Introduction:

Prototyping is a very important stage to developing a product. The first prototypes usually consist of a very simple and cheap design, however, for the second prototype, we decided to produce a more functional design testing the main components. The more prototypes to a design, the better the design and the components with them. Having multiple prototypes also allows the developers to obtain more information about their product, refine parts, and test components to further advance their functionality. In the case of our project, we’ll only be producing three main prototypes (with testing of side components). Having such prototypes will allow us to explore the various ideas and concepts of the design to find a product that suits the clients desired needs. This prototype is simply determining what the user wants before we spend a lot of time and money into a final product (third prototype).

In terms of our prototype, it consisted of testing the physical dimensions of the product and if they suit the client, as well as many major mechanisms. Producing the second prototype took lots of time to make since it consisted of lots of purchasing of parts, machining of parts, precise measuring and calculations, as well as assembly. By the end of creating the second prototype, everyone had a really good idea of how the main structure would turn out, and the compromises that had to be made so that we achieve the clients' needs, as well as the components and mechanisms that need to be worked on.

Once all the prototyping material has been presented to the client, we will know exactly where the product will progress and most of the major features it will have. In this document, a list of details regarding the second prototype will be found, as well as the client’s feedback and changes that may be needed for the next prototype. This prototype is a more accurate design to the final design/product and will resemble its overall shape/ main mechanisms.

## **Test Plan**

**Define purpose**

* The purpose of this design is to test the attributes of a box that would be used to contain all the electrical components and would be attached to the chest strap from the previous prototype.

**Design concepts**

* Prototype will be a box capable of carrying the necessary equipment
* Measurable attributes include ability to carry everything, size/weight, comfortable, aesthetics.

**Testing methods**

* Once made, Designers will test by putting the items the box would need to carry inside to see if it holds them
* And how heavy/bulky it is with them inside(Dimensions, Weight).

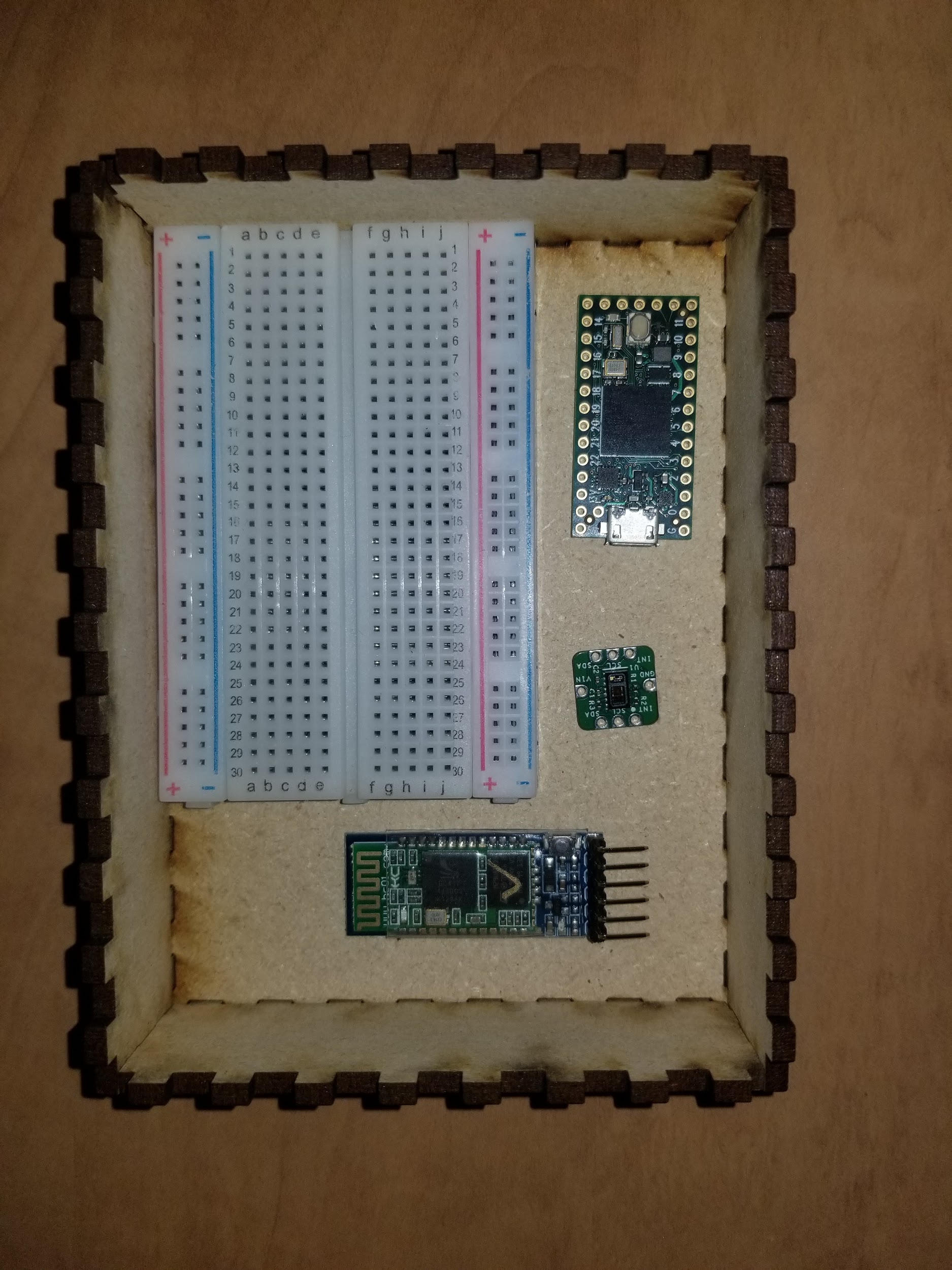
**Observations from test**

* The box does not look ugly
* The box holds the necessary equipment
* The box is a manageable weight with components inside
* Height of the box will need to be reduced for discreteness

**Interpretations**

* The prototype attains the necessary criteria outlined in Target specifications related to/and the objectives for which it was created as stated previously.
* The test succeeds which allows the project to move forward as planned and with the same design overall.
* The results are very much applicable.
* This also proves that the electrical components are manageable as in the way that was thought previously.

## **Prototype 2**



*The 12cm x 8cm x 3cm box. Electrical components in the box. Weight of the box and components.*

Prototype 2 has a 12cm x 8cm x 3cm wood box attached to the plastic plate on the chest strap. The weight of the box with the components inside was 95.46g, meaning it won't have a large effect on comfortability. All electrical components fit inside the box well and it is not heavy to wear at all. One issue with the box was that it came out too far and was very noticeable. Future models of the box will be smaller and designed around how the electrical components are assembled.

**Conclusion**

This deliverable shows that prototyping, testing, and the project as a whole are proceeding as intended, giving the desired results and very organized time-wise. This prototype specifically achieves its objective from the test plan to carry the necessary equipment and with an appropriate weight so as to not cause discomfort to the user. This is an important test because it helps us understand where electrical elements can be put and how to organize it to increase effectiveness and comfort, both of which are in the user’s interest. This formatting of it also affects how other adjustments that may be added in the future might interact with the circuitry or be positioned with respect to the circuitry which helps us make the design and adjustments in a safer manner.

List of Cited Work

Bigras, J. (2020). Prototype 2 Introduction. *Deliverable E 2101*, 3–7.