Project Deliverable H: Design Day Pitch and Final Prototype Evaluation

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1.0 Introduction

The next step in our design process is to complete our final prototype and present it at Design Day. In this deliverable, we will be providing a very short summary of our project which will be used by the judges. Then, our team will summarize our Design Day pitch, to be delivered to our clients, professors, fellow students and judges. The pitch will be approximately three minutes, and this will be followed by a 5 minute question and answer period following our short presentation. Our team will explain why the problem is important, the basic user requirements, current solutions in the market and the key aspects of our product. We will then demonstrate our final prototype in action during Design Day. Finally, we will also include some images and pictures of our finished product.

2.0 Project Summary

Our final prototype is a metal attachment device that allows for a wheelchair to be securely and safely connected to a bicycle. This allows for the wheelchair user to enjoy the everyday experience of riding a bike.

3.0 Design Day Pitch

Throughout this semester, our team has been applying a wide variety of engineering design principles to solve a problem for a real-world client. One of the first steps was to determine what this problem exactly is, and why it is important to solve. Our problem statement, established at the start of the semester, is defined as follows: “There is a growing desire for wheelchair users to be able to enjoy a common leisure activity such as riding a bike. There is a need for an attachment-based device that connects a typical bicycle to a wheelchair, without making any permanent modifications to either”. To solve this problem, we have conceptualized and created this prototype, that is lightweight, simple to use and within the provided budget. In our opinion, this problem is very significant because it is often very difficult to incorporate a bike into a wheelchair. Many current solutions are expensive, require permanent changes to the

wheelchair and are difficult to install. Our group therefore felt like it was a compelling task to provide a basic but effective way to solve this important problem for the client.

One of our most important design considerations was the overall usability of the prototype. We have designed it to have a short attachment time, by using clamps to secure the device to both the bike and the wheelchair. When the prototype is first put to use, the width can be adjusted using a screwdriver if necessary, so this is the basic tool that may be required by the client. Furthermore, since the product's footprint is quite small, the user would need minimal space to store the device when not in use.

Most of the current market solutions that we have researched involve permanent modifications to the bike. Usually, we have seen a bicycle with an attached platform at the front, where the wheelchair can be strapped on and secured to. We have seen that these alternatives are very costly and would require many hours and materials to manufacture. These types of designs do offer a very sturdy, secure and enjoyable ride for the wheelchair user, and we believe that these solutions are also simple to employ. However, our solution presents more advantages since it addresses our problem statement, because it can be installed and removed after every use and it also remains within the allocated budget for this project.

In our opinion, the key aspects that make our product the best solution on the market include its small footprint and simple install method. Not much space is required to store our product when it is not in use, and it is also lightweight, so it can easily be carried around. Only a basic tool may be required to operate the prototype, and the use of carabiners make it quick to clamp onto both the bike and the wheelchair. Furthermore, the use of steel for the final product makes the attachment very durable and secure, which was one of our main target specifications identified at the start of the semester. Also, as opposed to other solutions seen in the industry, our product can be manufactured for a very low cost, so it would be accessible to many more wheelchair users who wish to enjoy the leisure activity of riding a bicycle.

Finally, we will now demonstrate our fully functional prototype in action.

4.0 Pictures of our Final Prototype

In this section, we will include some images of our final prototype, taken from a variety of different angles.

Figure 1: Side view of the attachment device

Figure 2: Front view of the attachment device

Figure 3: Top view of the attachment device

5.0 Conclusion

In conclusion, our team is now prepared to present our final prototype at Design Day. We have summarized the pitch that we will be presenting, which includes what our problem is, why we need to solve it and what we have done to come to a solution. We will also show our prototype functioning, and we are prepared to answer any questions that may come from the judges or clients. Our team has also included a few pictures of our final prototype, which will be shown at our booth on Design Day.