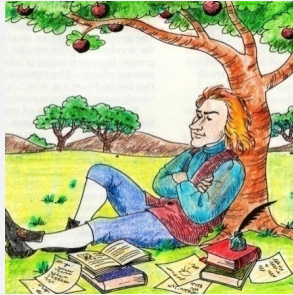
End Notes

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DT&I Course – end notes

- being a conscious designer



- . Newton
- . Archimedes & others
- . Why Newton? or Archimedes?



DT&I Course – end notes

- DISCOVERY



- . **Problem** > Definition or Brief
- . **Worldview** > Research & Understanding
- . **Context** > Users, Environment
- . **Mental Map** > Problem Space Visualisation
- . **Connection** > Insights & Design Opportunities

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DT&I Course – end notes

- LOOKING AHEAD

**Human
Strengths**

- Agriculture
- Military



**Human
Skills**

- Arts
- Crafts



**Human
Knowledge**

- Sciences
- Technology



**Human
Creativity**

- Innovation
- Form giving

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A2.8

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

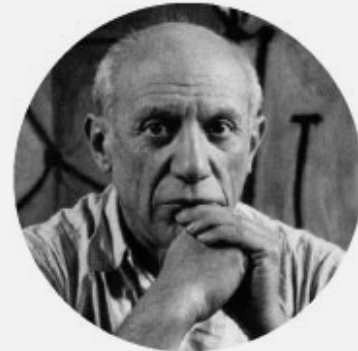
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Design Quote:

“I am always doing
that which I cannot
do, in order that I
may learn how to
do it”

Pablo Picasso





**Thanks for
Listening**

DT&I Project
Section: A2
Week 2

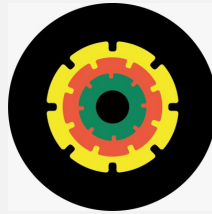
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DT&I Course – Week 2:



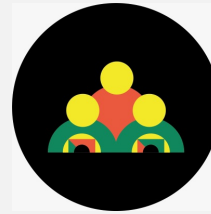
DT&I
Process
(20%)

- > What, Who, How
- > Models of DT&I



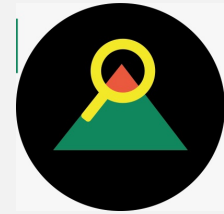
DT&I
Tools
(20%)

- > Mind-Maps +
Affinity Links



DT&I
Project
(50%)

- > Finalize Topic
for DT&I project +
Do Mind-Mapping



DT&I
Case Study
(10%)

- > Case Study
Project Smaran



Credits:

Presented by:
Prof. Ravi Poovaiah



D'source Project



Open Design School



MoE's Innovation Cell



Credits:

Camera & Editing:
Santosh Sonawane



D'source Project



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Credits:

Think Design Animation:
Rajiv Sarkar



D'source Project



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Credits:

Graphic Icons:
Shweta Pathare



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Credits:

End Title Music:
C P Narayan



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