**Lab: Problem Definition, Brainstorming and Solution Prototyping**

The purpose of this lab is to complete problem definition, brainstorm solutions to your design problem, select design ideas, rapid prototype three solutions and get feedback.

**Task 1: Write problem statement including need, objective and requirement.**

Share your interview story/experience with your team. Now expand your POV need statement into a story. Invent a (semi)-fictional character and give your character a name, age, profession (and other relevant characteristics). Write a story of how your character experiences the pain point. Include three parts in your story: action, conflict and transformation.

* Action: What is the character trying to do? What actions are they taking to achieve it?
* Conflict: What is in his/her way? What frustrations/questions linger beneath the surface?
* Transformation: How do the action & conflict resolve? It is expected that the current solution (if there is one) is inadequate. What is the big insight? This is your POV.

Now add objective and requirements to make it a complete problem statement. What does your design need to do? What will your design try to achieve? What are the requirements? The list of requirements could be organized using bullets or numbers, and should include the design requirements you have identified that are absolutely necessary. Look in the **project document** posted on Blackboard to find constraints related to cost, size and etc. The requirements on the list may be organized into separate categories if you feel it is appropriate. Remember to be as unambiguous, verifiable and traceable as possible.

Write down the complete problem statement: the story (need), project objective and requirements.

**Task 2: Prepare brainstorming**

“How Might We” (HMW) questions are short questions that launch brainstorms, i.e., seeds for your ideation. It should be broad enough to allow a wide range of solutions but narrow enough that the team has some helpful boundaries. Start with your POV need statement. Break the larger challenge into smaller actionable pieces, and write the HMW statement for the pieces.

Write down (at least) five “How might we” (HMW) questions.

**Task 3: Brainstorm**

Wait for instruction from the instructor to start. You will brainstorm for 20 minutes, aim for 50 solutions.

1. Make sure you are close enough to the whiteboard and can easily stick a post-it on the board. One post-it per solution.
2. Brainstorm solutions to the HMW questions you developed. Take one HMW, brainstorm solutions. When no more new ideas, move on to the next HMW until all questions are used.
3. Still haven’t reached your solution number goal? Put constraint on your solution space, such as size, cost, how to use the product and etc. Leave the constraint on for as long as it is useful. Then change to a different one.

Once you are done, take pictures of your post-it ideas.

**Task 4: Select ideas and choose top three.**

Select ideas following instructions below:

1. Each team member check marks three ideas he/she likes the most. Select the top four with the most votes.
2. Choose one idea for each of the four categories: the rational choice, the most likely to delight (the customer), the darling (the team likes the most), and the long shot.
3. Select top three from the ideas in step 1 and 2. If an idea is so far out there that it seems pointless to implement, ask yourselves what about that solution was attractive, and then integrate that aspect into a new solution. Combine solutions if you like.

Include descriptions of the top three ideas.

**Task 5: Rapid-prototype three ideas.**

You have one hour to build three prototypes for the top three ideas using cardboard, post-its and sharpie.

When time is up, present your prototypes to the team across the aisle. Each student needs to write feedback for the three prototypes the other team built. One post-it per prototype, write feedback using the template “I like …, I wish…, What if/I wonder/How to …” “I like” is what you like about the prototype, “I wish” is your desired features, and “What if/I wonder/How to” is your suggestion for improvement.

Include pictures of your three prototypes and a summary of feedback you received.