Design Criteria

Introduction

The goal of this project is to create a steampunk costume that has user interaction built in. The client's main focus is on the aesthetic of the costume. The costume needs to clearly show a steampunk design, and have some level of user interaction. The purpose of this document is to outline the design criteria based on the needs identification gathered from discussion with the client.

Functional Requirements

- Costume needs to light up
- Needs to be able to be worn for several hours at a time
- Power source must be able to last for several hours and must be cordless; battery is needed.
- Must have easy access to software, hardware and tech inside the wearable in the case of something needing to be fixed.

Non-Functional Requirements

- Must have a steampunk aesthetic
- Must be detailed
- Keep the wearer at a comfortable temperature.
- Light weight and good quality.
- Hide the circuit and power supplies.
- Being able to conceal the software or technology not included in the design (ie: wires, arduino)
- Components must be able to fit average female and male adults and be adjustable to variations in sizes. (for head circumferences, the average size of 55.2 cm for females and 57.2 cm for males with average size varying proportionally with height.)

Constraints

- Budget - Restriction on the amount of money provided and personal financial restrictions
- Time - limited amount of time before the deadline
- Weight - it will be on someone for hours at a time, cannot weigh too much
- Power Supply - can't be too bulky, must be the right voltage needed, power source must be battery, can't be plugged in
- Access to materials - only certain materials are available for use, don't have access to professional quality materials like control boards and lighting systems

- Safety - the functional part must not damage the user.
- How fast our materials can be shipped to us.

Competitor's Products

Figure 1: Product 1 (Goggles)

Figure 2: Product 2 (Mask)

Figure 3: Product 3(Chestplate)

Benchmarking

Product **Specifications**	**Goggles**	**Mask**	**Chestplate**
Steampunk aesthetic	• Some steampunk aesthetic, there are gears on the side of the goggles • Old fashioned and metal parts of this goggles enhance Steampunk aesthetic	• Colour/shading matches the steampunk aesthetic (old fashioned) • Spring and mechanical parts on the mask show off the Steampunk aesthetic	• Design matches the steampunk aesthetic • shading/colouring on the chestplate is very good. • The pressure reader is very steampunk
Detailed	• Some detailing seen on the side of the goggles and around the rims of the	• Detailing done around the mask with the coils • Detailing appears spread out/all over	• Not very detailed compared to the other products • No additional gears or colours

	glasses part.	the mask, not just in one area. ● Uses spring to decorate and two puzzle pieces on the top makes this make mysterious	added. ● The decoration of this chestplate is very simple
User interaction	● No user interaction	● No user interaction	● The middle lights up, changes colour.

<u>Gaps in Knowledge</u>

- Circuitry of the heart rate sensor (ie: where to place them, how to hook them up to the arduino software)
- We will work to become more aware and intuitive in the steampunk aesthetic as we are not as well accustomed to this theme at the present time.

<u>Conclusion</u>

As we lay out and fit the design requirements for our teams wearable technology, we are able to observe how the intricacies of this project will come together for our final product. These pieces not only require a lot of detail, but give us a chance to hone our abilities toward adapting and learning new methods and how to use new software. Our design models are aimed to meet the criteria set out by our clients and will require the use of new skills, hence giving our team the opportunity to further our knowledge and learn how to utilize different and possibly new varieties of technolgy. We are very much looking forward to creating our steampunk design and to have it displayed in the science gala this May.