CAPSTONE LOGBOOK

Capstone Project – Spring 2020

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Product Brief

The objective of this project is to develop a life vest that enhances the swimming experience and pushes the users to perform their best in any environment, guaranty their complete safety and encourage them to swim freely knowing that it got their back.

Water is life, and life could be taken by water. Swimming is an activity many people enjoy, safety gadgets can play an essential part when swimming, it can prevent drowning accidents

This life vest is designed to detect if the person is drowning by the sensor chip located within the arm sleeves that sends an emergency call to an ambulance along with the location. Whilst the sensor will send a command to the Co2 tube airbag that is located around the waist of the life vest to inflate and lift the person above the water.

SMART **LIFE VEST**

A life vest which enhances the swimming experience and pushes the users to perform their best in any environment, guaranty their complete safety and encourage them to swim freely knowing that it got their back.

FEATURES

Movement Sensor

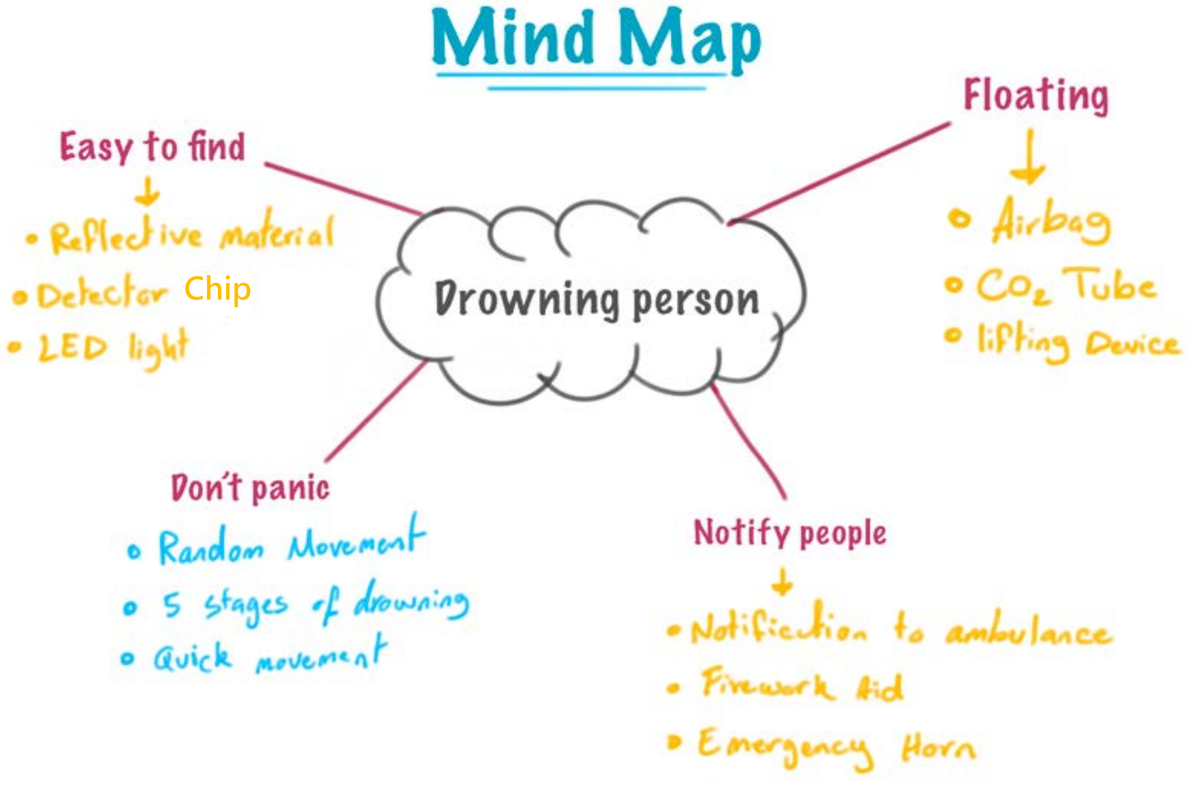
LED

Airbag

Location Detector

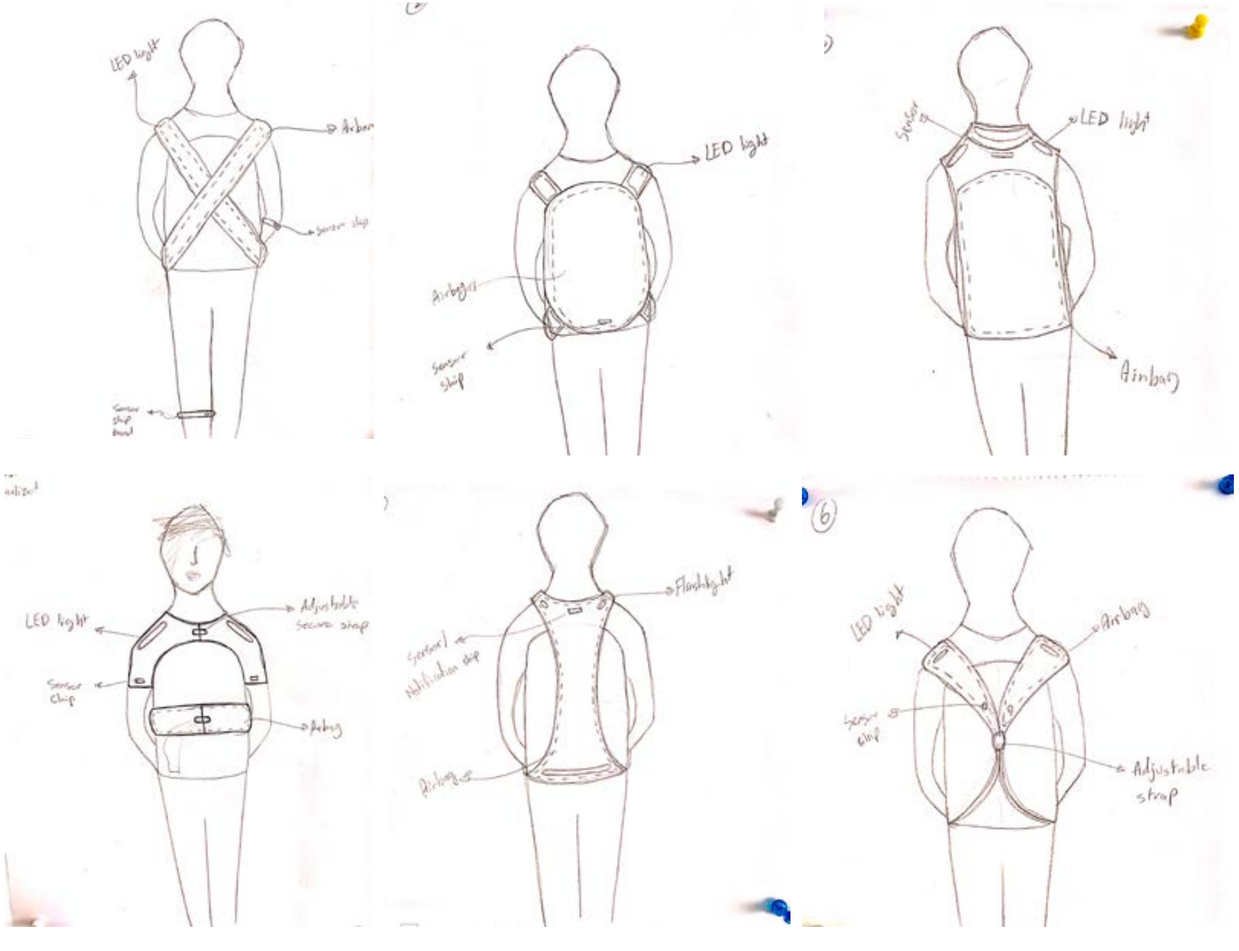
COLOR OPTIONS

Mind Map



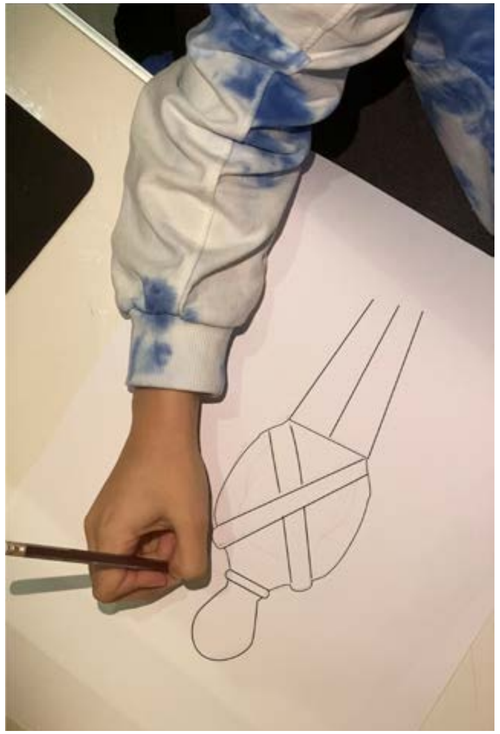
Brainstorming Sketches

Brainstorming sketches to come up with concepts and trying different styles and considereing the placements of parts that will be within the life vest.



Developing Concepts

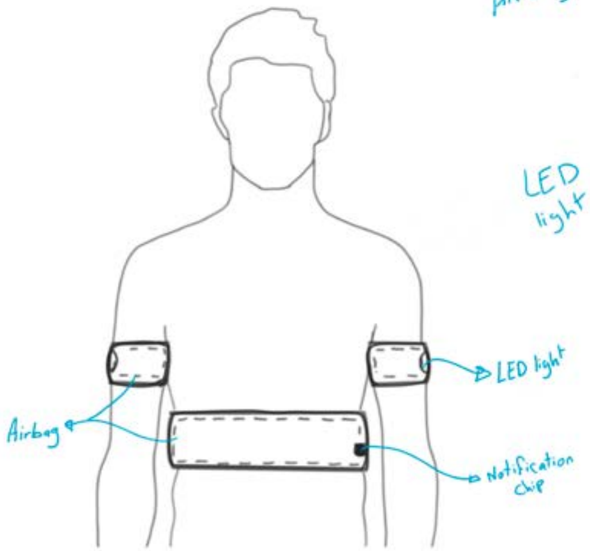
Here are the developing concepts stage in the design process, where I sketch, trace to modify concepts and pin it up to get feedback and bulid some primary models

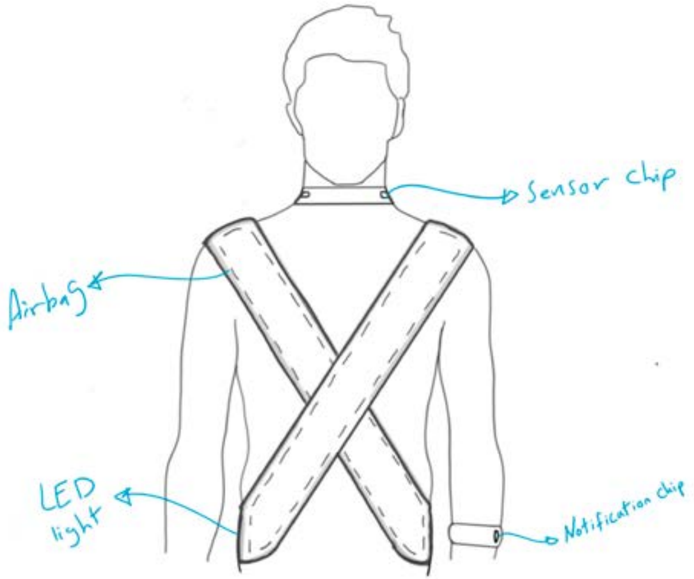


Ideation Sketches

Concept 2

Concept 2 is developed to make the user has the option to easily wear the life vest above cloth or by itself.





Development 1

For the first sketch, it has a neckband to the heartbeat of the user when in danger while swimming

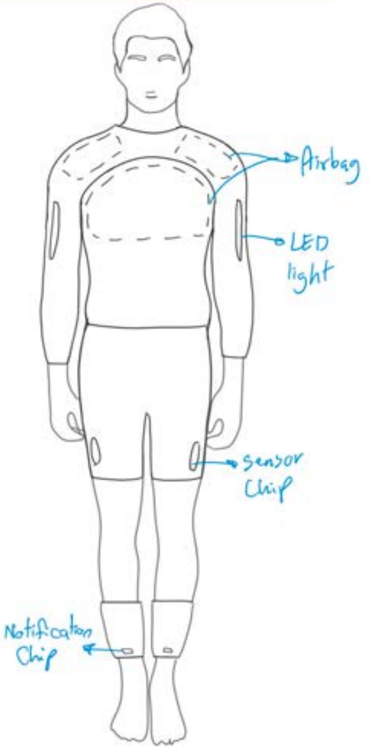
Concept 1

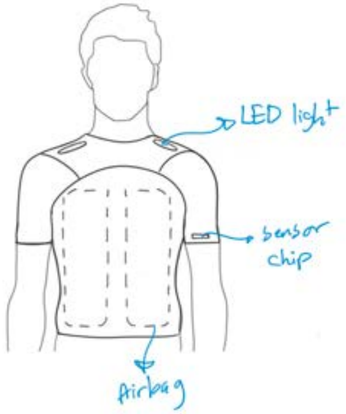
This concept focuses on the main features that are located in a different area within the life vest.

The detector chip detects random and unnormal movement which indicates if the person is in danger then it sends an order to the airbag to inflate.

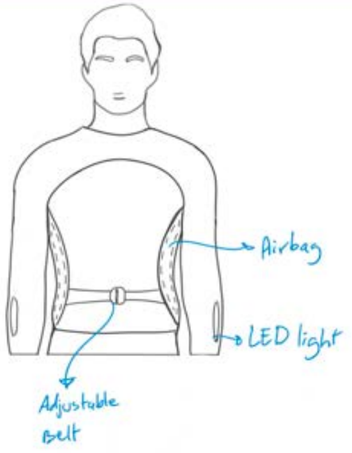
The LED light will turn on for night visibility, and the notification chip will send a call to the ambulance for help.

Development 1



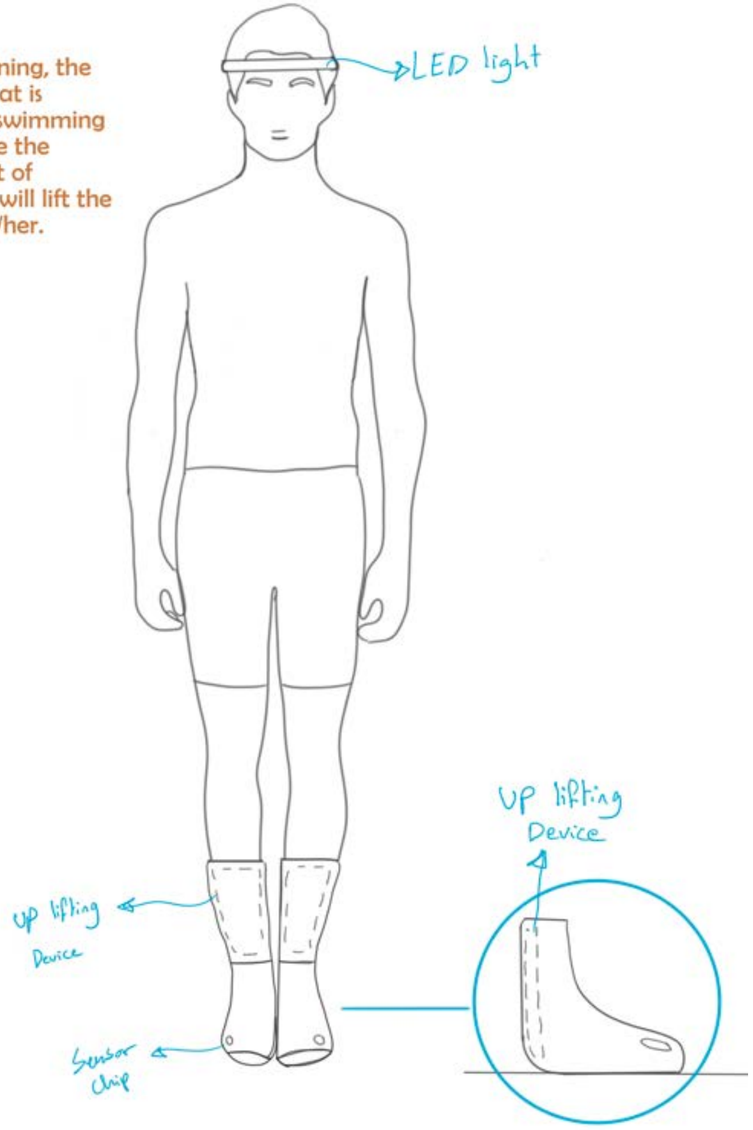


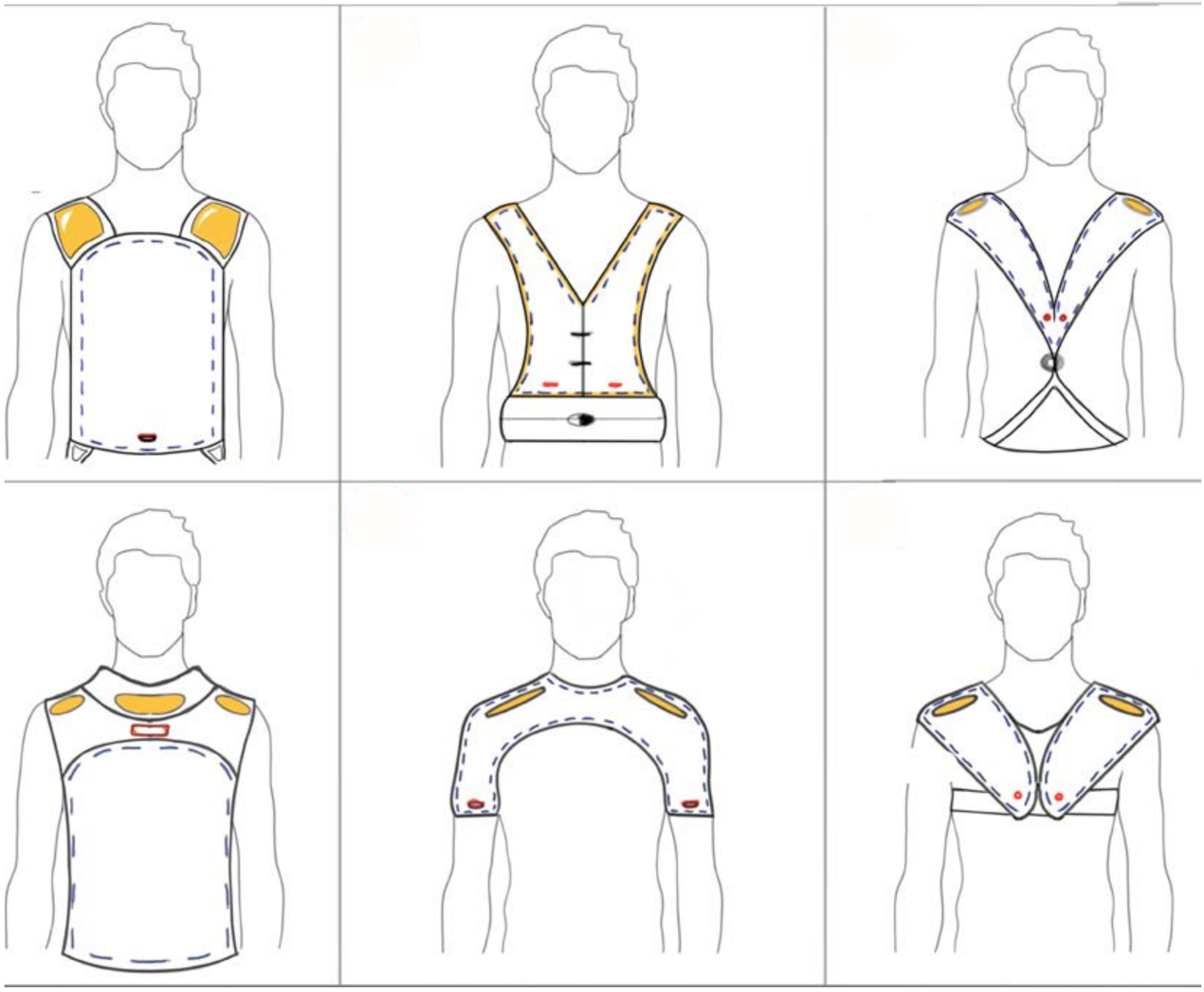
Development 2



Concept 3

In the case of drowning, the up-lifting device that is located within the swimming boots that will sense the random movement of drowning, hence it will lift the person to save him/her.





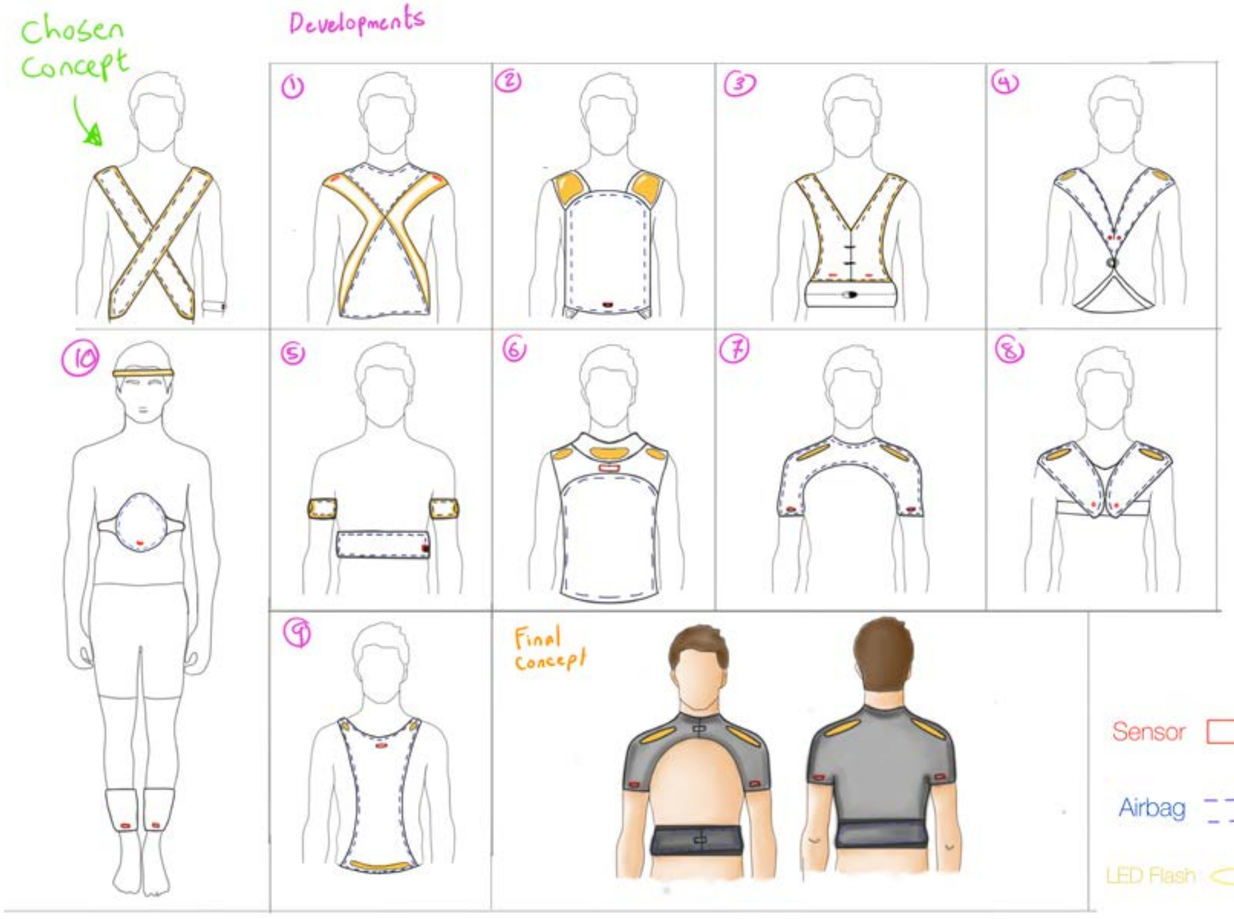
Pugh Matrix

Pugh matrix is a method of evaluationg the concepts based on a certain criteria in order to choose the best concept or the concept that has most of the features.

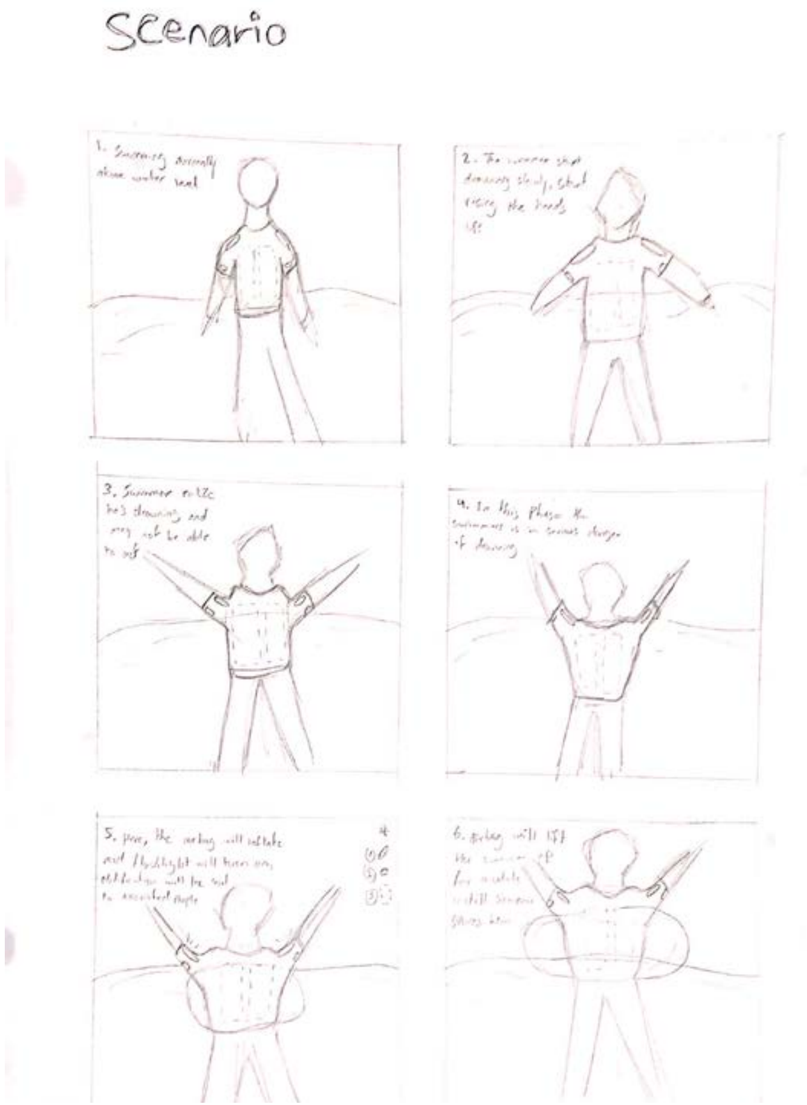
Features	Concept 1.1	Concept 1.2	Concept 1.3	Concept 2.1	Concept 2.2	Concept 3
Lightweight	🟢	🟢	🟢	🟢	🟢	🔴
Practicality	🟢	🔴	🔴	🟢	🟢	🔴
Safety	🟢	🟢	🟢	🟢	🟢	🔴
Functional efficiency	🟢	🔴	🟢	🟢	🔴	🔴
Total	4	2	3	4	3	0

In this matrix, the best concept that has the qualities and features is “Concept 1.1” I took this concept for further development and started to do more sketches of the same concept but with different forms and placement of the parts.

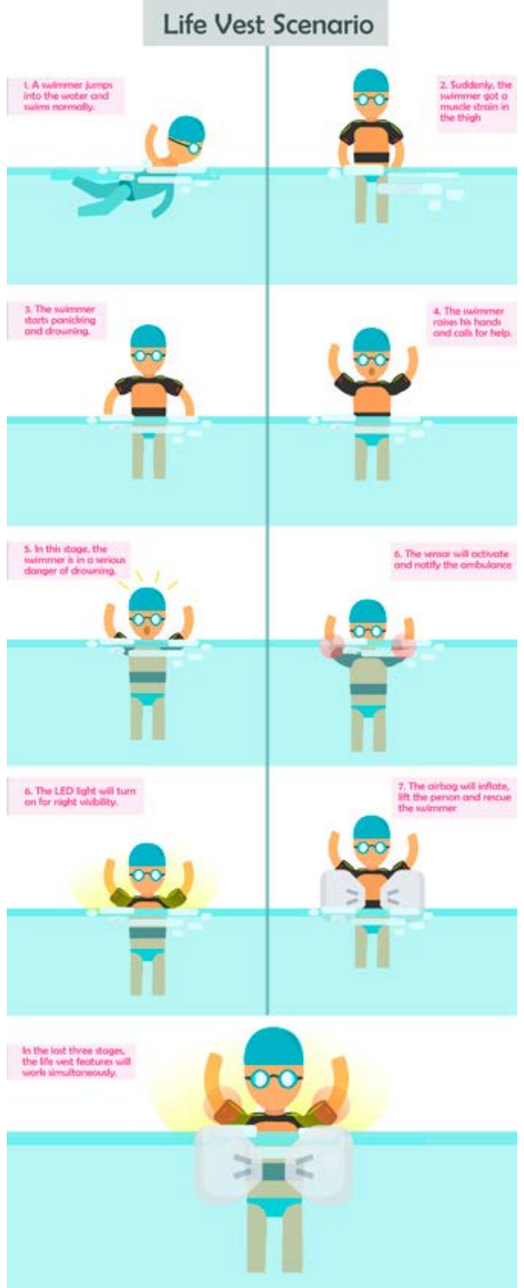
Final Concept Sketch



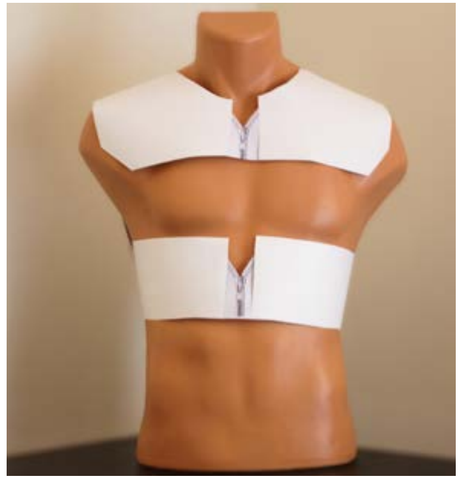
Scenario Sketch



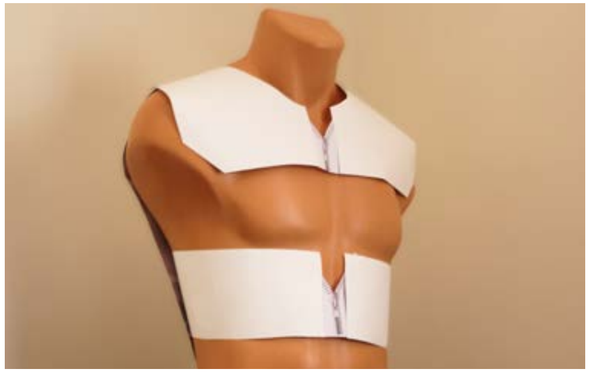
Scenario Graphic



Primary Models

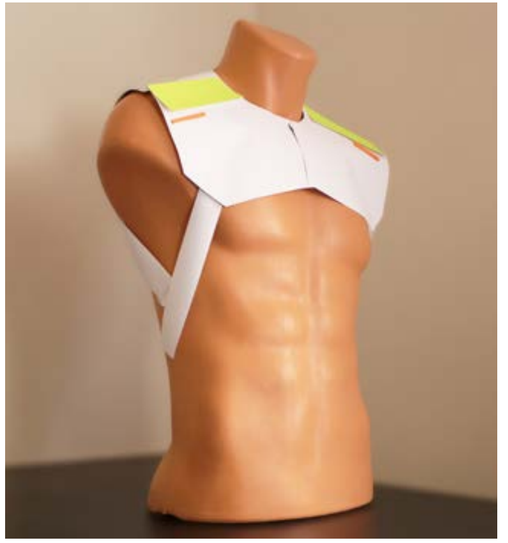


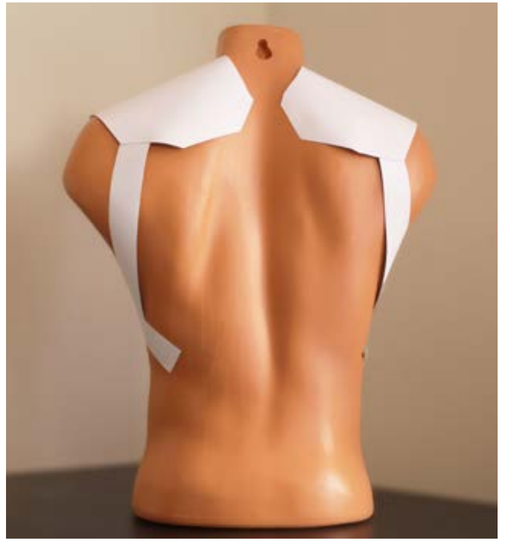
Final concept primary model



Primary Model Develpoment 1

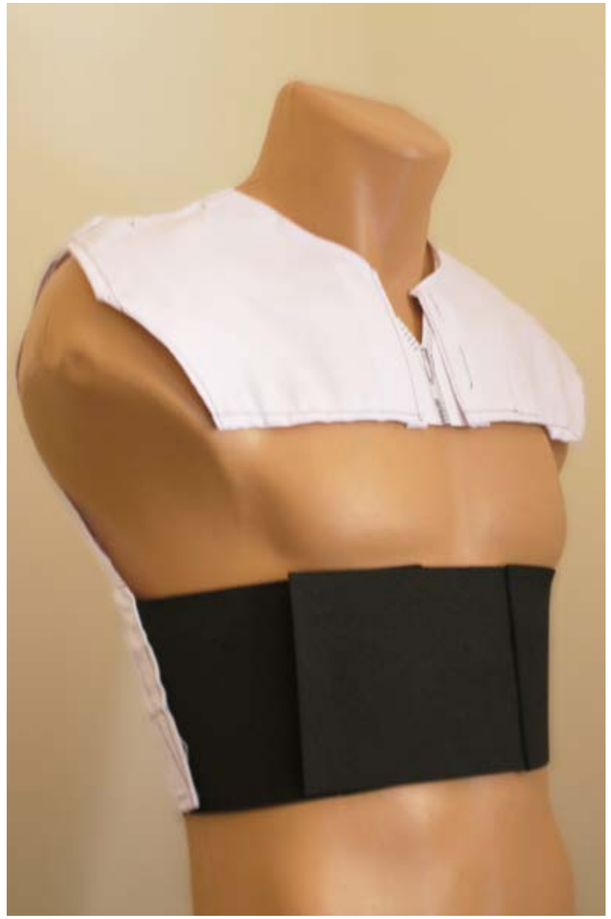
Primary Model Develpoment 2



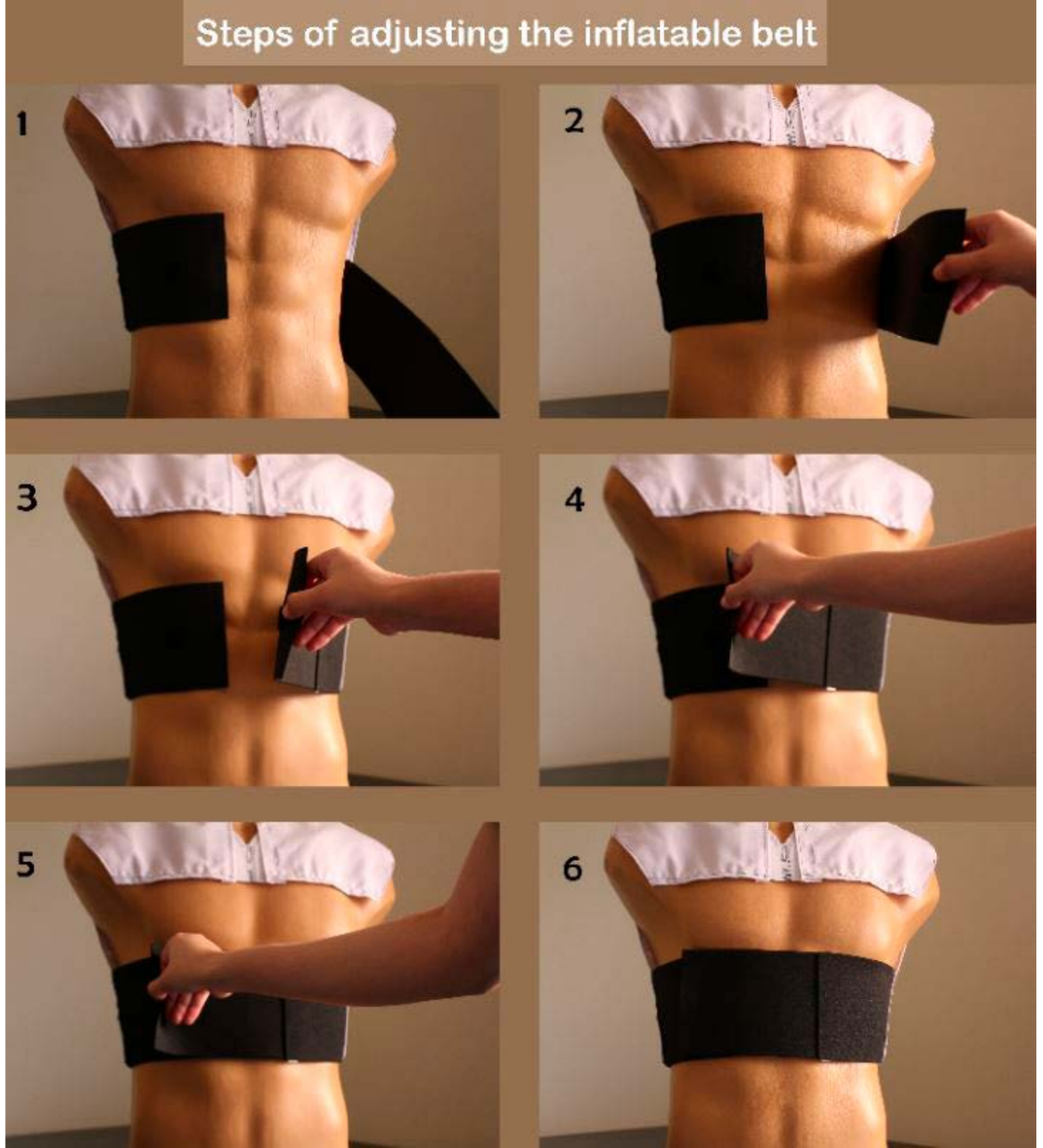


Primary Model Develpoment 3

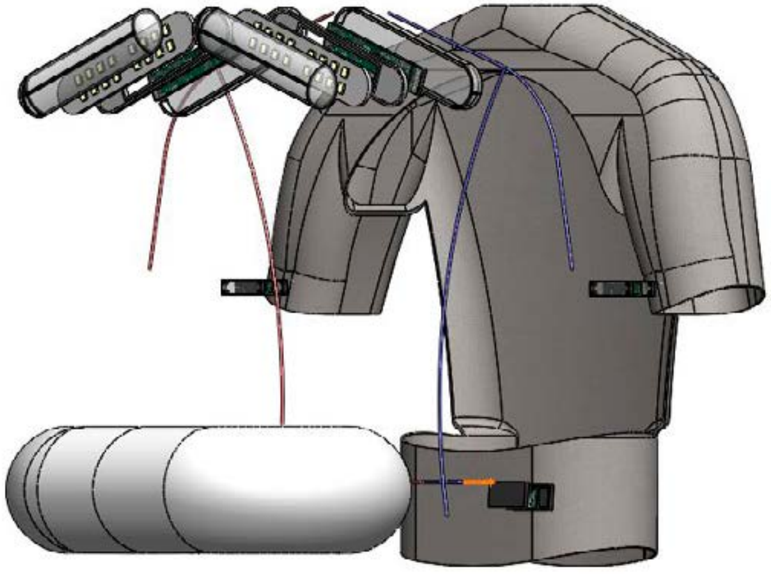
Final Concept Mockup

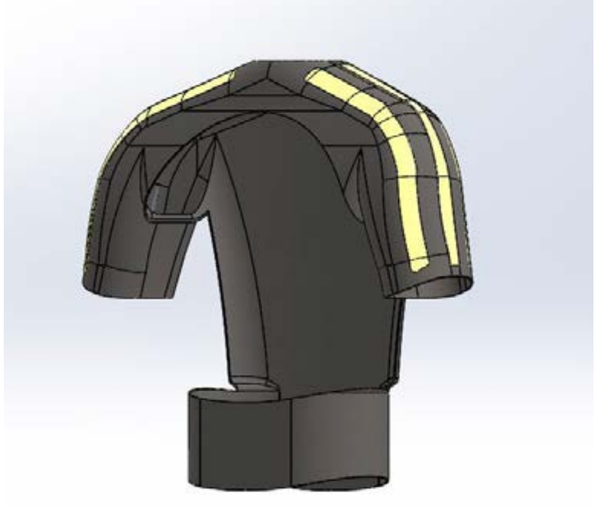


Final concept mockup

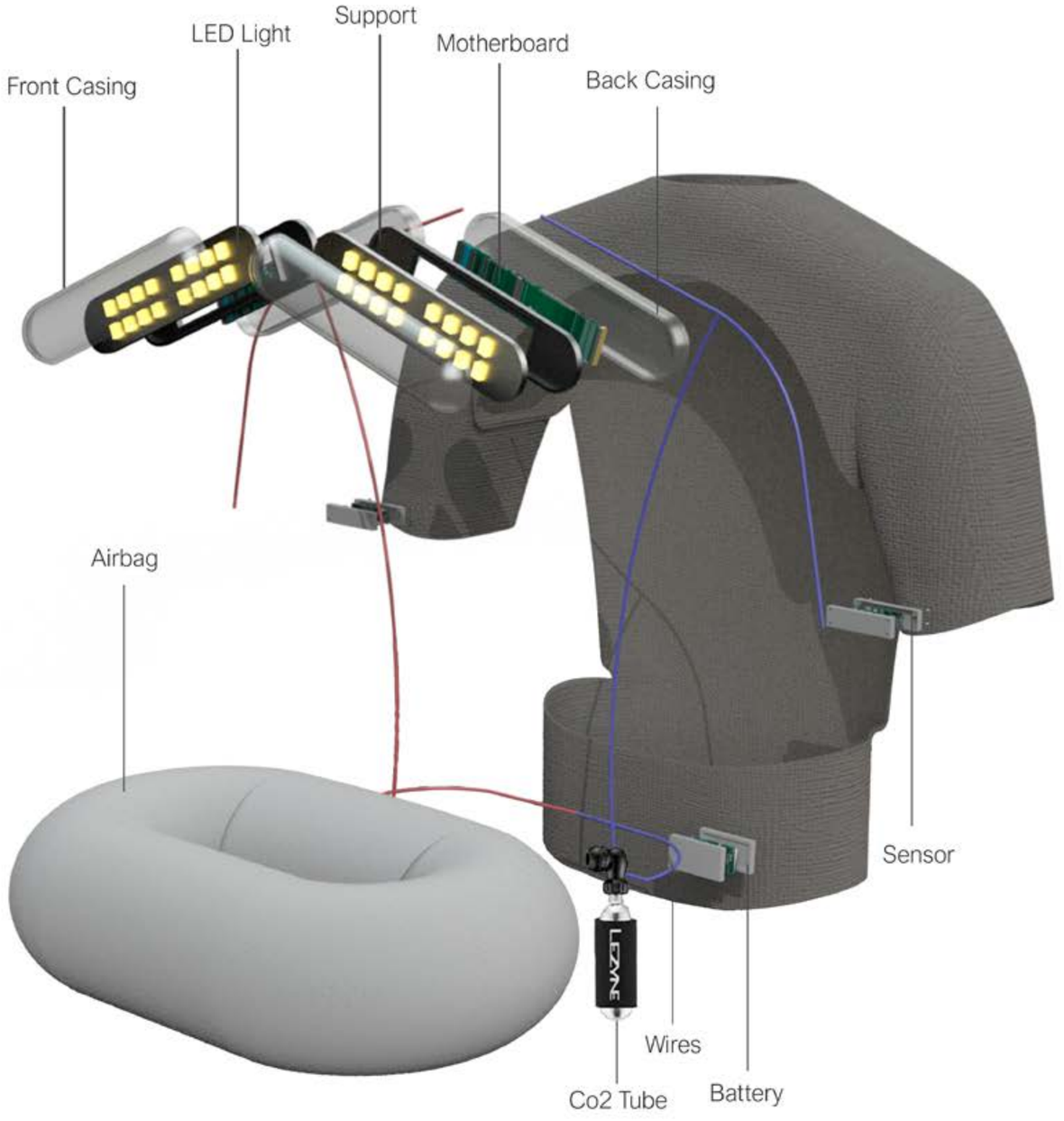


CAD Modeling





Exploded View



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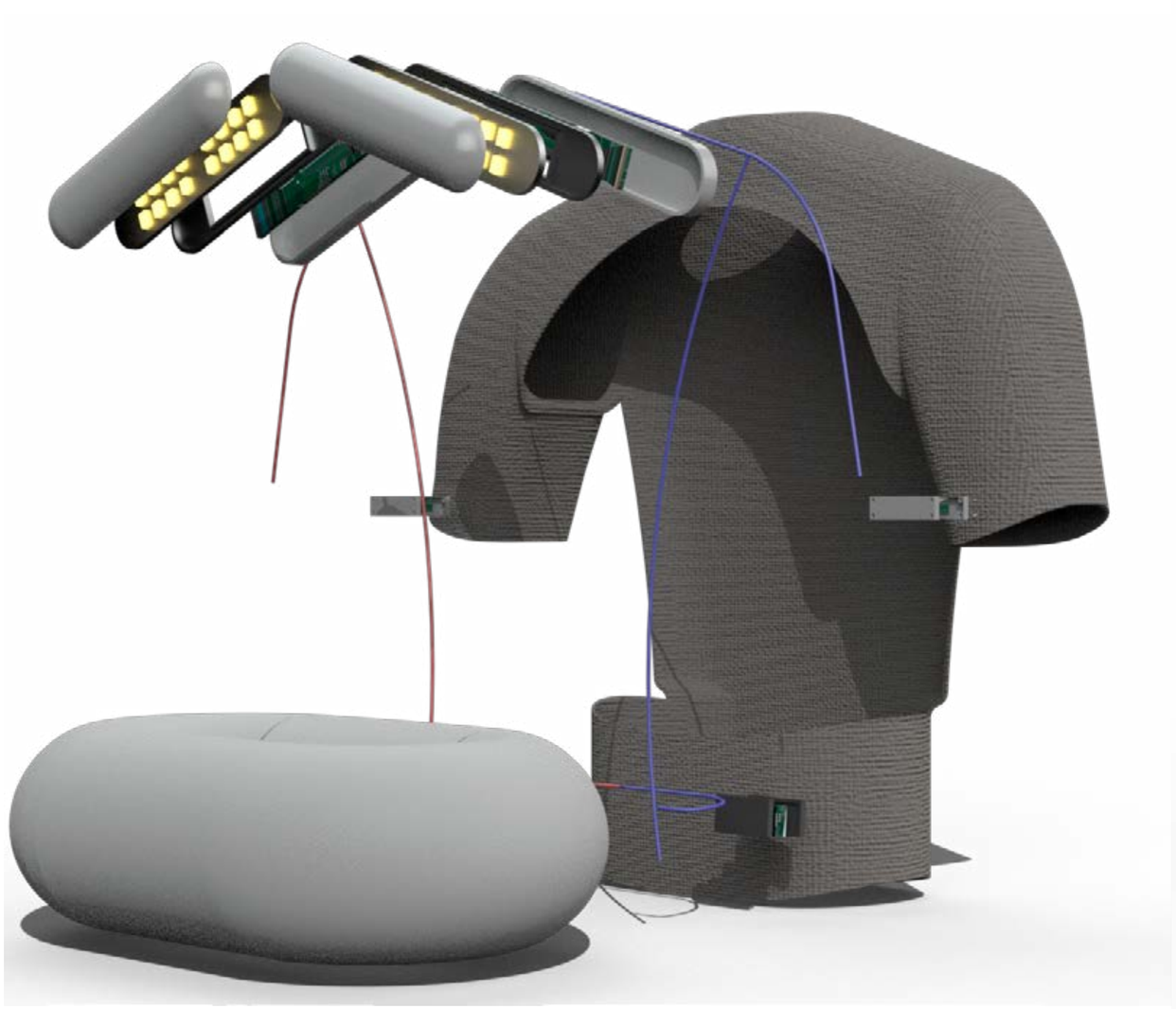

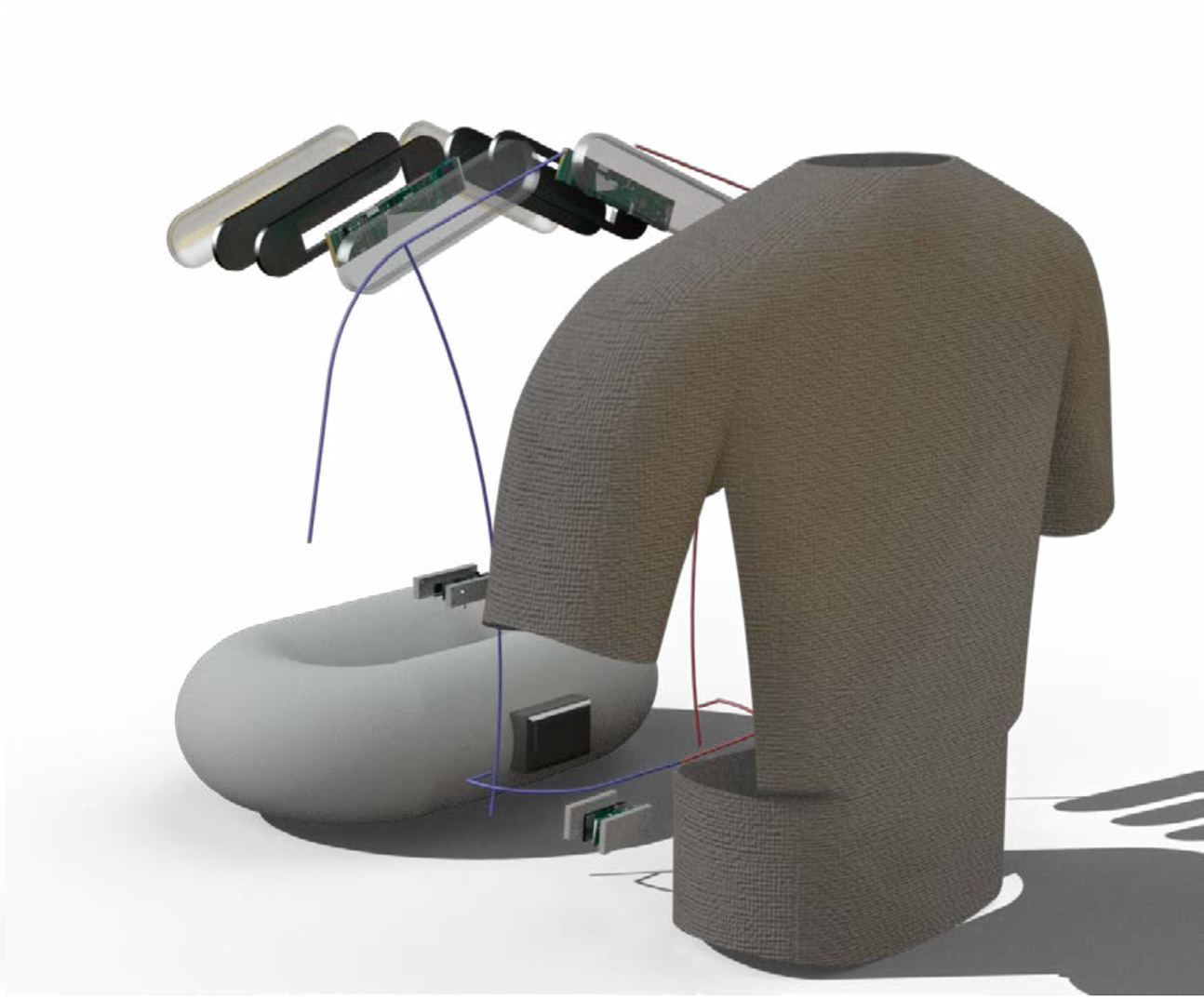

Rendered Shots

Rendered Shots

These shots showcase the life vest
when the airbag is inflated

Rendered Shots

This picture shows the context and place of the life vest and how it looks on the user.

THANK YOU