



# Steps of the engineering design process



## Define the problem

The engineering design process starts when you ask the questions below about problem that you observe.

- What is the problem or need?
- Who has the problem or need?
- Why is it important to solve



Make a word document about your project to answer these questions

## Do background research

Learn from the experience of others rather than repeat their mistakes. So, for an engineering design project, do background research in two areas:

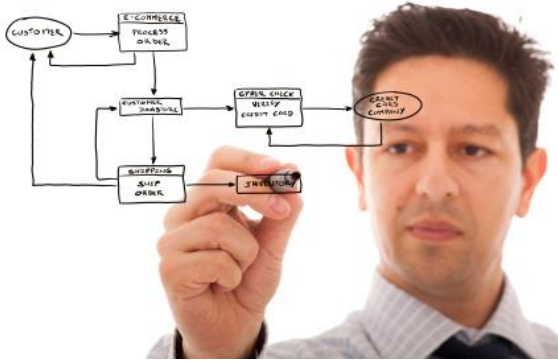
- users or customers
- existing solutions



Make a word document to define your customer profile and to describe the background research you made

## Specify requirements

Design requirements state the important characteristics that your solution must meet to succeed. One of the best ways to identify the design requirements for your solution is to analyze the concrete example of a similar existing product noting each of its key features.



Make a word document to define the design brief of your project

## Brainstorm solutions

There are always many good possibilities for solving design problems. If you focus on just one before looking at the alternatives, it is almost certain that you are overlooking a better solution. Good designers try to generate as many possible solutions as they can.





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## **Choose the best solution**

Look at whether each possible solution meets your design requirements; Some solutions probably meet more requirements than others; Reject solutions that do not meet the requirements;

## **Develop the solution**

Development involves the refinement and improvement of a solution and it continues throughout the design process, often even after a product ships to customers.

## **Build a prototype**

A prototype is an operating version of a solution. Often it is made with different materials than the final version and generally it is not as polished. Prototypes are a key step in the development of a final solution, allowing the designer to test how the solution will work.



Design review. Make a slide show.

## **Test and redesign**

The design process involves multiple loops and circles around your final solution. You will likely test your solution – find problems and make changes – test your new solution – find new problems and make changes – and so on, before setting on a final design.



## **Communicate results**

To complete your project, communicate your results to others in a final report and an oral presentation.

Write your final report. Make a slide show.