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Mrs. Floyd

Engineering Design & Development

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Design Specifications

Name of Product: Working on the go efficiently - Rover

Designers: Zach Shellhorn & Declan Ruiz

**Target Consumer:** Business men/women, teachers, students, sales men/women, & entrepreneurs (Market Research) (Problem Statement)

**Customer Needs:** (Market Research)

* High quality
* Fair price
* Sturdy
* Efficient
* Convenient
* Can charge devices
* Portable
* Light weight
* Store materials but not too heavy
* Work space
* Dependable
* Easy to use/ cut down time of work
* High quality
* Fair price
* Sturdy
* Efficient
* Convenient
* Can charge devices
* Portable
* Light weight
* Store materials but not too heavy
* Work space
* Dependable
* Easy to use/ cut down time of work

**Performance:** help people work more efficiently while working on the go (Market Research)

**Target Cost:** $70+; minimum $70; max $150 (Market Research)

**Size/Weight:** no larger than carry on size for an airplane or about the size of a suitcase. (Market Research)

**Aesthetics:** There are some wants of something being fashionable but a simple design is more important. There will be lightweight materials so it’s more portable, neutral colors such as black and grey. (Pre-conceived ideas + based on market research)

**Materials:** there are no specific materials required but will be using something that will be durable and also lightweight. We want something that will last long, be weather resistant, and durable so it doesn’t break. (General Thoughts from Zach & I)

**Safety and Legal Issues:** the only legal issue with this project is trouble with patents and the only safety issues is if someone hurts themselves trying to lift a heavy container. (Patent Research)

**Ergonomics:** this is a key point because if someone is in a bad position working, then while working overtime they won’t be very productive because they will be in pain. Therefore, we have to make something that is functional and safe for the body to endure. (Market Research & Personal Complaints)

**Operating Environment:** our product will be used in all kinds of atmospheres but mainly in the back of people’s cars, in and out of office buildings, in and out of schools, etc. Constant dropping, mechanisms failing will be more due to use rather than environmental conditions. (Problem Statement) (Project Research) (Market Research)

**Global Environment:** this product does not contain any type of toxic or dangerous material that will endanger anyone.

**Service Life:** the life expectancy of this device is obviously intended to be lifetime. But right now we don’t know what kind of material we will be working with and how well the materials will hold up under various tests. Under ideal conditions I would hope that our product lasts at least 5 years.

**Product life:** Our goal is to make a design that will work ultimately the first time. However, we have been in engineering way too long to know that it is practically impossible to make a perfect design the first time. Therefore, we plan to make our best design the initial design. Then from there we will make updates and modifications when we find suit. Hopefully, our newer designs will accomplish what was lacking in the previous designs to enhance the overall efficiency of the product.

**Durability & Maintenance:** the product wouldn’t need to any routine maintenance during the life span. The goal is to make the product as durable as possible with minimal moving parts to enhance the life expectancy and reduce wear and tear on parts. (Market Research & Personal Complaints)

List of Criteria from Most Important to Least important:

1. Size and weight
2. Materials
3. Target consumer
4. Customer needs
5. Performance/ durability & maintenance
6. Target cost
7. Product/service life
8. Ergonomics
9. Aesthetics
10. Safety and legal issues
11. Operating environment
12. Global environment

Constraints:

* Time: we have to design a product within a school year (ending May 25th)
* Funds: we don’t have unlimited funds to be making expensive products.
* Resources: we won’t necessarily have access to all the most desirable materials in the world to work with and test out. We will have to make due with whatever we can get our hands on, for the most affordable price.
* Equipment: Based on our consultant, we may not have all the necessary tools, machines, etc to accomplish the project the most efficient way.