AMNO

The Next Step In Hearing & Health Technology

Written Summary.

The Problem:
Hearing loss is an issue we all face as we age and the W.H.O have predicted that by 2050 1 in every ten people will suffer from disabling hearing loss. Which is worrying as it can lead to variety of health problems such as, Depression, Dementia and Accelerated Cognitive Decline.

Process:
After my initial research online, carrying out surveys and identifying users I had a meeting over the phone with the head of learning and development in Hidden Hearing. During the meeting we discussed the project and he gave me feedback on early concepts and what area to focus. After the meeting he suggested looking in to the Lancet journal commission on Dementia, which discusses how hearing loss can lead to heightened risk of developing Dementia.

Proposal:
A smart hearing aid that works in cohesion with an app and built in AI assistant to enable users to protect and improve hearing, general and cognitive health by tracking factors that affect them. Encouraging the user to track and improve these stats with the help of an AI assistant.

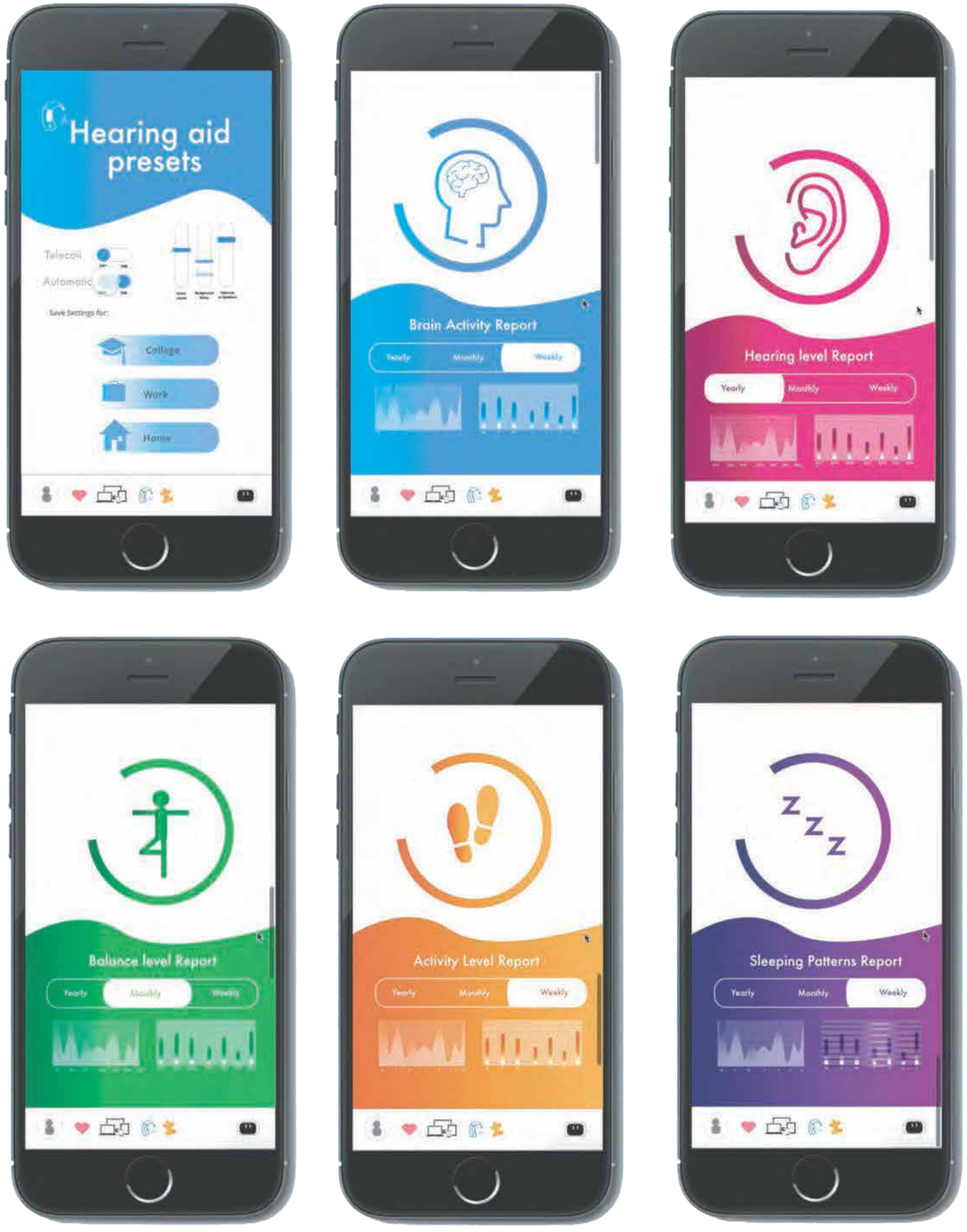
Proposal Board 1

Social & Enviromental Impact

With Avino making hearing easier for users and helping them to track their **cognitive activity, hearing levels, balance, physical activity and sleeping patterns** they will gain a better overview of their health and be able to identify areas where they can work to improve.

The app will give the user the ability to control their hearing aid settings and set preferences for familiar surroundings or choose automatic so that the hearing aid can automatically adjust to suit the surroundings based off the users' hearing.

This will enable people to stay more active and engaged in their lives helping them to lead a happy, meaningful and more productive life for longer.



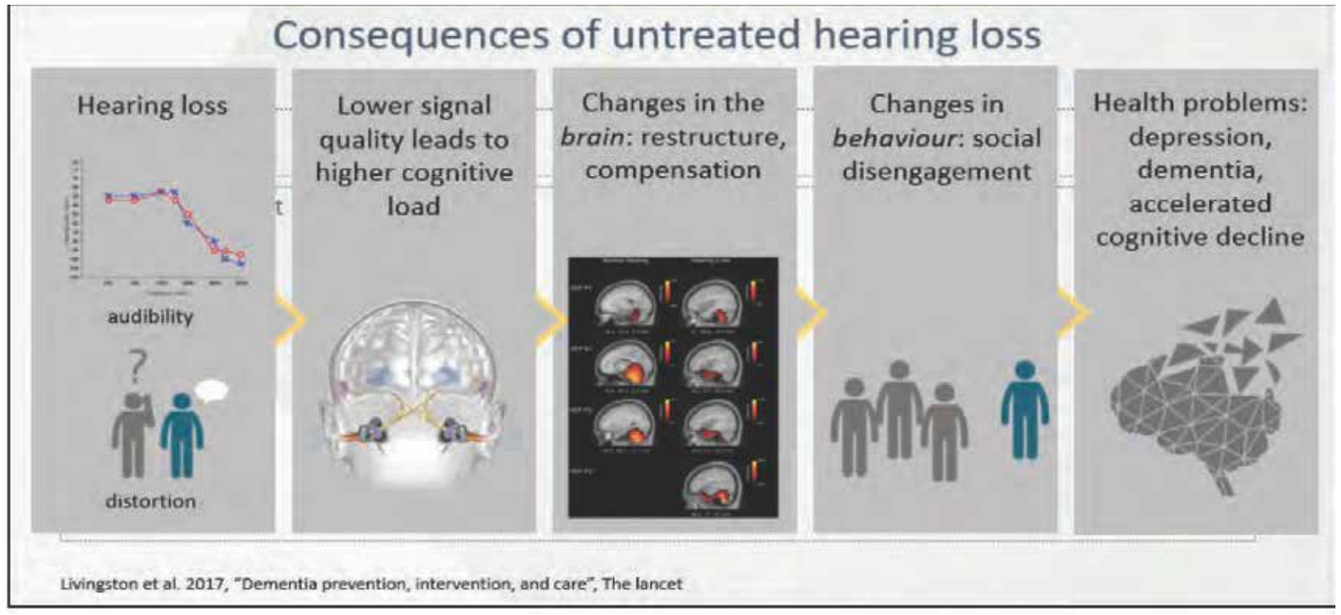
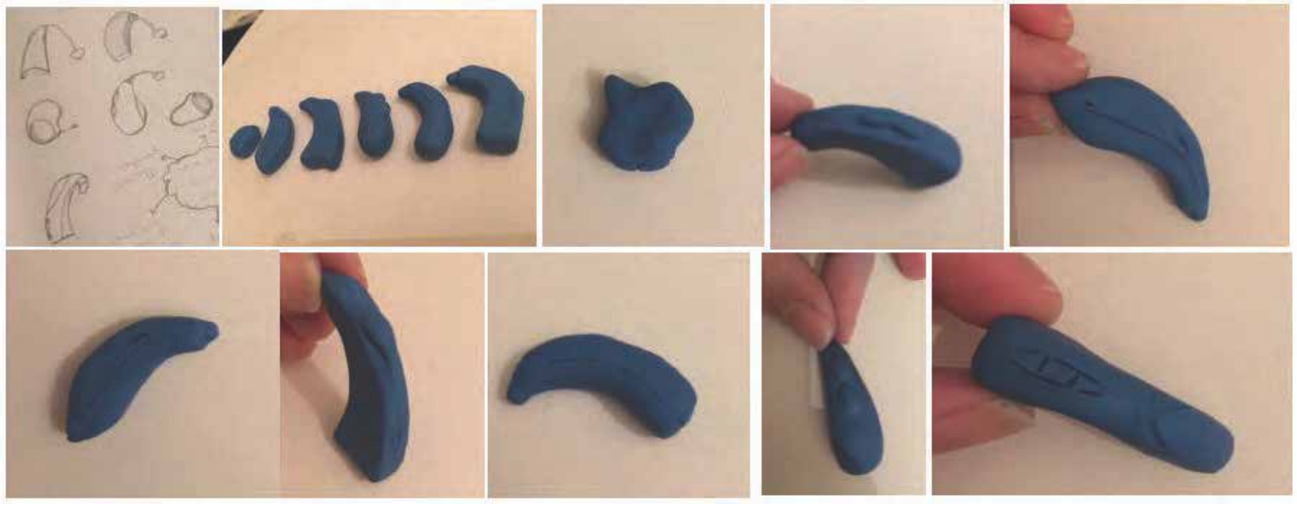


Figure 2. source :Lancet Journal

I Started creating prototypes of hearing aids out of clay to experiment with different shapes.



Proposal Board 2

Rigorous Research & Compelling Insights

From my initial research I identified hearing loss as a major issue. Causing knock on effects like isolation, depression and dementia and accelerated cognitive decline.

I was compelled to look into this topic as I have an elderly neighbour that struggles with hearing loss. I began by sharing my early concepts with the head of learning and development at hidden hearing for feedback. Then I also carried out a survey amongst people who have different levels of hearing loss to see which concepts were most viable.

After Speaking to Tim and analysing the survey results I began to concentrate more on the effect hearing loss has on our cognitive health and he encouraged me to look into the lancet journals commission about Dementia. After this I finalized my concept and began to create prototypes to figure out the shape of the hearing aid and working on wireframes for the app and carried out some user testing in order to refine them both.

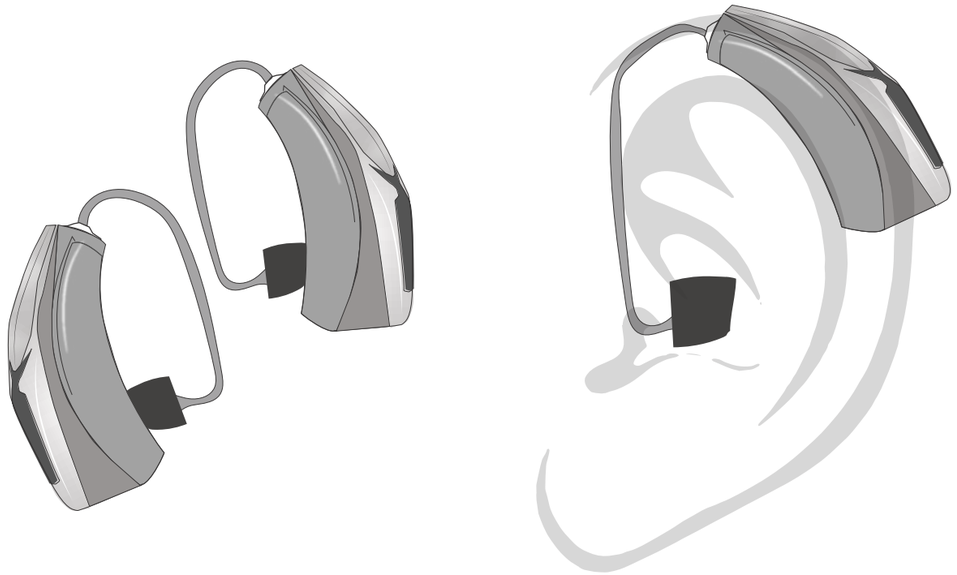
Proposal Board 3

System thinking & Viability

The goal is to encourage the user to be more socially engaged and physically active by showing them their scores daily. I'm hoping that by making the attempt to improve their health and reduce their risk the of cognitive decline individuals will become more active within their community and be able to live happier and more productive lives for longer.

In regards to viability ideally the hearing aid would be stocked by public and private audiologist clinics as well as Hearing instrument specialists in order to be supplied to people with hearing loss unfortunately due to the technology involved the hearing aids would be at the higher end regarding price, for patients.

Hopefully with health insurance and medical cards some form of discount could be created to make them more accessible. I would consider the idea successful if audiologists could see the potential value in the product and wanted to suggest them to patients. I would also consider it successful if the idea changed peoples' mindset from seeing a hearing aid as a sign of a disability to a more desirable product.



Proposal Board 4

Creativity & Innovation

Something that makes my concept different is the built in AI Assistant and cognitive activity monitoring. I wanted to include an AI assistant as when I was talking with the Head of Learning and Development at Hidden Hearing he mentioned how the clients usually appreciate a personal experience and being able to interact with their audiologist and ask them advice so I added AVINO to answer any questions the user may have.

Avino also delivers reminders and tips throughout the day should a user need its help. The hearing aid would also have built in sensors that work with the AI to monitor the activity and movement of users' throughout the day.

In order to calculate their health scores and identify areas that they could improve on, which is why I also included a game section where the user can work to improve their brain score on days where it may be particularly low.

Process Board 1

Early Concepts

After my initial research to identify my area of focus (hearing loss) I carried out research into the different types of products that are available to people with hearing loss and worked on identifying what sort of pain points someone with hearing loss faces. I started by generating multiple concepts:

•A VR systems that uses gamification to teach kids sign language.

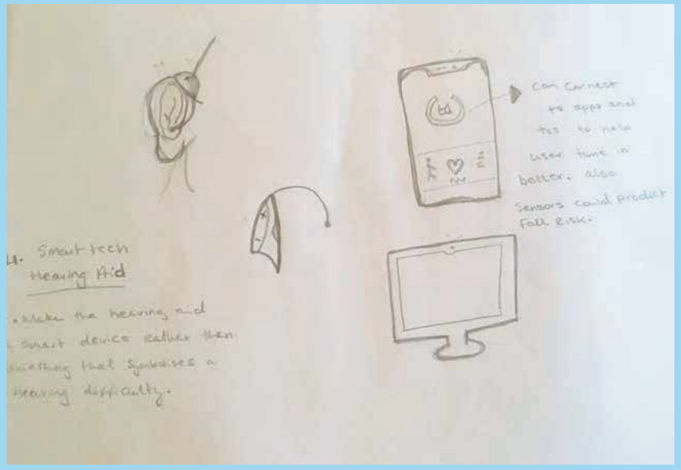
•A series of smart appliances that connect to a watch and warn the user of dangers they may not notice.

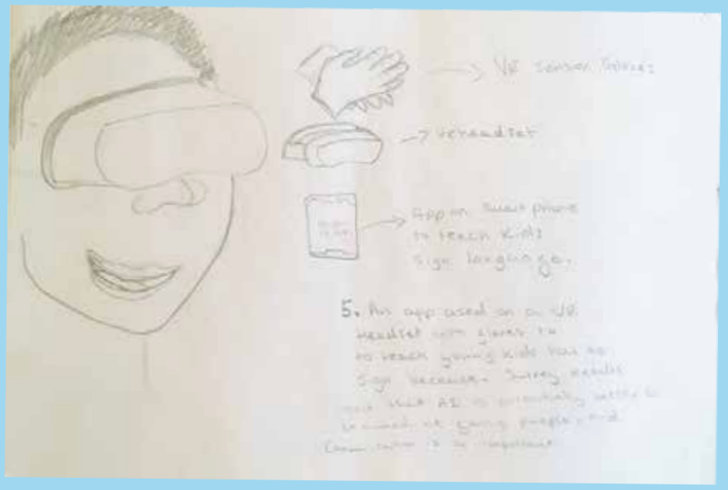
•A kid friendly hearing monitor to detect unidentified hearing loss in kids.

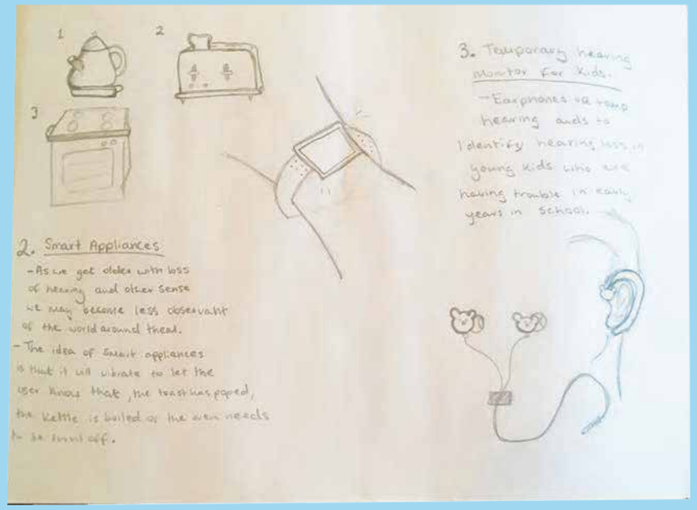
•An adapted driving system within a car to make it more user friendly.

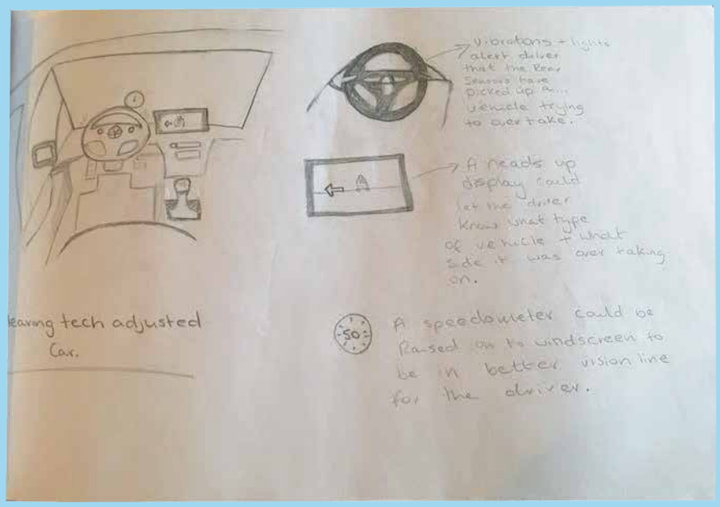
•A smart hearing aid that monitors health and brain activity.

I narrowed these ideas down with the help of feedback from Tim Pringle from hidden hearing and a survey that I held amongst a group of individuals who have some form of hearing loss. The top two concepts were the adapted driving system and smart hearing aid but the survey results reflected that people didn't find that their hearing loss effected their driving enough.





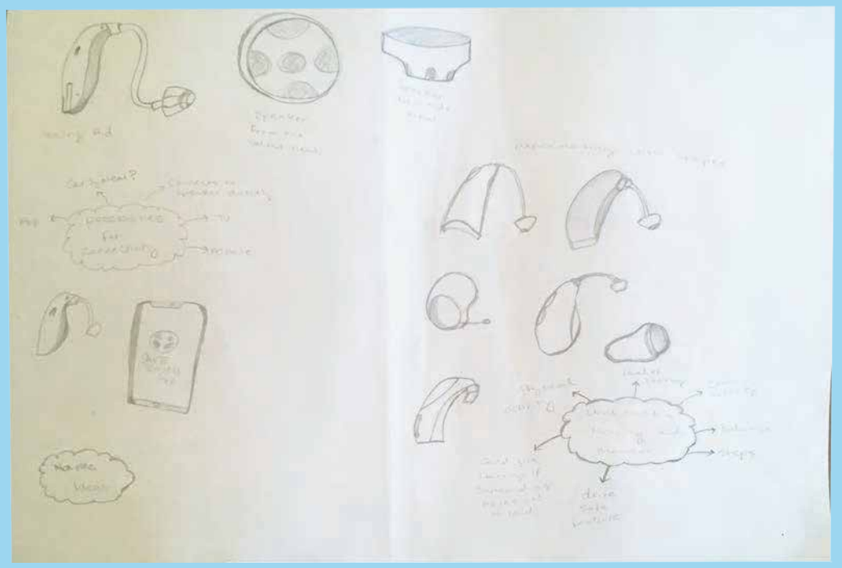


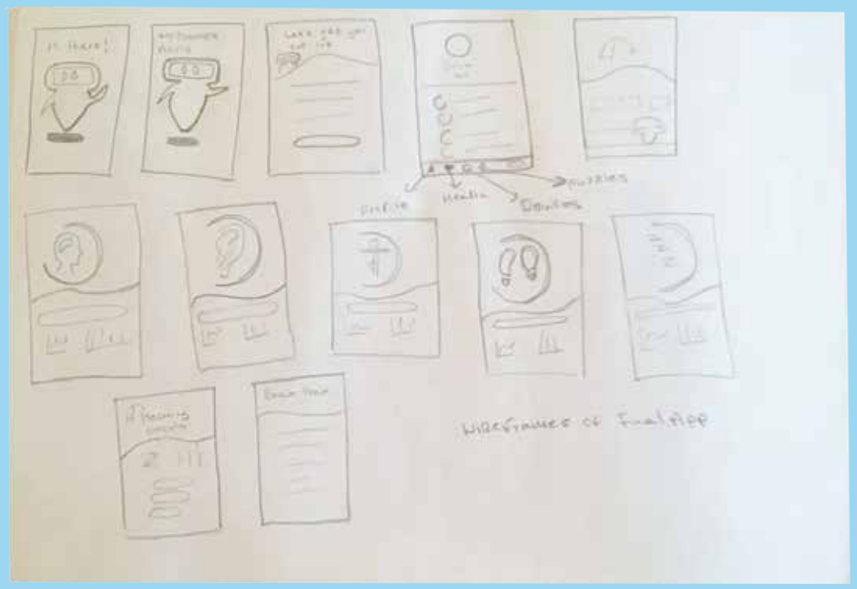


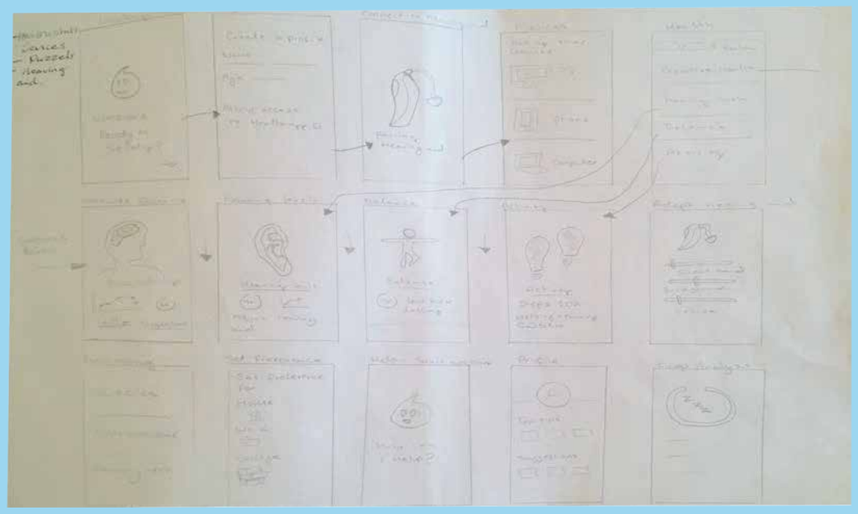
Process Board 2

Wireframes

The next step in my process was to flesh out the smart hearing aid Idea and the shape of the hearing aid. So I started to sketch out different shapes of hearig aids and working on wireframes for the app so that I could begin collecting feedback from user testing.





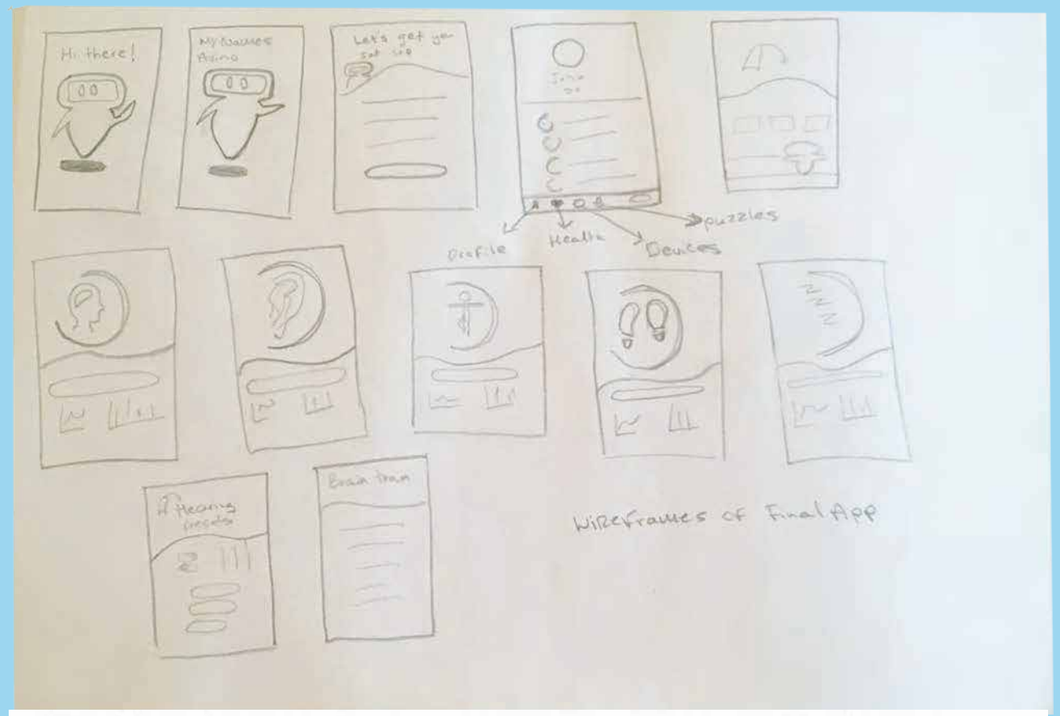


Process Board 3

Prototyping

Then I began to work on prototyping and altering the design before begining onscreen development.

I then also got feeback on my wireframes and made the required alterations before beging development on screen.



I Started creating prototypes of hearing aids out of clay to experiment with different shapes.

I then carried out some user testing with the clay hearing aids to find the most efficient fit to base my design off.

Process Board 4

On Screen Development

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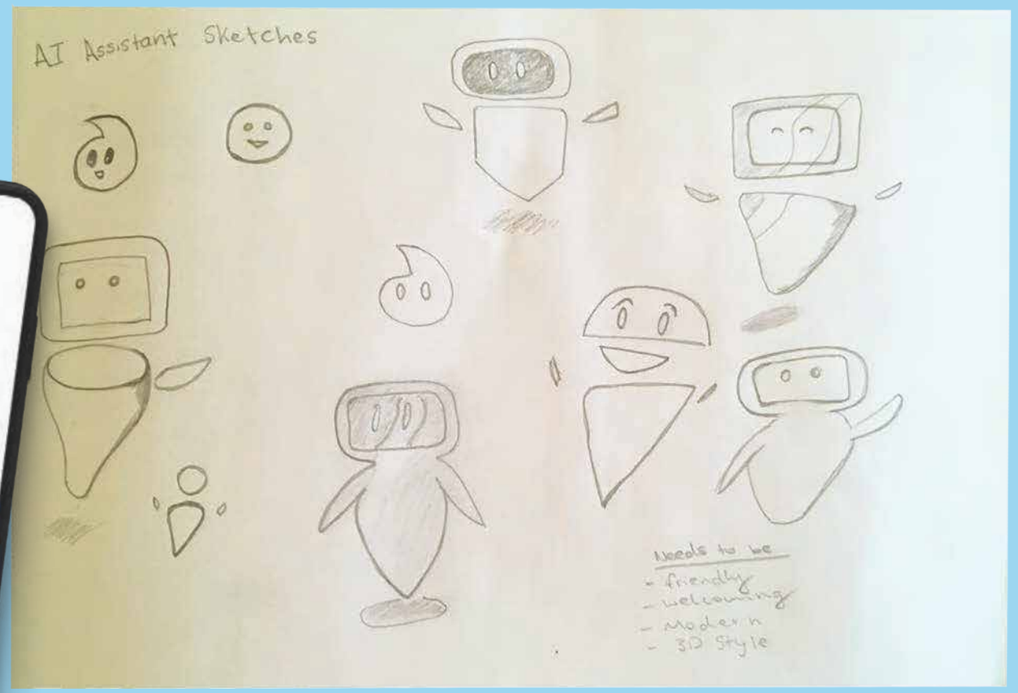
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