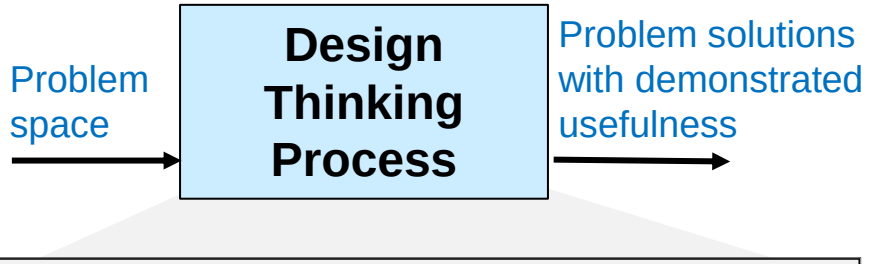
Design Thinking

Problem
How to address an ill-defined problem?

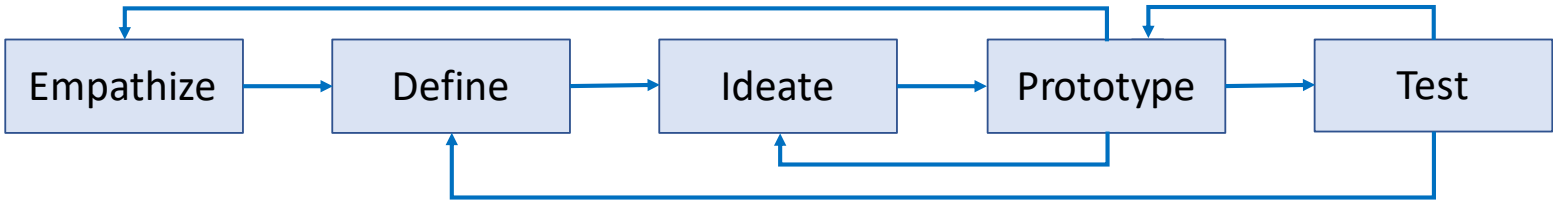
Difficulty
Work with an SME

- **Design Thinking** (DT) is an innovation approach which: empathizes with users, creates artifacts that address user needs, tests those artifacts, analyzes feedback, and continuously reworks the solution.
- DT usually has 5 steps: *Empathize, Define, Ideate, Prototype, and Test*.
- While DT steps are shown sequentially, rarely do they occur in a linear fashion. Usually, "backward" steps occur as the team learns more about user needs.
- DT does not address the entire life cycle of a product or solution, it only focuses on specific problems within the life cycle.



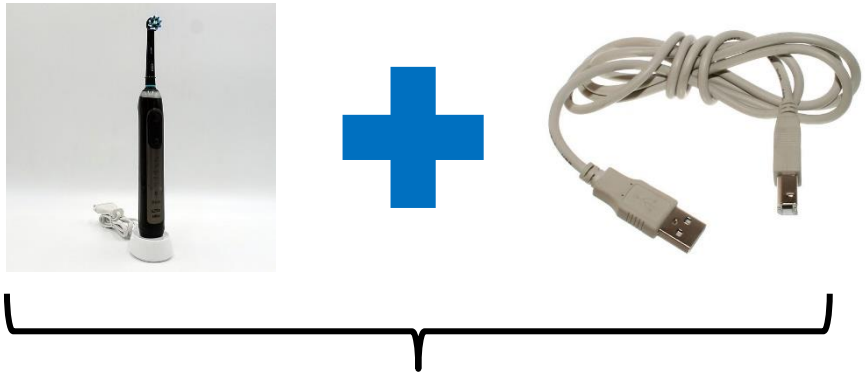
The following steps do not often occur linearly!

1. Empathize with your users
   - Determine how users interact with their environment in the context of the problem space.
2. Define the problem
   - Create a high-level human-centric statement that encapsulates the problem to be solved.
3. Start generating ideas
   - Generate as many ideas as possible to translate the problem statement into practical solutions.
4. Build a prototype
   - Take the most promising product ideas and create minimum viable product (MVP) versions.
5. Test your solution
   - Use test feedback to fine-tune the MVPs.



Design Thinking – Example – electric toothbrush

1. The web has many examples of Design Thinking.
2. An example is the design of the Braun / Oral-B electric toothbrush. Apparently:
   A. An initial Braun goal was to create a high-tech toothbrush that gave feedback to users on how well they brushed.
   B. After user discussions, it was determined that users wanted a less stressful brushing experience.
   C. Some stress related to the charging of an electric toothbrush.
   D. Braun changed their goal and created an electric toothbrush that uses USB charging.



New product: “Technical Portable Compatible for Braun Oral b Replacement Oral Charger Durable Convenient Electric Toothbrush Holder USB”

https://commons.wikimedia.org/wiki/File:A-B_Usb_Cable.jpg
https://commons.wikimedia.org/wiki/File:Oral-B_Genius_X_Electric_Toothbrush_-_48263286922.jpg

The web has examples of Design Thinking applied to problems in:

- Education
- Financial Services
- Healthcare
- Journalism
- Non-Profit/NGOs
- Retail
- Technology
- Transportation

Design Thinking – Notes

Slide 1

1. Design thinking simultaneously addresses customer desirability, business viability, and technology feasibility.
2. Design thinking incorporates multiple disciplines:
   - humanities for empathy;
   - engineering for idea generation; and
   - the sciences for testing.
3. Design Thinking benefits include:
   - Applies to products and processes.
   - Ensures that there is a “why” behind every improvement.
   - Improved customer retention.
   - Is useful for addressing poorly specified problems, since there is constant user engagement.
   - Reduction of cost to get a product to market.
   - Reduction of time-to-market.

Slide 2

1. It is challenging to give a detailed example in a small space.
2. Web examples can be find with titles
   - “*40 Design Thinking Success Stories*”
   - “*Design thinking in action … 35 great examples*”