



Monique Mahony - User research and testing

Tariq Amireh - Documentation and planning

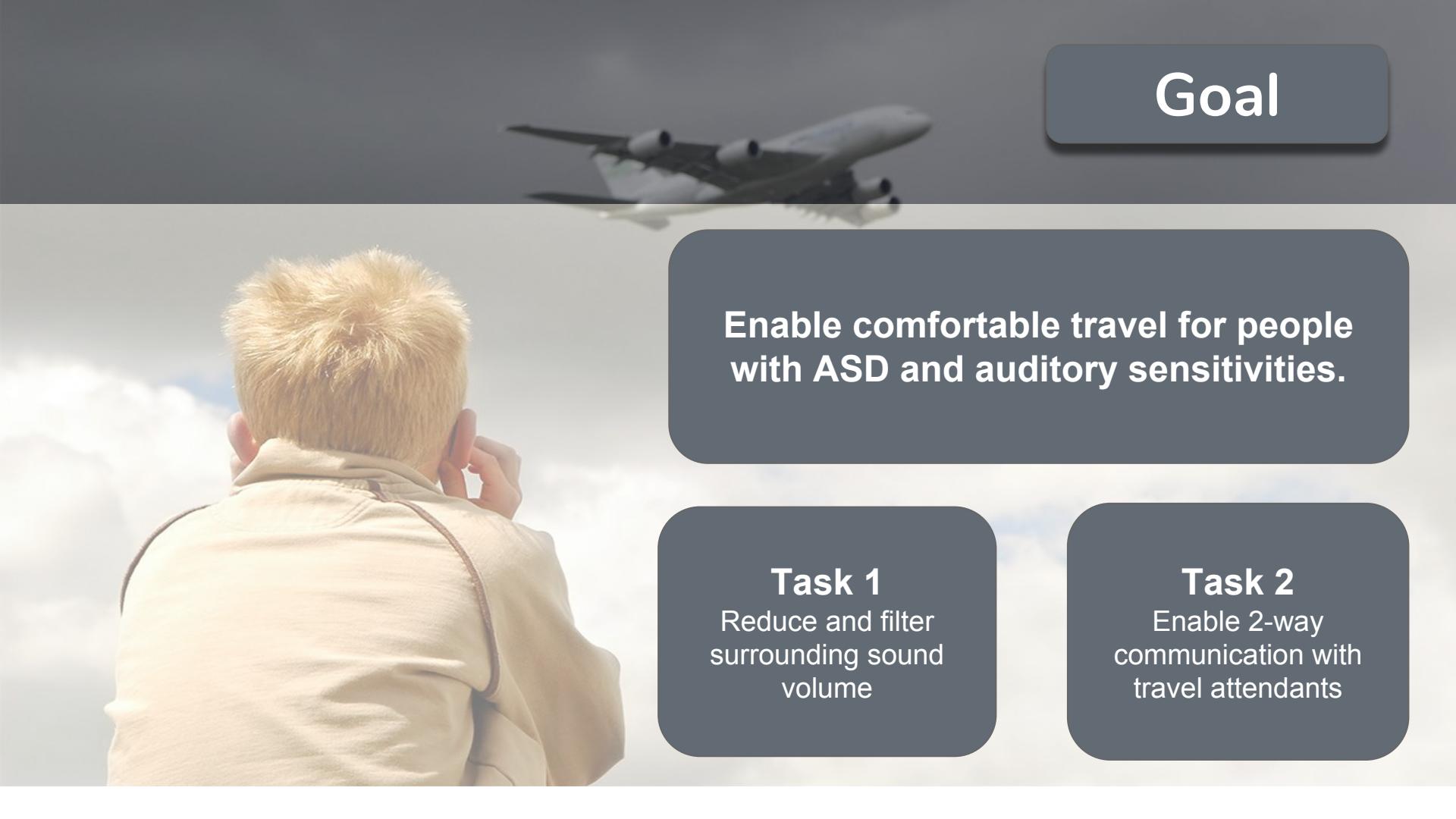
Sungmin Rhee - Paper and digital prototypes

Steven Miller - Revisions and formatting

Problem

**Most adults with ASD
have difficulty with
traveling due to auditory
hypersensitivity.**





Goal

Enable comfortable travel for people with ASD and auditory sensitivities.

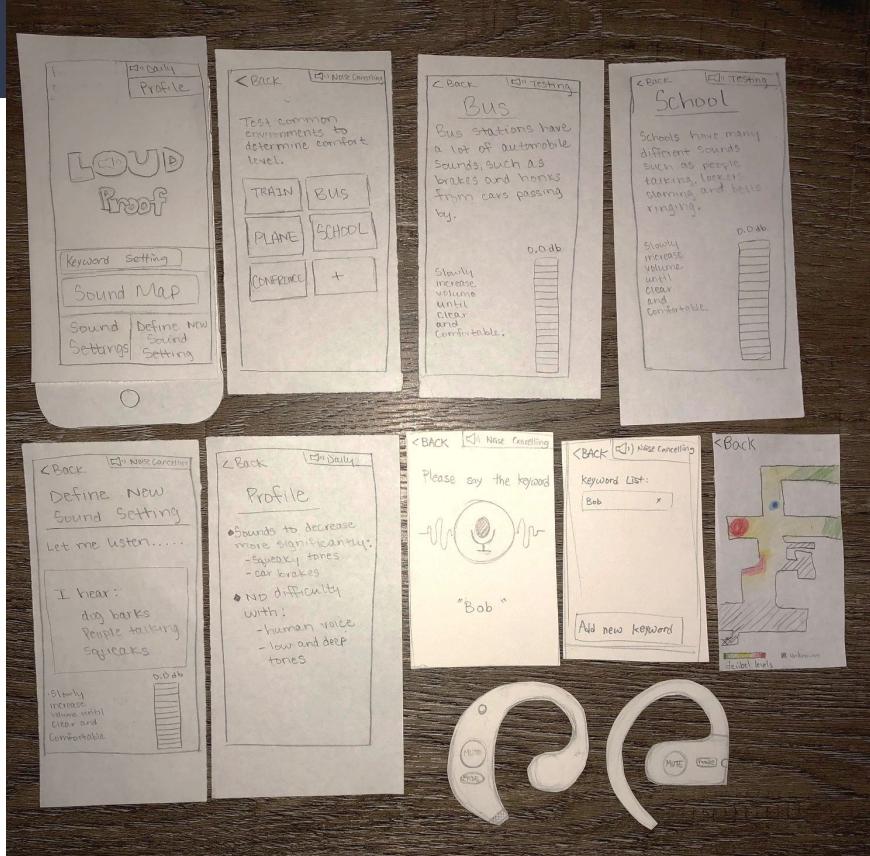
Task 1

Reduce and filter surrounding sound volume

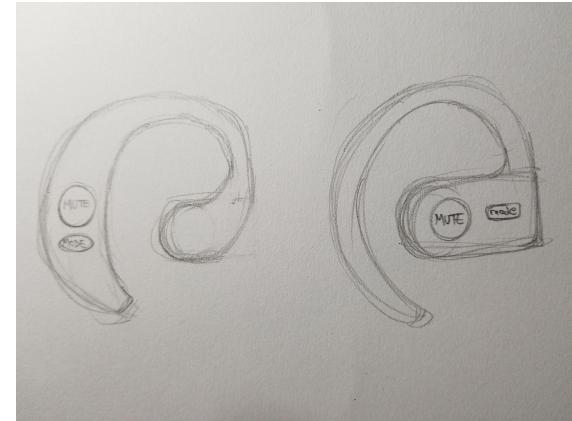
Task 2

Enable 2-way communication with travel attendants

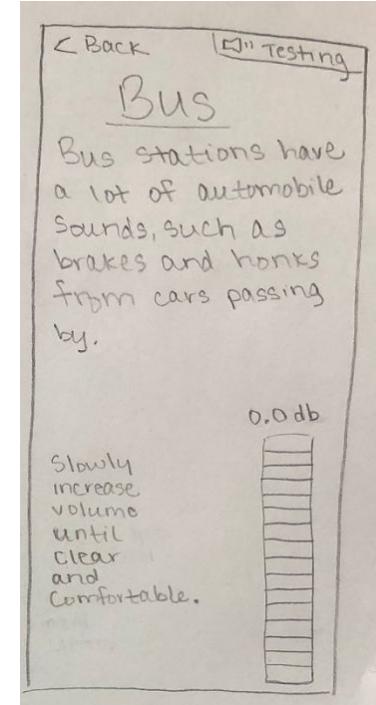
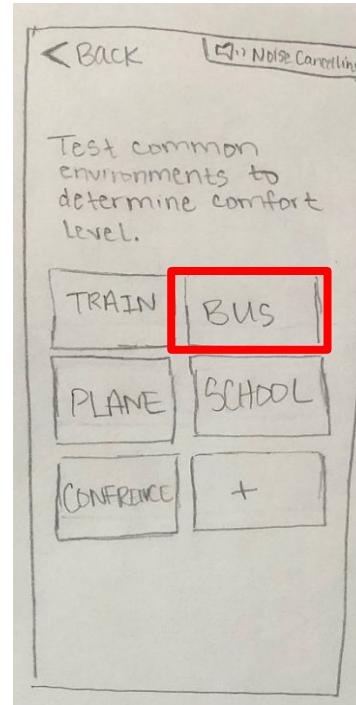
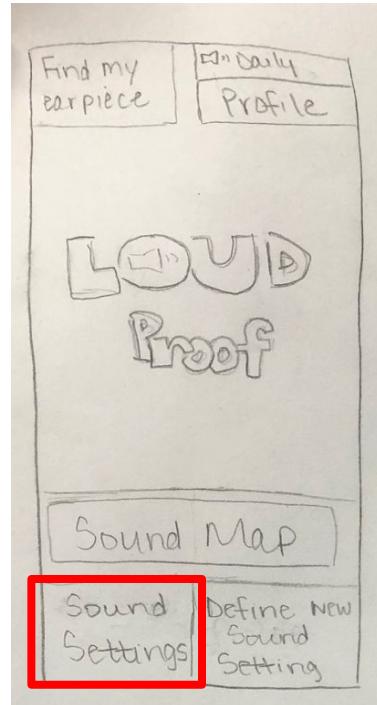
Initial Paper Prototype



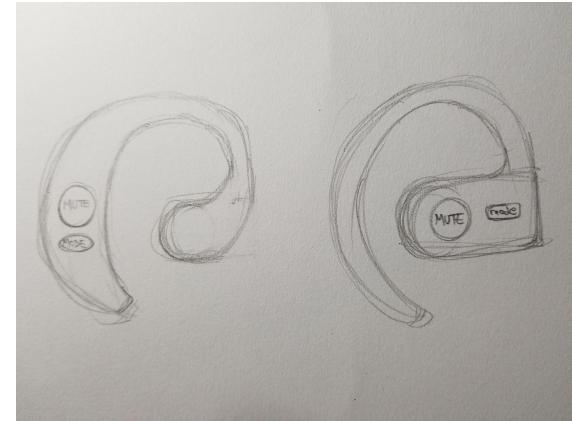
Task 1: Reduce and Filter Surrounding Volume



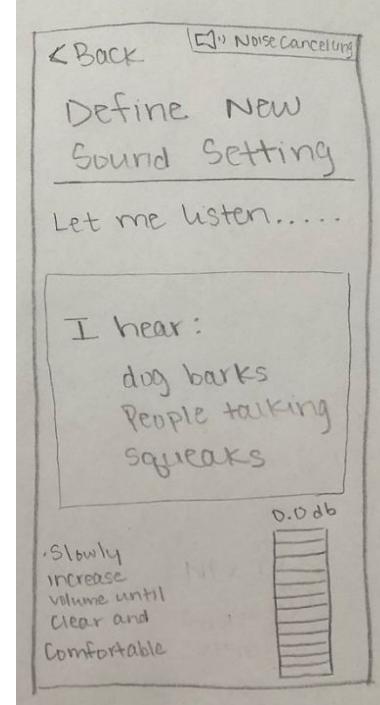
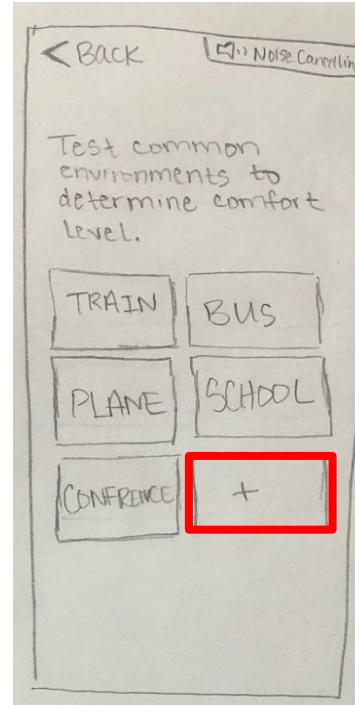
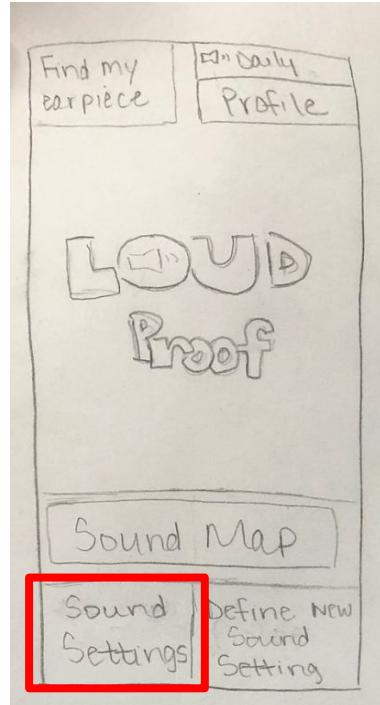
1a: Creating “Sound Modes”



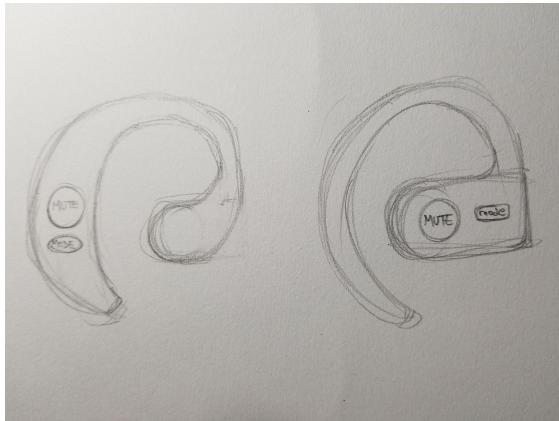
Task 1: Reduce and Filter Surrounding Volume



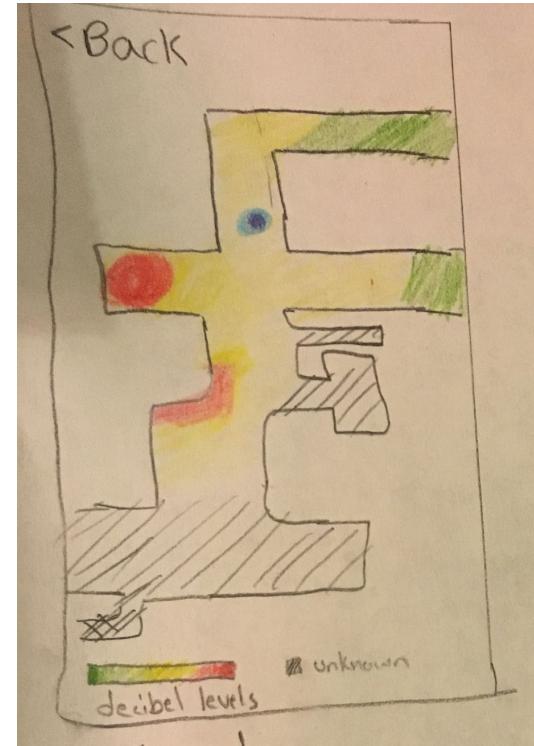
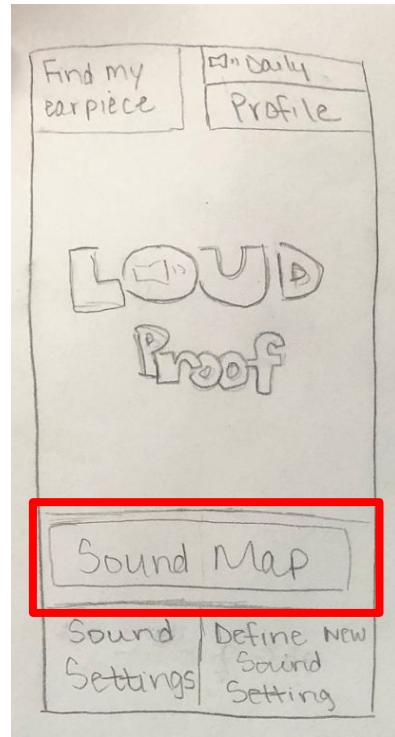
1a: Creating “Sound Modes”



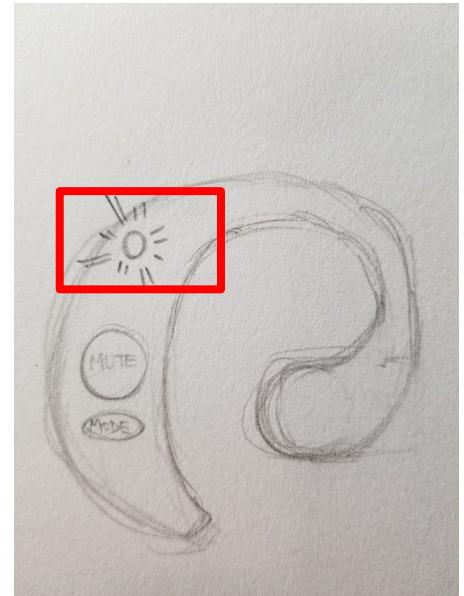
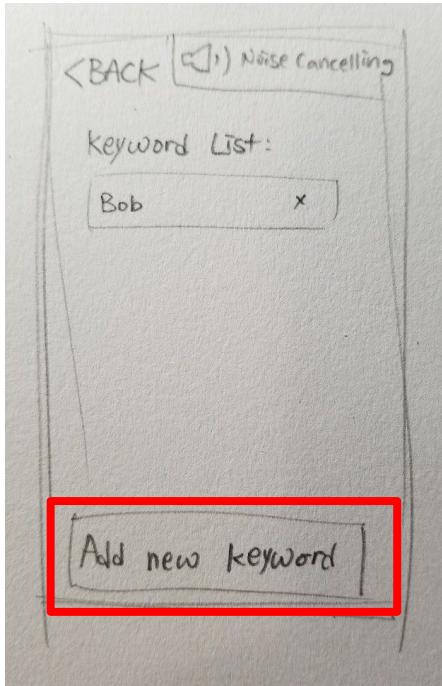
Task 1: Reduce and Filter Surrounding Volume



1b: Viewing “Sound Map”



Task 2: Enable 2-way Communication with Travel Attendants



2: Keyword detection

Testing Process

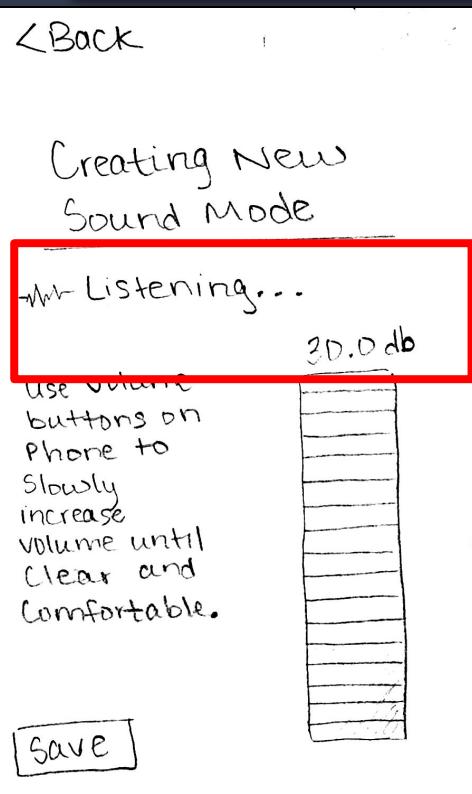
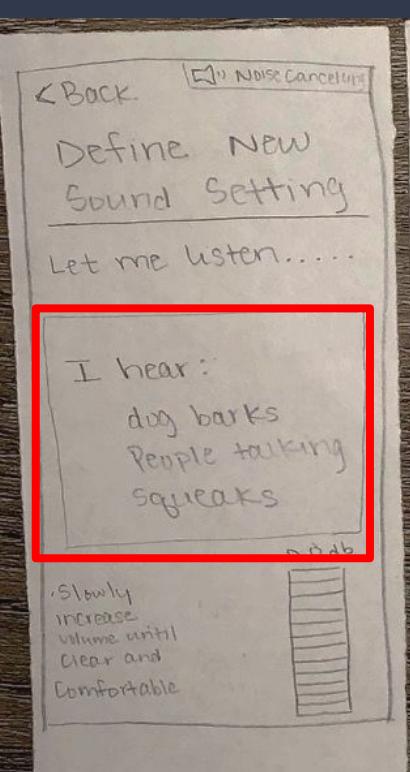
3 Participants

- 2 of 3 experienced some annoyance or sensitivity to audio

Subtasks

- Add keywords
- Create and edit sound modes
- Cycle through sound modes

Revision 1



User believed that they could set caps on individual noises (false affordance)

Excessive text and classification of noises was what indicated this

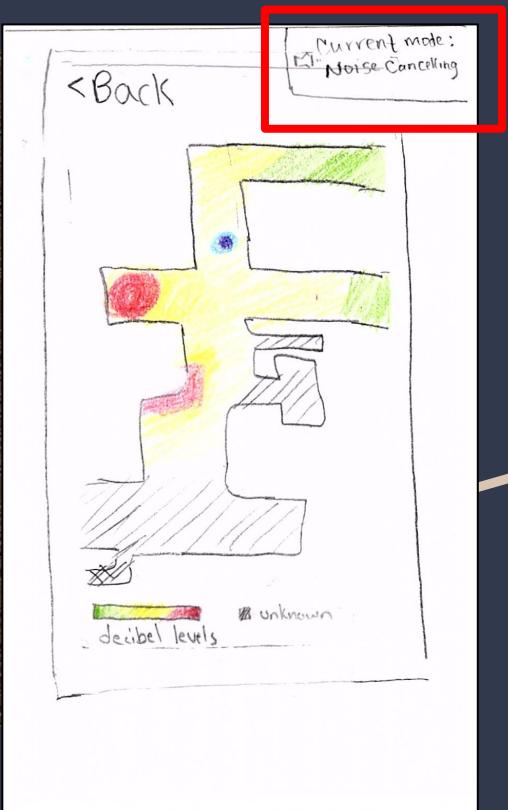
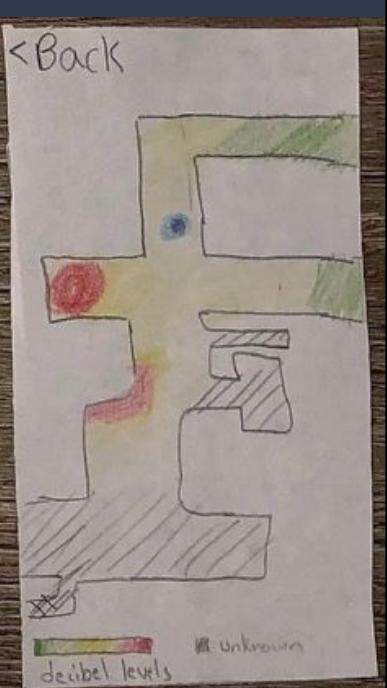
Revision 2

No volume control affordance on physical hearing aid device

After much discussion we decided to add a volume wheel to device



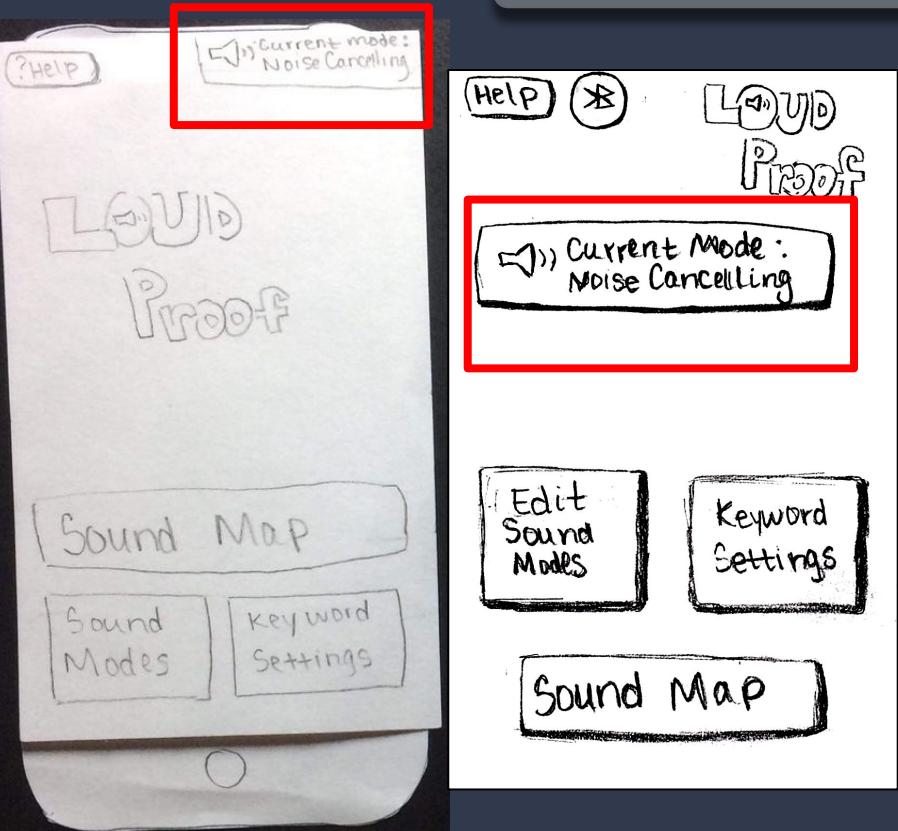
Revision 3



Visibility of current mode was unavailable on some screens

Use unused space in upper right corner to display current mode

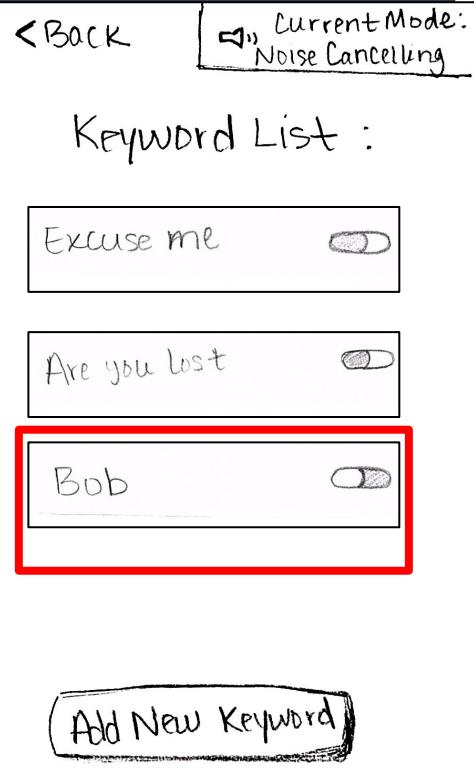
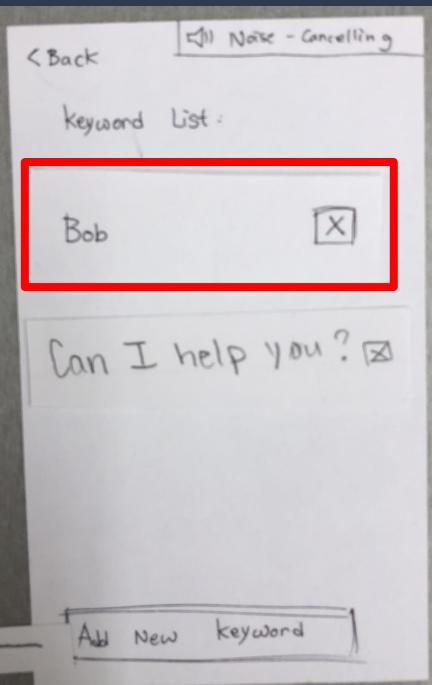
Revision 4



The main screen should display the current mode more obviously

Made use of unused space on the main screen to display current mode more clearly

Revision 5



No clarity on whether keywords were universal or mode specific

Made use of an IOS standard and used enabling and disabling of keywords instead of mode-specific or always on keywords



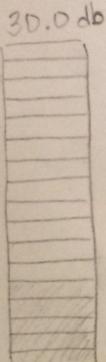
Revision 6

< Back

Creating New Sound Mode

Listening...

Use volume buttons on phone to slowly increase volume until clear and comfortable.



Save

< Back

New Mode

System Listening

80.0 db

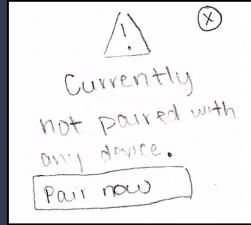
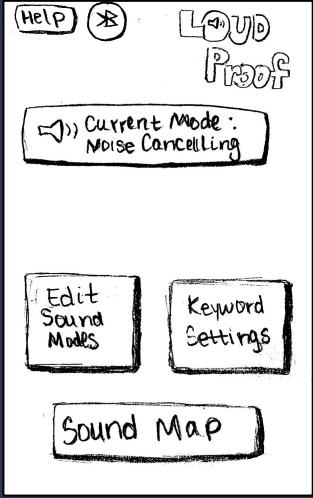
Use Volume buttons on phone to increase volume until clear and comfortable

Save

Excessive amounts of instructional text made the interface cluttered

Used tooltips as a fluid solution

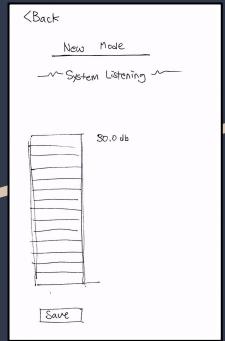
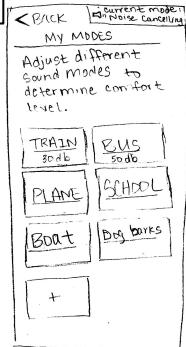
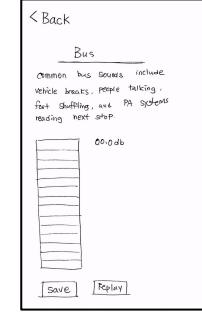
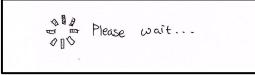
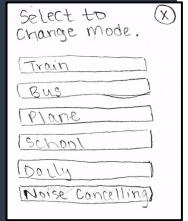
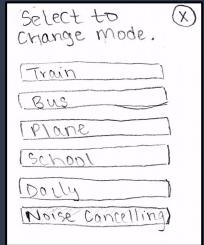
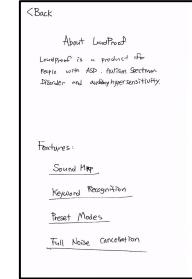
Final Paper Prototype



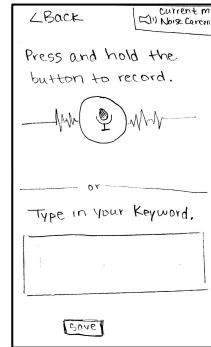
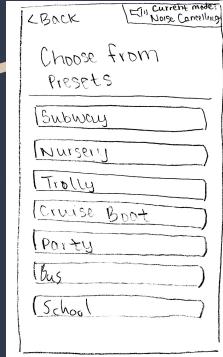
Hold power button on device to pair.

Sync failed.
Try again now
Try again later

- Record new mode from current environment
- Choose from Preset list of Sound modes

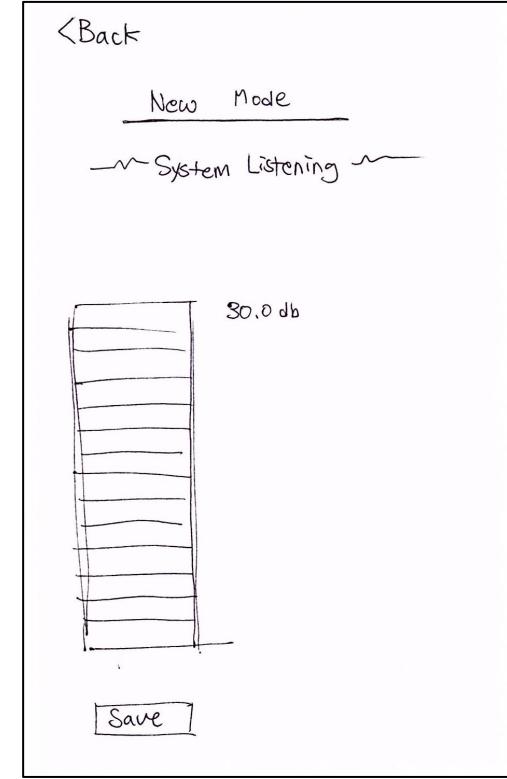
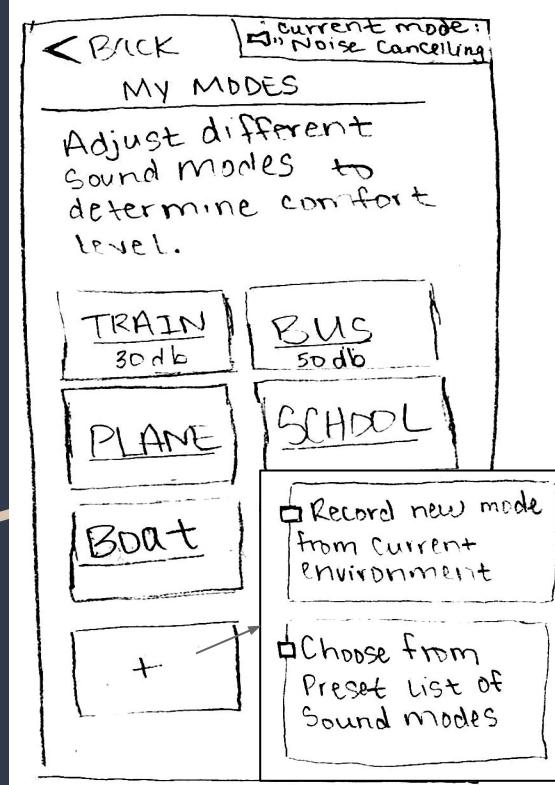
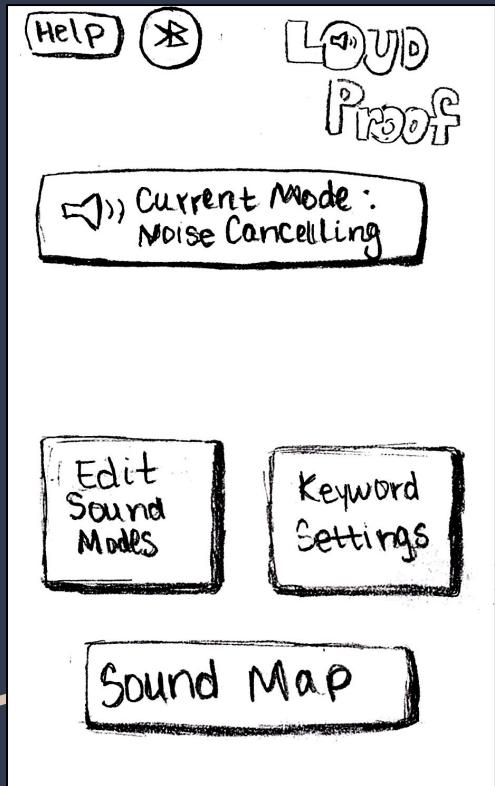


Use Volume buttons on phone to increase volume until clear and comfortable



Final Paper Prototype

Task 1: Reduce Sound



Final Paper Prototype

Task 2: Enable Communication

< Back

Current Mode:
Noise Cancelling

Keyword List :

Add New Keyword

< Back

Current mode
Noise Cancelling

Press and hold the
button to record.



— or —

Type in your Keyword.

Save

< Back

Current Mode:
Noise Cancelling

Keyword List :

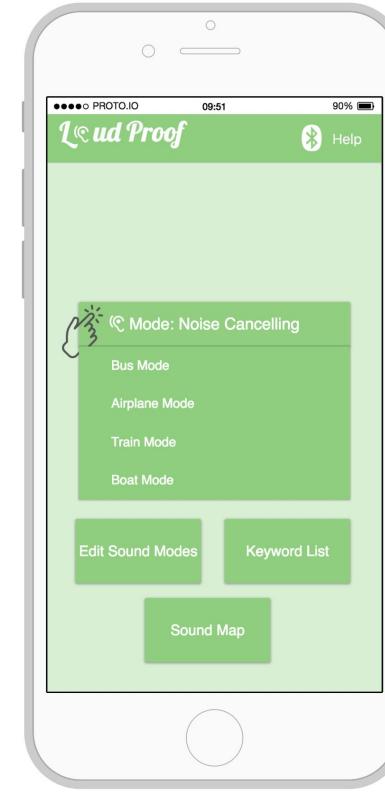
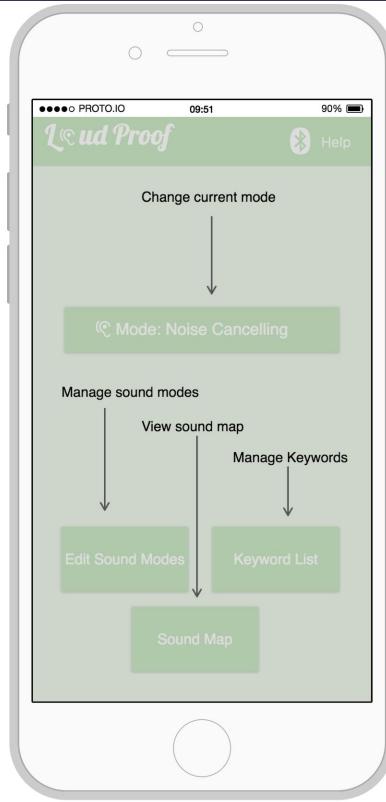
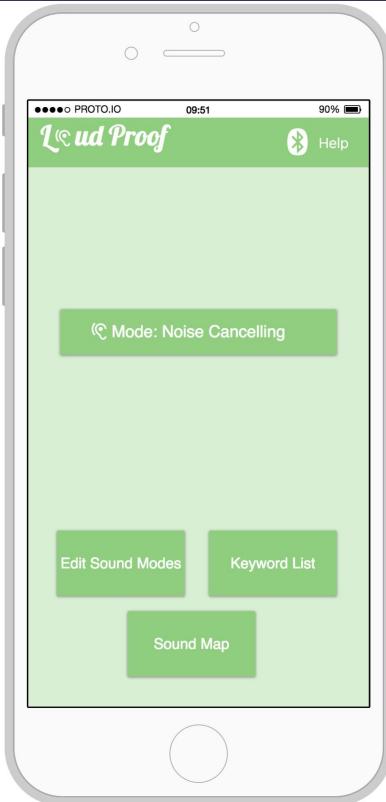
Bob



Add New Keyword

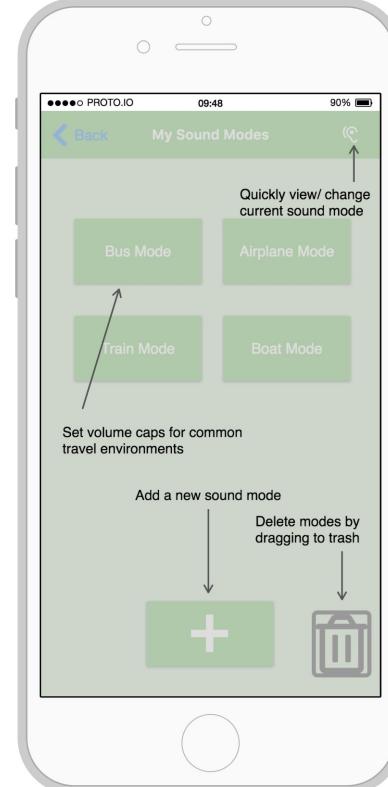
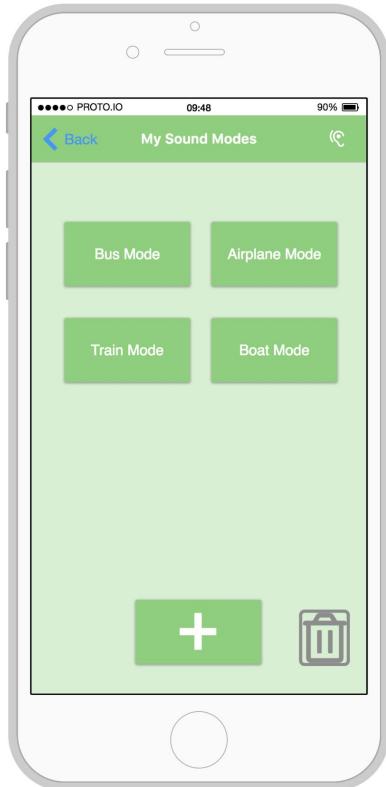
Digital Mockup

Task 1: Reduce Sound



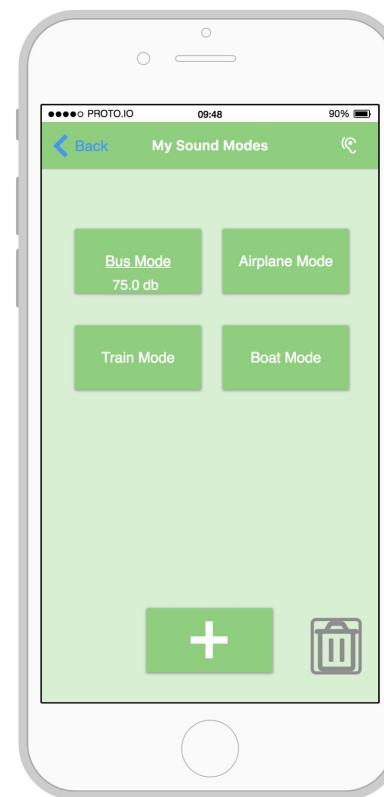
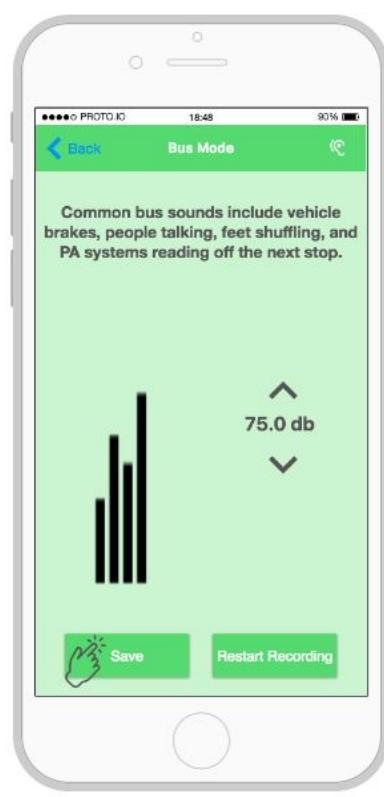
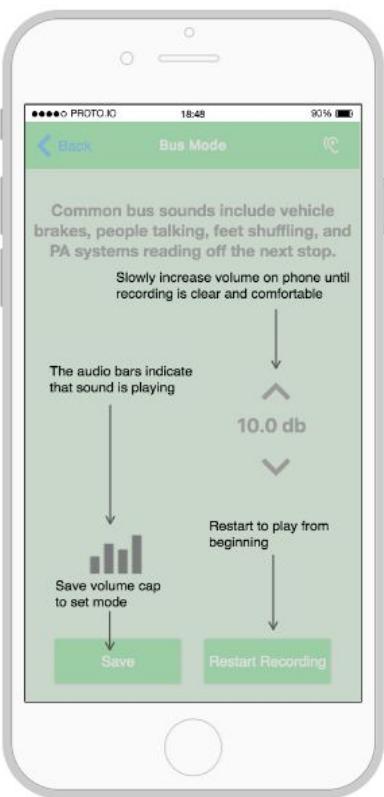
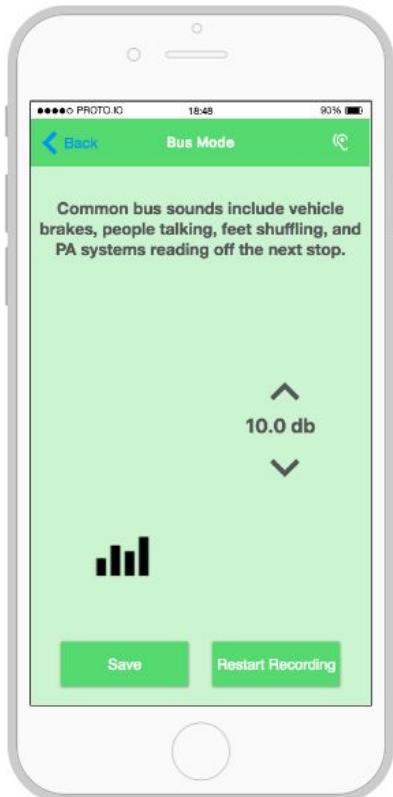
Digital Mockup

Task 1: Reduce Sound



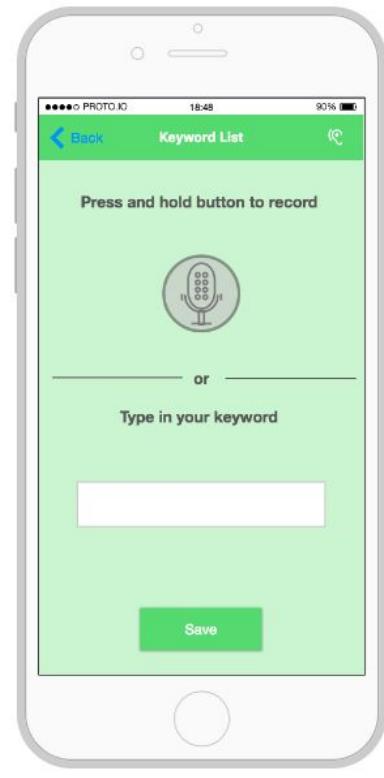
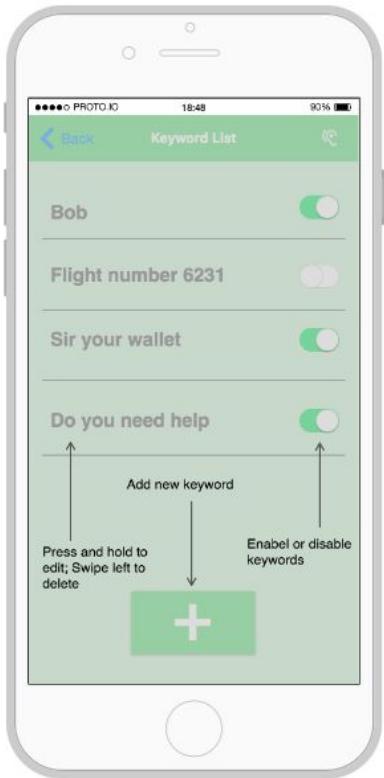
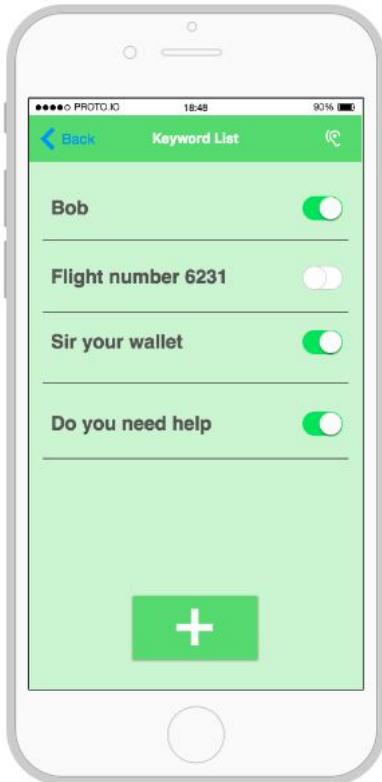
Digital Mockup

Task 1: Reduce Sound



Digital Mockup

Task 2: Enable Communication



Physical Prototype



Summary and Takeaways

- Balancing learning curve and feature richness
- Usability testing should be semi-scripted
- Tasks are always shifting
- Everything is contextualized

Questions?