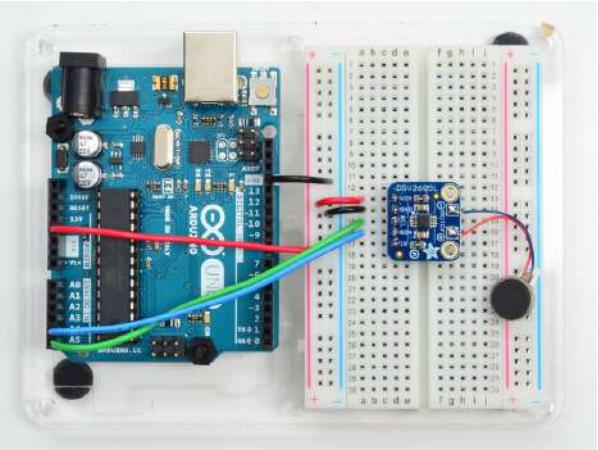
MAY 2019

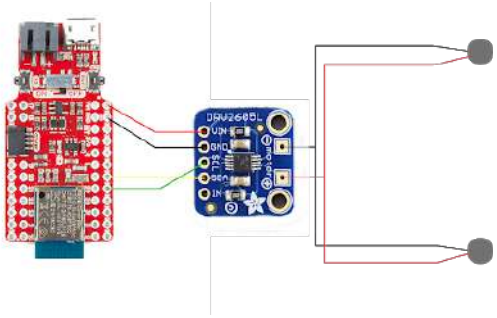
PLANNED, BUILT & TESTED CIRCUIT USING ARDUINO UNO

Prior to planning and building the schematic for our product, we knew that we wanted to use a product that had the same capabilities as the Arduino uno. Additionally, we would want control over the haptic effect that a user would feel through the vibration motors. This is when the Adafruit haptic driver, which offered over 100 different variations of vibration effects, was discovered. In order to first test if their ideas were viable, we put our plan to the test by using an Arduino uno and haptic driver in a simple circuit to see if we would have control over the type of vibration patterns. It checked out! This meant we could move on into looking for a chip that could support both their needs for Arduino inputs and a bluetooth module.



CIRCUIT PLANNED

Once the haptic driver circuit was tested and confirmed that we could have a range of control over the vibration patterns, we discovered a sparkfun chip that served as power source, bluetooth module, and carried the same inputs as an Arduino Uno. At this point the team created the first version of its schematic for the Queen Been. Materials are listed below.



Material List:

- Sparkfun Chip (Bluetooth and arduino module)
- Adafruit haptic driver
- 2 haptic driver

MAY 2019

3D MODEL FOR MATERIAL TESTING

Prototype 1 & Prototype 2

Prototypes 1 and 2 consisted of both material testing and 3D printer capabilities. In order to determine which printer we would use for our final product, we established our objective for our final print. This consisted of the following elements: the body of the print must be flexible in order to attain our one size fits all goal, the print must be conducted in as limited pieces as possible, and finally the print must not take too much time. Prototype 1 consisted of the use of the forms lab 1 using the liquid elastic material. Unfortunately, the bed size of the forms lab would require for the base shape of the neckband to be printed in 8 seperate pieces and it would take approximately twice the amount of time to print as the ultimaker. This ultimately ended in the decision of ruling out this option of print. At this point we decided to use the ultimaker with TPU 95A, which is a flexible type of filament.

Prototype 1

- Printer: Forms labs
- Materials: Elastic liquid resin
- Purpose: Testing material

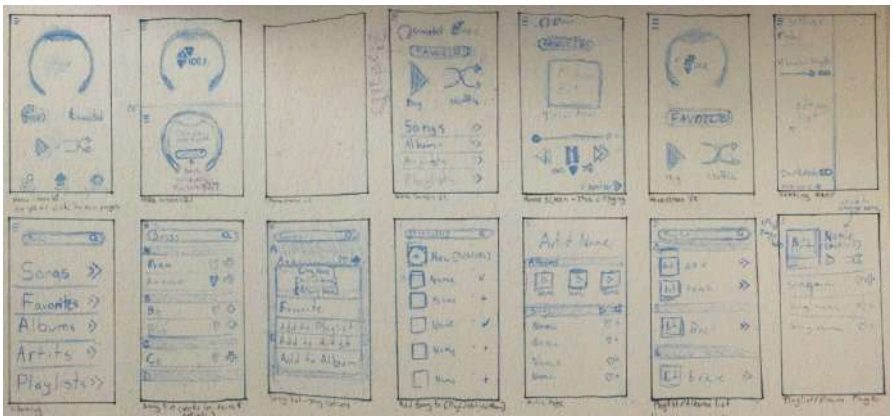
Prototype 2

- Printer: Ultimaker
- Materials: Flexible TPU 95 (Thermoplastic polyurethane) and water dissolvable PVA
- Purpose: Testing material

MAY 2019

THUMBNAIL SKETCHES OF VARIOUS APPLICATION DESIGN OPTIONS

Several different sketches were created in order to test out the user interface as well as get a feel for the user experience with said designs. Roughly 2-3 sketches were created for each application design layout. This allowed for a broad range of options for our application design.



VISUALIZER RESEARCH

We analyzed current popular visualizers made in Android to determine what similarities they had and what features would be best to implement in our own visualizer.

What makes a “good” visualizer?

- Responds in time with the audio
- Incorporates the volume and frequencies

Current design trends

- Waveform: circular or linear
- Bright, fluorescent coloring
- 2D or 3D space
- Pulsing animation
- Particle Effects
- Thin, wireframe-like