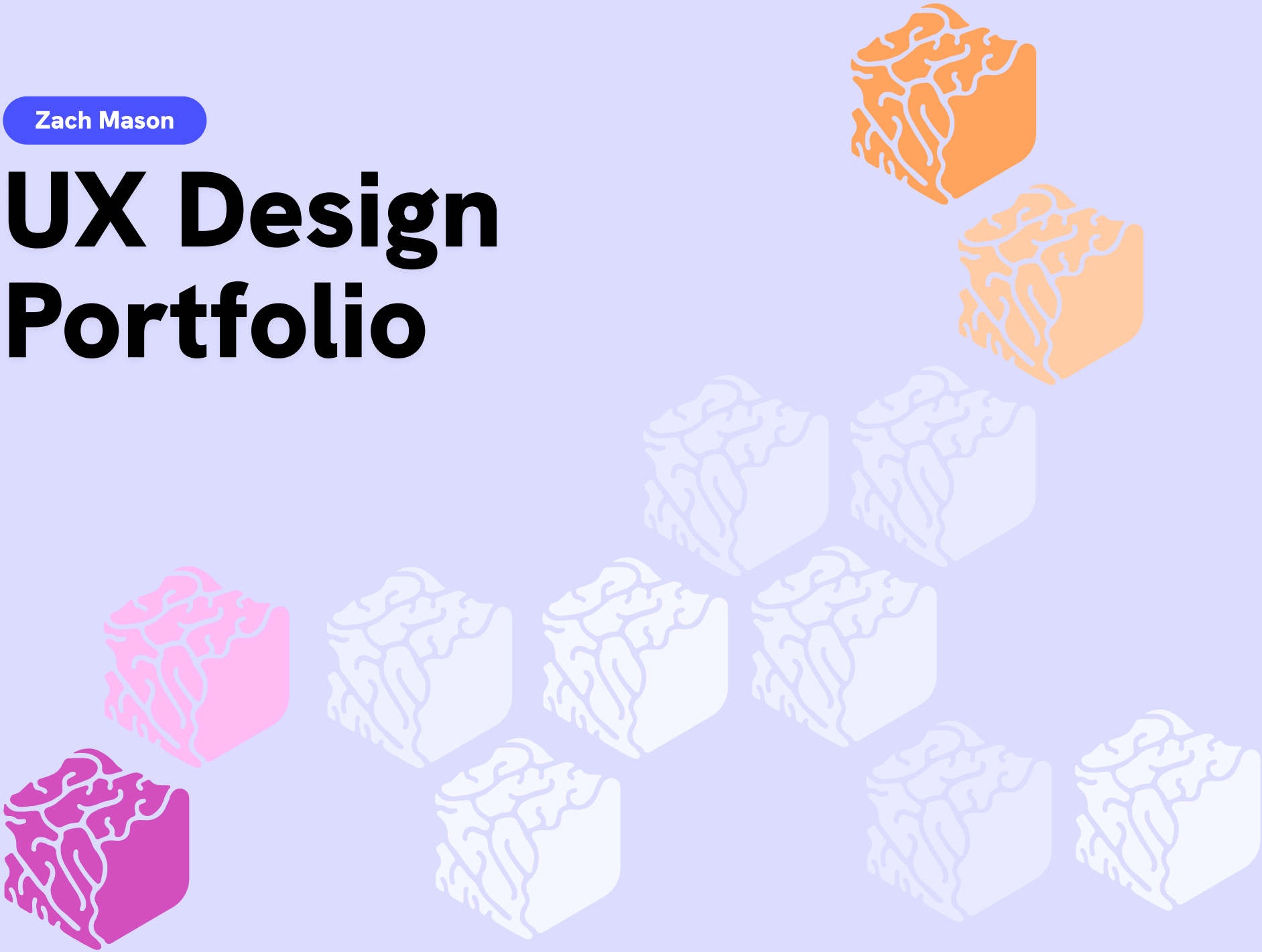
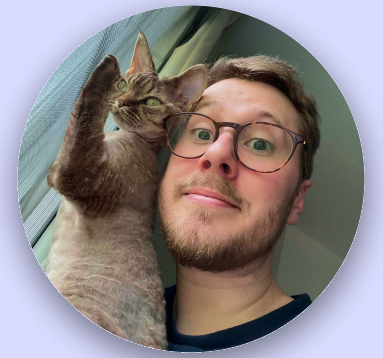
Zach Mason

UX Design Portfolio





Hey, I'm Zach Mason UX Designer living in Cambridge

My UX design journey began with a degree in Interaction Design at Glasgow School of Art followed by a PhD researching accessible UX Design for virtual spaces.

I constantly champion accessibility, inclusion and usability through my UX design work across academia and industry.

GSoFA

Interaction Designer

2016

UX & Motion Designer

2020

UX Designer

2023

Design Process

I have developed my design process to enable me to efficiently work as a designer within different organisations.

My portfolio projects from both industry and academia follow this process.

INDUSTRY

Intelligent Spaces

My case study of working as a UX Designer at a data & AI software company in London.

UI after design process

BACKGROUND

I joined **Elastacloud** as a UX Designer & Accessibility Consultant in 2023. They are a software development company in London specialising in data & AI SaaS solutions. Intelligent Spaces is the main project I work on which is a Digital Twin sensor management and data analysis platform.

MY RESPONSIBILITIES

My responsibilities range from standardising company-wide style guides to designing UI and UX proposals, and from end-to-end user research phases to conducting accessibility reviews across various company projects.

TEAM STRUCTURE

I work predominantly as part of an agile team directly alongside a Product Owner, two Frontend Developers and several Backend Engineers.

INDUSTRY

Outlining Requirements

I started by understanding the business requirements.

KICK-OFF MEETING

I started my role at Elastacloud by organising a kick-off meeting with the Product Owner and UI Development Lead. As I was brought into the role to improve the usability and accessibility of the platform I wanted to establish any key insights or assumptions they had already made.

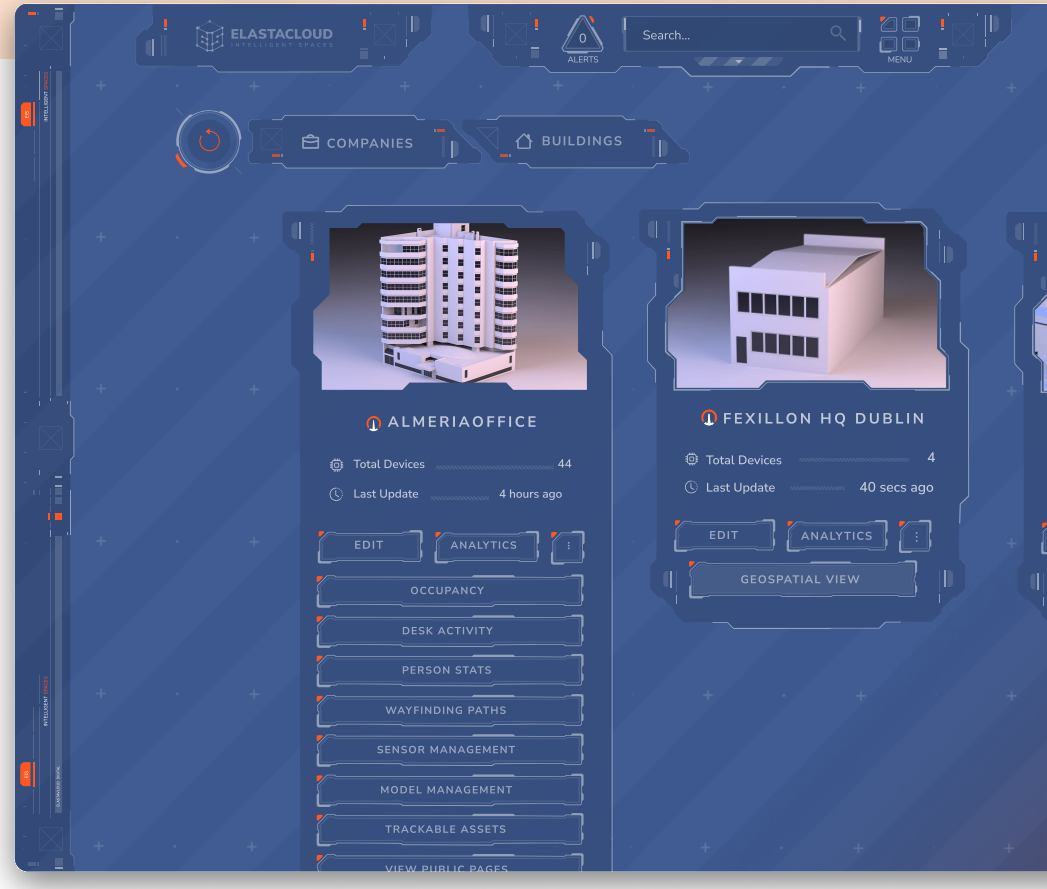
BUSINESS GOAL

The company's goal was to improve the product's accessibility because potential clients were expressing hesitance to buy into the platform without improvements in those areas.

PROBLEM DEFINITION

Hypothesis 0

The product is failing to meet client's customer's accessibility and usability needs.



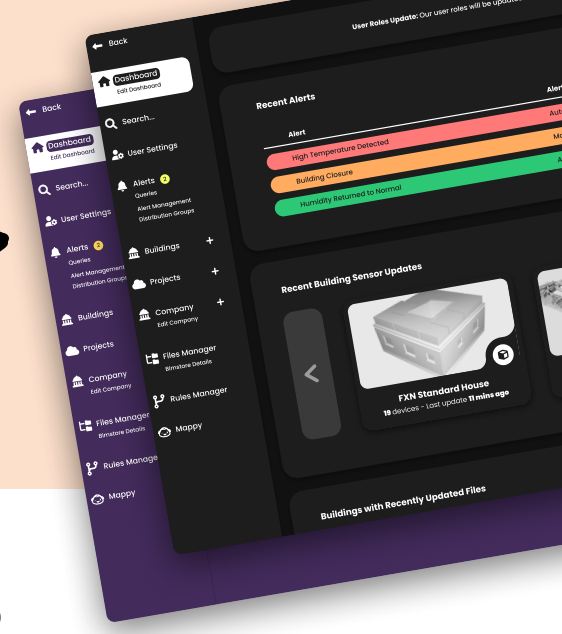
UI before design process

INDUSTRY

Design Review

I reviewed the current platform to evaluate what works and what doesn't – assumptions from my professional point of view.

The platform is now white-labelable



WHAT WORKS

Hypothesis 1
- ✓ Alert system is intuitive and streamlined for user friendliness

Hypothesis 2
- ✓ Graphs and data in sensor analytics section are easily navigable

Hypothesis 3
- ✓ Sensor statuses and buildings are well labelled and easily differentiated

Hypothesis 4
- ✓ Query creation for parsing data is user friendly with block snapping editor

Hypothesis 5
- ✓ Well built backend infrastructure makes user experience reliable and consistent

WHAT COULD BE IMPROVED

Hypothesis 6
- ? Menu shouldn't hide as users scroll because the menu needs to be readily available

Hypothesis 7
- ? Many of the most important pages are confusing to find through the menu

Hypothesis 8
- ? Colour contrast ratios could be challenging for most users to read

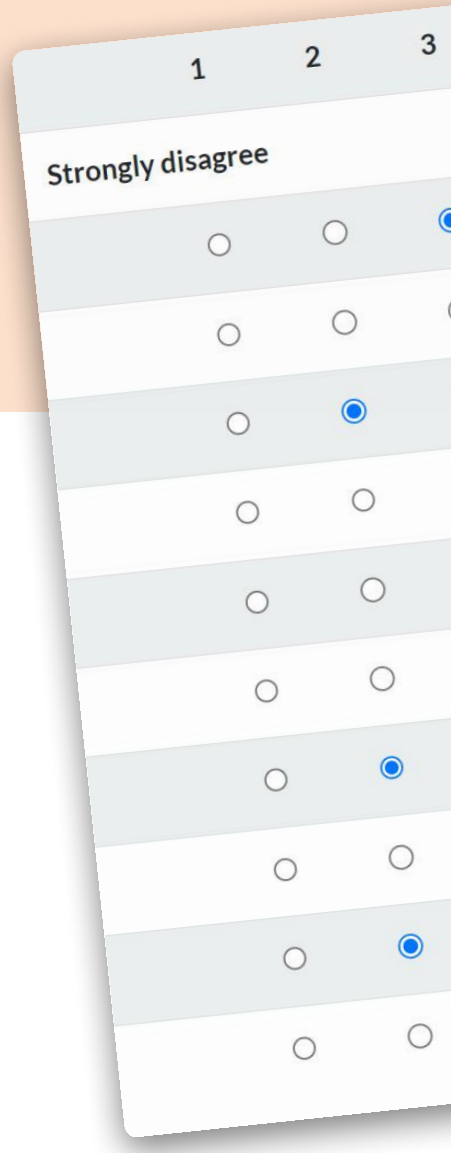
Hypothesis 9
- ? Animations and interface detail are overly stylised and game-like

Hypothesis 10
- ? 3D view for buildings is hard to navigate and impossible for screen reader users

INDUSTRY

User Research

I wanted to understand the average user's profile based on the current customer base, and prove my & business' hypotheses.



AVERAGE USER PROFILE

— Building Manager

— 30–45 years old | male

— UK-based

— Has a non-technical background

— Want to automate their work

USER INTERVIEWS

Having talked to our clients about their userbase we established their user profile. We then conducted internal user testing with people who fit this demographic.

We asked testers to conduct specific tasks within our platform to identify unknown pain points.

QUANTITATIVE DATA

I wanted to quantify the feedback from the internal testing. At the end of my user testing we asked participants to assess the existing design of the website by completing a questionnaire that uses System Usability Scale (SUS).

SUS SCORE

I've calculated the SUS score, with the product receiving a rating of:

30 out of **100**

INDUSTRY

User Research

I wanted to understand the average user's preference for interface style, and prove my & business' hypotheses.

SURVEYS

I ran a survey among 30 representatives of the target audience using **Microsoft Forms** with 5 interface styles asking them to order them from best to worst for different categories:

- *86% — Said styles 3, 4 or 5 had the clearest buttons*
- *96% — Said styles 3, 4 or 5 were most readable*
- *74% — Said styles 4 or 5 was most visually pleasing*

Hypothesis 9

Animations and interface detail are overly stylised and game-like

Pass

REPORTING FINDINGS

I prepared a summary for the management with my recommendations for them to prioritise design simplicity.

This lead to a product UI retheme with an emphasis on usability and interface clarity.

Styles 1-5, top to bottom

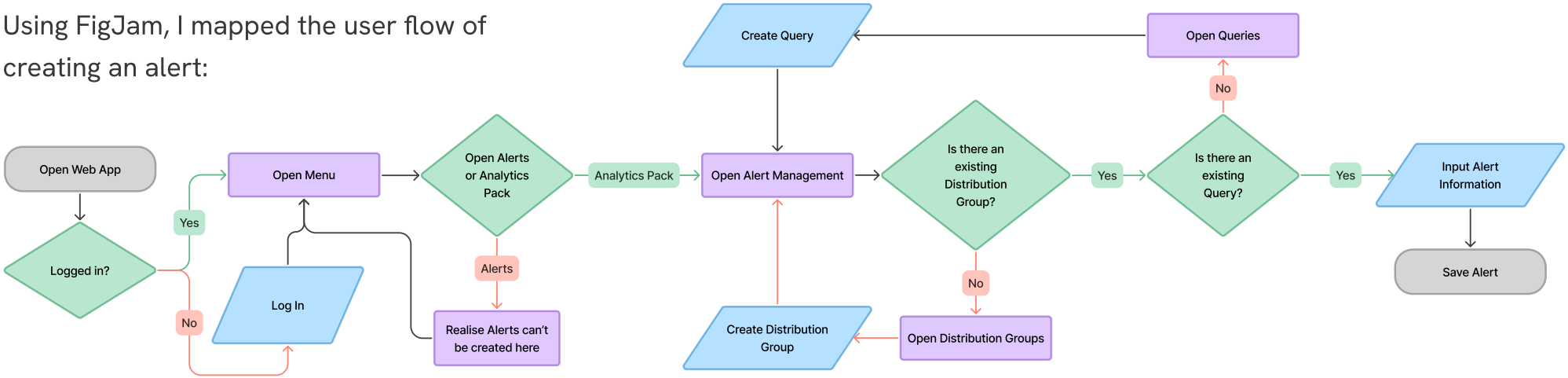
INDUSTRY

User Journey

I aimed to understand how many steps it takes for users to create an alert and if it could be optimised.

CURRENT ALERT CREATION JOURNEY

Using FigJam, I mapped the user flow of creating an alert:



Hypothesis 1

Alert system is intuitive and streamlined for user friendliness

Fail

UNHAPPY PATHS

It's important to acknowledge the user frustration of having to leave a page and loose progress. Users without an existing query or distribution group have to leave halfway through creating an alert and start over.

INDUSTRY

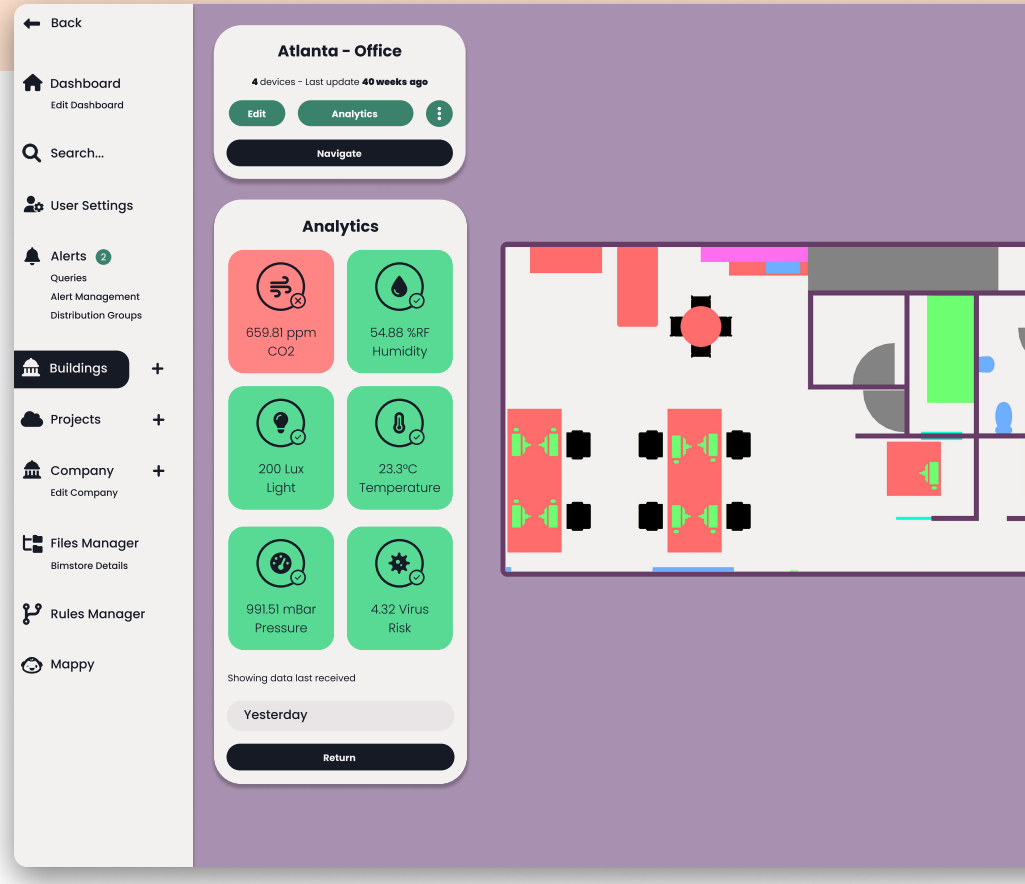
Information Architecture

I ensured the website's content is usable, making it easy to navigate through for general and screen reader users.

VOICE ASSISTANT

Upon confirming the 3D view couldn't be navigated with a screen reader, I designed and implemented a 2D view, high contrast mode and voice assistant for this viewer, basing these closely off game design and conventional document navigation systems (e.g. PDF). We found massive uptake with:

- *62% of users who visited the page using the voice assistant at least 5 times.*
- *85% of users trying both the high contrast and 2D view modes.*



Hypothesis 10

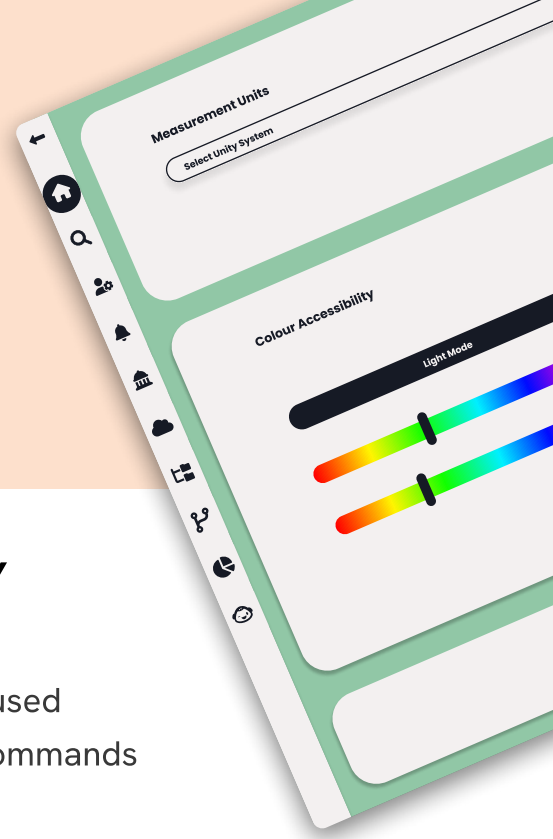
3D view for buildings is hard to navigate and impossible for screen reader users

Pass

INDUSTRY

Accessibility Checks

Validating our design is widely accessible, enabling it to work for everyone's needs is critical to my work.



WCAG VALIDATION

I improved the platform to be widely compliant with [Web Content Accessibility Guidelines](#).

- ✗ → ✓ Platform is now reactive up to 250% scale
- ✗ → ✓ AAA Colour contrast ratios now achievable through both white-labelling & user settings
- ✗ → ✓ Floorplans now accessible using voice assistant
- ✗ → ✓ Fixed flashing backgrounds during theme loading to prevent triggering photosensitive epilepsy
- ✗ → ✓ Retrofitted aria-labelling to make platform screen reader & keyboard-only navigable

IMPROVING INCLUSIVITY

Within the voice assistant we continuously track commonly used words to help us design new commands which fit users' expectations.

PERFORMANCE

While initially analysing the web app with commonly used tools which aim to automatically find accessibility issues, many glaring WCAG issues were missed. Automated accessibility tools often miss 50% of issues!

Hypothesis 0

The product is failing to meet client's customer's accessibility and usability needs.

✓ Pass

Hypothesis 8

Colour contrast ratios could be challenging for most users to read

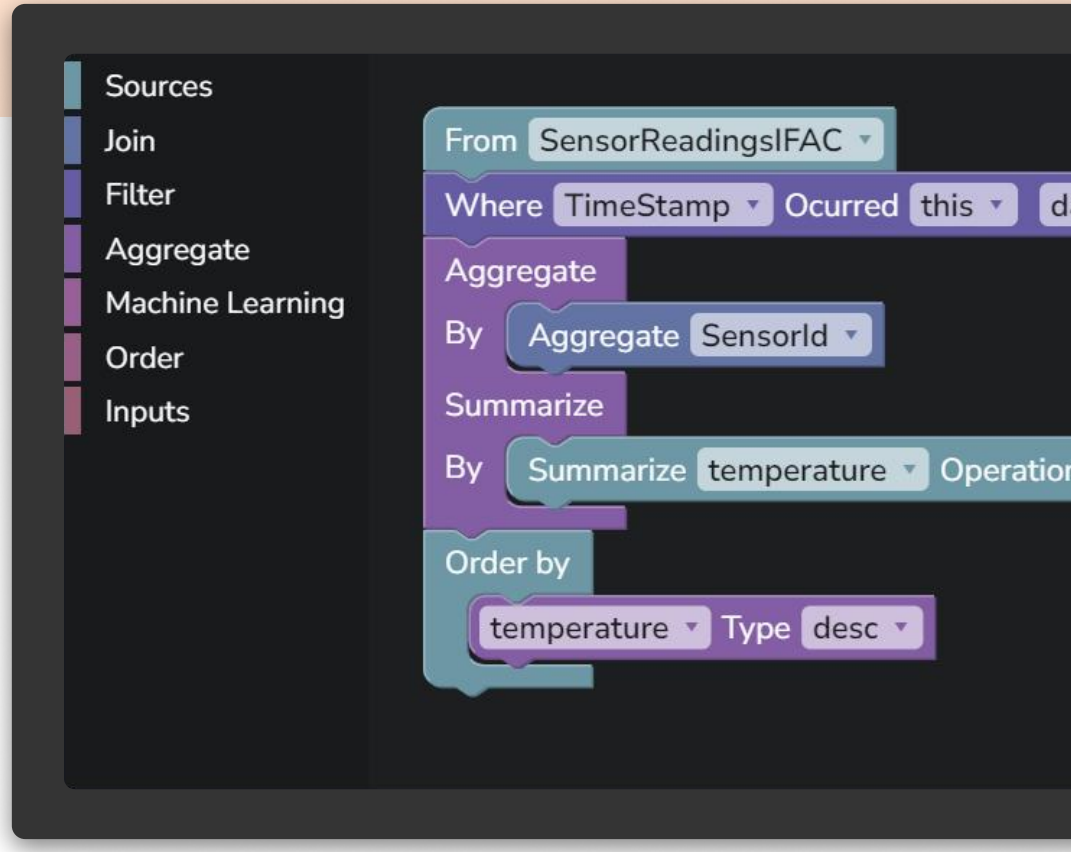
✓ Pass

INDUSTRY

Usability Testing

I validated that the main user flows were intuitive and not degraded by common user errors.

Current query creation system



SCENARIO TESTING

I set up remote usability testing internally with 12 people from our target audience, completing 4 main workflows through our platform. These were compared to expected results in order to identify areas which needed improvement.

- *4 out of 12 testers successfully created a query.*
- *11 out of 12 testers successfully generated a sensor report.*

This testing highlighted that while most flows passed usability testing, query creation was complex and confusing for non-technical users.

Hypothesis 4

Query creation for parsing data is user friendly with block snapping editor

Fail

Hypothesis 2

Graphs and data in sensor analytics section are easily navigable

Pass

INDUSTRY

Usability Testing

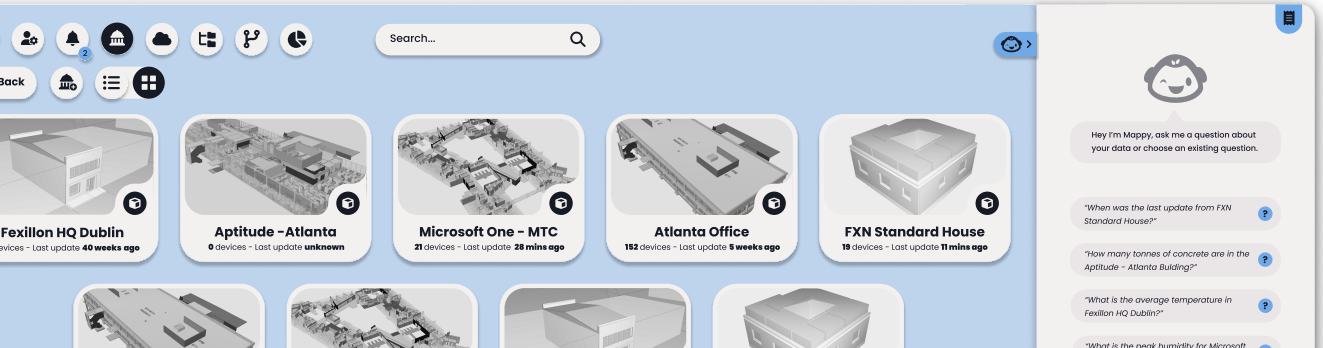
I needed to find a solution to the complex query creation as query and alert creation are core features.

PAIN POINT RESOLUTION

Highlighting this user pain point to Backend Engineers, we found time in an internal company hack to design and implement an AI assistant which could create queries for the user through natural language following the success of the voice assistant.

All testers successfully created queries using our AI assistant.

We are now constantly expanding the functionality of this assistant. I also found that this assistant's mobile friendliness was an unforeseen user benefit.



Our A.I assistant, Mappy

INDUSTRY

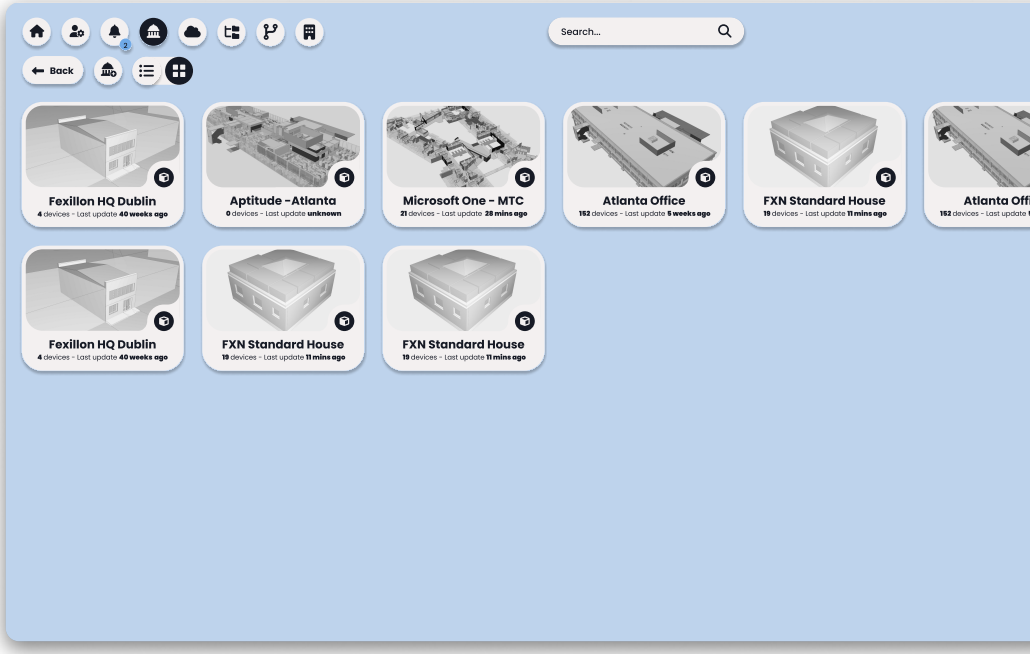
A/B Testing

My aim was to pick the best performing design variation based on facts rather than gut feeling.

MENU TYPE TESTING

Our main client preferred a top menu because they were embedding our platform inside of their own with a side menu, but this menu was cumbersome for screen reader users and hid when scrolling.

We designed them a new top menu which scrolled with the page, alongside a side menu for general customers. We then A/B tested both with users for 4 weeks to get feedback.



68% of users preferred the side menu leading us to set this as the default for all users, offering the top menu in user settings.

Hypothesis 6

Menu shouldn't hide as users scroll because the menu needs to be readily available

Pass

INDUSTRY

Business Sign-Off

I got approval from the business for each design change before the development team began implementation.

PROVING THE VALUE OF DESIGN

Every design I propose needs to demonstrate what value it brings to the business, backed up by user research and usability testing. To get business buy-in, I invite Product Owners, Developers and Board Members to observe user testing. This allows them to see feedback directly from end-users, validating our assumptions and design decisions.

ESTIMATING WORK

All of the implemented design improvements in this portfolio are based on user research which went through work estimation after business sign-off. Story-points were assigned based on work requirements, with design proposals presented during end-of-sprint demos to the team. Designs were validated with parts of the team throughout the sprint schedule.

Hypothesis 0 ✓	Hypothesis 1 ✗	Hypothesis 2 ✓
Hypothesis 3 ✓	Hypothesis 4 ✗	Hypothesis 5 ✓
Hypothesis 6 ✓	Hypothesis 7 ✓	Hypothesis 8 ✓
Hypothesis 9 ✓	Hypothesis 10 ✓	

82% of assumptions made in hypotheses were validated by user data or testing.

INDUSTRY

Design Handover & QA

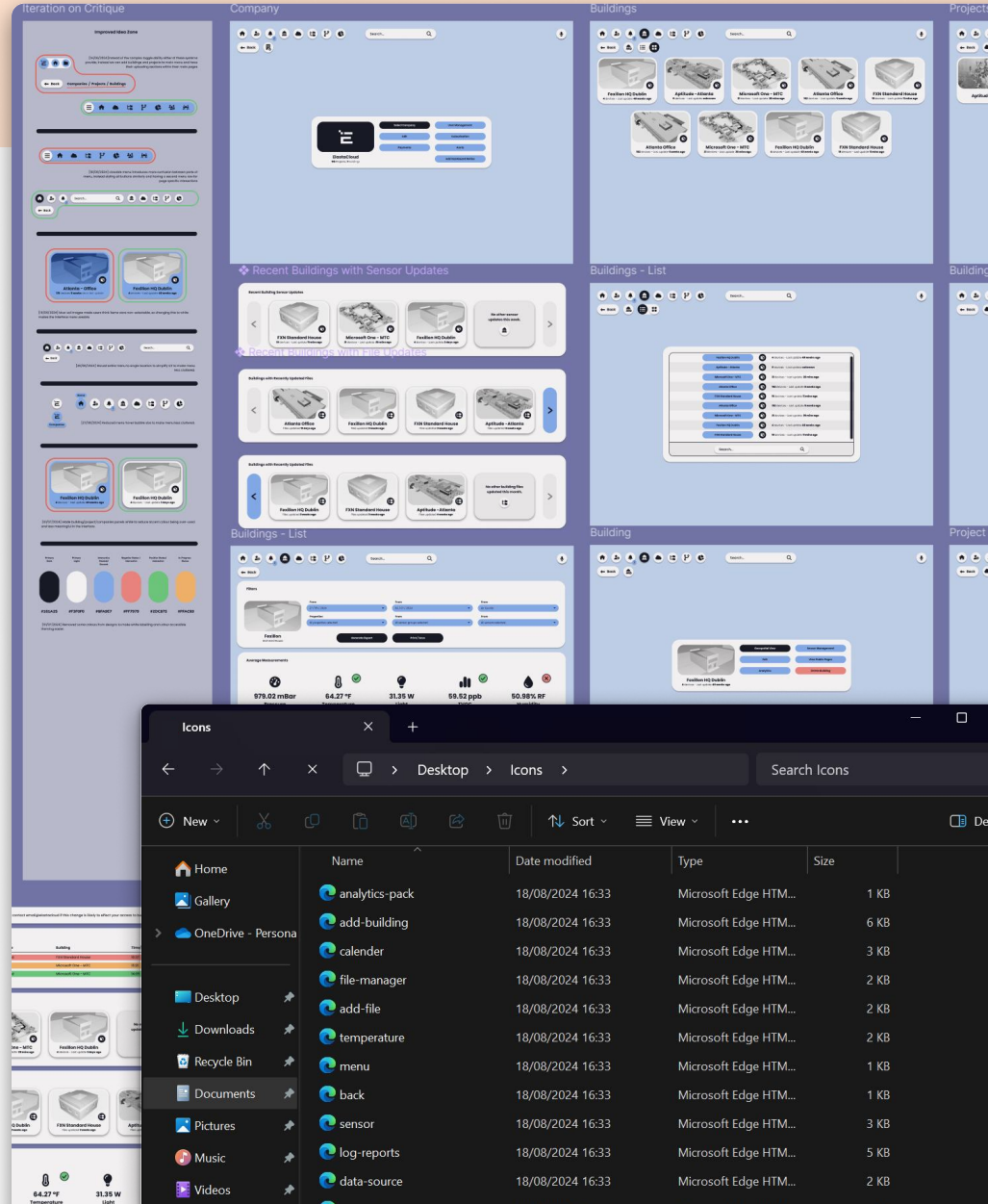
I made sure the design was implemented optimally through regular check-ins with developers.

WORKING TOGETHER

I worked closely with our UI development Lead while executing major UI changes. I prepared handover of design materials and assets for our developers depending on the project, often including: user journeys, sitemaps, content (copy, documents and images in all necessary resolutions and formats), font files, icons, wireframes, style guide updates and fully-interactive prototypes. Throughout the design process I include developers input to ensure code feasibility and smooth handover.

DESIGN QA

I set up weekly company-wide design guild meetings so UX Designers working on different projects could analyse and critique each others designs. These meetings often uncover unnoticed potential improvements, pain points and form part of our growing quality assurance measures.



INDUSTRY

Analytics

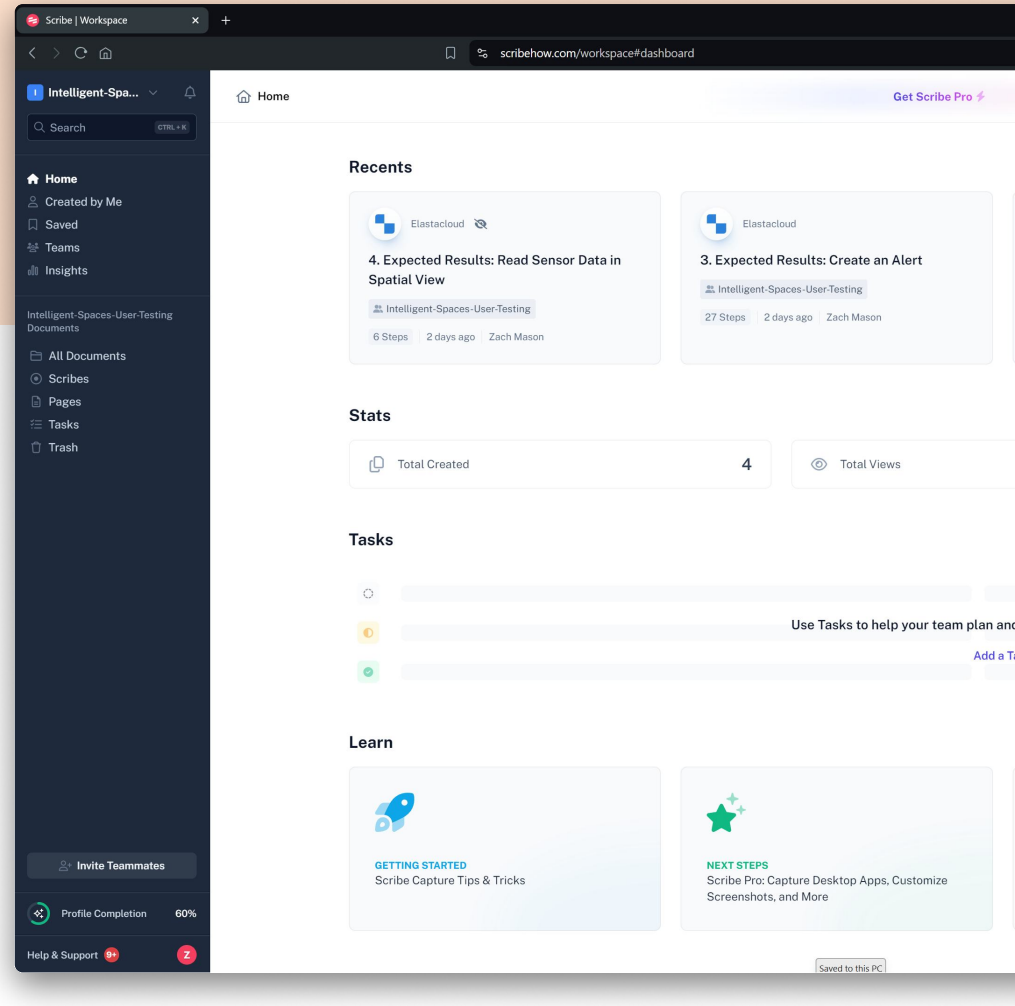
I measured and improved usability by tracking user movement between different pages.

SETTING UP TRACKING

I set up tracking within our platform to uncover what pages visitors are most often visiting accidentally. I found that in 46% of visits to our ‘Alerts’ section, users would immediately go to the ‘Analytics Pack’. Through further user testing we found that by moving the Analytics Pack functionality inside of the Alerts section, user expectations were better met.

SESSION REPLAY

This tracking was implemented after following user journeys in **Scribe** – getting insights that helped pinpoint issues which could be tracked automatically.



Through tracking I found that 46% of visitors to Alerts were immediately leaving, indicating user error.

Hypothesis 7

Many of the most important pages are confusing to find through the menu

Pass

Elastacloud Testimonials

Zach quickly got stuck in, taking initiative despite never having worked in a similar company before. He is a great asset with his knowledge of UX design, accessibility and strong interpersonal skills. Zach's fresh ideas allowed our team to substantially streamline our product's usability and design processes. Zach is highly versatile and would excel in any team.

Lola Williams, DevOps Engineer

Zach is dedicated and devotion to his work. He is 200% committed, excelling in our collaborative team. He is a person with well-established knowledge and solid ideas, alongside flexibility and open-mindedness to people's voices. Zach is adaptable and researches before making decisions. A professional in every sense of the word.

Juan Amodeo, UI Development Lead

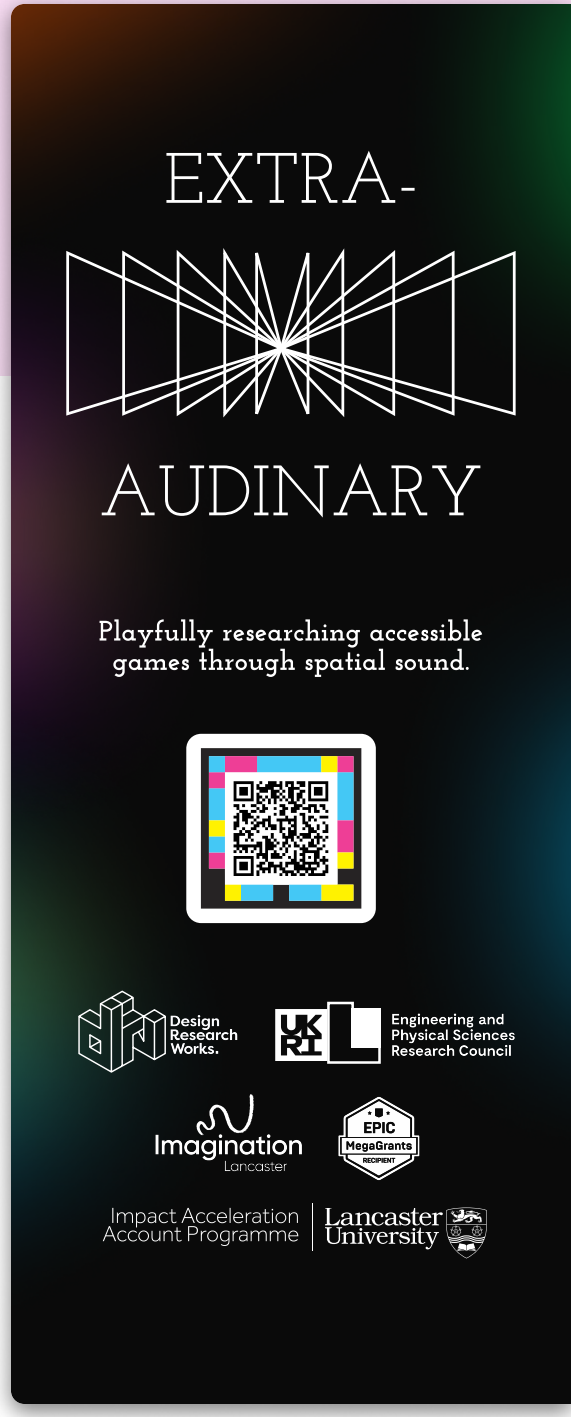
It has been a remarkable experience to collaborate with Zach. He is consistently attentive to details, articulates his ideas with enthusiasm and assertiveness and is receptive to criticism. Zach fosters teamwork, and his dedication to accessibility and the design process is completely infectious to everyone around him.

Veronica Gutiérrez, UX Designer

ACADEMIA

Audio-Only Game

My case study of working towards a PhD in UX Research around virtual space accessibility at Lancaster University.



BACKGROUND

My PhD with **Design Research Works** at Lancaster University started in 2020, researching accessibility for visually impaired users in virtual spaces. This led to buy-in from senior researchers and the university faculty as the audio-only game I was designing and developing gained several rounds of additional research funding. This came from sources including Epic Games' MegaGrants and Lancaster University's Impact Acceleration fund.

MY RESPONSIBILITIES

My role was to produce design research with real world impact. My responsibilities covered all areas of the game's early design, from writing funding bids, to coding interactions, and from presenting research findings internationally to synthesising insights from workshops with blind and visually impaired participants.

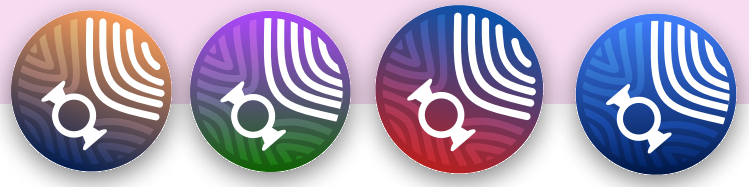
TEAM STRUCTURE

The team grew from only myself to 4 senior researchers and 2 external partner sight loss charities. My role began as the sole designer, evolving into managing the other researchers' contributions including running testing workshops, signing-off funding bids and forming research partnerships.

ACADEMIA

Outlining Requirements

I started by understanding how we could use each researcher's skills across the project.



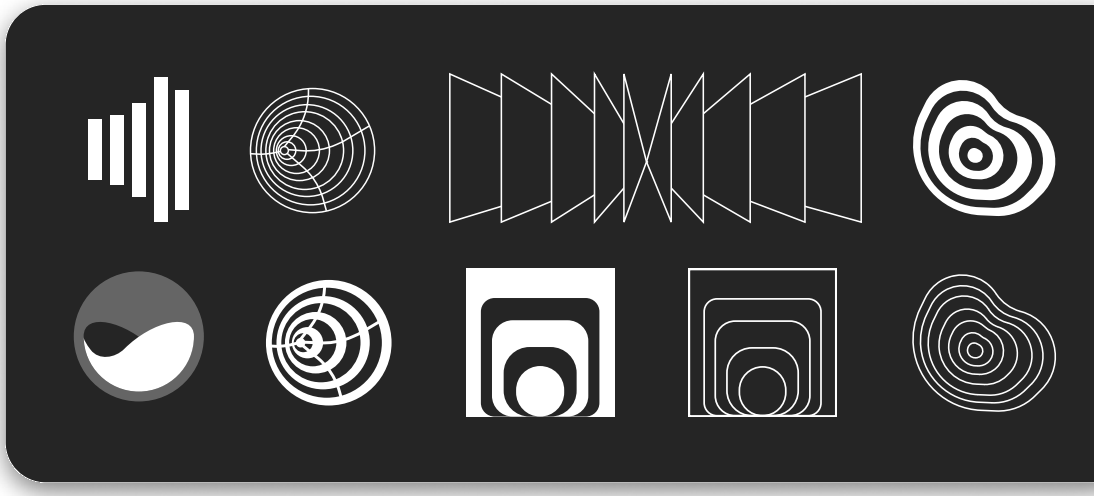
Icon and graphic ideation for the game

KICK-OFF MEETING

While the preliminary stages of this project were undertaken solely by me, once I gained funding to bring people on board, we instigated a kick-off meeting. Here we decided on charities we would aim to partner with for playtesting and co-design workshops alongside general research aims.

RESEARCH GOAL

The research group's aim was to find new approaches to non-visual game design that champion gameplay. We wanted to create games like Tetris or Pac-Man with high replay-ability prioritised over narrative elements.



PROBLEM DEFINITION Hypothesis 0

Games designed for visually impaired people are so accessibility focused they usually limit gameplay fluidity

ACADEMIA

Design Review

I reviewed existing audio game solutions from the Vale to Papa Sangre to find what worked well and what could be improved in existing solutions.

Renowned audio games

WHAT WORKS

Hypothesis 1
- Game controls familiar to real life movement are preferred

Hypothesis 2
- Haptics shouldn't be included because keyboard and mouse aren't compatible

Hypothesis 3
- Diverse sound types (e.g. robots, nature, animals) are easily distinguishable

Hypothesis 4
- Aim assist could be used to improve the final pinpointing of objects

Hypothesis 5
- Novel subversive mechanics make general navigation in games more enjoyable

WHAT COULD BE IMPROVED

Hypothesis 6
- It can be challenging for the user to keep track of their orientation non-visually

Hypothesis 7
- Controllers could have more features for blind and visually impaired users

Hypothesis 8
- Conveying controls is challenging without a visual interface

Hypothesis 9
- Audio design shouldn't focus on realism over providing maximum information to users

Hypothesis 10
- Narrative-centric games would get boring if they were the only option for you

ACADEMIA

User Research

I wanted to understand the average user's profile, so we reached out to sight loss charities to find blind people interested in games.

AVERAGE USER PROFILE

— Blind or Visually Impaired
— 16–30 years old | male
— UK-based
— Has some game experience
— May want to play games with sighted friends

USER INTERVIEWS

While talking to testers in several informal interviews, we realised the desire for gameplay centric audio games existed. We asked testers about what kind of games they wanted to play most, with ideas including shooting, racing, heist and puzzle games - all focused on movement and gameplay.

QUANTITATIVE DATA

I wanted to validate the desire for gameplay centric audio games through quantitative data. After running gameplay tests we asked 20 participants whether they would buy the game when it was finished if it cost £15 or less. However...

16 out of **20**

Gameplay testers said they would pay £15 or less for the game even in its unfinished state.

ACADEMIA

User Research

I wanted to understand the average user's preference for types of audio spatial experience.

WORKSHOP RESEARCH

We gave user testers a short binaural audio experience demo, alongside several playtesting segments of an early audio navigation system we developed. During this, we recorded their thoughts and feelings qualitatively through transcripts and workshop sketch-notes. We got lots of feedback about our game, as well as other use cases for our audio system and validation that narrative was not a core concern to our userbase:

> *'As you get through the levels it's getting more and more difficult, so you've got a challenge to work through, rather than making a narrative roleplaying kind of game which once you've done it you've done it. You can always get to the next level faster so that's why I prefer this kind of game.'*

Hypothesis 10

Narrative-centric games would get boring if they were the only option for you

Pass

Workshop sketch-notes

ACADEMIA

User Journey

I wanted to find particular parts of games which cause friction for blind and visually impaired users, so I created user flows.

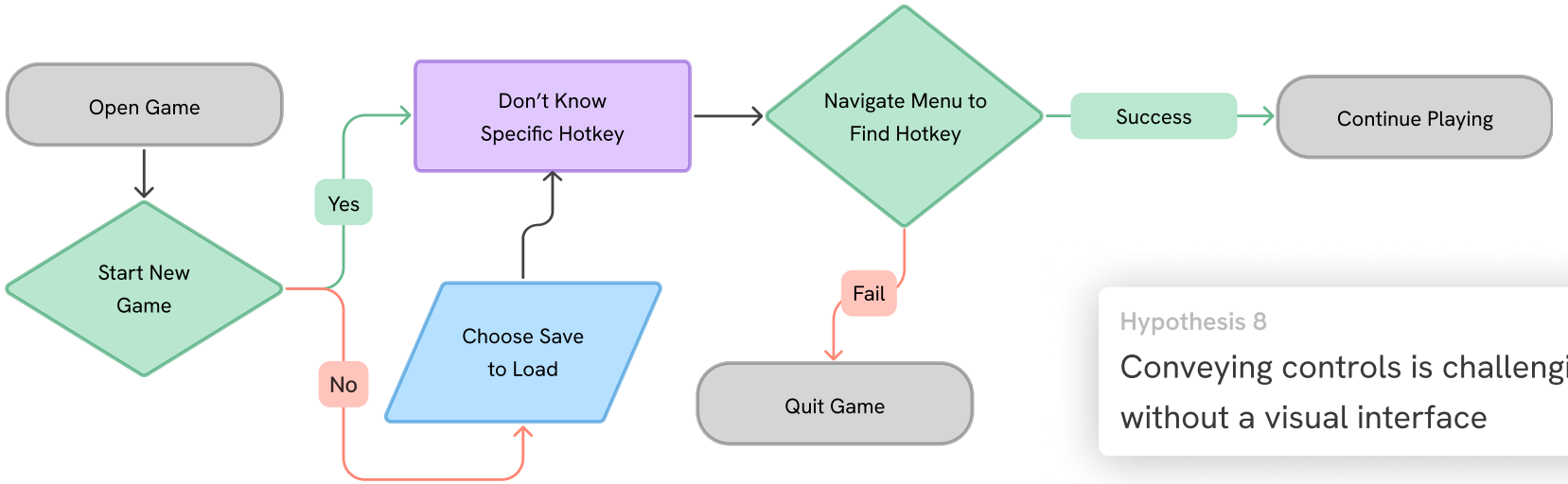
GAME CONTROLS USER FLOW

I mapped the processes of many standard user experiences within games to find areas which aren't accessible for visually impaired people. Looking up controls was the most pressing issue as existing solutions rely heavily on visual information.

ACCESSIBLE SOLUTIONS

Solving the issue, we realised we could allow blind users to toggle into a control lookup mode while playing where button presses tell the user their purpose audibly. This avoided the need for visual queues and menu navigation entirely.

95% of testers felt this solution completely solved the issue.



Hypothesis 8

Conveying controls is challenging without a visual interface

Pass

ACADEMIA

Information Architecture

I experimented with methods to provide the same information architecture to blind users as sighted players.

Tactile mini-map controller prototype

TACTILE CONTROLLER

Having noticed haptics were critical to maximising sensory bandwidth for blind gamers, I began experimenting with how we could maximise its availability in virtual spaces.

Motorised haptic displays had been widely successful in speeding up navigation for visually impaired people. Additionally, far-field information normally displayed through in-game mini-maps was hard to convey audibly. Therefore adding haptic displays to game controllers to facilitate mini-maps was an ideal design solution.

Hypothesis 2

Haptics shouldn't be included because keyboard and mouse aren't compatible

Fail

Hypothesis 7

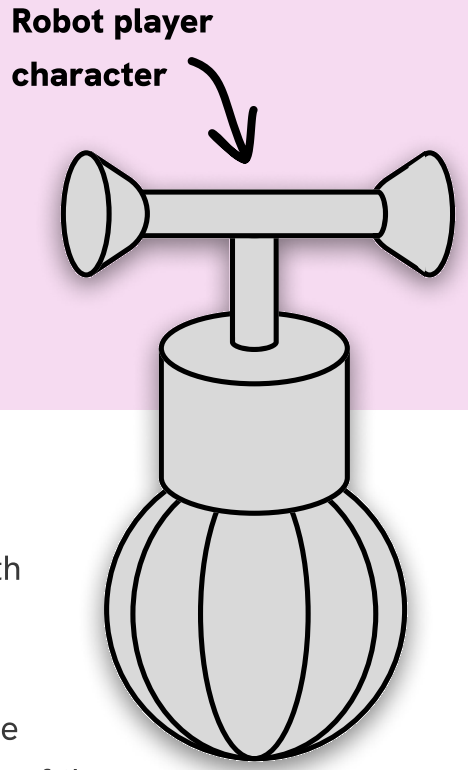
Controllers could have more features for blind and visually impaired users

Pass

ACADEMIA

Accessibility Checks

I made sure our game had a focus on fun rather than purely providing improved accessibility to game space.



LEVELLING THE PLAYING FIELD

I really wanted to level the playing field with this game, and believed the hypothesis that novel subversive mechanics could provide that.

We had issues with players struggling to avoid enemies, distance being hard to perceive, goals being hard to pinpoint, achievements cluttering the sound space and sounds being too similar.

We solved all of these issues by recontextualising the games' loose narrative, positioning the player as a robot navigating a natural world. This allowed organic and synthetic sounds to be differentiated clearly.

Hypothesis 4

Aim assist could be used to improve the final pinpointing of objects

Pass

SONAR STUNNER

This theme also perfectly fit with having a sonar stunner device. This allowed the player to fire particles, judging distance to the nearest wall based on the delay of the impact sound. It also allowed players to stun enemies to creep past them, find otherwise hidden collectables freeing up sound space, and pinpoint end of level goals from a distance.

5 out of 20 testers independently expressed strong desire to have a similar device for their every day lives.

Hypothesis 5

Novel subversive mechanics make general navigation in games more enjoyable

Pass

ACADEMIA

Usability Testing

I aimed to validate our focus on gameplay over narrative elements with our target audience.

Lego maps to quantify player understanding of game levels

GAMEPLAY TESTING

Keeping our initial prototype ambiguous enabled gameplay or narrative focus to be defined further after user testing. While most testers wanted increased gameplay focus, interest in narrative and other non-game applications were expressed:

- *'If there were audio maps you could access before going places to figure out how to get from place to place you could use it in so many different settings.'*
- *15 of 20 testers favoured clearer soundscapes over realism when discussing preferences for game feel.*

We introduced reduced volume when objects were behind players, and a less linear noise falloff improved spatial awareness at the cost of acoustic realism.

Hypothesis 9

Audio design shouldn't focus on realism over providing maximum information to users

Fail

Hypothesis 3

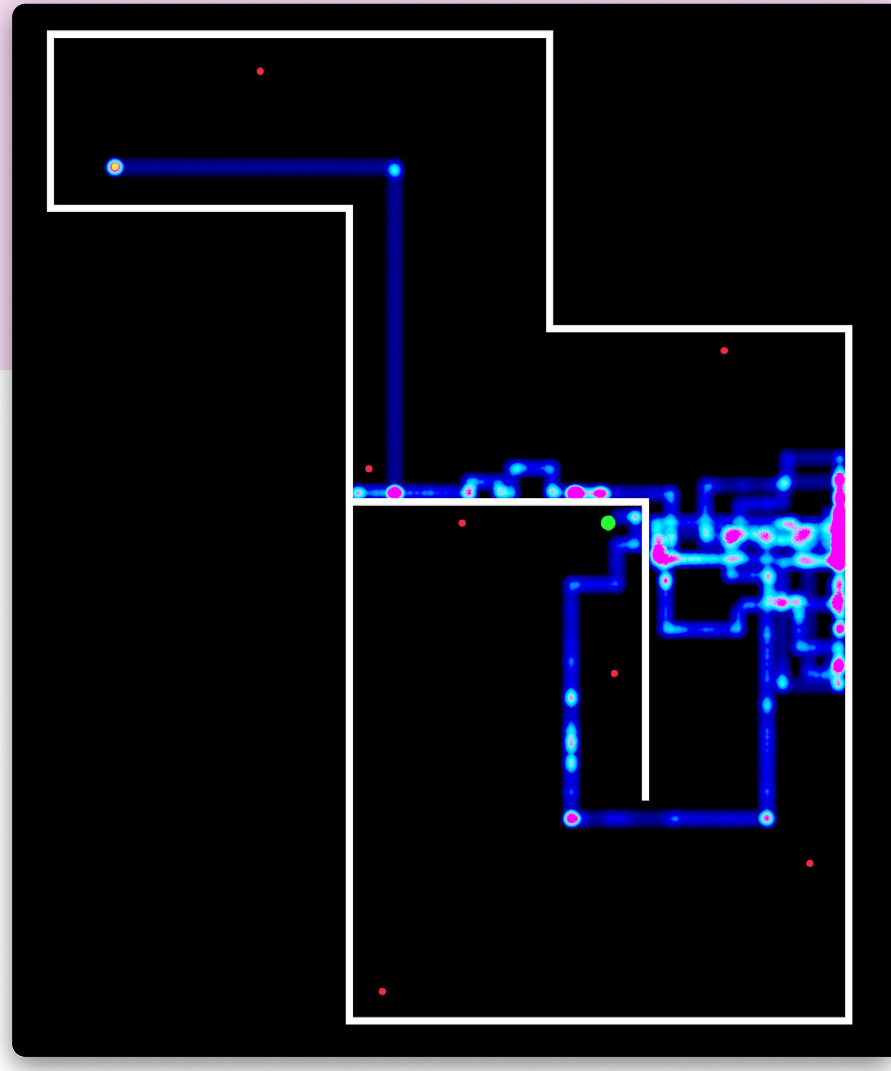
Diverse sound types (e.g. robots, nature, animals) are easily distinguishable

Pass

ACADEMIA

Usability Testing

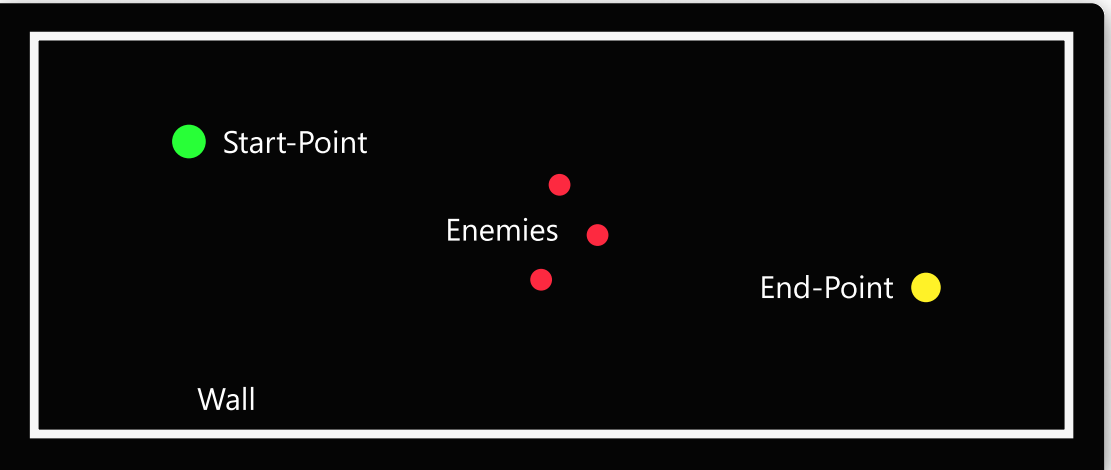
We quantified users' struggles and suggestions by comparing transcripts statements to their gameplay heatmaps.



PAIN POINT RESOLUTION

Testers expressed issues with the movement control schemes and difficulties getting stuck between two walls. We quantified these expressed issues using heatmaps of their gameplay movements to look for patterns between different players.

Based on this feedback we were able to add functionality to bounce players away from walls when they got stuck, as well as A/B testing 2 distinct control schemes to improve player experience.



Hypothesis 6

It can be challenging for the user to keep track of their orientation non-visually

Pass

ACADEMIA

A/B Testing

I tested the applicability of control schemes from visual games in non-visual contexts.

CONTROL SCHEME TESTING

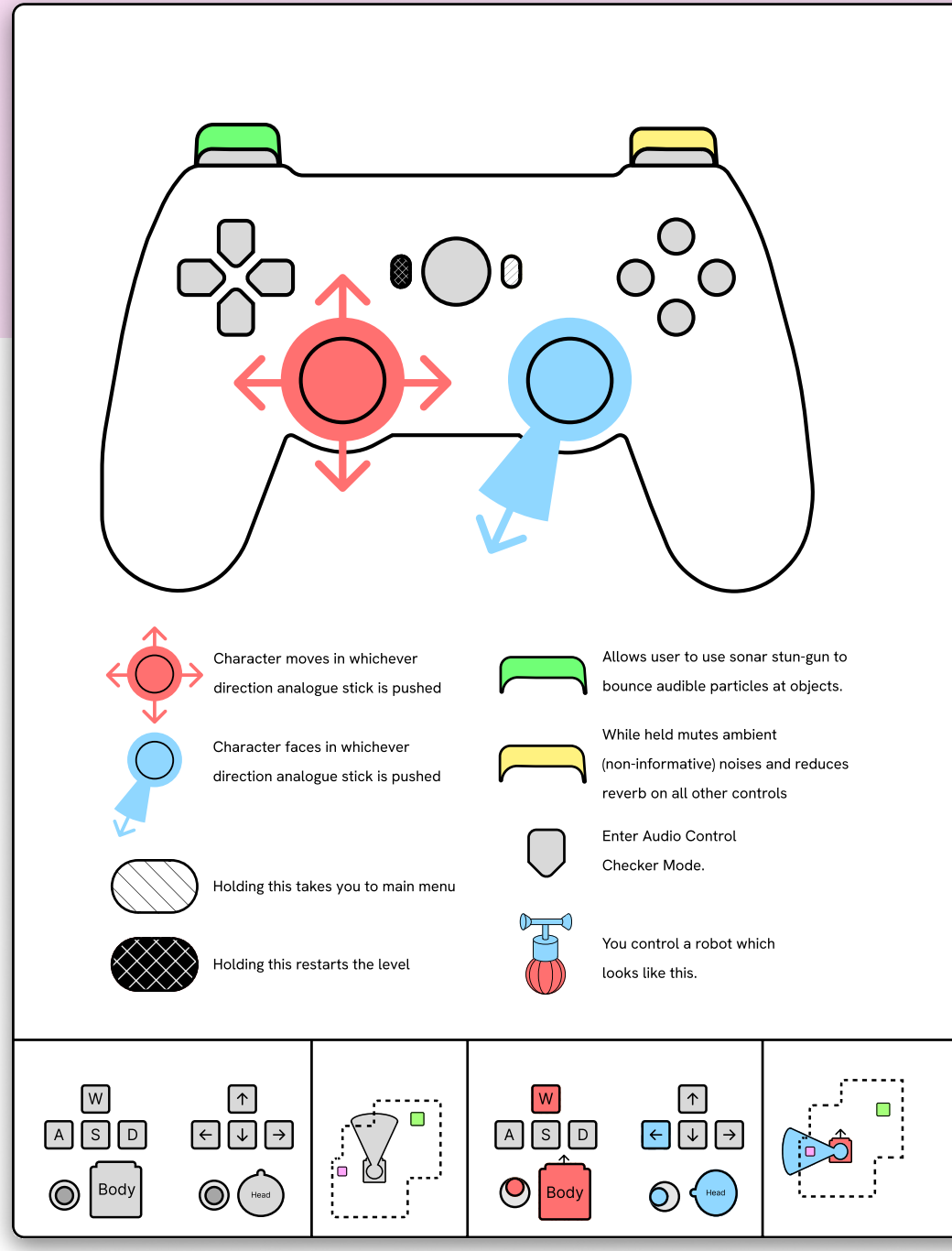
User testing identified a need for control scheme refinement. We implemented switchable movement styles akin to first person and top down games. Using A/B testing we found that top down controls were substantially easier without visuals due to their inputs translating to absolute movement (i.e. down on a joystick moves south rather than backwards).

- *0 of 20 players made it past level 4 of 15 with first person controls.*
- *20 of 20 players made it past level 4 of 15 with top down controls, and 5 made it past level 10.*

Hypothesis 1

Game controls familiar to real life movement are preferred

Fail



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Academic Sign-Off

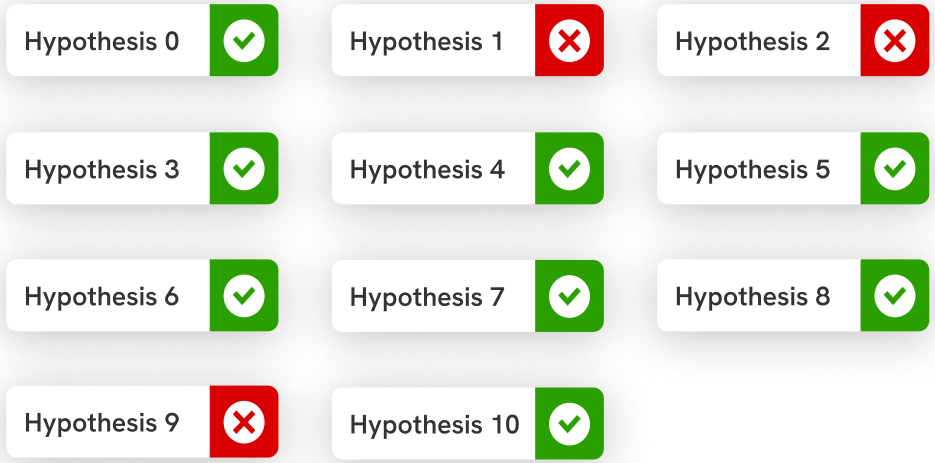
Academic sign-off often comes in the form of proving impact to gain more funding for further research.

PROVING THE VALUE OF DESIGN

Academic research's value is proven through awards and funding. This research gained sign-off to continue at several stages, being awarded the Vice Chancellor's Prize for Participatory Research, Visionary Inspire Award for trailblazing new ideas and initiatives and an Epic Games Mega Grant.

PUBLICATIONS

Research also gains validity through appearing in published papers scrutinised under peer review. My research was presented at CHI New Orleans, as well as through publication in Seeing with Sound: Creating Audio Only Games, Play at Work: Virtual Conferencing in Game Space and as part of the book Design and Covid-19



73% of assumptions made in hypotheses were validated by user data or testing

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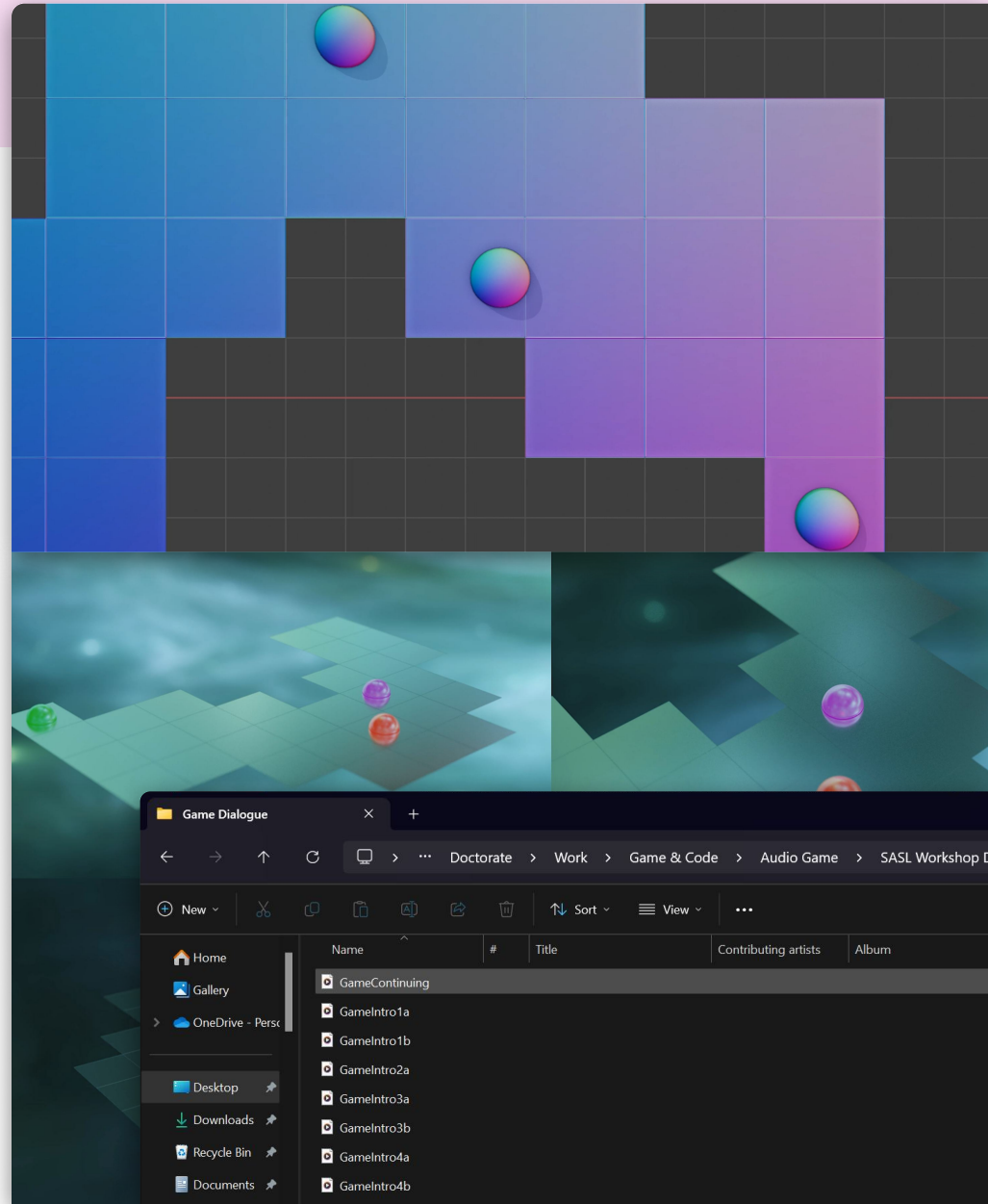
Design Handover & QA

Design handover took place in the late stages of this research in order to polish and publish the game.



ASSET HANDOVER

With a fully functional prototype and the research direction defined, we employed a game developer to rebuild the game to create a polished, publishable game with open source resources. We had weekly check-ins alongside impromptu meetings to steer this development. The developer received the full repository of the prototyped design in unreal engine, alongside audio assets and design guidelines to outline what was expected of them.

DESIGN QA

As this publishable version is being developed, we play-test constantly to ensure usability and adherence to the user testing feedback. This ensures we are building towards a game which meets the needs of the intended users. We aim to publish this game soon, so stay tuned!

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Analytics

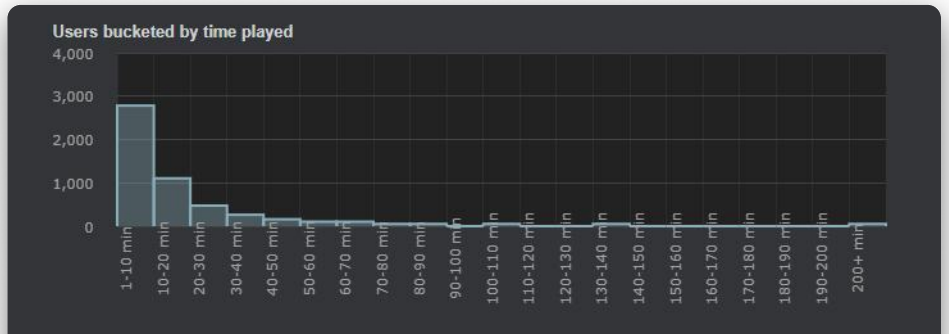
The published game isn't the end of the research journey, but a step in the Co-Design process.

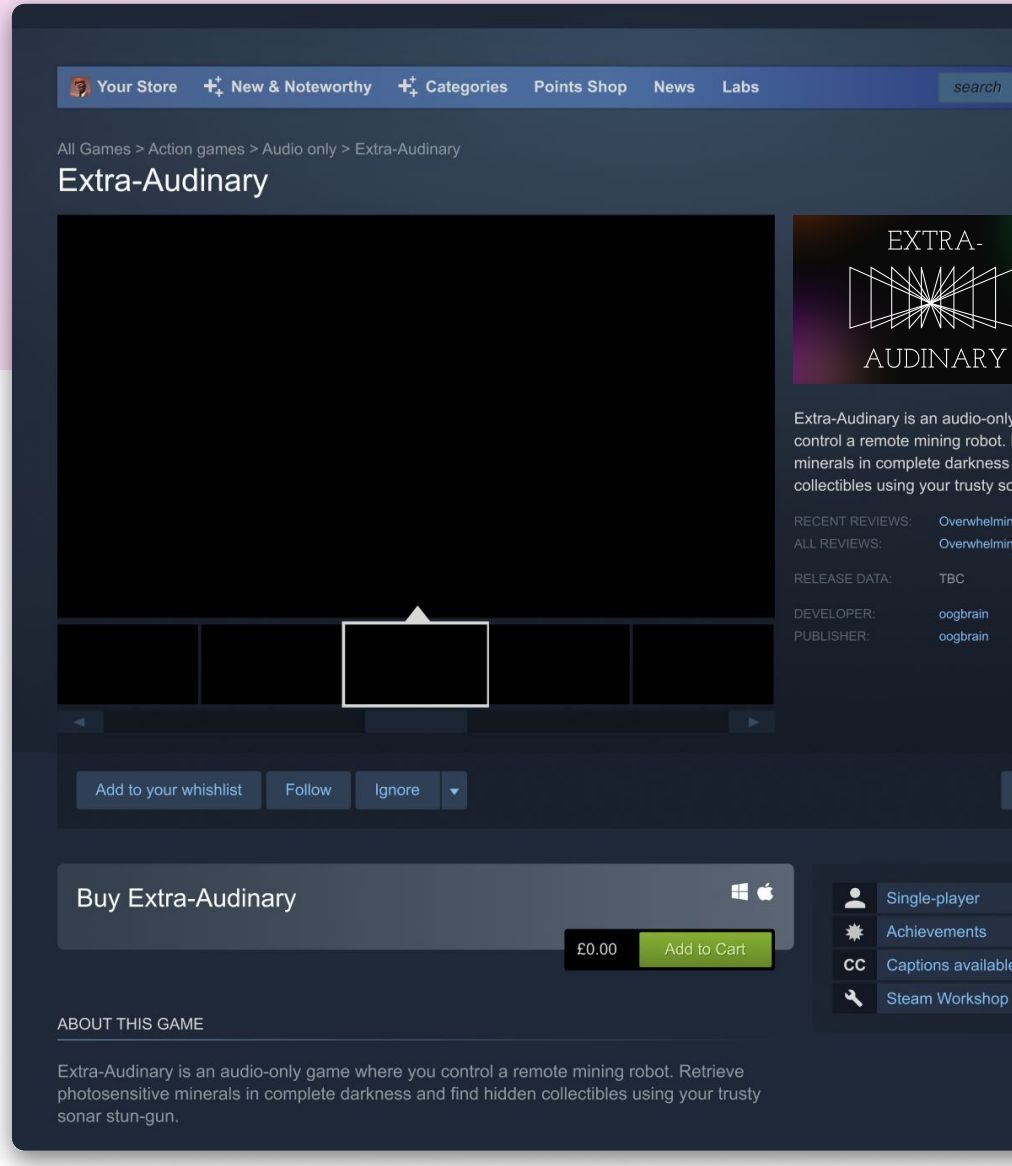
CO-DESIGN PROCESS

Using Co-Design, we continuously went back to our visually impaired testers to get feedback on changes we'd made. As this game's design was about making a framework for future audio games, it aims to be a source of constant analytics data for other games to draw from.

STEAM ANALYTICS

I intend to analyse ongoing user metrics once the game is published, tracking metrics including player count, achievements gained, median playtime and user reviews.





Hypothesis 0

Games designed for visually impaired people usually limit gameplay fluidity

Pass

Hire me.

Zach Mason
UX Designer

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