DECO3200 Portfolio

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INTRODUCTION

The Problem: Noise Pollution

Noise pollution is a major issue within our city spaces, with exposure causing negative effects on the mental and physical well-being of the residents. Noise pollution triggers a stress response within our bodies, leading to chronic stress, risk of heart disease, depression and other health issues (Department of Health, 2018). Noise pollution impacts city streets, as well as parks and green spaces, changing them from relaxing escapes to new sources of stress for citizens (Buxton, 2017).

The Solution: Oasis

Oasis is a large wall which is built around existing park benches and green space infrastructure. Complete with relaxing lights and sound, Oasis masks the noise pollution in the park, creating a pocket of tranquility within bustling cities. Users experience a calming, melodic sound which is played over the surrounding noise. They can customise the sound by turning the lights, changing the volume of different notes. The lights ‘breathe’ calming colours of blue and green, completing in the meditative environment.

THE TEAM

MIRIAM

UX Researcher & Creative Direction Lead, leading the team in background research, aesthetic finishes of the prototype and documentation.

JODIE

Interaction & UX Designer, leader of user testing sessions, analysis of data, video composition and general team leader.

MIKKEL

Visualisations & Fabrication Lead, in charge of making the prototype structure and components, renders and sound experience.

TAHA

Front-end Developer, in charge of code creation and troubleshooting for the lights, sound and technical setup.

MY ROLE

- Background Research
- Concept Development
- Analysis
- Documentation
- Artistic Fabrication

MY ROLE

Background Research

I did research into different problem areas and existing designs and discovered that the problem of noise pollution was not well addressed, and there were many opportunities for improvement. I also found design precedents and technologies which we drew inspiration from.

Concept Development

I assisted with developing concepts to address our problem area, focusing on designing for key areas where noise pollution was most intrusive, especially construction sites and residential areas.

Analysis

After all our data was collected from user testing, I assisted in synthesising the information to find key insights, then collaboratively discussed how we might apply these and improve our concepts for users.

Artistic Fabrication

For our final prototype, I was primarily focused on aesthetics and details to improve user experience, making sure the visual appearance and user interaction of our product was of high quality and making creative decisions to achieve this.

Iterated render of Oasis before building

Final prototype fabricated to resemble visualisation

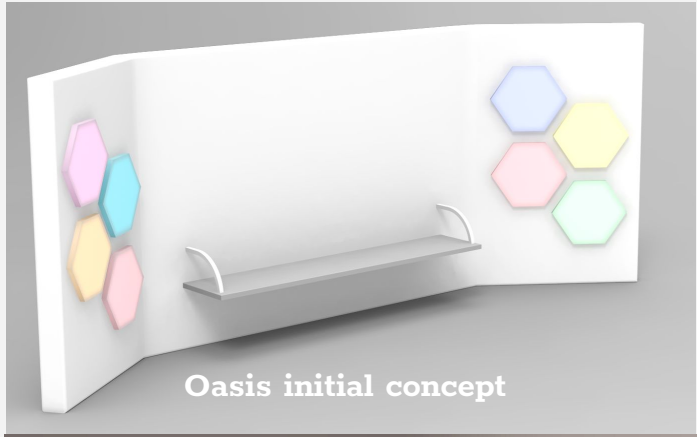
MY CONTRIBUTIONS: Research & Concept Development

Background Research & Existing Technologies

Once I had discovered noise pollution as a key problem area, I did research into existing technologies and products to gain inspiration, see who the target audience was and how we might differentiate ourselves. Primarily, there were products targeting indoor office areas or individual devices, presenting a gap in the market. I also found that most products were addressing the problem by using noise cancellation.

Concepts & Iterations

Concept development within our group was collaborative and we each brought our background research, knowledge of sound, coding and building together to create both our initial concepts and iterations. I combined my findings of noise cancellation with further research into noise transformation research to ground our initial Oasis concept in realistic and innovative technology.

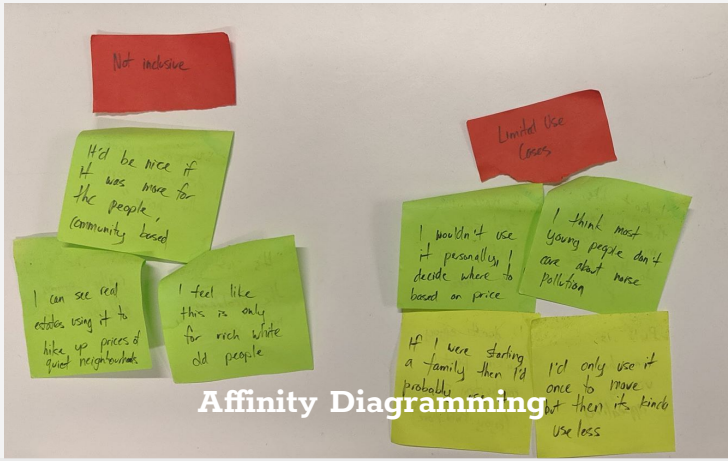

Oasis initial concept


Iterated Oasis concept

MY CONTRIBUTIONS: Analysis & Documentation

Analysis & Key Insights

After completing user testing sessions and heuristic evaluations as a group, I helped analyse the data to gain key insights and pain points that we could use to improve our concepts. We used many methods including affinity diagrams, insight statements and how might we questions.



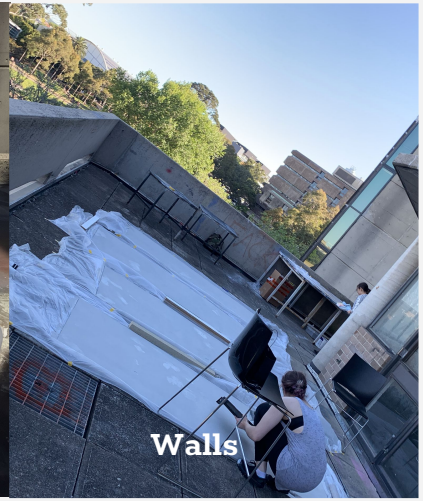
Affinity Diagramming

Documentation

I assisted in leading the team in documentation to make sure it was clear to people who were not involved in our project, concisely communicating our process and decision making process throughout our whole project.

Insight statements for testing Oasis

MY CONTRIBUTIONS: Fabrication



Painting

I lead the team with aesthetic decisions and execution to create a visually appealing product and which was contextually appropriate. This included painting the walls, evenly spraying frosting paint on the light domes for diffusion and white paint on the backplates for reflecting the lights.

Details to Improve User Interaction

I also helped to think about and execute smaller details to help complete the project and improve the experience for the user. This included using the average heights of people to place the lights to ease interaction, and arranging and gluing the ivy vines in a natural pattern to help the structure blend into the environment and add to the calming aesthetic for the user.

CHALLENGES: Research & Concepts

How to ‘solve’ noise pollution

We discovered that is was impossible to ‘solve’ noise pollution through a single concept. Instead we found concepts to help manage it and repurporse the sound into a more positive output, such as visuals or sound overlays.

Users didn’t like being reminded of noise

Oasis was our only concept which actually tried to address the problem for the user, rather than just drawing attention to the problem. Positive user feedback encouraged us to iterate on this idea and make it more useful to the target audience.

CHALLENGES: Final Prototype

Light Diffusion

The light diffusion was not as bright and consistent as desired, having a dark circle in the centre. We tried different placement of the lights and frosting the domes more, but found that the wrapped LED strips were still the best for this prototype. In future versions we would change the light source.

Live Noise Transformation

Due to time and technical restraints, we were unable to make our noise transformation live, instead we manually edited a track of traffic noise to create a melodic sound. This allowed us to demonstrate the effect of noise transformation and allow the user to experience it.

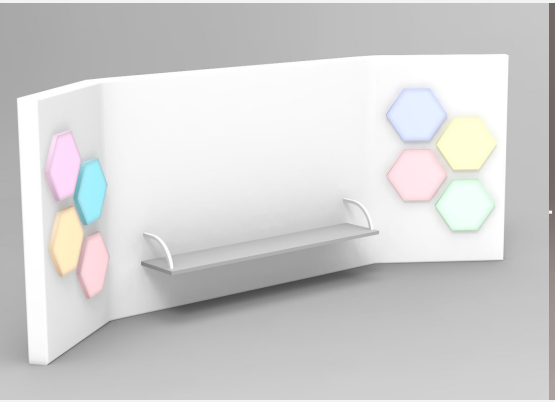
Dark circle in centre of light

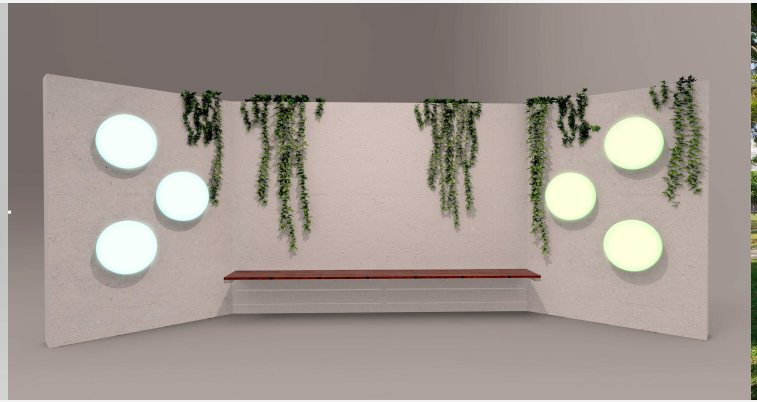
CHALLENGES: Final Prototype

Feedback for Lights

The light disc had a limited feedback model for the user, only affecting the sound when interacted with. This is problematic in terms of communicating to the user what the function of the discs is. It is also difficult for the user if they are hearing impaired or the environment is particularly loud surrounding the wall. Alternatives such as changing the colour or intensity of the lights, or an LED volume bar would be possible solutions for further iterations.

OASIS: Lo- to Hi-Fi Prototypes





Initial idea

- Hexagonal lights
- Varying colours
- Not interactive, only reactive noise transformation
- Environmental/natural soundscape

Iteration

- Interactive model - turning light discs
- Adding vines for environmental context
- Changing colour and shape of discs
- Dark ambient soundscape

Physical model

- Similar to iteration, but no screen
- Bright melodic soundscape with added notes for discs
- added signage (arrows) for prompting

FINISHED PROTOTYPE

Vines arranged naturally to fit with the context

Light diffusing domes at accessible height

Reflection

Overall, our team worked really well together and had a good combination of skills to enable us to complete the project to a high degree. With our combination of UX, fabrication, coding and design skills we were able to give useful feedback on each other's work, problem solve and collaborate effectively. We were also organised and kept on track throughout most of our process and fabrication, being flexible, yet reliable and accountable to our other team members.

If we were to do it differently, we would work on the light disks for a longer amount of time, as we realised a too late that there was an issue with the diffusion. We would also improve other aspects of the prototype, such as giving users more feedback when turning the light disks, such as changing the light display, and attaching the light discs to the back more effectively.

We have not decided whether we will work on the prototype further beyond this year. We are happy with the quality for the graduate exhibition, however we may look into an application for vivid and improving the prototype to increase durability and adapt it to the space.

References

Buxton, R. (2017). *Human noise pollution is disrupting parks and wild places.* Retrieved 6 November 2019, from http://theconversation.com/human-noise-pollution-is-disrupting-parks-and-wild-places-78074

Department of Health (2018). *The health effects of environmental noise.* Retrieved from https://www1.health.gov.au/internet/main/publishing.nsf/Content/A12B57E41EC9F326CA257BF0001F9E7D/$File/health-effects-Environmental-Noise-2018.pdf

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