

Product Specification Creation

Overview: The product specification describes all the necessary requirements of a product as well as the specific performance acceptability of each requirement. It is a specific type of goal statement that clearly and specifically lists the requirements. It should be made in table form.

Purpose:

The purpose of creating a product specification is to clearly define the requirements of a final product. Both the engineers and the clients use the product specification to reach agreement about product expectations.

Who:

While most engineering product designs begin with a starting point, the engineer needs to create an appropriate product specification. That is, a list of specifications that will create a high quality product.

When:

Product specifications should be created when starting a product design. Creating a product specification is an iterative process that involves assessment by your client and/or boss. Product specifications are updated as understanding of the product grows or changes.

Why bother creating a product specification?

1. It saves time! Creating a goal statement will keep you focused on your deliverables.
2. Get alignment with your boss and client early. Everyone knows what is expected of the product. There's nothing worse than thinking you completed a product to find out you designed the wrong product.
3. A product specification provides the foundation for the prototype test plan.

How is a product specification created?

Steps:

1. **Create the Specification Table:**
 - a. Label column one "General Requirements."
 - b. Label column two "Specific Requirements."
 - c. Label column three "Acceptable Performance"
2. **Fill out the Table:**
 - d. List the general requirements (either come from the customer or are classifications of customer requirements)
 - e. List the specific requirements for each general one.
 - f. Assign a numeric value and unit of measure to each specific requirement for the product to be acceptable.

Assessment Criteria

Much like action items, product specifications need to be SMART

Yes/No checklist for a product specification t:

- Specific:** The product specification is specific enough that everyone knows what the deliverables will be. The language is clear and concise.
- Measurable:** Each specific requirement has a measurable acceptable performance.
- Attainable:** The product specifications are attainable.
- Results oriented:** The product specification is a result, not a method.
- Time bound:** The product specification is practical given the time constraints of the course.

*Example on next page

Product Specification for a mouse death-trap:

General Requirements	Specific Requirements	Acceptable Performance
Kill the mouse	Mouse dies instantly	Death < 0.005 sec
	Mouse is left in one piece	One piece, no blood
Trigger	Trap must reliably trigger with a mouse	Trigger force < 5 grams
	Trap must not trip if gently placed or slid	Trigger force > .05 grams
Usable	Trap may be set by a person with weak hands	< 150 gram required force on any moving parts
	Bait must be common household item	Works with cheese or peanut butter
	Dead mouse must be easy to remove	Place to release trap no matter where mouse is situated
Low-cost Manufacturing	Piece part cost must be low	< \$.15
	Assembly cost must be low	< \$.10
	Packaging for sale must be low	< \$.03