CT318 LECTURE 3

Design Process

- What? UX Design

- Interaction Design Model

- Design Process:

  - Double Diamond Design Process Model

  - Design Funnel

  - Interaction Design Process

  - **Design Thinking**

- Group Design Projects

DESIGN PROCESS

How to Design?

➢ First: What are we "designing"?

➢ And then: How do we design it?

  ➢ What steps are involved?

  ➢ What tools and techniques?

DESIGN

"Designers are action-oriented ... today's world of design produces deep, thoughtful doers. The design philosophy is to think by doing. Designers do their research by designing ... they move rapidly to experimentation, to construction of artifacts or new procedures which they use to probe the world relevant to the issue at hand, using the responses as evidence on how to proceed... deep embodied thought, embodied in action, in physical structure .. by the real evidence of the responses to the probe"

Donald Norman, JND.org. (2016)
"The Future of Design: When you come to a fork in the road: Take it."

WHAT ARE WE DESIGNING?

UX DESIGN?

➤ Don Norman joined Apple as their first "User Experience Architect" In the early 90s

➤ He used the term "user experience design" because he wanted to cover all aspects of the person's experience with a system

➤ *"User experience encompasses all aspects of the end-user's interaction with the company, its services, and its products."*

USER EXPERIENCE

➢ What is User Experience?

➢ Usage leads to experience

➢ What is Experience?

➢ Hassenzahl:

"Meaningful, personally encountered events rather than knowledge gained from events"

"Psychologically, an experience emerges from the integration of perception, action, motivation and cognition into an inseparable, meaningful whole"

USER EXPERIENCE

➤ How a product behaves and is used by people in the real world: the way people feel about it and their pleasure and satisfaction when using it, looking at it, holding it, and opening or closing it

➤ Cannot design **a** user experience, only design **for a** user experience

UX DESIGN

"It's about enhancing the experience that people have while interacting with your product.

If UX is the experience that a user has while interacting with your product, then **UX Design** is, by definition, the process by which we determine what that experience will be.

UX Design always happens. Whether it's intentional or not, somebody makes the decisions about how the human and the product will interact. Good UX Design happens when we make these decisions in a way that understands and fulfills the needs of both our users and our business"

Laura Klein, UX for Lean Startups

UX DESIGN

"UX design is a commitment to building products that are created with the customer in mind. It starts with studying who the customers are and what they need and taking that information to provide products and services that improve the quality of people's lives."

Marieke McCloskey

UX DESIGN

"UX Design is the purposeful application of logic and rationale for creating experiences that offer both utility and value to the end user. It's a process of deeply understanding the user's needs and objectives, identifying where their greatest problems exist, and working generatively to ideate ways to solve these problems."

Scott Johnson, Head of Design, Alto

UX DESIGN

"User Experience Design (UXD or UED) is a design process whose sole objective is to design a system that offers a great experience to its users. Thus, UXD embraces the theories of a number of disciplines such as user interface design, usability, accessibility, information architecture, and Human Computer Interaction."

Justin Mifsud (Usability Geek Founder)

UX DESIGN

- Why, What and How of Experience Design

- UX starts from the *Why*: the needs and emotions involved in an activity, the meaning, the experience

- Then the functionality that is able to provide the experience (the *What*) and

- An appropriate way of putting the functionality to action (the *How*).

- Experience Design integrates the *Why*, *What* and *How*, with the *Why* setting the tone

The Disciplines of
User Experience Design

ExS Experience Strategy	IxD Interaction Design
UR User Research	IA Information Architecture

UX

IXD & IA

INTERACTION DESIGN: DESIGN
THINKING & ID LIFECYCLE

IA: INFORMATION ARCHITECTURE:
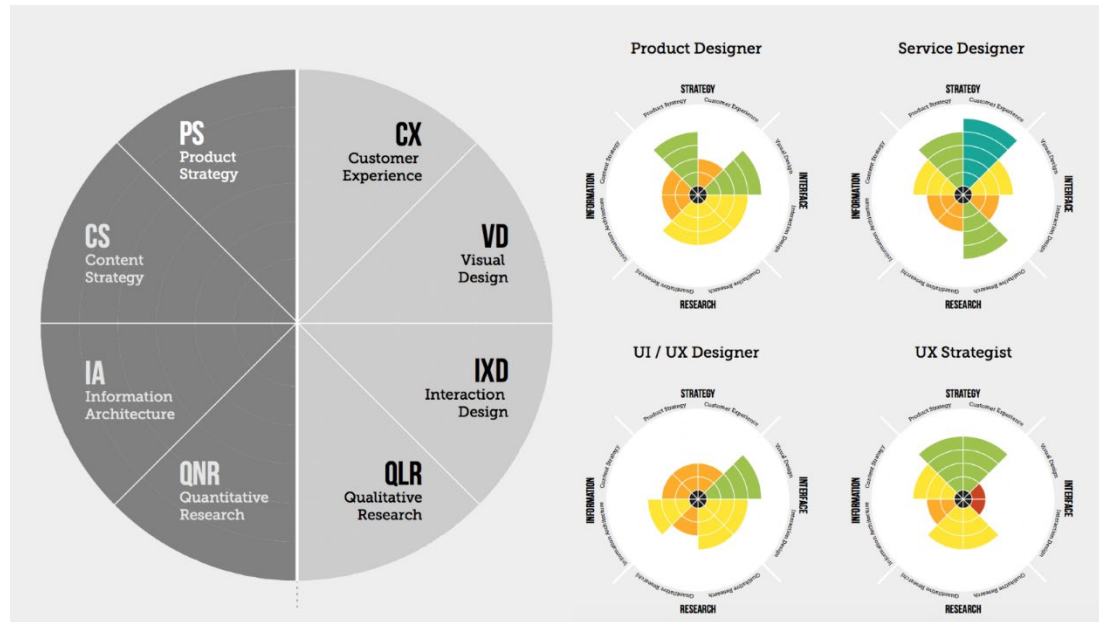ONTOLOGY, DATABASE, INFORMATION
VISUALISATION AND PRESENTATION

UX SPECTRUM

(JASON MESUNT)
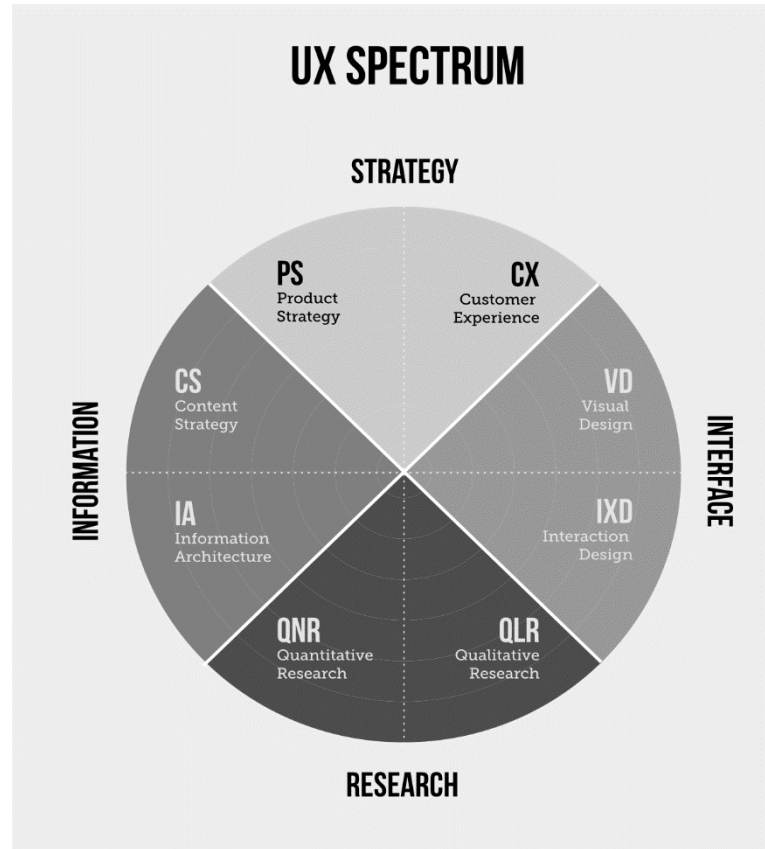
UX SPECTRUM: EXAMPLES

INTERACTION MODEL

INTERACTION MODEL (NORMAN)

➢ Norman's model of interaction (1988): stages of action in using interactive product

➢ Interactive cycle:

  ➢ User formulates a plan of action - *intention*

  ➢ Executes this at the interface - *action*

  ➢ When executed the user observes the interface for the result to determine future actions - *evaluation*

INTERACTION MODEL

➢ These two phases are subdivided into seven stages - each a user activity:

- ➢ establishing the goal
- ➢ forming the intention
- ➢ specifying the action sequence
- ➢ executing the action
- ➢ perceiving the system state
- ➢ interpreting the system state
- ➢ evaluating the system state wrt goals and intentions

Action Cycle
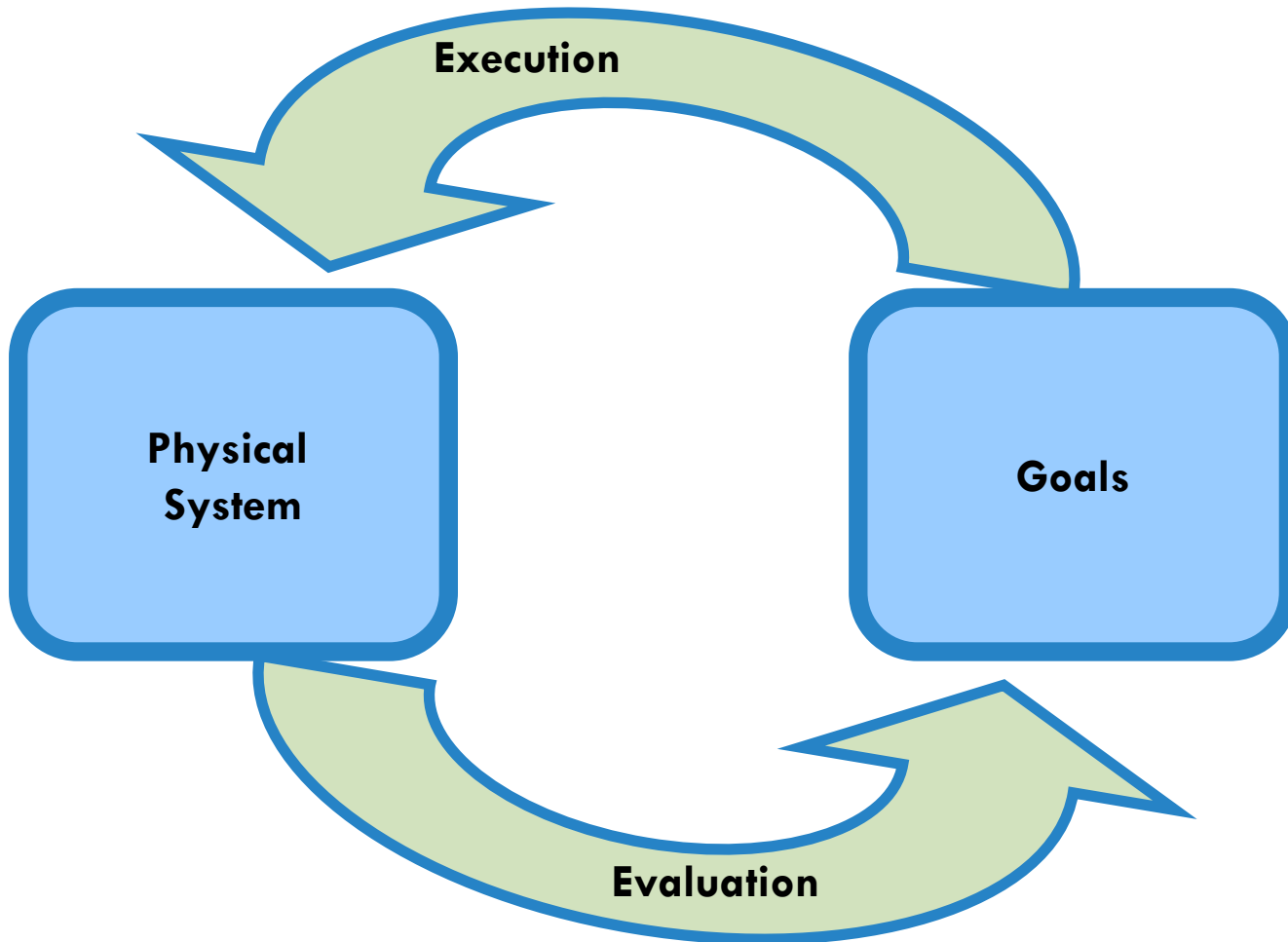
INTERACTION MODEL: EXECUTION

➢ User and system use different languages: translation

➢ If system actions correspond to user actions, the interaction will be effective

➢ ***Gulf of execution***: *difference between user's formulation of actions to reach the goal & actions allowed by system*

➢ Interfaces should be designed to reduce this gulf

INTERACTION MODEL: EVALUATION

➢ ***Gulf of Evaluation***: *the distance between the physical presentation of the system state and the user's expectation*

➢ Goal is for user to easily evaluate the presentation in terms of his/her goal: the more effort required, the less effective the interaction

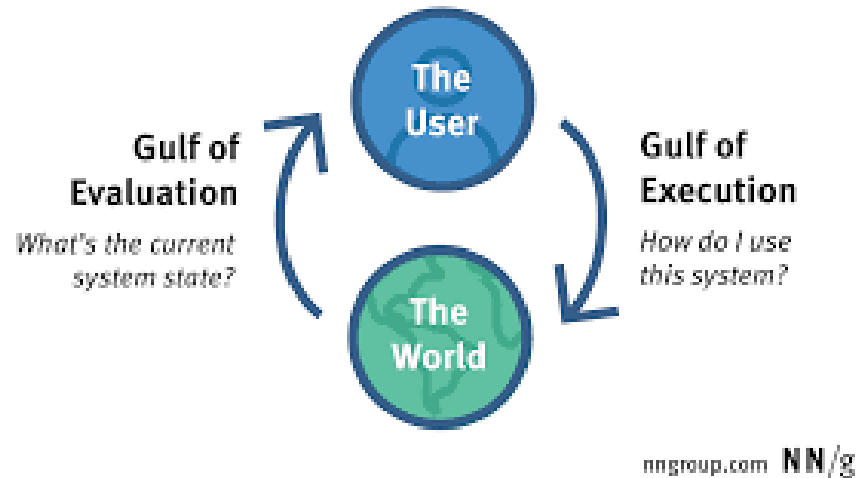➢ Interfaces should be designed to reduce this gulf

INTERACTION MODEL: GULFS
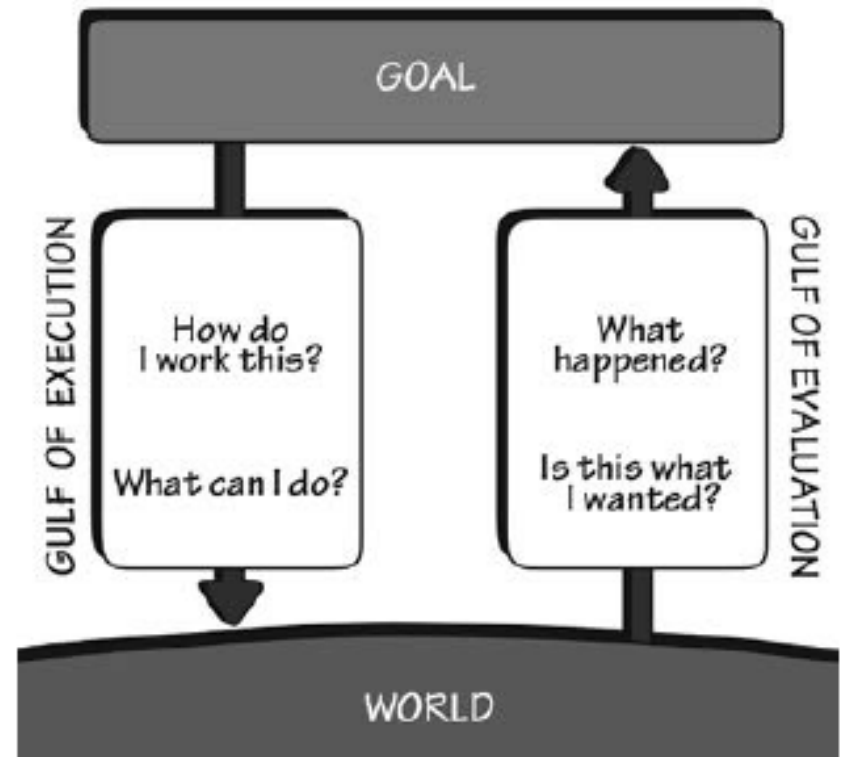
INTERACTION MODEL: DESIGN

"With every interaction, users must overcome the twin challenges of understanding the current state of a system and figuring out how to change it. Designers can support them by being aware of these gulfs and bridging them with a transparent conceptual model."

(Whitenton, NNG 2018)

Gulf of Evaluation
What's the current system state?

The User

Gulf of Execution
How do I use this system?

The World

nngroup.com NN/g

INTERACTION MODEL: DESIGN

➤ Design to reduce the gulfs: create visual & functional similarities with familiar designs

    ➤ Visibility (affordances: cues to action)

    ➤ Feedback

    ➤ Consistency

    ➤ Non-destructive operations (undo; exploration)

    ➤ Discoverability (systematic; e.g. rollover of menus)

    ➤ Reliability

➤ Example: Vending machines
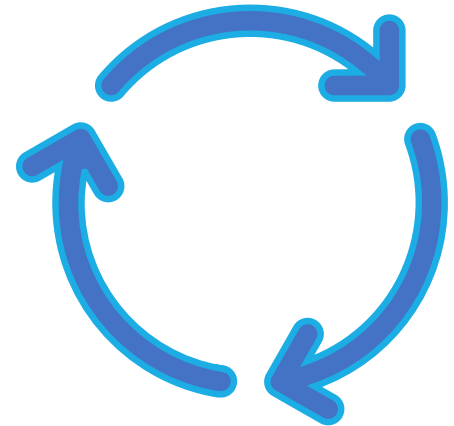
INTERACTION GULFS IN DESIGN

- Seven stages of action: checklist for effective interaction design:
    - Establishing the goal:
    - **What do I want to do?**
    - Forming the intention:
    - **What are my alternatives?**
    - Specifying the action sequence:
    - **What can I do now?**
    - Executing the action:
    - **How can I do it?**
    - Perceiving the system state:
    - **What happened?**
    - Interpreting the system state:
    - **What does it mean?**
    - Evaluating the system state wrt goals and intentions:
    - **Is this ok? Have I accomplished my goal?**

HOW TO INTEGRATE INTERACTION DESIGN ACTIVITIES WITHIN OTHER MODELS?

Integrating interaction design activities in lifecycle models from other disciplines requires careful planning

Software development lifecycle models are prominent

Integrating with agile software development is promising because:

- It incorporates tight iterations
- It champions early and regular feedback
- It handles emergent requirements
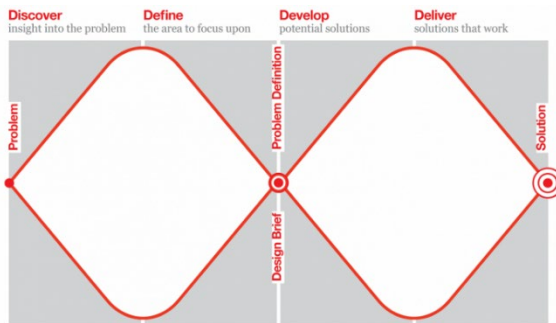- It aims to strike a balance between flexibility and structure

DESIGN PROCESS?

# DOUBLE DIAMOND DESIGN PROCESS

Source: https://www.designcouncil.org.uk/news-opinion/design-process-what-double-diamond
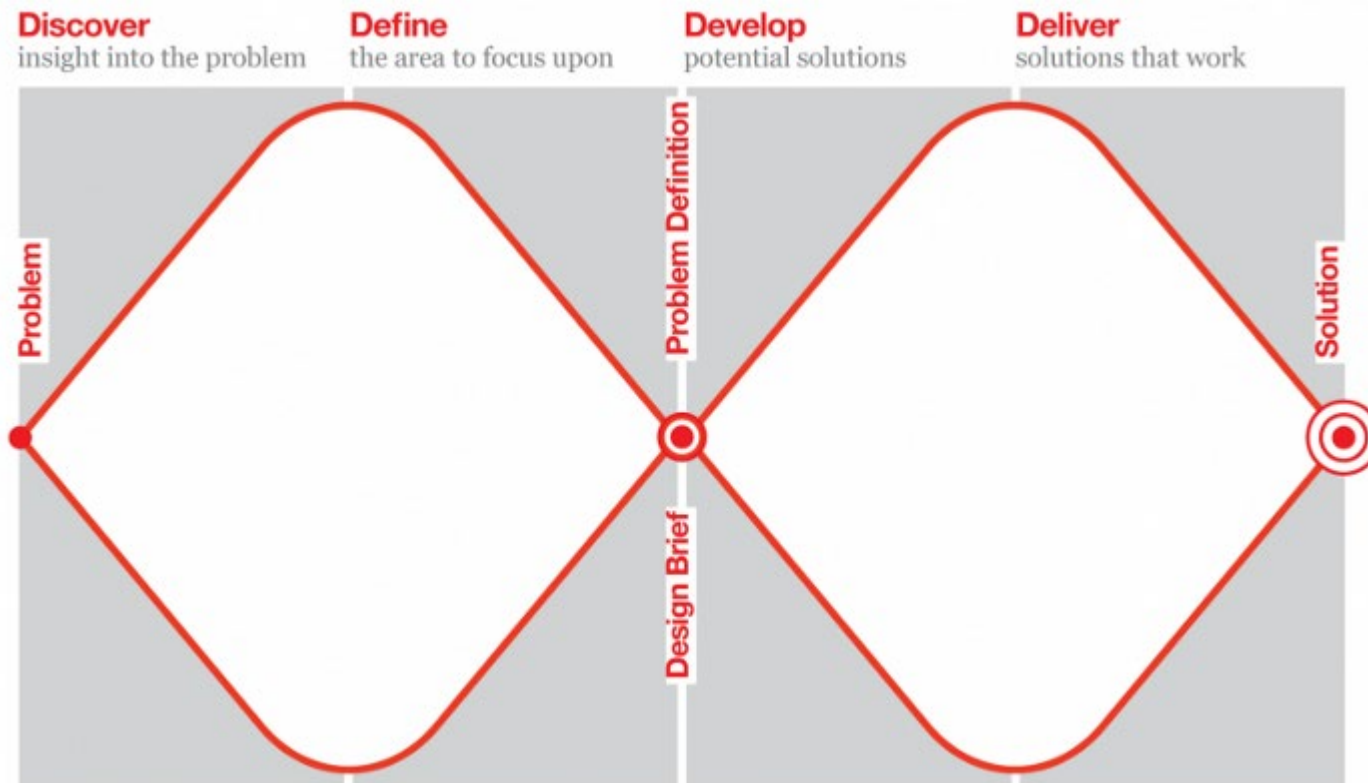
DOUBLE DIAMOND DESIGN PROCESS

- ➤ Discovering something about the world: insights, innovation
- ➤ Understanding users: user research: data gathering and analysis
- ➤ Defining what will be developed
- ➤ Develop: core design activity: propose ideas to meet requirements; conceptual and physical design; prototyping: evaluating designs through interaction
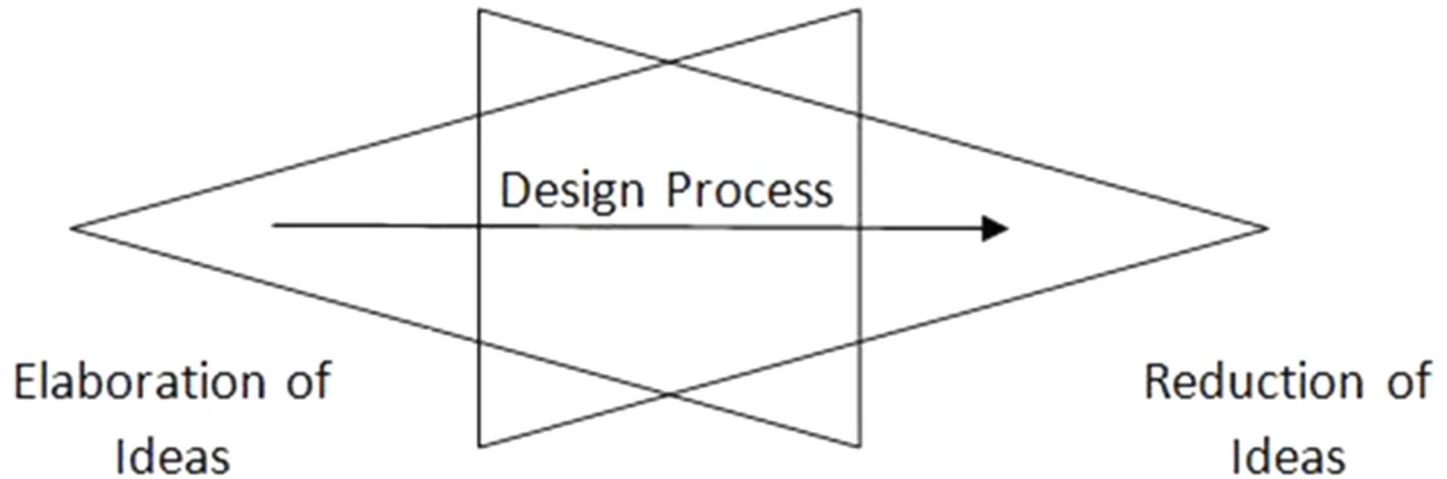
DESIGN FUNNEL

INTERACTION DESIGN

Interaction Design **process**:

- A goal-directed problem solving activity informed by intended use, target domain, materials, cost, & feasibility

- A creative activity

- A decision-making activity to balance trade-offs

Interaction design is also a **representation**:

- A plan for development

- A set of alternatives & successive elaborations

INTERACTION DESIGN PROCESS MODEL (PREECE ET AL)

⬚ There are four basic activities in Interaction Design:

1. Identifying needs and establishing requirements

2. Developing alternative designs

3. Building interactive versions of the designs

4. Evaluating designs

Preece, Rogers and Sharp (2010)

A SIMPLE INTERACTION DESIGN MODEL

Identify needs/
establish
requirements

(Re)Design

Evaluate

Build an
interactive
version

Final product
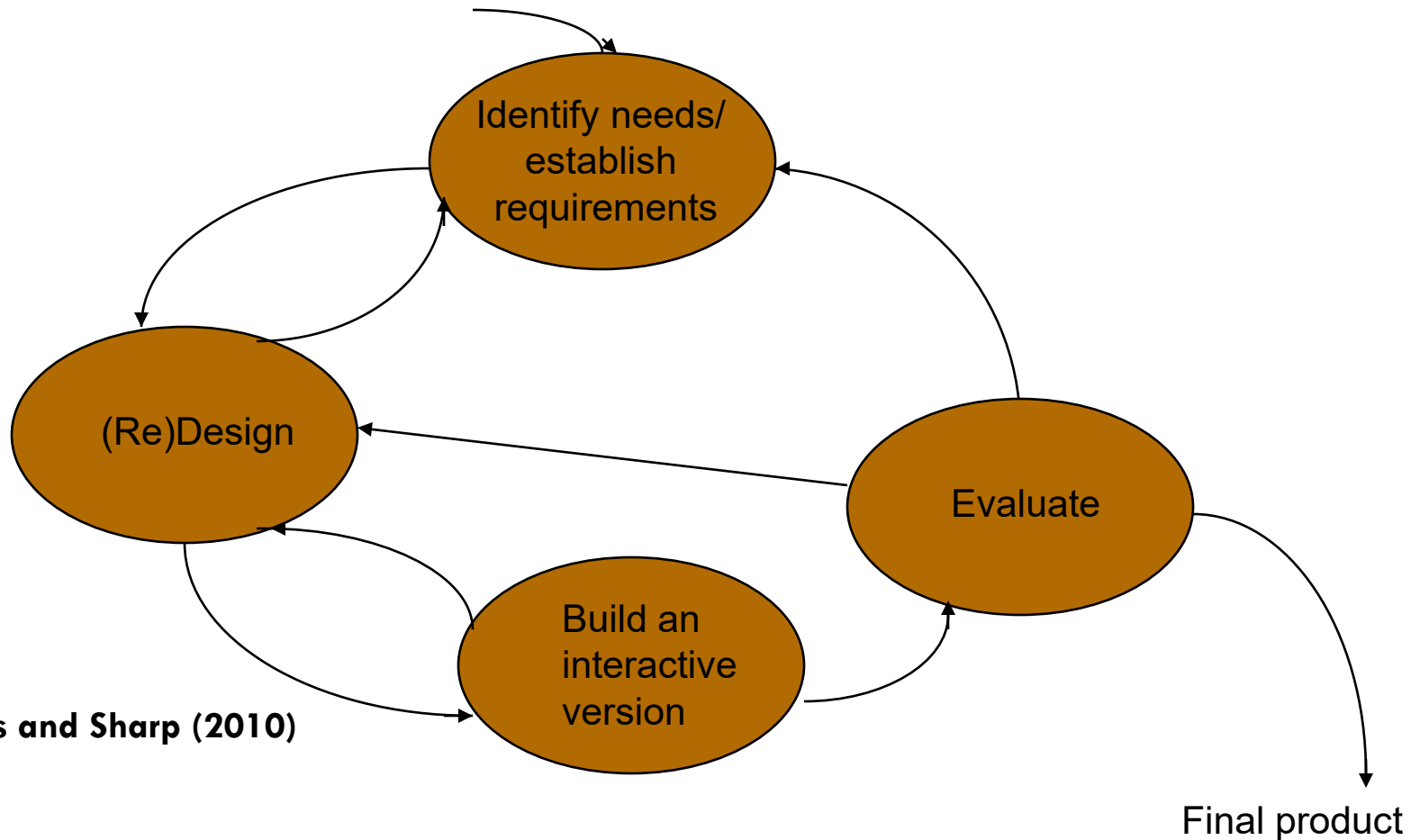
Preece, Rogers and Sharp (2010)

INTERACTION DESIGN PROCESS MODEL

Three key characteristics permeate these four activities:

- **1. Focus on users** early in the design and evaluation of the artefact

- **2.** Identify, document and agree specific **usability** and user experience goals

- **3. Iteration** is inevitable. Designers never get it right first time

Preece, Rogers and Sharp (2010)

ANOTHER LIFECYCLE MODEL: GOOGLE DESIGN SPRINTS

(Knapp et al., 2016) *Source: Google Design Sprints* (used courtesy of Agile Marketing)
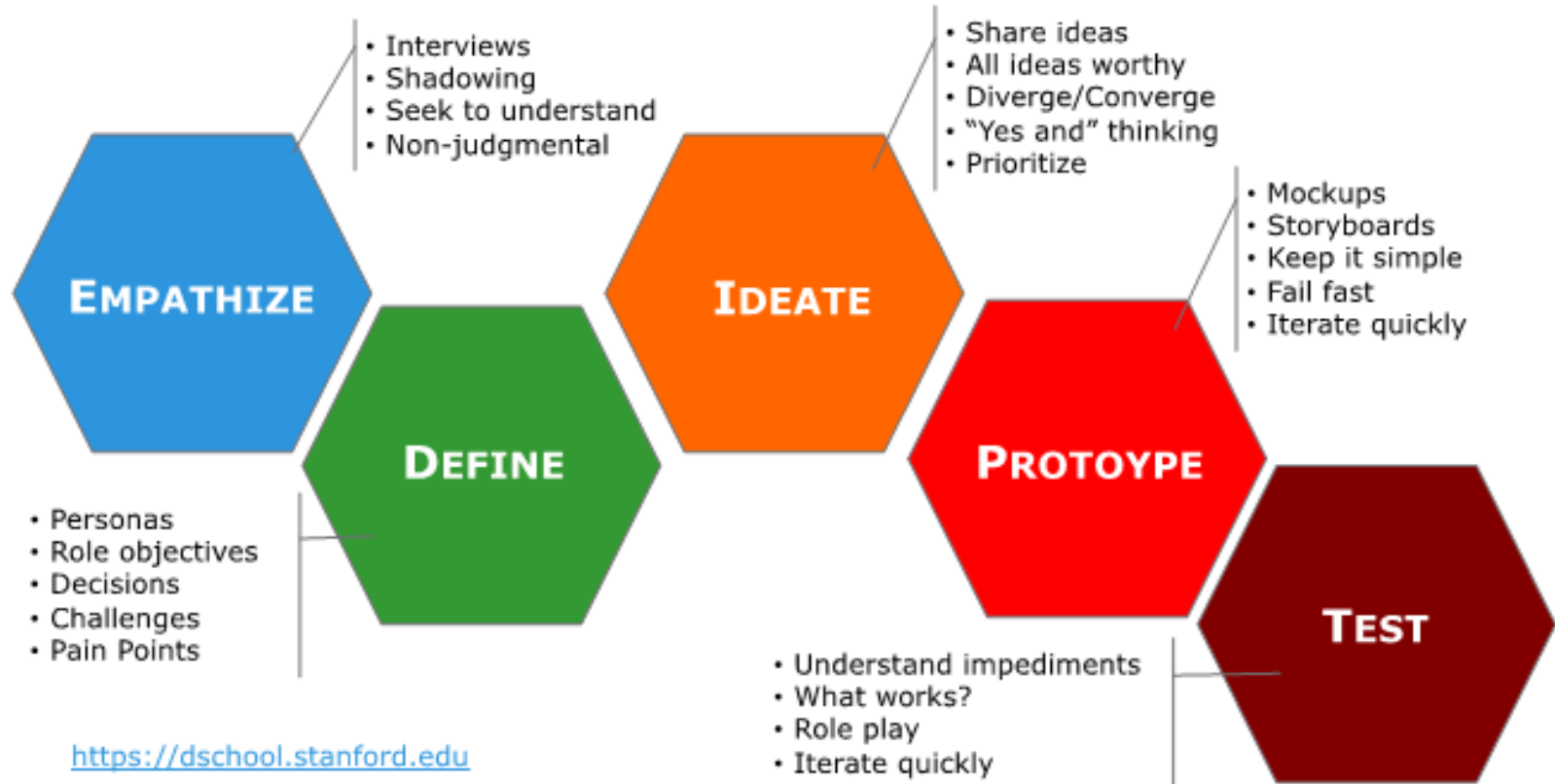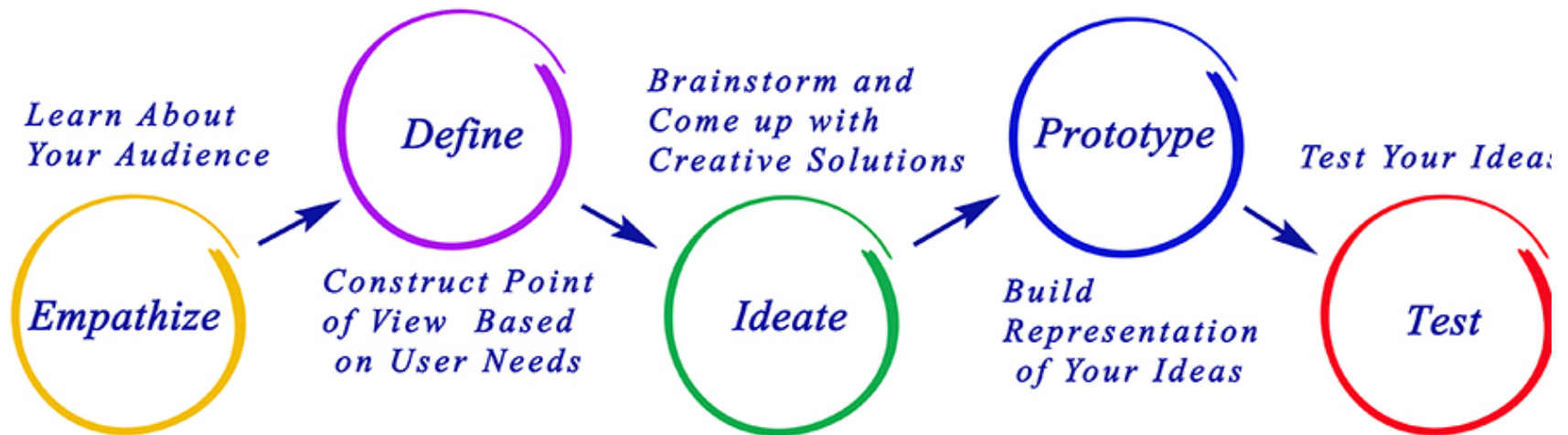
DESIGN THINKING

DESIGN THINKING

➢ A non-linear, iterative design process

➢ Suited to ill-defined, unknown problems

➢ Supports designers in understanding users, challenging assumptions and creating innovative solutions

➢ Involves five phases:

1. Empathise

2. Define

3. Ideate

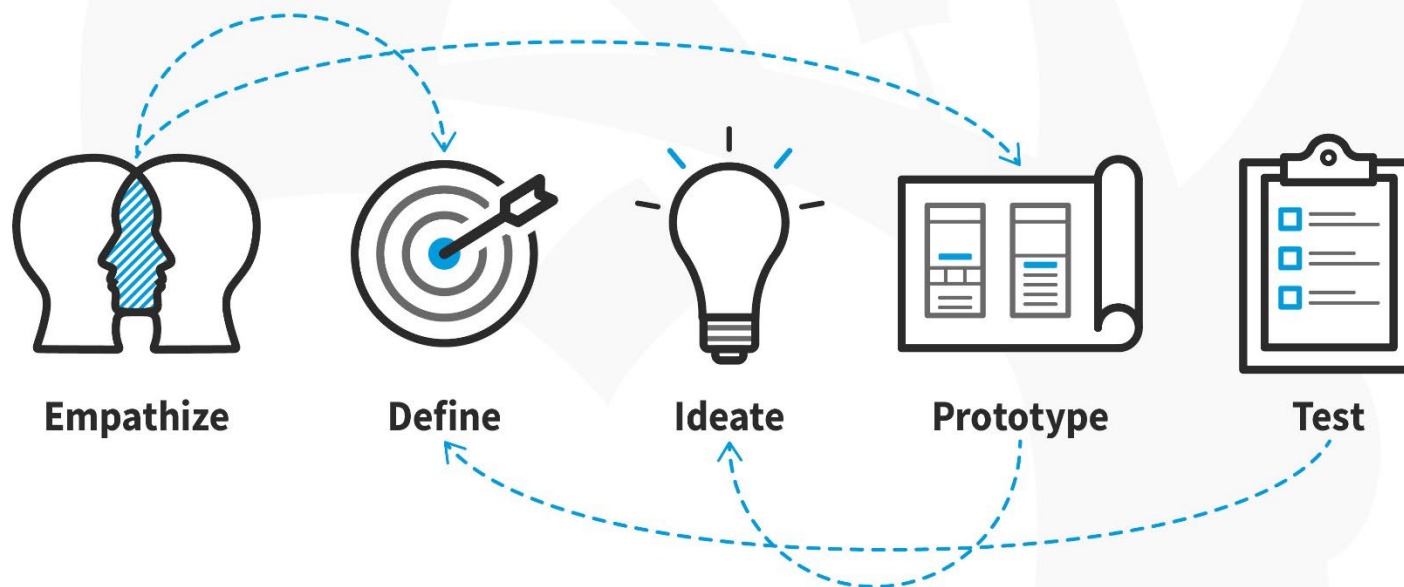4. Prototype

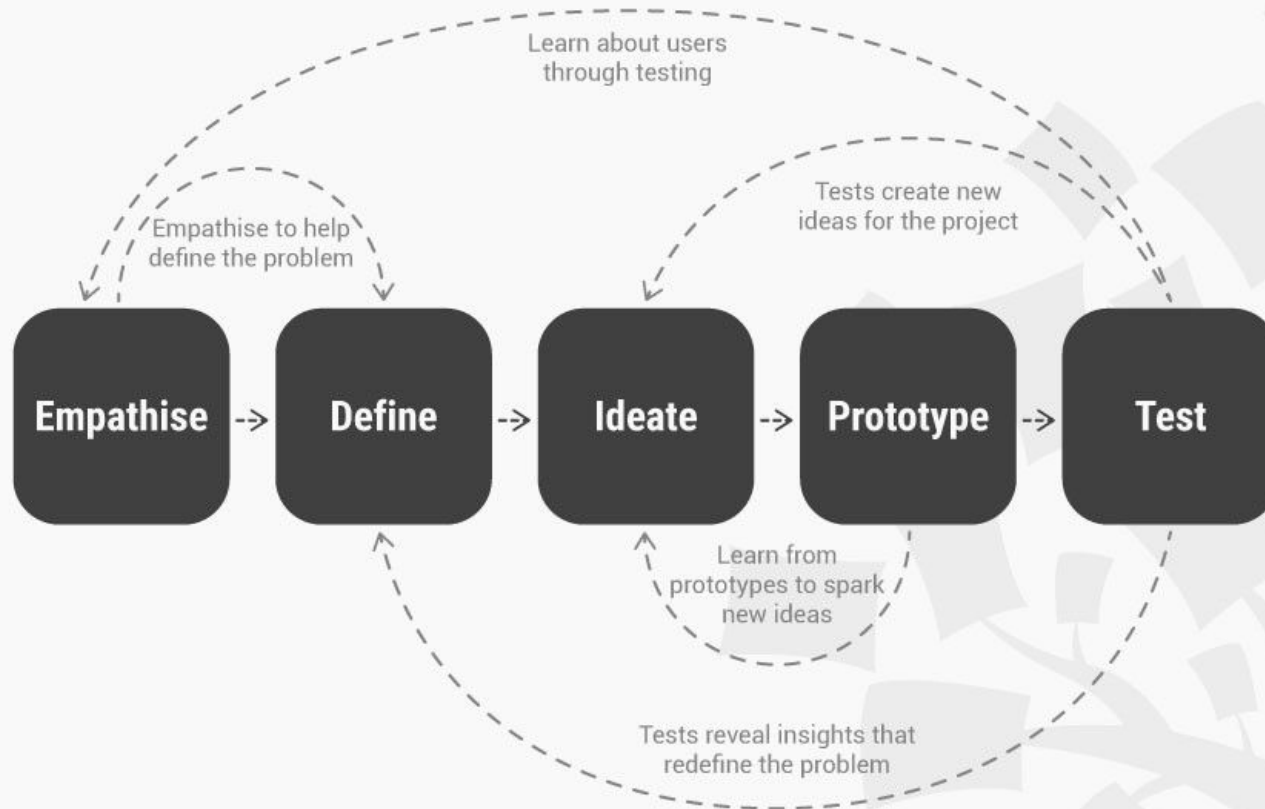5. Test

Stanford d.school Design Thinking Process

EMPATHIZE
- Interviews
- Shadowing
- Seek to understand
- Non-judgmental

DEFINE
- Personas
- Role objectives
- Decisions
- Challenges
- Pain Points

IDEATE
- Share ideas
- All ideas worthy
- Diverge/Converge
- "Yes and" thinking
- Prioritize

PROTOYPE
- Mockups
- Storyboards
- Keep it simple
- Fail fast
- Iterate quickly

TEST
- Understand impediments
- What works?
- Role play
- Iterate quickly

https://dschool.stanford.edu

Design Thinking Process

Design Thinking: A 5-Stage Process

Empathize **Define** **Ideate** **Prototype** **Test**

Interaction Design Foundation
interaction-design.org

DESIGN THINKING: A NON-LINEAR PROCESS

INTERACTION DESIGN & DESIGN THINKING?

➢ Both non-linear and iterative design processes

➢ Phases? 3, 4 or 5?

➢ Design Thinking: More support for initial user understanding and problem definition phases: *empathy*

➢ Creative interdisciplinary brainstorming

DESIGN PROJECT

➢ What Design Problem?
  ➢ Health: SDG 3 Good Health and Wellbeing
  ➢ Security: cyberattacks, scams: behaviour change

➢ Why is this an important problem? Why address it?

➢ What is the Problem?
  ➢ Gulfs of Interaction?
  ➢ Double Diamond: Discover and Define before Design activity

➢ Who is it a Problem for?
  ➢ Stakeholders?

➢ Examples?
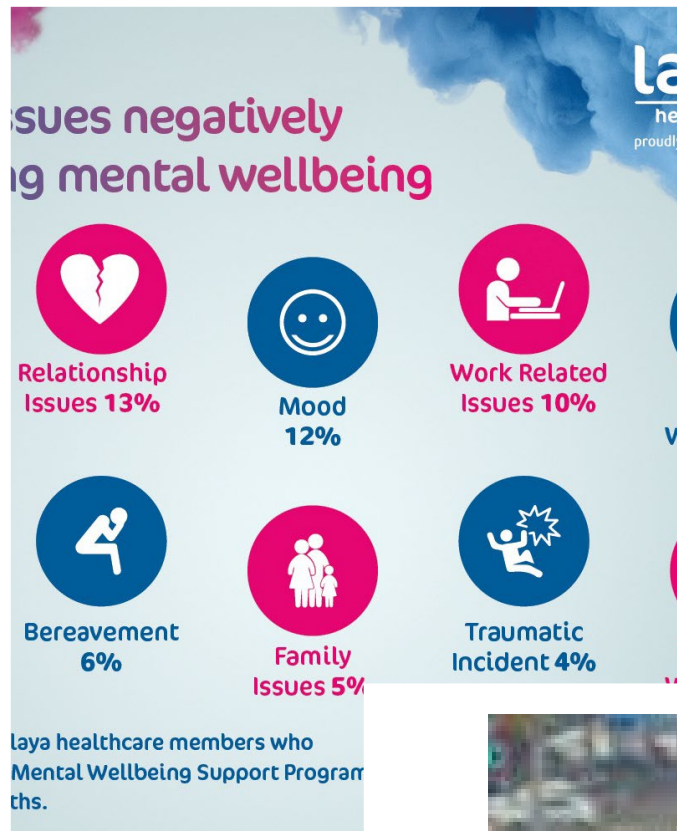
DESIGN PROJECT

UNDERSTANDING THE PROBLEM SPACE

Explore

- What is the current user experience?

- Why is a change needed?

- How will this change improve the situation?

Articulating the problem space

- Team effort

- Explore different perspectives

- Avoid incorrect assumptions and unsupported claims

DESIGN PROJECT

➢ **Miro**: collaborative design platform; online workspace for innovation

https://miro.com/app/board/o9J_IIChzE4=/?invite_link_id=472886157467

➢ **Figma**: Interactive prototyping tool

https://www.figma.com/file/FvBUMRYiiNaAltcez51JC6/Prototype?node-id=0%3A1

CT318 LECTURE 3 REVIEW

Design Process

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- Interaction Design Model

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  - **Design Thinking**

- Group Design Projects