Why are we doing this test?

*This is an introduction. Capture the reasons for the test, giving enough background information to justify doing **any** prototyping at all. Is the **general** objective one of: learning, communication, de-risking, etc.*

For deliverable H, we are creating our third, and final prototype for our steampunk wearable. Our team has assembled both of the systems previously produced in the last two deliverables to create our final design. This includes the Arduino control system that will be translating the wearer's heart beat into the paired flashing of lights protruding from the chestplate, as well as a more intricate and sophisticated design of the chest plate.

This prototype is focused on finalizing the production of our design and to fix any problems previously encountered in our past prototypes. The final product will be presented at Design Day and to our client.

Test Objectives Description

*What are the **specific** test objectives?*

- Fix any issues with wiring or putting together the new chest plate.
- Receive customer feedback.
- Create final product.
- Ensure all sub-systems (Arduino, LED lights, and heart rate sensor) work together.

*What **exactly** is being learned or communicated with the prototype?*

Through prototype 3 we are hoping to resolve any issues with cooperation between the technology and the physical chest plate itself, as well as finalize the incorporation of all systems into our final and presentation-ready design. We hope to communicate the interaction that will take place between the user's body and this software, enabling the viewers to get a shallow glimpse of the user's state through their heart rate (relaxed, excited, nervous, calm).

What are the possible types of result?

- The client feedback gives us the opportunity to make changes more to their liking.
- We have to rearrange different sections of the chest plate design.
- Perhaps use different materials (glue, foam, lights)
- Change the shape and dimensions of the chest plate.

How will these results be used to make decisions or select concepts?

In the previous prototype we learned that the refresh rate on the LCD screen was too slow to translate the heartbeat of the wearer. In this event, we altered the path that the sensor would be translated through, and instead transferred it through the LED lights. The screen will still be used to display a rotating gear, while the lights will flash along with the wearer's heartbeat.

Another alteration was the shoulder piece on the chest plate. Instead of adding three sections to the polydraun, we inverted the middle section, resulting in final product only housing a two-section polydraun.

Upon receiving feedback from the client, we played more on the asymmetrical design we originally had, as well as adding a difference in texture pattern. One of the abdomen sections has a smooth, sectioned surface, while the rest of the chest plate has a rougher, bumpier surface.

What are the criteria for test success or failure?
Failure:

- Design flaws lead to failure of prototype 3.
- Finding ease-of-use issues to determine the failure of design.
- Not meeting the customer's demand.
- Not finding a program compatible with the Arduino and LCD screen.

Success:

- Verifying the product is ready to launch.
- Soliciting improvement ideas.
- Provide the client with a working prototype to demonstrate progress and receive feedback to improve final product.

What is going on and how is it being done?

*Describe the prototype **type** (e.g. focused or comprehensive) and the reason for the selection of this type of prototype.*

This is a comprehensive and physical prototype that we created for our final product. This prototype includes all features and components, therefore it is comprehensive.

Describe the testing process in enough detail to allow someone else to build and test the prototype instead of you.

Different key parts of the chest plate was initially cut out of hard foam. The parts were then spray painted with the main colours being gold and black. The different pieces will then be assembled with liquid glue and reinforced with hot glue. The circuitry will then be added to the center of the chest plate. This section includes the arduino board, LCD screen and the wirings etc. The final product will then be tested on one of the group members and photos would be taken.

*What information is being **measured**?*

The final design measures the heartrate of the person wearing the chestplate through a clipped on earpiece that will record the wearer's pulse, and the chestplate would flash accordingly.

*What is being observed and how is it being **recorded**?*

The final prototype will be observed based on it's functionaility, exterior aesthetics, aswell as it's comfort when put on the wearers. These things will then be recorded down as different criterias and adjusted based on the results and feedbacks.

What materials are required and what is the approximate estimated cost?

The parts include:
Everything from the last prototype except for the actual material of the chestplate being the foam, which is provided by one of the team members.

What work (e.g. test software or construction or modeling work or research) needs to be done?

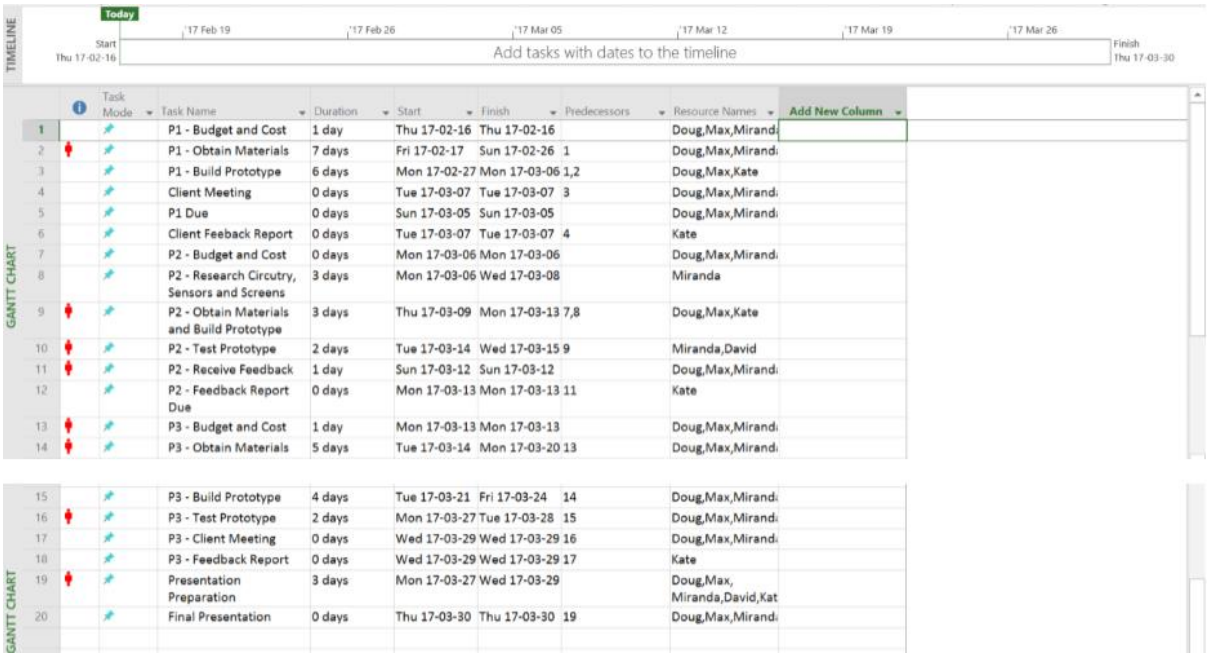
Research on different ways to assemble a chestplate would need to be made in order for the construction process to be completed in an organized and timely fashion while having it's progress compared to a basic template design with how the parts are going to be assembled. Different chestplates with different exteriors would be also looked at due to aesthetics being an important aspect of the final prototype.

When is it happening?

*How long will the test take and what are the **dependencies** (i.e. what needs to happen before the testing can occur)?*

The testing process will take place over the month of March in 3 increments. The first prototype will be one focused more on aesthetic and the design layout of the wearable. The second prototype will be more specific to the manipulation and testing of the software and technology we will be incorporating. And lastly, the third prototype will be an implementation of both technology and design, similar to the final product. Before these steps occur, our team must be prepared by acquiring the proper materials, having design specifications and measurements, detailed production schedule, and criteria. As this process furthers, our team will seek feedback from our clients in order to ensure that we meet their needs.

A separate test planning Gantt chart can be created to help making sure that the testing fits with the overall project schedule or it can be defined as part of that schedule (i.e. as a sub-task).



TIMELINE

Today

'17 Feb 19 | '17 Feb 26 | '17 Mar 05 | '17 Mar 12 | '17 Mar 19 | '17 Mar 26

Start Thu 17-02-16 — Add tasks with dates to the timeline — Finish Thu 17-03-30

GANTT CHART

	Task Mode	Task Name	Duration	Start	Finish	Predecessors	Resource Names	Add New Column
1		P1 - Budget and Cost	1 day	Thu 17-02-16	Thu 17-02-16		Doug,Max,Miranda	
2		P1 - Obtain Materials	7 days	Fri 17-02-17	Sun 17-02-26	1	Doug,Max,Miranda	
3		P1 - Build Prototype	6 days	Mon 17-02-27	Mon 17-03-06	1,2	Doug,Max,Kate	
4		Client Meeting	0 days	Tue 17-03-07	Tue 17-03-07	3	Doug,Max,Miranda	
5		P1 Due	0 days	Sun 17-03-05	Sun 17-03-05		Doug,Max,Miranda	
6		Client Feeback Report	0 days	Tue 17-03-07	Tue 17-03-07	4	Kate	
7		P2 - Budget and Cost	0 days	Mon 17-03-06	Mon 17-03-06		Doug,Max,Miranda	
8		P2 - Research Circutry, Sensors and Screens	3 days	Mon 17-03-06	Wed 17-03-08		Miranda	
9		P2 - Obtain Materials and Build Prototype	3 days	Thu 17-03-09	Mon 17-03-13	7,8	Doug,Max,Kate	
10		P2 - Test Prototype	2 days	Tue 17-03-14	Wed 17-03-15	9	Miranda,David	
11		P2 - Receive Feedback	1 day	Sun 17-03-12	Sun 17-03-12		Doug,Max,Miranda	
12		P2 - Feedback Report Due	0 days	Mon 17-03-13	Mon 17-03-13	11	Kate	
13		P3 - Budget and Cost	1 day	Mon 17-03-13	Mon 17-03-13		Doug,Max,Miranda	
14		P3 - Obtain Materials	5 days	Tue 17-03-14	Mon 17-03-20	13	Doug,Max,Miranda	
15		P3 - Build Prototype	4 days	Tue 17-03-21	Fri 17-03-24	14	Doug,Max,Miranda	
16		P3 - Test Prototype	2 days	Mon 17-03-27	Tue 17-03-28	15	Doug,Max,Miranda	
17		P3 - Client Meeting	0 days	Wed 17-03-29	Wed 17-03-29	16	Doug,Max,Miranda	
18		P3 - Feedback Report	0 days	Wed 17-03-29	Wed 17-03-29	17	Kate	
19		Presentation Preparation	3 days	Mon 17-03-27	Wed 17-03-29		Doug,Max, Miranda,David,Kat	
20		Final Presentation	0 days	Thu 17-03-30	Thu 17-03-30	19	Doug,Max,Miranda	

GANTT CHART

When are the results required (i.e. what depends on the results of this test in the project plan)?

Prototype 3 is the final product of our wearable design and depends on the success and failures learned from our first two prototypes. This final design will be used to present at the Design Day on March 29th, as well as to our client for the technology gala in May. If we are chosen to take part in the technology gala, we will use the remaining time to perhaps make more improvements and create a more finished piece of technology.