



DESIGN THINKING

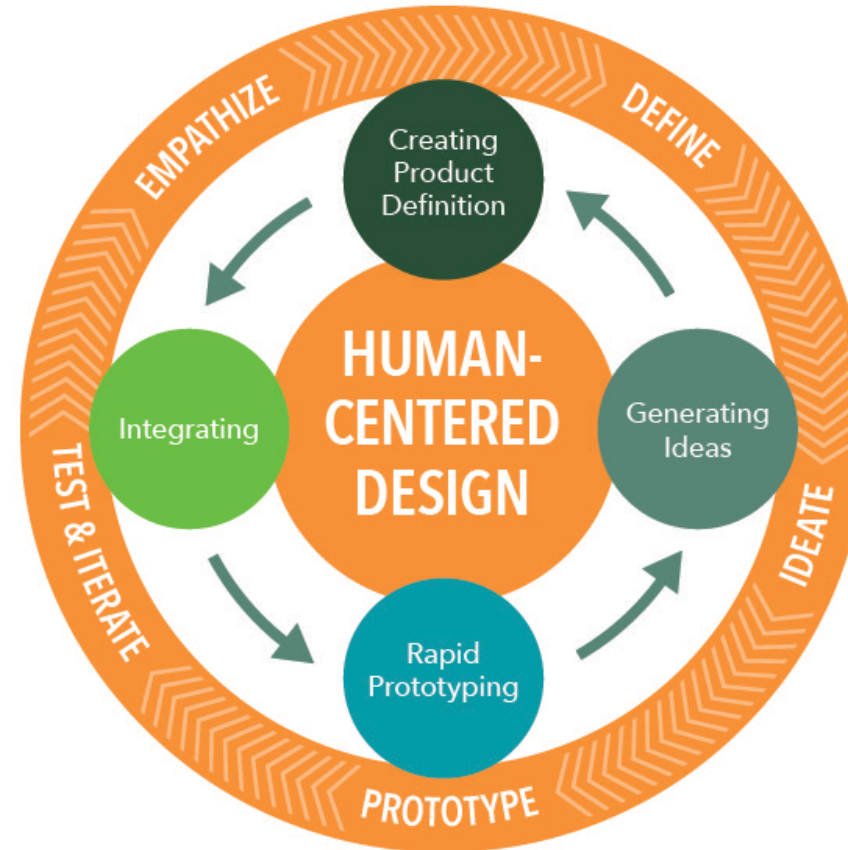
AT THE INTEGRATED DESIGN LAB

CREATING PROJECT DEFINITION | Introduction

This work is licensed under a Creative Commons
Attribution- NonCommercial-ShareAlike 4.0 International
License.

DESIGN THINKING – CREATING PROJECT DEFINITION

- Human-Centered Design
- **Creating Project Definition**
- Generating Ideas
- Rapid Prototyping
- Integrating



DESIGN THINKING – CREATING PROJECT DEFINITION

Upon completion of this module the student will be able to:

- Understand the context of a design problem.
- Explore strategies for getting to the root of a design problem.
- Use tools to better define and understand a design problem and its sources.
- Generate a problem statement.

DESIGN THINKING – CREATING PROJECT DEFINITION

- During this stage we are discovering the structures that lead to the problem, working from the fundamentals to the specific. Many of the techniques we use for problem *finding* are the same for problem *solving*, the only difference is the intention.
- The goal is to create an actionable ***problems statement*** and discover the source of the problems uncovered during the **human-centered design/empathy** phase.

Finding the Potential in the Problem

- Throughout the design thinking process, we will go back to earlier sections to reevaluate or reiterate what was learned, but in this early stage, resist the urge to jump ahead to solving the problem before it's been properly defined.
- **Sample Questions** that one should answer in this phase can be found in the **Module 2 Supplementary Document**.

Tools for Exploration

The following strategies are useful in defining design problems.

5 WHYs

Why?.....why??+++**why?!?*****WHY^^^**why?

Follow up every question by asking five more questions that start with WHY

Reverse Brainstorming

What could I do to make the problem worse?



Tools for Exploration

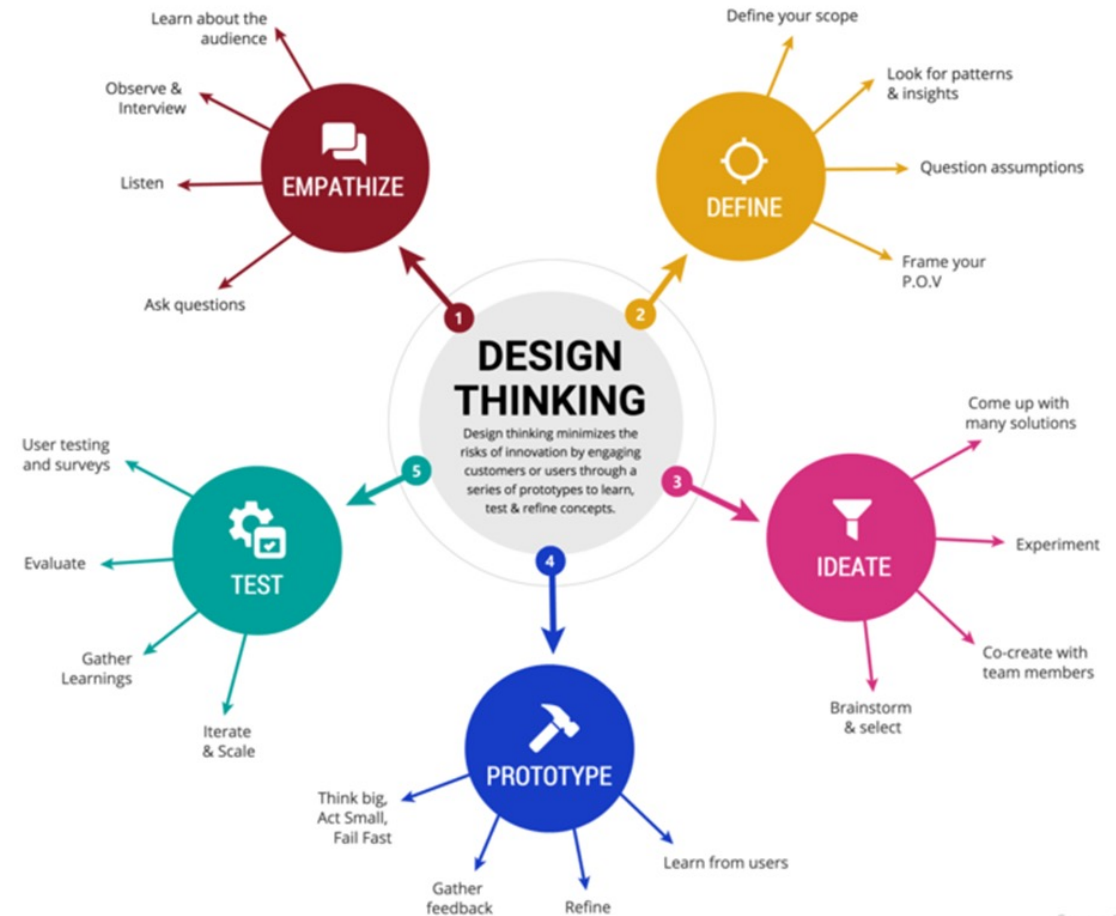
Mind Mapping

A mind map is a diagram used to visually organize information. Major ideas are connected directly to the central concept, and other ideas branch out from those major ideas.

Build to Think, Think to Build

Use the material to distract your conscious brain and allow your subconscious to do its crucial work and report back.

For more explanation, see the **Module 2 Supplementary Document**.



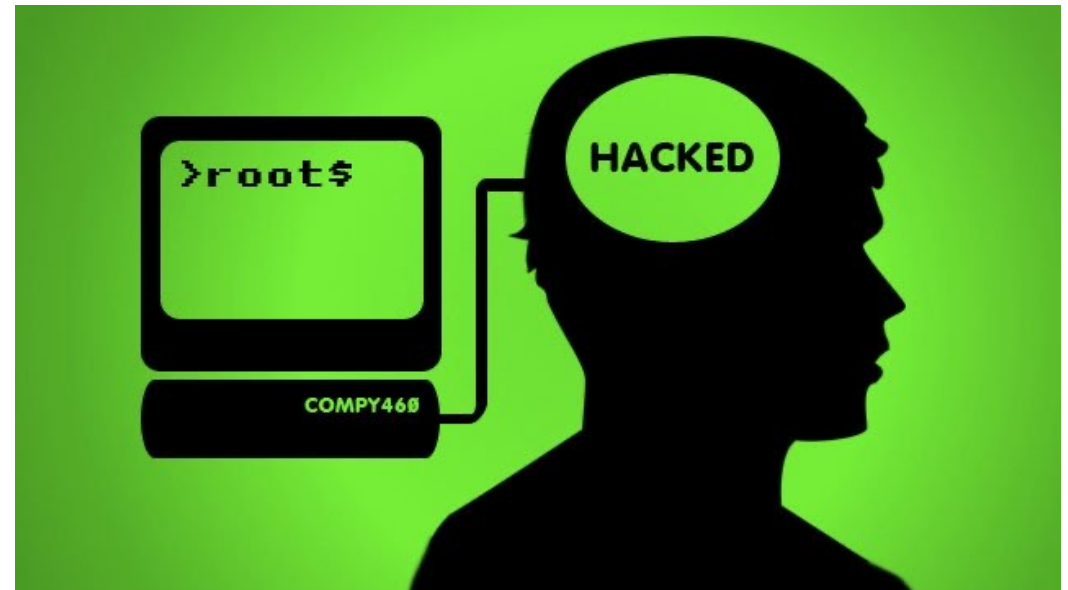
Source 1

Tools for Exploration

Brain Hacking

- Write down what you know
- Step away from the problem and distract yourself
- After 1-2 hours of distraction, write whatever comes to mind. Patterns will emerge that reflect the result of your subconscious mind working to solve the problem

For more explanation, see the **Module 2 Supplementary Document**.



Problem Statements

- Describe the perfect situation.
- Fully explain the problem.
- Explain what might happen if the problem is not solved.
- Back up your statements with evidence

For more information about writing a **Problem Statement** see the **Module 2 Supplementary Document**.



DESIGN THINKING – CREATING PROJECT DEFINITION

SUMMARY: A client will tell what they think they want.
The designer's role is to understand.

understand

“Human-centered design is a philosophy, not a precise set of methods, but one that assumes that innovation should start by getting close to users and observing their activities.”

– Donald A. Norman, Co-founder of Nielsen Norman Group

“User-centered design means understanding what your users need, how they think, and how they behave – and incorporating that understanding into every aspect of your process.”

– Jesse James Garrett, User experience designer



DESIGN THINKING

AT THE INTEGRATED DESIGN LAB

You've completed CREATING PROJECT DEFINITION | Introduction

Next: CREATING PROJECT DEFINITION | Case Studies

Module 2 Supplementary Document—Creating Project Definition

SAMPLE QUESTIONS

Here is a sample of questions that one should answer in the Creating Project Definition phase:

What are the known problems/needs?

What are the underlying structures that caused the known problem?

What is the budget for the project?

What materials are preferred for the project? Research alternatives.

What is the timeline?

What deadlines are mission-critical and which are preferred?

What similar products/project already exist?

Identify all the strengths and weaknesses of existing solutions.

What are the strengths and why?

Capitalize on any known strength, either in team members, location, resources, market visibility, manufacturing capacity, etc.

Which challenges can be turned into opportunities?

Limitations lead to innovation.

Who is the audience or user for this project?

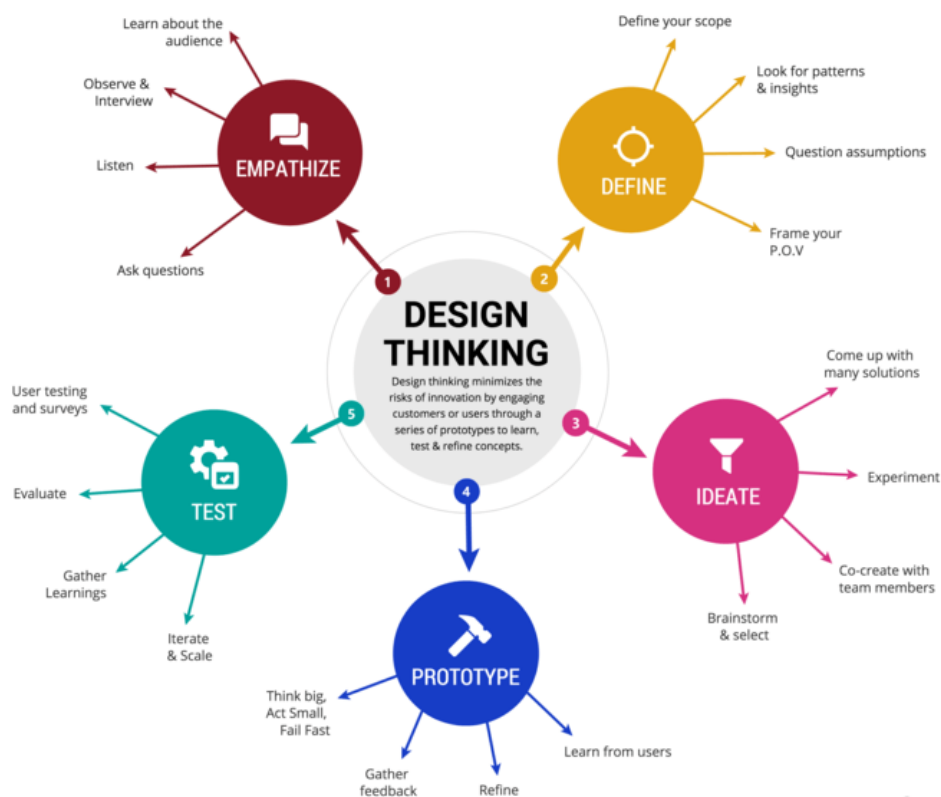
Since the project will tell a story, who is listening and what is their part?

FIVE WHYS

- Why?-----Why?.....why???++++++why?!?*****WHY?
- For every question that is asked, it should be followed with Five Whys. By asking “why” five times, we can continually dig deeper into the root of the problem or need.

MIND MAPPING

A mind map is a diagram used to visually organize information. A mind map is hierarchical and shows relationships among pieces of the whole. It is often created around a single concept, drawn as an image in the center of a blank page, to which associated representations of ideas such as images, words and parts of words are added. Major ideas are connected directly to the central concept, and other ideas branch out from those major ideas.¹



Source 1
Source 2

REVERSE BRAINSTORMING

Instead of gathering your brightest minds together to brainstorm the best possible solution, gather together and try to find ways to make the problem worse. What could you do to this project that would guarantee complete failure, the failure of the company and hopefully the collapse of civil society as we know it? Once the group has defined the worst it could possibly be, simply explore its opposite to find novel approaches to the problem and new avenues of potential solutions.

¹ https://en.wikipedia.org/wiki/Mind_map

BUILD TO THINK, THINK TO BUILD

Many designers, craftsmen and artists think best while working with their hands. While this step may seem better suited for the prototyping phase, there is great creative potential in play. Gather materials that relate to your problem, older versions of previous solutions, or scaled version of your material. Play with the materials as a way to better frame the problem, understand previous solutions and play with ideas that seem impossible. Be sure to have a notebook handy to capture the thoughts that arise. You are using the material to distract your conscious brain and allow your subconscious to do its crucial work and report back. Write down any word, idea, reference or image that comes to mind during this process as these will lead to new possibilities.

BRAIN HACKING

This is a powerful technique to discover more about any problem you may encounter, but following the steps in order are important.

1. Write down everything you know about the problem, include the background information you gathered from the *Human Centered Design* portion; also write down your questions, including a list of what you don't know yet.
2. Go for a walk, exercise, work with your hands, do something to distract your conscious mind (similar to *Build to Think, Think to Build*, but with a writing component). Avoid watching TV/videos, reading or conversation, which will disrupt your subconscious processing.
3. After an hour or two of conscious distraction, sit down and write whatever comes to mind. This should be 4-5 pages of handwritten text, without edits and without judgement of what is written. The goal is to write whatever pops into your mind, no matter how mundane or "off-topic" it may be. As your random thoughts flow onto the paper, a pattern will emerge that reflects the results of your subconscious processes and reveal innovative potential.

PROBLEM STATEMENTS

Problem statements can be effective ways to ensure that you fully understand an issue or issues before moving on to the ideation or solution stage. A problem statement includes the following:

- 1) **A description of the ideal or perfect state of affairs.** What would things look like if our design problem didn't exist?
- 2) **Explain the problem.** Use the outcomes of the tools described above to provide a deep explanation for the problem.
- 3) **Explain what happens if the problem is not solved.** Imagine a scenario where the client/customer/user has not invited designers to be part of the solution.
- 4) **Back up your statements.** Use the information gathered in the human-centered design phase and earlier parts of this phase to provide evidence that you really understand the design problem(s).