



OCTOBER 2019



FIRST LIFE-SIZE PROTOTYPE PRINTED

Prototype 4 was Buzzin Bees first ever life size prototype. Although we discovered later on through user testing that it was slightly smaller than expected and needed, the prototype allowed for this information to surface. It also allowed for us to make rough marking in order to figure out how the components would be placed on the inside of the neckband. This prototype was produced with the same ultimaker material that we established during the first and second material test.

Prototype 4

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





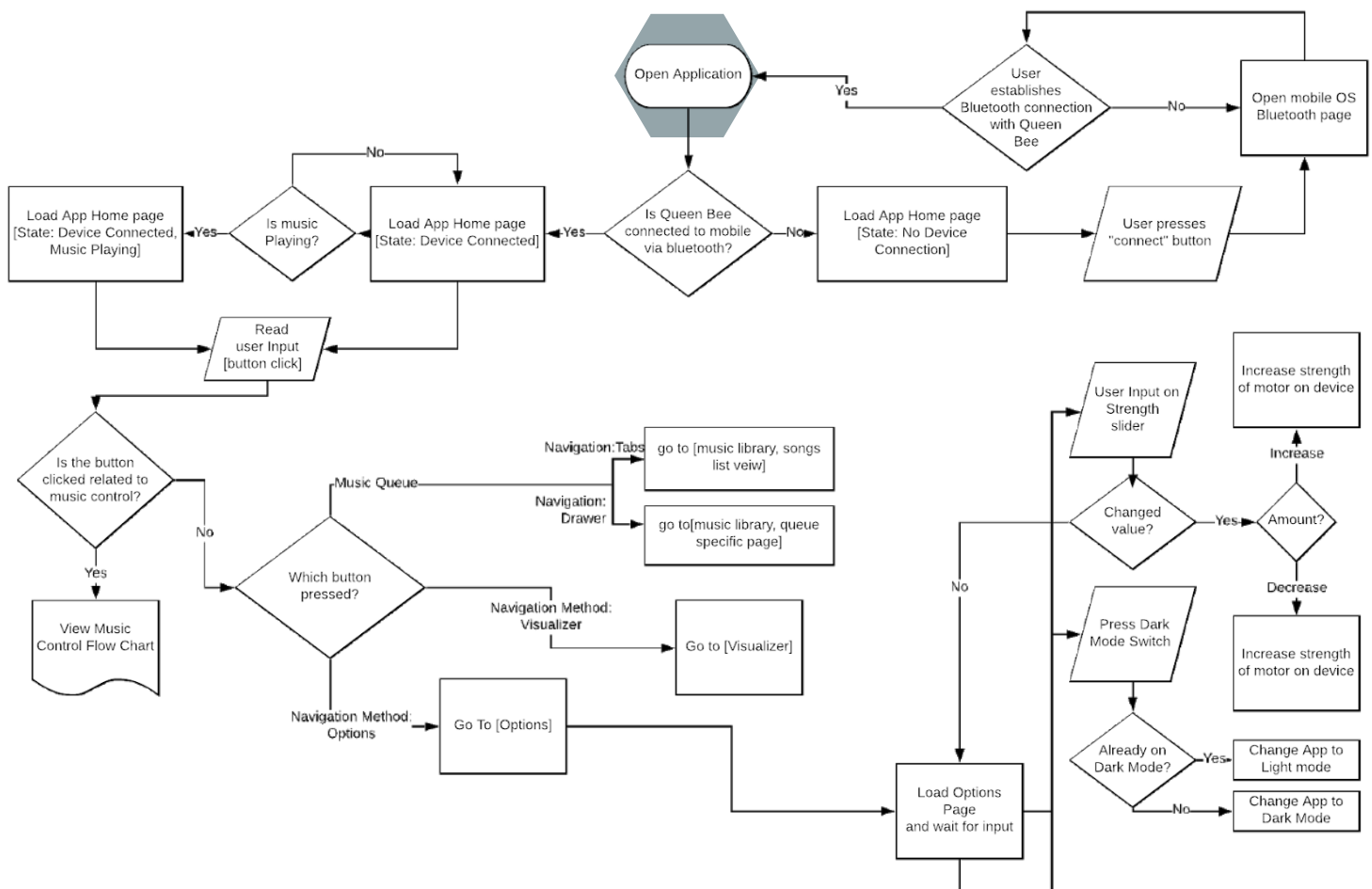
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APPLICATION FLOW DIAGRAMS

The following figures demonstrate user control flows through each page of the mobile application.

HOME PAGE CONTROL FLOWCHART



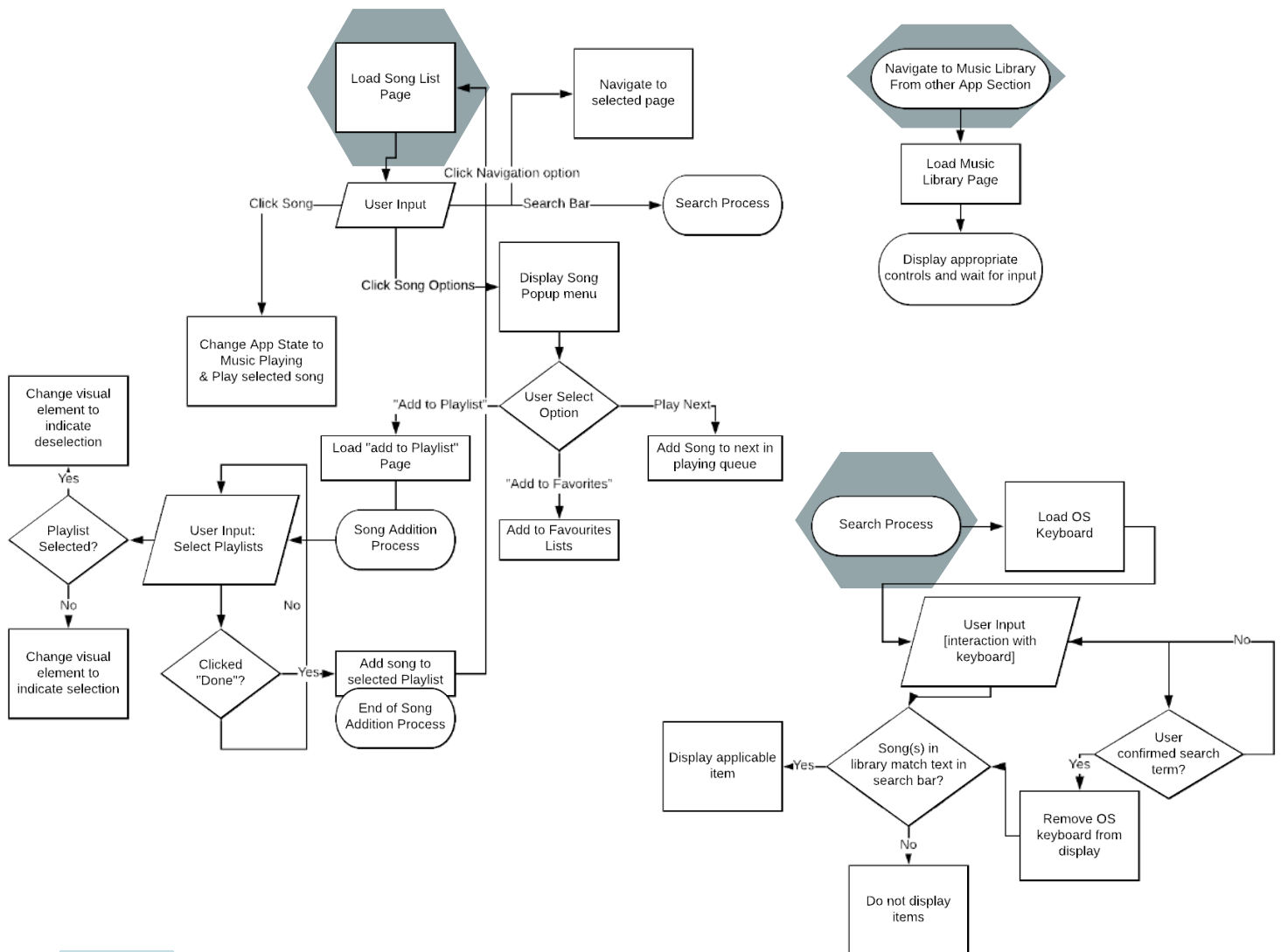


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APPLICATION FLOW DIAGRAMS

SONG LIST PAGE CONTROL FLOWCHART



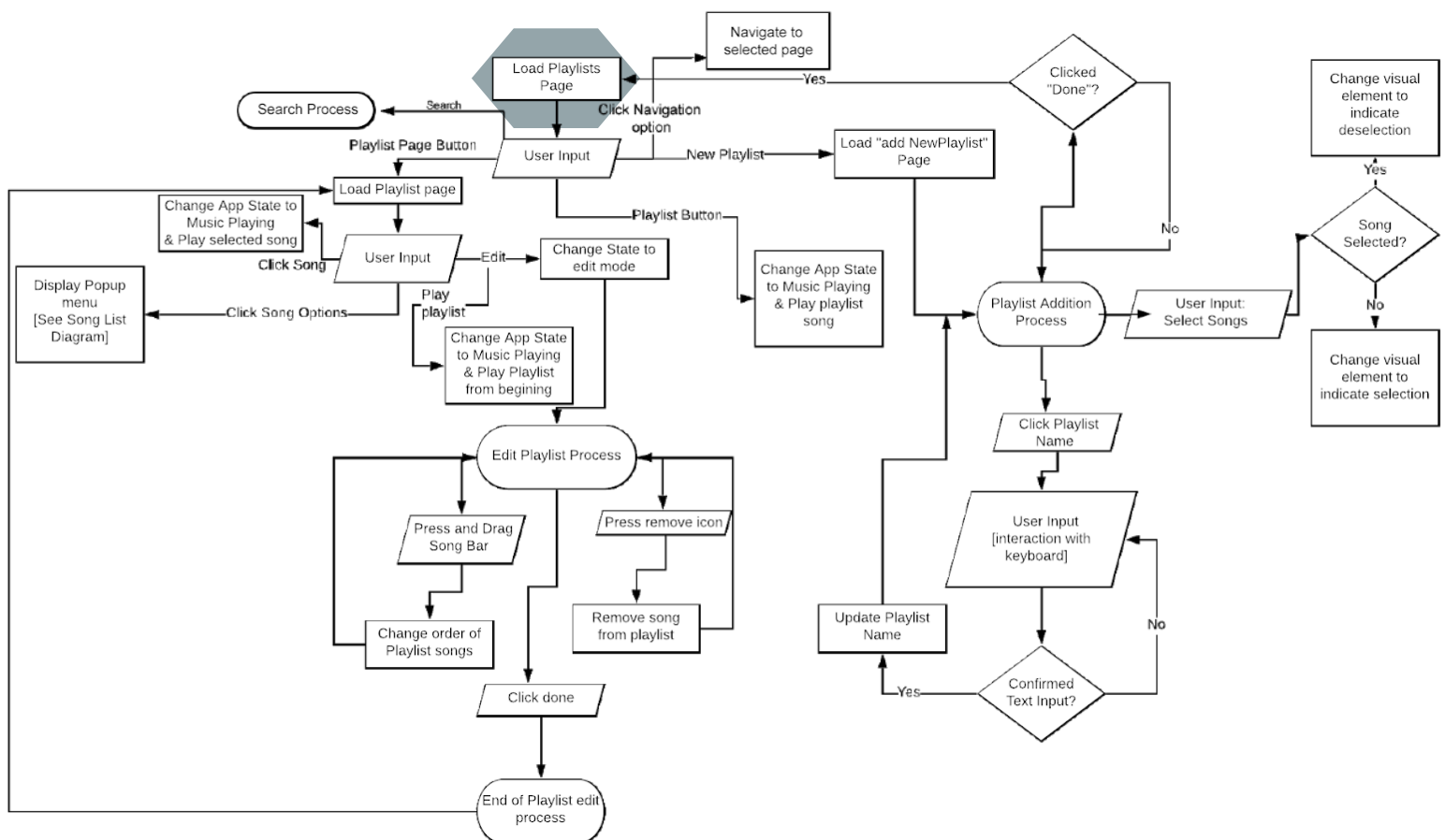


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APPLICATION FLOW DIAGRAMS

PLAYLIST PAGE CONTROL FLOWCHART

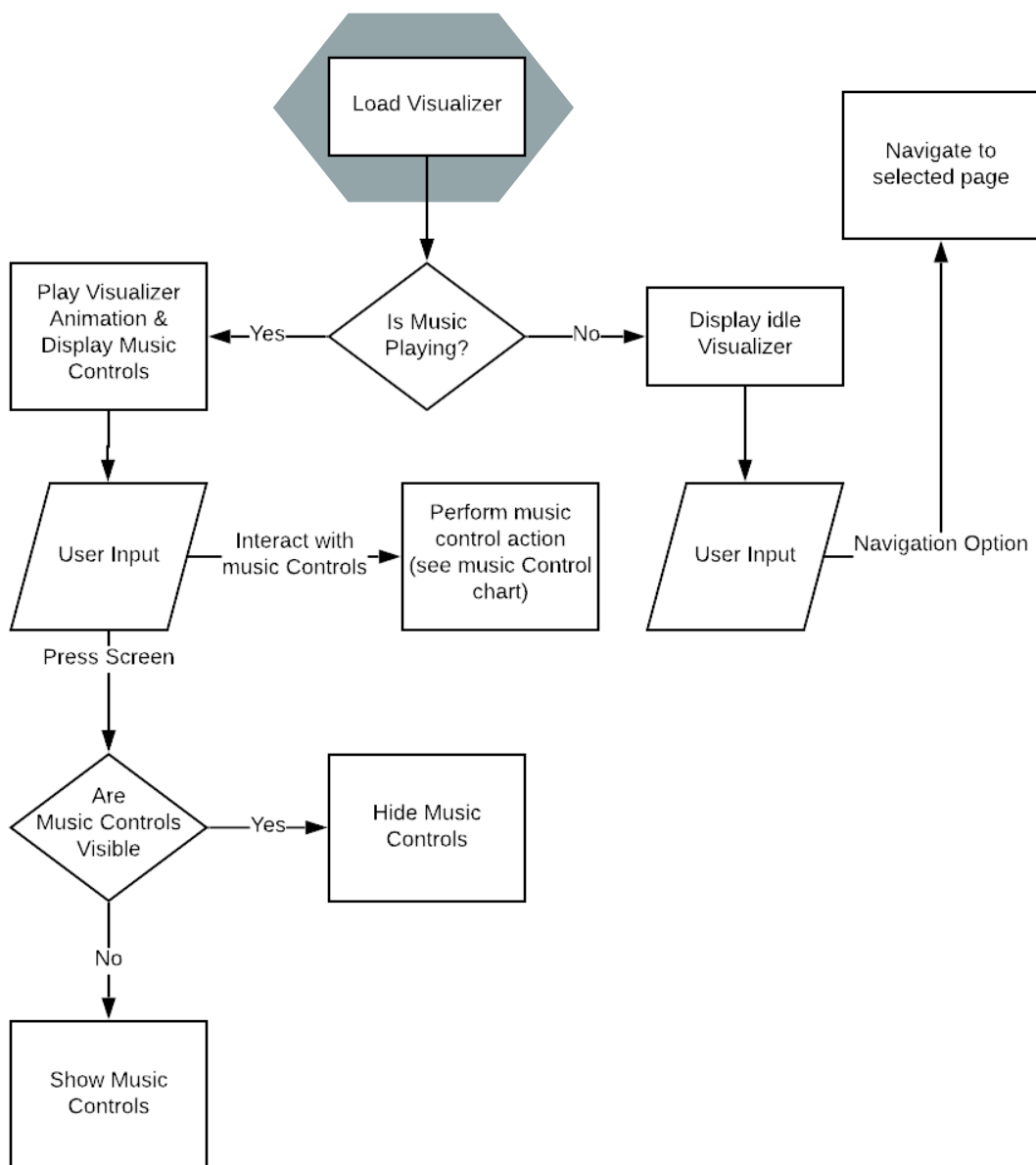


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APPLICATION FLOW DIAGRAMS

MUSIC VISUALIZER FLOWCHART





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PROJECT PLAN & DESIGN DOCUMENT DRAFT

At this point, we created our initial project plan and design document to guide us through the remainder of the year.

- Initial outlines created
- All members contributed and gave more personal insight

LOOK & FEEL USER TESTING FOR PROTOTYPE

Prototype 5 was essentially a spin off of prototype 4, with the addition of taped on spare parts to simulate the additional weight one would carry if the components were inserted within the neckband. Participants of the user study conducted were asked to try on the neckband and make comments about its features. With this information the team was able to make size iterations and dimension extensions as the results showed that participants thought the neckband was slightly too small. Test protocol and results can be found in further documentation on our website.

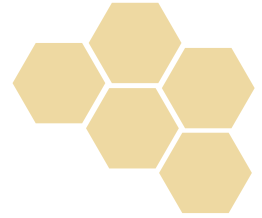
Prototype 5

- Printer: N/A
 - Materials: Previous prototype, tape, spare parts for weight
- Purpose: User testing prototype





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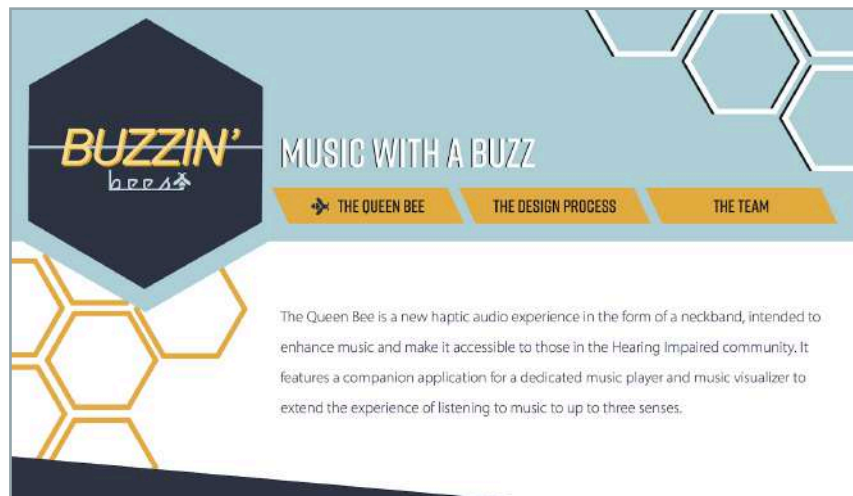


NAVIGATION USER TESTING FOR APPLICATION

As we had two possible navigation methods (tabs in the form of a bottom navigation bar, or a hamburger-style menu known as a navigation drawer in Android), we thought it best to test both methods to determine which was superior, if either. Test protocol and results can be found in further documentation on our website.

PROMOTIONAL WEBSITE COMPLETED

We completed our initial website: a three-page site outlining our product overview, our design, and our team members. The website was put on hold until needed for promotional purposes at this point.



INITIAL BLUETOOTH CONNECTIVITY + ARDUINO CODE + CIRCUITRY

We created temporary code in Android and Arduino to simulate the predicted framework for bluetooth connectivity between Android and Arduino. This was intended as a benchmark for what to expect further in the project. We then iterated on the Arduino code in particular to test the circuitry and the connection we had achieved, in an effort to send data between chip and circuit.



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CONTACT WITH DEAF COMMUNITY - ACCESSIBILITY RESOURCE

During this time, we also reached out to members of the Deaf community for feedback and insight as to our project. This allowed us further accessibility resources, as well as the knowledge that the visual component would likely provide some interest in our device. Additionally, we learned that some researchers had previously investigated similar devices in the vein of accessibility and that there had been interest among a significant portion of the Deaf community for these devices, so ours would likely garner a similar response.

Made contact with members of the Deaf community for feedback and further accessibility resources

TAKEAWAYS:

- Strongly recommended visual demonstration of song
- Informed us that there would be a potential market as some fellow members expressed interest

3D MODEL CHANGES - ACCOMMODATIONS ON/OFF SWITCH

Prototype 4 and 5 user testing allowed for alterations to be made to the 3D model of the neckband. As mentioned it was discovered that the neckband size was too small and required changes within the arms of the product. Additionally, the product also required there to be 3D model cuts made in Maya so that, after printing, the components could be placed within the neckband with ease.

Prototype 6

- Printer: Ultimaker
- Materials: Flexible TPU 95 (Thermoplastic polyurethane) and water dissolvable PVA
- Purpose: Iteration on Prototype 4, accounting for user testing response and the need to have the model in pieces for insertion of parts.

3D MATERIAL TEST

Concerns about the internal components and the protection of these components were brought up in a team meeting. As a starting pointer, we opted to print an entire neckband of solid PLA material. Post-print, we realized the tough PLA material no longer upheld the goal of having a flexible one size fits all material, however, it did spark the idea to create back and vibration motor clips out of this very material in order to protect the parts that need it the most. This would be seen in Prototype 8, which was printed in November 2019.

Prototype 7

- Printer: Ultimaker
- Materials: Solid black PLA
- Purpose: Testing materials as we needed a certain level of protection for the internal components