Introduction

After meeting with the clients and establishing the needs for our product, we have put together a prioritized list of the criteria and requirements. We affiliated all our necessary/essential specifications, as well as consulted further with the client and course staff to understand how we can further our understanding of how to develop our project. Building off that, we devised a variety of criteria - establishing the sine qua non of our project - to have reliable groundwork to develop ideas as well as provide direction for future prototypes. We have also created a list of functional and non-functional requirements to assure that our product does not stray from the needs established by our client. Moreover, a comparison table of parallel product designs was created to have a broader view of design aspects, areas to improve, performance discontinuity and forecast our expectations for our design. Lastly, we developed a set of specifications to guarantee our product will stay within our established restrictions.

Initial Constraints

1. Cost $
2. Durable
3. Beyond a days battery life

Requirements

Functional Requirements

- Real-time tracking of oxygen saturation percentage
- Real-time tracking of breaths per minute
- Alerts emergency services
- Bluetooth compatible
- Does not inhibit movement or control

Non-Functional Requirements

- Aesthetically pleasing
- Discrete
- Customizability options
- Water resistant
- Durable

	Identified Need	Rank	Design Criteria	Criteria
1	Notifies EMS	5	-Safety	-Alerts paramedics/police/family/caretaker
2	Measure oxygen saturation(under 90%)	5	-Safety	-Must be able to measure oxygen saturation
3	Let's the user know that they are having an overdose	4	-Safety	-Capability to notify user
4	Affordable	4	-Cost	-Must respect the $100 budget
5	Measure respiratory rate	4	-Safety	-Must have the ability to measure the respiratory rate
6	Battery life	4	-Physical product	-Must posses a days worth of battery life
7	Durability	3	-Physical product	-Must be able to withstand the average day wears and tears
8	Discrete	3	-Physical product	-Can not inhibit daily lifestyle
9	Will minimize interference with the user	3	-Physical product	-Can not interfere with users ability to consume opioids
10	Aesthetically pleasing	2	-Physical product	-Must be discreet and good to look at

Product name	AK1980 Fitness Tracker	Innovo Deluxe Fingertip Pulse Oximeter	Santamedical Generation 2 Fingertip Pulse Oximeter
Picture of Product			
Physical Product	Fitness tracker	Fingertip Pulse Oximeter	Fingertip Pulse Oximeter.
UI	-Displays oxygen saturation -App -Time -Heart rate -Calorie count	-Displays oxygen saturation -Displays heart rate - Visualization of heart rate.	-Display oxygen saturation -Displays heart rate
Safety	- Displays BOC and heart rate	Displays BOC as well as heart rate	Displays BOC as well as heart rate
Cost	$39.99 CAD	$26.99 USD	$24.99 USD

Technical Specifications:

- **Dimensions:** Individual devices must be able to fit around an average person wrist - 19 cm by around 10 cm
- **Cost:** $100-200 CAD
- **Production Time:** Must have a fully-working prototype in 2 months
- **Scale:** Prototype must completely incorporate a bluetooth connection and a bmp and blood oxidation reader
- **User Time:** Must alert the user if they are having an overdose within 3 minutes
- **Lifetime:** Must have a days battery life and must last for at least

Discussion

It has been challenging to create our specifications for our project as we are new to many of the functional requirements needed for the final product to function. Lucky many projects before us utilized arduino which will be very helpful for when it comes time for the group to code for the project. After the client meeting the criterion for the project became more apparent. As shown in deliverable B the needs and identifications were organized and sorted into a table, which greatly affected our design ideas.

Conclusion

After both deliverable A and B we now have a good understanding of the project and possess a solid base. There is still a lot of work to be done in terms of designing and making the product but with our current understanding of arduino the goal doesn't seem so far fetched. There are many possible ways to proceed with our problem statement. This is a lot easier and less demanding when looking at our benchmarking. The combination of the 3 previous deliverable documents will serve as a great foundation for continuous progress of our portable life saving device. We believe that the biggest problem moving forward will be making the product portable, discreet as well as programmable with the arduino circuit board and attachments since as a whole ur group does not possess any experience regarding arduino programming.