

Project Planning • Understanding the Problem

Putting it in Context

Solving a problem is much easier when you understand why it is a problem, and not just a fact of life. Before you even start brainstorming solutions, you need to find out a little bit about the issue at hand. It's possible that some of the research you do now will help you make more informed choices later on in the project.

Answer the questions below relating to your project.

What will you be designing or redesigning? Describe it in at least two full sentences.

Who is the audience for this project? Who wants you to make this?

Will this project be beneficial to anyone outside of the group that it is specifically designed for?

Has this project ever been undertaken before? If not, why not?

Is there a commercial market for the outcome of this project? Can it be manufactured at a reasonable cost?

Will this project have any negative environmental impacts?

Will the product be easy to use? How can we make it so?

Project Planning • Understanding the Problem

Creating a Design Specification

A design specification is a document created to help you fully understand the problem before you start designing a solution. Only by knowing the full constraints of the problem to begin with can you come up with an effective solution that will not need a major overhaul somewhere down the line.

The final document should fully describe all of the requirements that a product must fulfill and include any constraints that may affect the product. The actual or intended customer should be consulted as fully as possible while producing the design specification, as their requirements are of paramount importance.

The design specification should include numeric properties, as well as descriptive ones. For example, a customer may specify that the product must weigh less than five pounds, for shipping purposes. However, they may also include a tolerance along with the numeric property, like that the product may weigh as much as 5.25 pounds, but no more.

Below are some common categories that are included in design specifications. You will probably not need to touch on all of these when you write up your design specification, but you should include a discussion of at least three.

- *Product Appearance*
- *Competition Rules/Specifications*
- *Customer/Consumer*
- *Documentation*
- *Ergonomics*
- *Environmental Impact*
- *Installation Needs*
- *Product Disposal*
- *Legal, Patent and Safety Implications*
- *Product Maintenance*
- *Materials*
- *Packaging and Transport*
- *Product Performance*
- *Available Manufacturing Processes*
- *Cost*
- *Dimensions/Physical Limitations*
- *Product Service Life*
- *Quality*
- *Governmental and Industry Standards*
- *Testing*