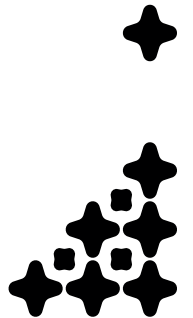# Final Major Project

Cameron Williamson

BSc Creative Computing, 2023
University for the Creative Arts, Canterbury
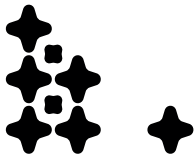
Part 1:
Bring Your Own Brief

Project Aims:

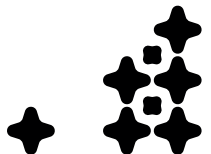To produce a "clear indicator as to the kind of vehicle (project) needed to complete"

Week 1: Introduction

Our introduction to Stage One of the Final Major Project (FMP) marks the beginning of the end of my time studying Creative Computing BSc at the University for the Creative Arts, so I hope to make it my most extensive and thorough showcase of the skills I have learned during my time. During our first lesson we were introduced to the brief, and part one of the project which required us to write our own brief and create a timetable and plan to follow. This project is all about how we plan and structure our own large project, managing our time throughout and making use of the resources and skills developed through university. We were then told to prepare a presentation for our brief at the end of this part of the project explaining our choices and brief plan.
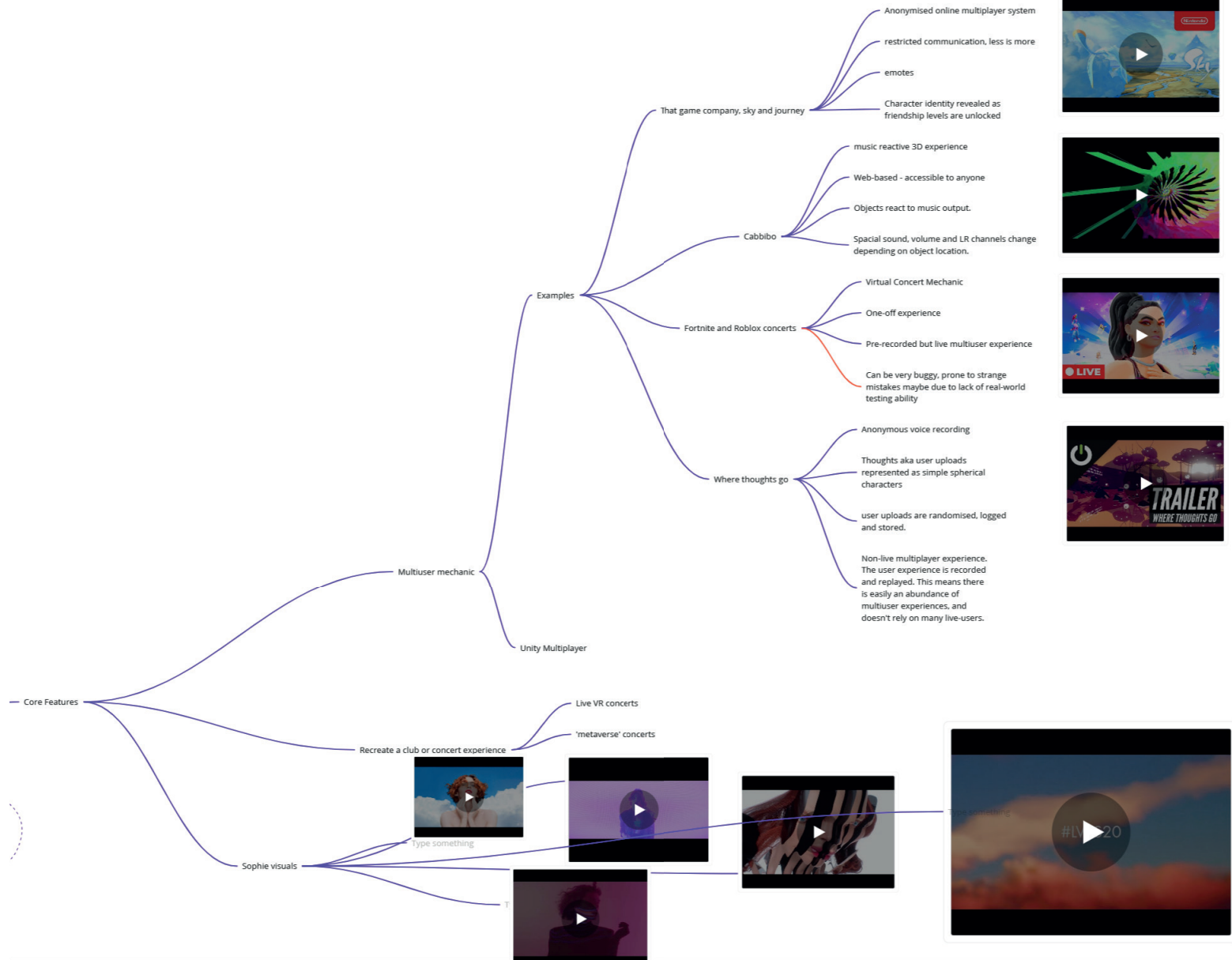
My initial idea closely follows and naturally progressed from the other two projects from the first term, CoLab and Pitching and Prototyping. Through CoLab I had found interest in the VR and XR industry, as well as a passion for the music I listen to and the community surrounding it, so I wanted to develop my skills to place me in a suitable position for employment after graduating, by learning design skills directly linked to XR. In Pitching and Prototyping, I had presented an idea for a project that I had been planning since the start of the previous summer, with the intention to bring it to my final major project. Going into this project, because of this, I already had an aspect of the planning and ideas and visual details of the design already thought out, albeit with some key aspects changed to suit the deadline and project parameters better.

The project I pitched was a VR music experience based around the producer Sophie Xeon, with a collaborative, fan based approach, complete with a set of social media posts. One key aspect of this project was the fact that it contained a multi-player mechanic to bring the fans together. The prototype didn't include this, but I did include a very basic example of a key-framed (animated) environment in Unity. I decided to use unity as I wanted a high level of immersion and accessibility. Unity is best for lower-power devices such as the Meta (Oculus) Quest 2 VR headset, allowing me to make a project that runs natively on the device. There was also thorough support from Meta for Unity with hand-tracking scripts and project optimisation for the headset which was ideal for streamlining the development process. Most of the research I had carried out in the process of developing a project like this was done in this project, and will be brought into this project and adapted to fit the requirements of my major project brief.
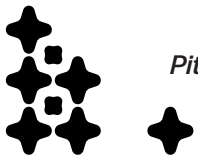
Examples

That game company, sky and journey
- Anonymised online multiplayer system
- restricted communication, less is more
- emotes
- Character identity revealed as friendship levels are unlocked

Cabbibo
- music reactive 3D experience
- Web-based - accessible to anyone
- Objects react to music output.
- Spacial sound, volume and LR channels change depending on object location.

Fortnite and Roblox concerts
- Virtual Concert Mechanic
- One-off experience
- Pre-recorded but live multiuser experience
- Can be very buggy, prone to strange mistakes maybe due to lack of real-world testing ability

Where thoughts go
- Anonymous voice recording
- Thoughts aka user uploads represented as simple spherical characters
- user uploads are randomised, logged and stored.
- Non-live multiplayer experience. The user experience is recorded and replayed. This means there is easily an abundance of multiuser experiences, and doesn't rely on many live-users.

Multiuser mechanic

Unity Multiplayer

Core Features

Recreate a club or concert experience
- Live VR concerts
- 'metaverse' concerts

Sophie visuals

Type something

T

Pitching and Prototyping research map
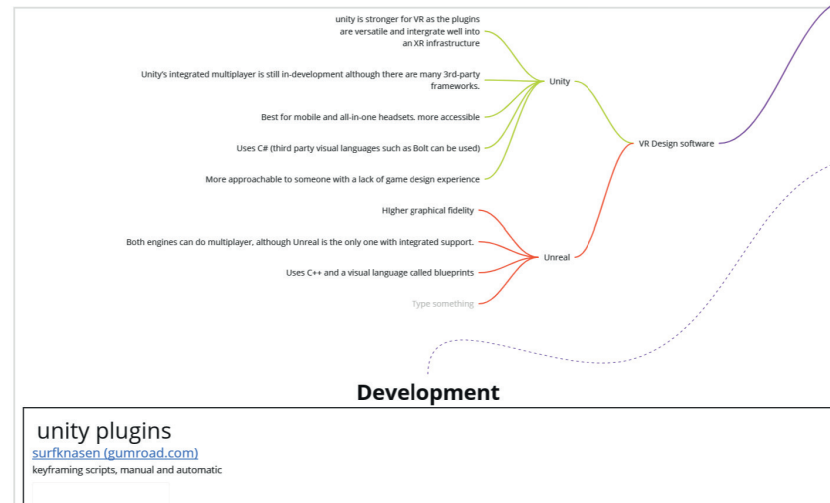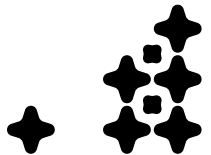
Pitching and Prototyping development research map
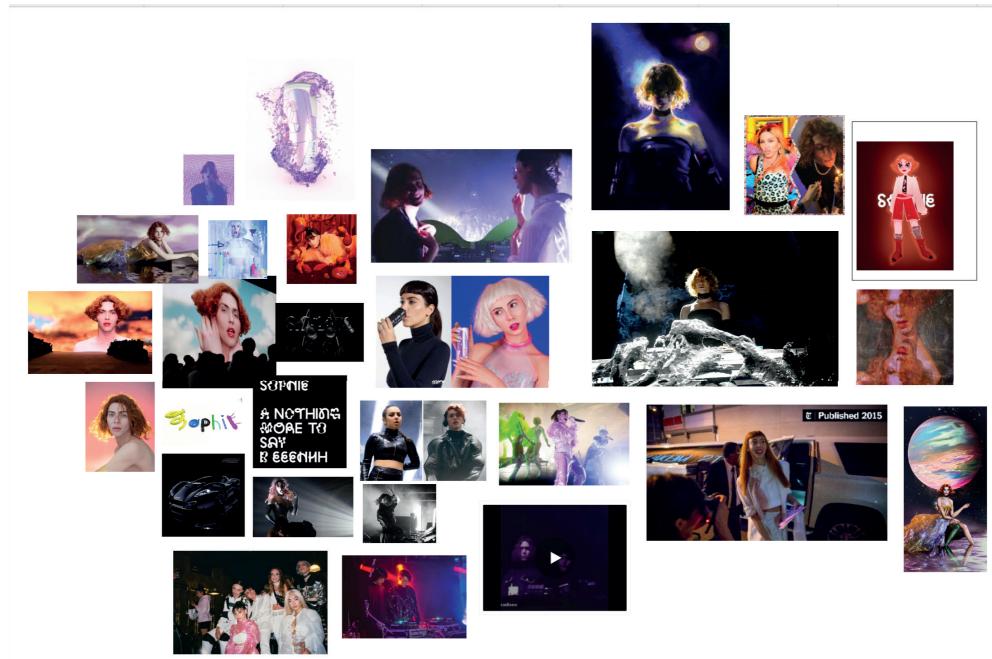
*Visual inspiration mood board*

Week 2: Orientation

This week's tutorial is about understanding my skills orientation, and what direction I want to take the FMP. I discussed what skills I want to practice and improve on and what ways I would like to challenge myself in this project. To do so I used the "Known Knowns" chart where I laid out the skills I know, skills I know I don't know, skills I don't know I know and the complete unknowns (the last one was a challenge to write out). Through this, I found unknown territory in XR development and design, 3D modelling and sound design in XR, as well as an awareness about my lack of C# knowledge and experience, and software publishing. Areas that I was familiar with, either through learning them in the course, or through other jobs included Unity 3D development, graphic design practice, blender rendering and project communication. Areas I wasn't familiar with, but felt I would be reasonably comfortable practicing included mixing and mastering of music, and motion graphics/video editing. Despite having a rough plan in my head for my brief idea, this was very beneficial to understand whether or not the skills I want to learn fit this idea, and how I may have to adapt the idea to fit my learning objectives better,

Known Knowns chart

| Known Knowns	Known Unknowns
Unity 3D workspace Surface-level python skills Graphic design and UI/UX Blender rendering Project communication and social media sharing	C# Software publishing Unity recording and stitching 360 degree videos for YouTube Unity Shaders
Unknown Knowns	**Unknown Unknowns**
Video editing and motion graphics Music mixing and mastering	VR Development as a whole (aspects I am not yet aware of, significant to VR) Sound Design 3D Modeling and asset designing Unity intricate model animating

miro

Known Knowns chart
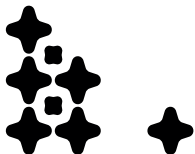
Week 3: Identify the Gap

Through my skills analysis and with the goal of working with XR, and with the information and research from the Pitching and Prototyping project, I decided that a community-based VR project would exercise and leverage my known skills in areas like Unity 3D and user interface design, as well as social media marketing skills and online project communication. It would also give me the chance to practice my C#, the language used in Unity, key-framing, a key part in 3D designing and unity, XR specific design, sound design and music mixing and 3D modelling. All of these skills felt beneficial for my target industry but also left me with a wide creative scope. The combination of skills required meant the proposed idea contained elements of familiarity, but in a new territory, resulting in an ambitious yet achievable project idea. As established from Pitching and Prototyping, community was a very important thing to cover for me so social media presence and a public facing development process was the way to go to achieve this.
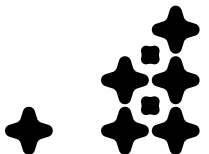
Week 4: Project Parameters

During this stage I was advised to begin laying the parameters for my brief. Combining my researched gap with my previous project plan, I went forward with adapting the parameters to meet the needs of this project, making sure to find differentiators from the 'Pitching and Prototyping' project plan, to a fully realised Final Major Project brief. My Pitching and Prototyping idea was a music experience in VR with a multi-player mechanic and user emotes. However, when considering the time constraints and available resources (there were no existing examples of the multi-player mechanic I wanted to use, comparative multi-player, for unity), I removed the multi-player mechanic and stripped the idea back to the key and most core components. These include a virtual reality experience, an accompanying music mix, immersive visuals that take inspiration from Sophie Xeon and community and fan-base engagement. My core goals of the experience being a high level of immersion (by factoring in processing efficiency and features such as hand-tracking, single scene loading), native processing on a VR headset such as a Meta Quest, and accessibility, by recording and sharing the experience publicly and on YouTube and my website.
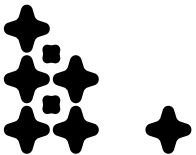
Skills testing: Prototype 1

To further test the skills required I decided to begin practicing them in the form of prototype experiences. The first test was to learn the process of making and experiencing unity files in VR, so I designed a simple plane and particle simulation environment in Unity. I opened Unity 3D in their VR template. This includes two cameras, controller models and scripts for VR use. There were several settings I had to choose between exporting for Meta Quest headsets or OpenXR. I chose OpenXR at first, as this is a file type supported by Meta, Pico and other VR headsets, and exported the file as an android APK. I had to sign in as a developer on my Quest headset, and then use a program called SideQuest to side-load the APK into the headset. The file ran, but opened as a 2D window inside the oculus home UI. So I went back to unity and re-exported the file dedicated for Meta Quest instead. This worked as planned, opening as a fully immersive 3D environment. There were no performance issues and I was surprised at how simple it was to export and run. The quest did seem to render textures differently to the unity environment however so this was something to take note.
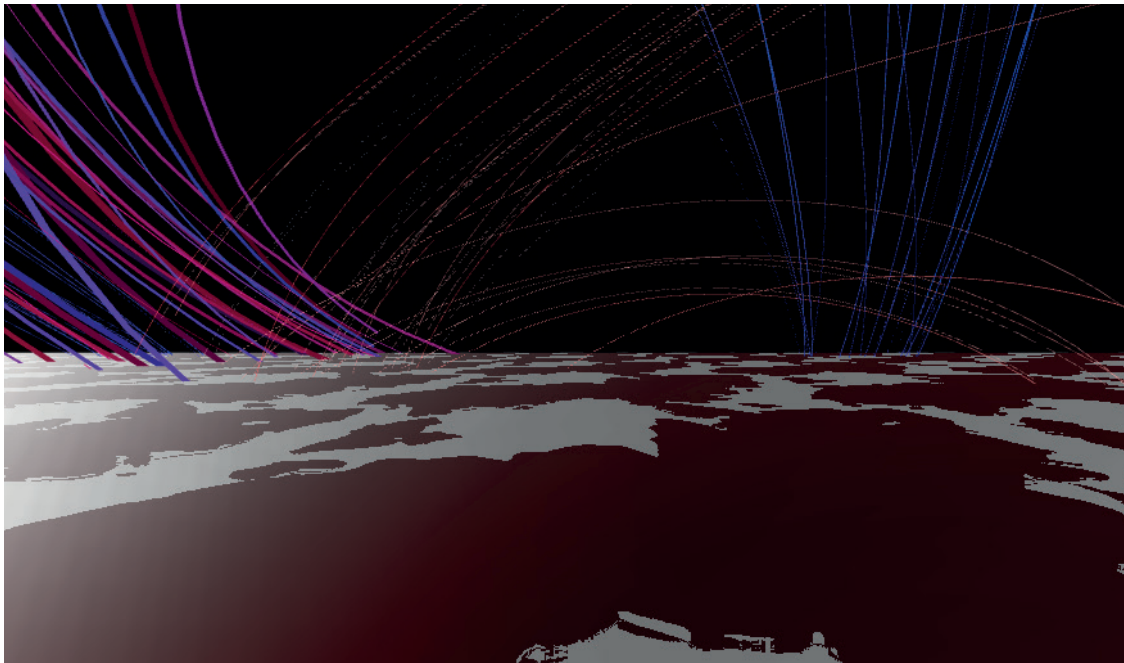
Prototype 1 screenshots
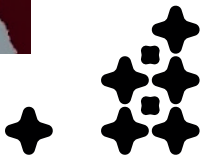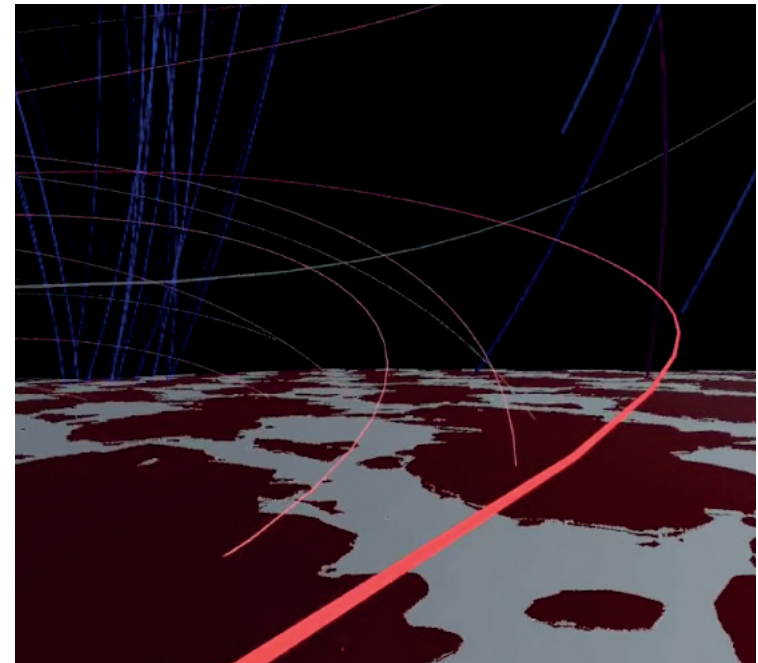
Skills testing: Prototype 2

After learning the process of producing and exporting a VR environment with particle simulation, I decided to take the testing further by key-framing in the environment. I imported more assets including mountain, a night-sky sky box, and different shapes. I also downloaded and imported a song I wanted to test with (I uploaded a question box to my instagram asking for test-song recommendations and one of them was I Can't Tell by Flume, so I chose this one, as it has distinct chorus and verse sections). I then key-framed objects and particle simulations by ear. The whole song took about 8 hours to key-frame, with lots of adjustments to the timing. There was a delay between when the song started playing to when the visuals loaded in unity, but not in the Oculus headset so this was an issue I had to do a lot of iterations to resolve. I found a script called "better key-framing" however, which would automatically place key-frames after analysing the music, which would speed up animating hugely, so I decided I would play around with this when I started developing. Overall it was a success, and gave me an insight into the time-scale I was working with. I was looking at around 3 minutes of key-framing a day. I got friends to test the experience and they said it was very effective.

Prototype 2 screenshots
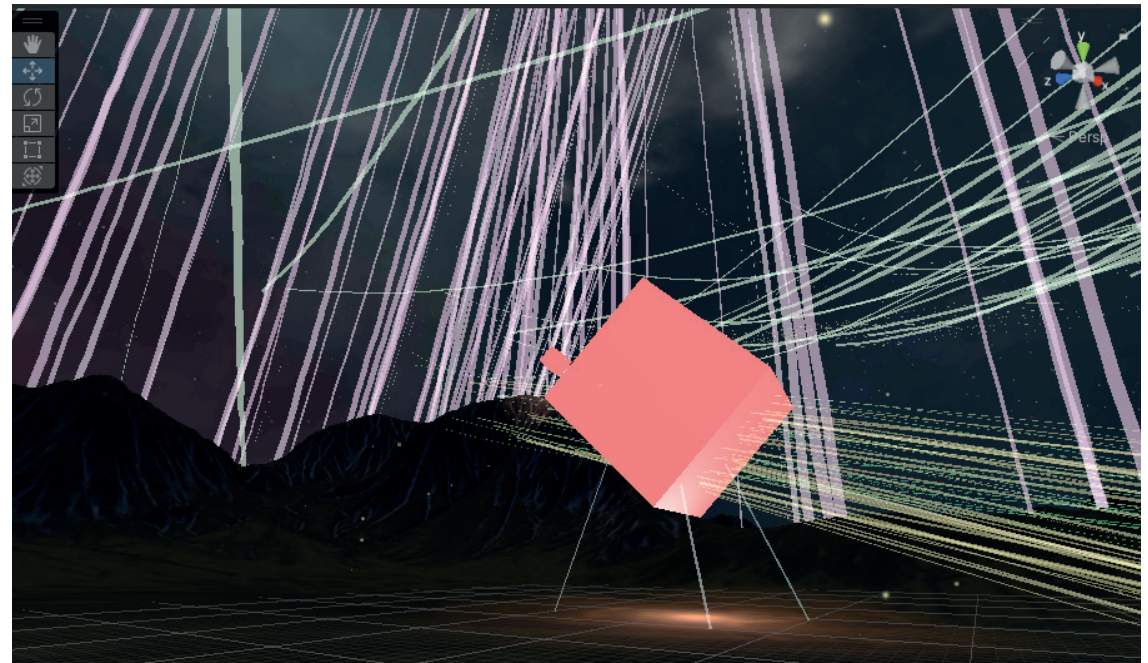
More videos of prototypes at www.camwilliamson.net/sophievr

Week 5: Brief Review and Plan

After researching the development process in Pitching and Prototyping, adapting the idea to my own learning objectives, and adapting my project criteria to better fit the time-frame, I began the process of detailing my brief and the timetable. I wrote out all my learning objectives and steps for the project in Miro, to give myself an overview of all the processes required. A screenshot of this list is below. I also set up a Microsoft Project Planner project and began entering the tasks with start and due dates, varying urgency etc. I decided to give myself 10 minutes of key-framing a week as an estimate, but want this to be flexible when I start expanding on design features and song lengths in the mix. I gave myself two weeks to work on the mix with my friend. This had to be a flexible process as it involved travelling to meet in-person to get the mix done.

Developments from the Pitching and Prototyping project idea:

Kept components:
- Celebrates SOPHIE XEON and the fan-base
- VR experience in Unity 3D
- Uses a Sophie Mix
- Collaborative design process
- To be accessible via Meta Store, YouTube etc.

Changes:
- Removal of the comparative multiplayer mechanic (resorting to simulated multiplayer "feel" via keyframing and animation where required for the experience) due to time constraints.
- New, more polished, shorter mix required.
- Focus on the experience and immersion, including an extended goal of including hand-tracking.

Changes to the Pitching and Prototyping plan

Learning Objectives:

- Become familiar with sound design in XR/Unity 3D environments.
- Learn shader programming particularly reactive music shaders.
- Strengthen C# experience.
- Take advantage of APIs, such as Meta Quest hand tracking, button input.
- Become familiar with the OpenXR platform.
- Experience designing XR Design elements both 2D and 3D.
- Storyboard and sketch: use hand-drawn ideas and planning to efficiently put thoughts onto paper, enabling a strong visual plan.
- Learn to convert 2D sketches and ideas into a 3D environment.
- Learn to publish APK files on the Meta Store, Pico store and Sidequest etc.
- Learn to record 360degree Unity footage and publish it as a 360degree file on YouTube.
- Become confident in the XR Unity design process as a whole, from start to publishing and testing.
- Understand scale, distance and other qualities of XR spaces that have to be considered.
- Project communication, online marketing and collaboration. Contacting relevent people and receiving relevant feedback from other fans of the music.
- Learn how to take sonic/sound design/production with specific unique characteristics and translate them into a visual design language.
- Develop a personal visual style.
- Learn the process of creating a music mix.

Detailed personal learning objectives
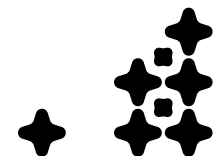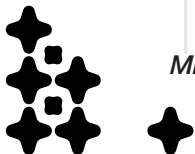
Week 6: Final Brief/Timetable

I copied the targets from my timetable in Project Planner into a diagram in illustrator to better visualise my timelined target development process. I further refined my project planner goals into smaller chunks with more information so it was clearer for me to understand. When writing my brief I planned out and refined my project targets and learning objectives for the brief. I tried to keep the same structure and language as previous briefs, including the introduction and inspiration for the project, covering, in particular, why doing a music related project to Sophie is so important to me and relevant on my university journey.

March 2023						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
26 +3 more	27 +3 more	28 +3 more	1 +3 more	2 +4 more	3 +3 more	4 +3 mor
5 +3 more	6 +3 more	7 +3 more	8 +5 more	9 +4 more	10 +3 more	11 +3 mor
12 +3 more	13 +3 more	14 +3 more	15 +4 more	16 +4 more	17 +3 more	18 +3 mor
19 +3 more	20 +3 more	21 +3 more	22 +4 more	23 +4 more	24 +3 more	25 +3 mor
26 +3 more	27 +3 more	28 +3 more	29 +3 more	30 +3 more	31 +2 more	1 +1 mor
2 +1 more	3 +1 more	4 +1 more	5 +1 more	6 +2 more	7 +1 more	8 +1 mor

Hide future recurring tasks ● Week **Month**

Unscheduled tasks

+ Add task

No date

○ Call Isaac Cohen

Goals

Completed

Microsoft Planner
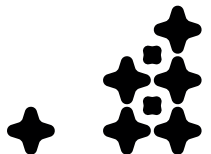
Bring Your Own Brief

Timeline

Finish the mix
Test experiences and Unity Keyframing

Sketch design UI elements and menu screen.
Storyboard the experience
Collecting models and designing in Blender
Research SDKs for hand tracking and spatial audio

Begin keyframing!
First 10 minutes

(10 min sections may be changed depending on mix section lenths)

Keyframe the next 10 minutes up to 20 minutes

Keyframe up to 30 minutes

Keyframe up to 40 min mark

Keyframe homage section (last 5 minutes)
Compile homage content

Space to refine animations and designs/ project manouverability

Develop the home environment and the credit and home panels and the loading animation.

Develop the home environment and the credit and home panels and the loading animation.

Testing SDKs including Audio SDK, Hand Tracking SDK

SDK development

Finish the experience, Record and post to YouTube in 360 degrees.

Finalise the project
Conclude the design document.
Submit the project.
Plan the degree show presentation.

16/02   23/02   02/03   09/03   16/03   23/03   30/03   06/04   13/04   20/04   27/04   04/05   11/05   15/05

Non-scheduled targets:
- Contact relevant artist e.g. Isaac Cohen
- Reach fan-base recognition to reach correct target audience
- Incorporate a fundraiser with the project publish

Timetable for the FMP

Brief

Music in VR

02/02/23 - 17/05/23

1.1 Introduction

My time at university has been arguably the most important and formative stage of my life, moulding me into a adult ready to enter the professional world, giving me the space to learn both academically and socially, developing a knowledge of myself as an individual and my place in the world. Despite the academic experience being a key part in this, one undeniably important aspect of my first years away from home has been music.

Through the music I listen to, closely related to how I express and identify with myself, I have found friends, communities and a creative hub that has shaped my own creative influences, and how I approach ideas. This forward-thinking, young, queer community has been my strongest source of inspiration in choosing the next steps in my creative path, including choosing this course, and since the end of second year, I have had my mind set on giving something back to the community. Due to this project being entirely self-chosen and directed, and possibly one of the only chances I will get to focus on an entirely self directed project, this is the perfect oppurtiny to do this.

A key member in this community was and still is the producer Sophie Xeon, who's futuristic music and sound design shaped the future of pop and carved a new space in this space. She was famously collaborative and known for uplifting other creatives big and small, developing a strong fan base and a talented visionary network of artists and musicians.

In part 2 I will focus on the production and design process of this self-chosen project brief, taking the research of the themes and context surrounding the brief idea and the timeline and documenting the development of an experience that celebrates Sophie, the fans, and other musicians and creatives adjacent to her.

UCA Canterbury School of Architecture // BSc (Hons) Creative Computing

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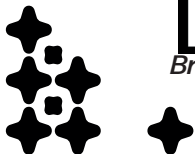
An industry that is going through a current boom in the start of 2023 is the XR (Extended Reality) industry, and a particular area I want to explore with the skills I have learned at UCA. It also feels like the perfect match for a SOPHIE project, with her embracing technology and the way it helped her produce and manipulate sounds in new ways.

While the research stage has passed, new findings and research during development will come up and is to be documented thoroughly. Adaptations will happen to Part 1 components where needed, but will act as a strong support system for project development.

By the end, Part 2 should present a project that reflects the skills learned during your time at UCA, and the length of time required for it, with a detailed design document to match.

1.2 Project Aims

After researching the this idea in both Term 1, and part 1 of this project, the goal is to produce a detailed music experience in virtual reality, readily available to be used natively on Oculus headsets, and free for others to experience.

Timelines and sketching to succesfully visualise influence from producer Sophie's visual and sonic design language should be detailed and frequent during this journey, and the music mix should be high quality and well thought out. Constant refinement to core components of the project, such as audio EQ, UI elements and overall performance should be an active part of project development, as well as taking notes and inspiration from fans and other spatial designers. The final result should be recorded and uploaded to YouTube for maximum accessability.
This project should result in a shared, free-for-all and visually inspiring experience.

1.3 Deliverables

You will hand in ONE portfolio, covering both parts of the unit. For all parts, your portfolio will consist of a curated and edited design document, complete with reflection upon your processes and design decisions. Although the final submission is in May, you should create and organise content as you are working on the brief.

NOTE: Your Portfolio will be submitted digitally via MyUCA, as such you will need to carefully consider file size when producing your final PDF.

For Part 2 you will hand in:
- Detailed documentation in the portfolio covering the research and development process.
- An APK file (or multiple) of the experience, ready to use on an Oculus or other VR headset.
- A 360 degree YouTube video recording of the experience
- A carefully curated mix of Sophie's music, with a VR experience in mind.

1.4 Key Dates

THURSDAY 12/01/23 - Unit Introduction and Briefing (10am- 12pm)

THURSDAY 09/02/23 - Review (Brief) (10am- 12.30pm)

THURSDAY 20/04/23 - Review (Project) (10am- 12.30pm)

WEDNEDAY 17/05/23 - FINAL SUBMISSION

UCA Canterbury School of Architecture // BSc (Hons) Creative Computing

Part 2:
SOPHIE VR EXPERIENCE
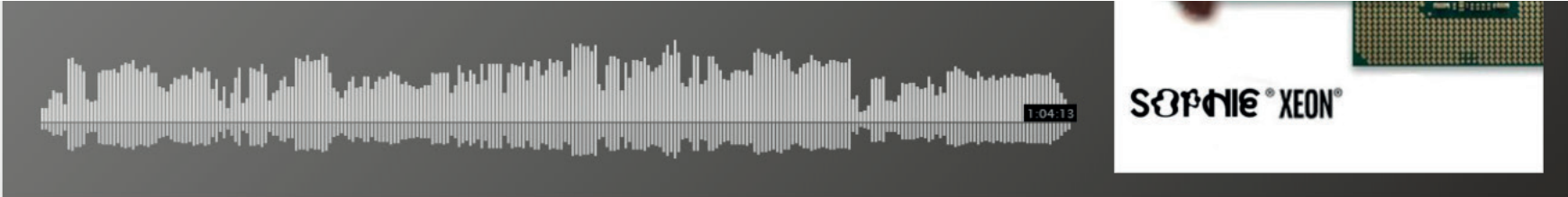
Project Aims:
To create a virtual reality music key-framed experience and accompanying mix celebrating the work, community and sonic and visual qualities of SOPHIE's work. To be shared as an APK file for Meta Quest headsets, a 360 degree YouTube video, and a Soundcloud mix.
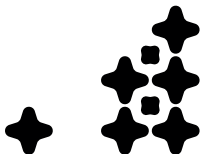
The Mix

The mix is one of the core components for this project, it's what the visuals are based on, and makes up half of what the users will be experiencing in VR. Because of this, a thorough and thoughtful approach was to be taken during deciding the tracks to include. My friend KC had already made a few rough example mixes over the Summer, after I started thinking about the idea, so we got together with the knowledge of how to create mixes with this style of music, and planned out the a set that we thought represented Sophie's discography best. We wanted to cover songs that were well known, songs from other artists that are produced by Sophie, niche and more experimental tracks and fan remixes and covers, as an important and constant aspect of this project is the community engagement and collaboration. I put requests on my story for fan engagement and submissions, and contacted the fan accounts @xcxshake and @xeonparadise. They then reposted my requests, boosting my fan-base reach. I got several responses. One responding with their cover for the song Infatuation, and another saying they would like to remix a song for the experience. I also got feedback from fans saying they were excited to experience the project, and were glad that I was keeping it accessible with a YouTube upload. At the end of the experience I also wanted a homage section, dedicated to fan's art, covers, interview snippets and literature about Sophie that represented her impact on the community and collaborators well, so this was an area to factor in when deciding music.

One of the first mixes by KC

Choosing Music

When deciding on music, due to the variety we wanted we were looking to include around 20 songs, with an experience around the 35 minute mark. We needed music for the menu, and homage sections too, so we included these while recording ideas. To help with the setlist I made a spotify playlist to listen to, and listened to KCs previous mix versions. I submitted requests for music submissions on my instagram story and heard back from someone who had done a cover of Infatuation by Sophie, which we decided would work well as the looping menu soundtrack, as well as an exclusive remix for the experience by friend and break-core producer Fresh Til Desu. Breakcore is a sub-genre of electronic dance music that consists of intricate "breakbeats" and samples played at high speed. The track formed into a carefully and strenuously laid out and purposeful exploration of Sophie's discography, delving into different EPs, singles, and Oil of Every Pearl's Un-Insides, as well as collaborative and remixed work from Hayden Dunham (QT, Hyd), A.G. Cook, Flume, Charli XCX, Hannah Diamond, Sonikku, Doss, Umru, EASYFUN and Quay Dash. Some of the song choices had already been included in KC's previous iterations of the mix, so this helped streamline the process.

Spotify playlist

Setlist

1) It's Okay To Cry Requiem - Nick Trapani on SoundCloud
2) Is It Cold in the Water? - Flume, Eprom
3) ~~Lipgloss (SOPHIE remix) - Charli XCX, SOPHIE~~
4) Hey QT extended version x Hey QT ad version - QT, SOPHIE, A.G. Cook
5) MSMSMSM - SOPHIE
6) Infatuation - SOPHIE
7) JUST LIKE WE NEVER SAID GOODBYE - SOPHIE
8) ~~Laser - SOPHIE~~
9) 1,2,3 Dayz Up edit - xcxinthemorning on Soundcloud
10) ~~Reason Why - SOPHIE, Kim Petras, BC Kingdom~~
11) Moteur Action (A. G. Cook + SOPHIE remix) Nightcore version - Yelle, SOPHIE, A. G. Cook
12) L.O.V.E. - SOPHIE
13) ~~Daddy Knows - SOPHIE, Eyelar~~
14) Forever (SOPHIE remix) - Fletcher, SOPHIE
15) BIPP - SOPHIE
16) ~~Bikers - SOPHIE, A. G. Cook~~
17) ~~Take Me to Dubai - SOPHIE, David LaChapelle, Pee Girl~~
18) ~~My Little Chemical (a.k.a Baby Bubbles) - SOPHIE, QT~~
19) Faceshopping - SOPHIE
20) Ponyboy - SOPHIE
21) ~~It's Okay to Cry (tVSS20 Extended Version) - SOPHIE~~ eak Sonikku

lemonade

interludes

Initial Setlist
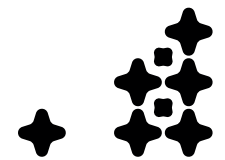
Mix Length and Track Lengths

While previous iterations of the mix came to around the hour mark, I was keen to condense this down as much as possible as I strongly believed in quality over quantity and needed enough time to create quality experiences throughout. I didn't want to run out of time, approaching the deadline, and rush the last quarter, producing inconsistent design quality. So we went through calculating the song lengths and began thinking about how much of each song we should include. We eventually had an idea of a mix somewhere between 30 and 40 minutes in length.

1. It's Okay To Cry Requiem - Nick Trapani on SoundCloud 3:00
2. Is It Cold in the Water? - Flume, Eprom 4:47 ~120bpm
3. Hey QT ad version x Hey QT - QT, SOPHIE, A.G. Cook 3:55 ~ 130bpm
4. MSMSMSM - SOPHIE 3:35 ~135bmp
5. Infatuation - SOPHIE 4:40 ~75bpm
6. JUST LIKE WE NEVER SAID GOODBYE - SOPHIE 3:08 ~145bpm
7. 1,2,3 Dayz Up edit ~ Nkfeem ~rning on Soundcloud [Into 123 d~ ~p]3:33 ~110bpm
8. Unisil - SOPHIE 2:06 ~160bpm
9. 88% Moteur Action (A. G. Cook + SOPHIE remix) Nightcore version - Yelle, SOPHIE, A. G. Cook [L.O.V.E] 2:36
10. Forever (SOPHIE remix) ~ Flu~ SOPHIE 3:29 ~ ~bpm
11. Bitch I'm Madonna Nicki verse - Madonna, Nicki Minaj, SOPHIE 2:27-2:52 / Whole New World DOSS remix (BIM ~150bpm, WNW ~ 140bmp)
12. Faceshopping - SOPHIE 3:56 ~115bpm
13. Ponyboy - SOPHIE 3:14 ~110bpm
14. Paradise - Charli XCX, SOPHIE 3:01~170bpm
15. Girls Night Out - Charli XCX 3:41 ~125bpm
16. Lightning Lipgloss Life - Life Sim 5:32 ~135
17. So Clear Umru Corrosion - Hyd, Umru 3:00 ~130
18. SWEAT Sonikku remix 3:17 ~130
19. QOTS - Quay Quash 3:06 ~ 120
20. Infatuation - The Abyss and Trenches fade outCredits w interludes (Flume, Charli, SOPHIE Grammys/other interviews plus others) 00:59 + 1 min or so

Setlist with track lengths and BPMs measured
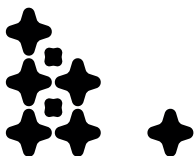
Track Order by BPM

The key way we wanted the experience to transform was with a steady increase in speed, then finishing with a conclusive ending/landing section. To do this I used a tap to BPM (beats per minute) website, and went through every song in our set-list and tapped to the beat, this provided a rough BPM that I then recorded for each song. I then rounded each number to the nearest 5, and grouped each song with its BPM, for example there were four songs that were recorded at 130bmp. The numbers didn't have to be exact, as small adjustments to the speed would be easy to make in audition. Once all of the songs had been grouped, they were ordered from slowest to fastest. I ordered all the tracks in a rather confusing key, but it was readable and did the job, and would help us when laying out the mix properly.
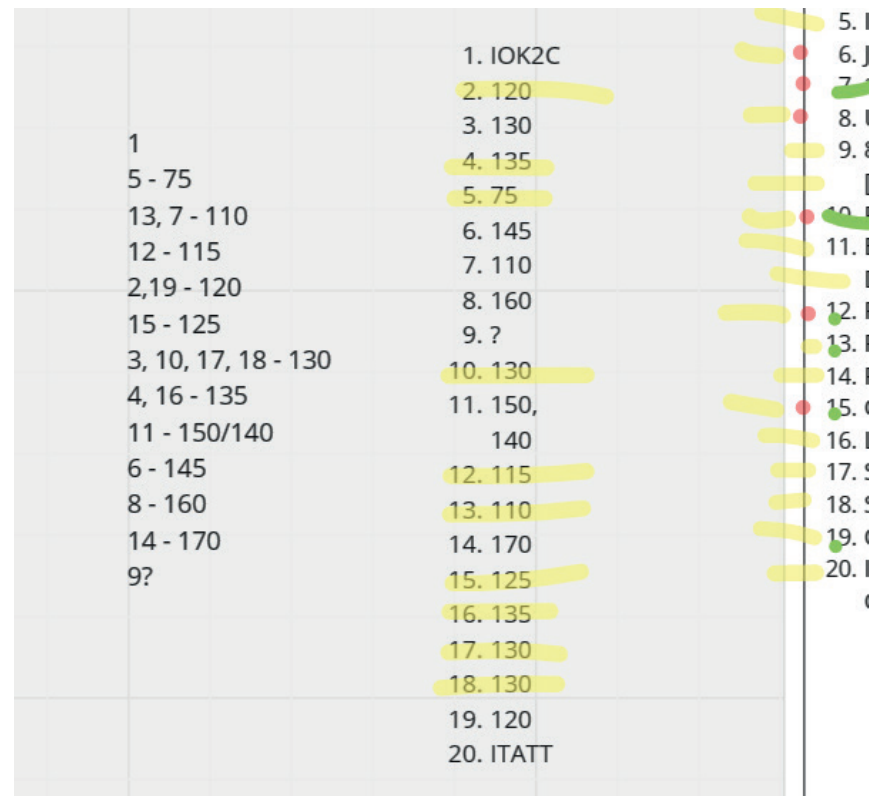
BPM key used to help form the final order of the mix

Development in Audition

When it came to the development of the mix, we had to decide which program would work best. We looked at what we already had access to, which were Adobe Audition, and Ableton Live Lite (a restricted version of Ableton Live that came with a midi controller). I had used Ableton Live already to create a mix, but found overall its interface overcomplicated the process, and my computer was under strain because its a large program. KC had used Adobe Audition already for previous mix versions, and its simple user-friendly interface and stripped-back functionality meant it was more convenient to use for something like a music mix, which only required a small set of functionality such as speed and pitch adjustment, fading, channel effects and decent file export settings. We also decided it would be most efficient to carry out development in person. So I travelled to Epsom and stayed round at their place so we could work on it. We took some of the beginning elements of the mix from the last version and polished it slightly, as I felt this was a strong introduction to the mix. We then progressed with adding songs, and soon found that some naturally mixed perfectly and others were more difficult to mix. It was obvious, for example, that Ponyboy and Faceshopping were designed to mix into each other, as they had similar speed. KC found that an effective way to transition songs that were more difficult to transition was to take an element from the last bar and apply reverb to it, which created a natural and more atmospheric cut into the next track.

We worked on the mix in Epsom for about 4 hours, but we still had about half of it to complete, so to continue in-person, KC travelled to Canterbury. Now both me and KC where more confident in the mix development process, and had thought over ways we could mix the tracks, so overall the process felt more streamlined. While meeting up we also happened to be going to some concerts, one of which included Doss and Caroline Polachek, both friends and collaborators of Sophie. In a sense experiencing live music like this intertwined with the development process provided fresh creative inspiration and kept the passion for this project ignited. We worked overnight for 8 hours putting together tracks and refining the transitions. I had to download each song as a FLAC for the best quality as we went along. Me and KC have a strong creative process, with a lot of experimentation and adaptability when it comes to each others ideas so it felt very natural. If one of us disagreed with the way something sounded, it was very seamless to find a middle-ground or change that we were both happy with. Eventually we had pieced together a mix that felt structurally complete, and KC went home with the mix to master and tweak into something that felt whole and polished. The final result came to 41 minutes, 19 minutes shorter than KC's initial versions, but 10 minutes longer than planned.

After completing and uploading the semi-final version of the mix, we listened over it repeatedly, and I noticed there was something off with the sound. I made a comparison to the original files and the difference became very obvious, with the mix sounding flat and compressed, with no spatial properties and a lack in bass and overall volume. After bringing the issue up with KC, they spend the next week searching for possible reasons. We found that one reason may have been due to the way Adobe Audition exports FLAC files, however the issues persisted. Luckily KC found a hidden feature in Adobe Audition that controlled the spatial properties of the mix, Once adjusting it, I fixed all the issues we were having, but also by surprise improved the immersive properties of the sound, a welcome surprise to include as a feature of the experience.
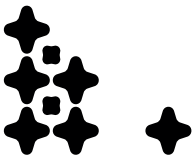
Final Exported Mix

The final exported version was uploaded to Soundcloud and saved as a FLAC file which I will then use while programming the experience. Listen to it via the QR code below.

Screenshot from Soundcloud.com

QR code to Soundcloud.com
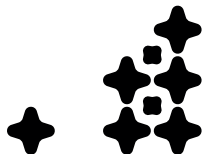
Project Update Page

During the CoLab unit in October, I set up a website to share my portfolio and create a brand identity for myself. One feature I wanted for this site was a dedicated 'live', "current projects" section with a page dedicated to ongoing projects, and the first project to use this feature was the Sophie Experience project. It was an important way to involve fans and add to the project's public-facing nature, complete with submission details, project updates and the final mix at the bottom in the form of an embedded Soundcloud module complete with a set-list and music credits underneath. I also created branding for the project that can be seen in the project section page on this document, and it was meant to draw homage to the sleeves Sophie wore in the Oil of Every Pearl's Un-insides album cover and the block represented a colour palette that I felt represented Sophie's visual style too. I designed the title and subtitles for this page using the same font as the rest of the site and my brand identity because its clean and modern but also subtly unified the design language across my work on the page. My plan was to release Project Updates for significant developments during the project, set with social media updates to inform followers to read them. Each update would contain detailed information, similar to the information I have been providing in this design document, but without the academic goal. I also made a large banner for this page on the homepage of the website.
I found creating this page very gratifying, and I enjoy my work being public facing whether or not it is seen because I feel like it adds to the value, especially with something as personal and meaningful to me as this project.

Sophie project page

Current project section on the website

Public Project Update 1.0

My first update covered the development of the mix, along with some photos we took. One thing we did while we were discussing mix ideas was doodle all over our Miro planning page, and I thought it would be nice to include some of the sketches into the project page, so I imported them into Illustrator and converted them into transparent PNGs which I could then place around the page.

Project update 1.0

Doodles on the project update page

Meta/VR Developments

At the time of developing this project, I am amongst a wave of VR development investment by both Meta, and other adjacent VR companies. I found a similar thing when writing about the metaverse; due to huge current investment I felt like I was writing it and updating daily with new headlines. The first big series of updates, was rumours and then a series of leaks reporting that several mixed reality headsets from Apple were to be released in 2023 and then years following. To me this felt like a huge sign of growth in the industry, as apple is known for cutting edge and mass-adopted entries into already existing tech spaces, and might be the first big push towards VR being fully mainstream. Meta also revealed that they had found a way to increase the processing power from the Qualcomm XR chip to improve graphics and performance which was also welcome news. They had also released a brand new spatial audio plug-in for unity which I was excited to test, and planned to incorporate into a unity scripts test program.
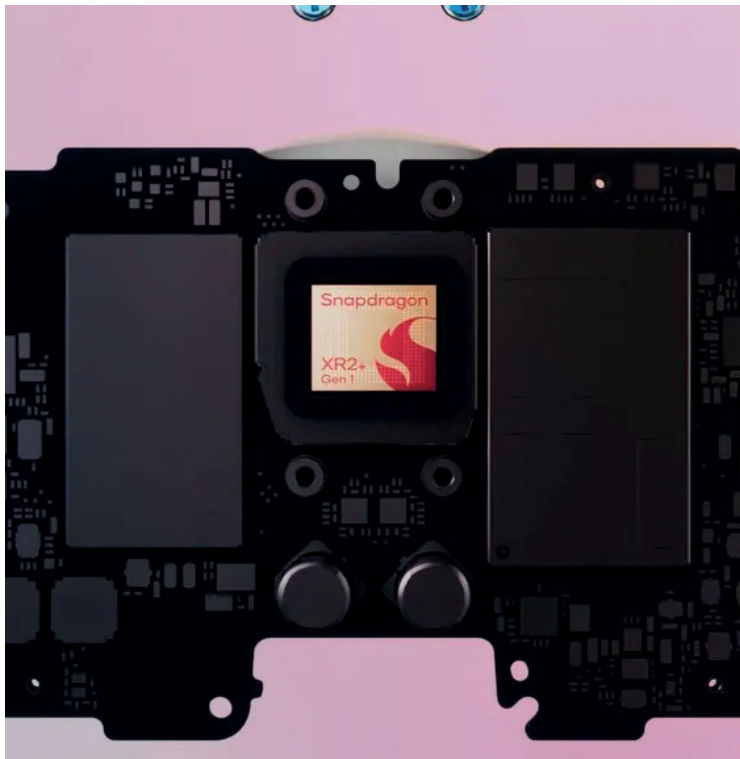
Qualcomm Snapdragon XR2+ CPU

Apple Reality Pro concept render
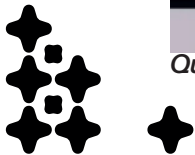
UCA Program Provision

One set-back with this project was my personal lack of access to powerful hardware to develop this project at home, so I had to turn to the university to supply a computer I could use for development. Due to UCA protocol and software testing, this became a very slow and long process, overall setting development back a few months. Each program required needs to go through several layers of testing and approval, and generally takes a very long time to happen. This was an unfortunate hurdle, and something I didn't know I'd need to include in my timetable. While this was happening I took the time to document and do some small tests on my laptop, with hopes that the university's delayed provision to hardware wouldn't affect my overall ability to complete this project too much. I should have predicted the delay and contacted staff for access well before starting this project.
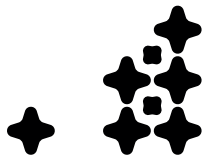
Key-frame Script Test

Having tested other free scripts without success, I decided to purchase and test a £30 package of scripts. The package contained promising examples and demos on YouTube from the developer, as well as many positive reviews. I downloaded the scripts and opened a new VR environment in Unity (a 3D Unity scene with some extra components for VR). The package included a range of scripts to animate different components, such as particle effects, objects, lighting, and materials. There were also some example prefab scenes, one of which was important for recording the volume of different sound frequency channels. The scripts split the music into channels, enabling components to react to bass, treble, mids, and vocals in different ways for a more dynamic experience. The scripts also allowed me to choose the threshold for fine-tuning to different sounds in the song. If a script was not reacting to a specific channel, I would have to check the prefab analysis scene, check the volume threshold, and then adjust the script to be under that threshold.
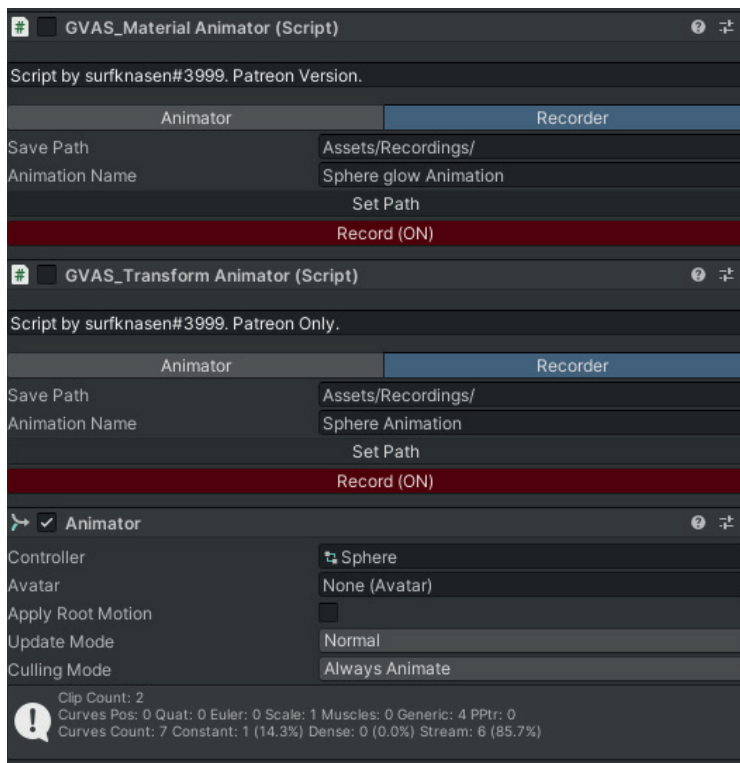
Keyframe scripts
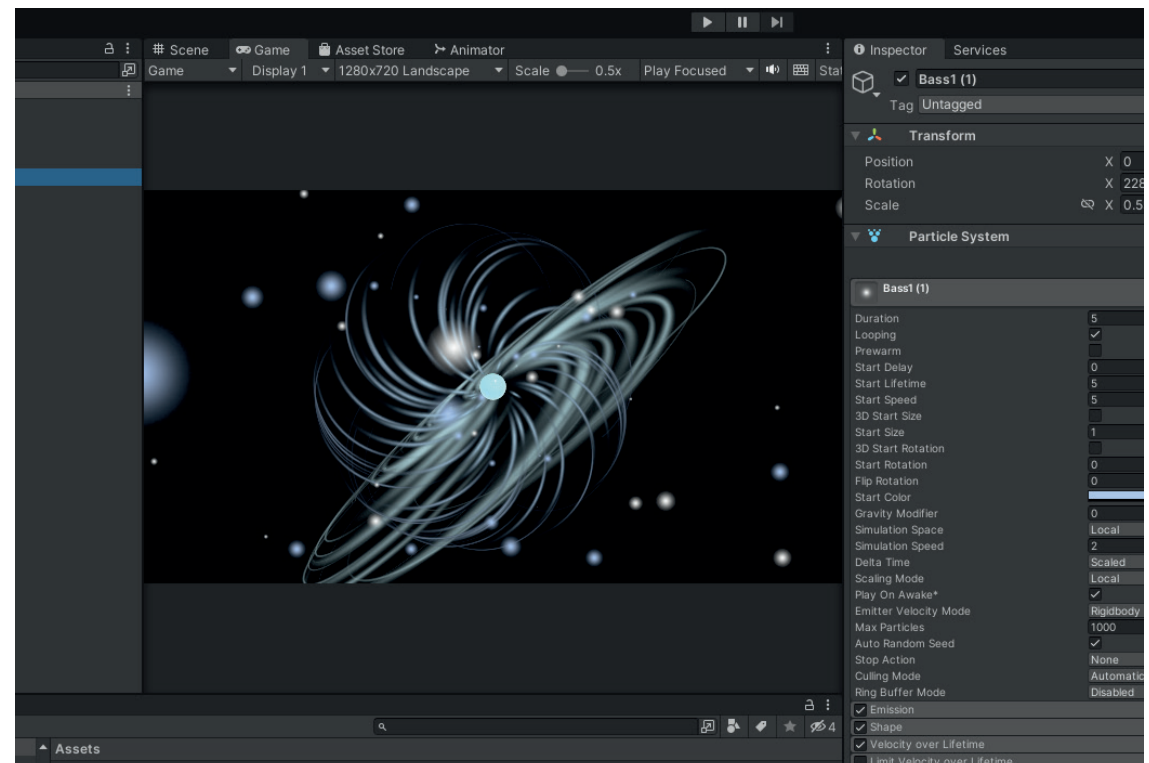
Unity workspace

Meta SDK Test

Meta provides a set of SDKs that make developing for their headsets more streamlined, the service is called the Meta Unity integration SDK and also acts as a plug-in in Unity that checks the project is compiling with the correct settings for use on Meta headsets. The contained scripts in the SDK include hand-tracking and interaction scripts, spatial audio scripts, character lip-syncing scripts and avatar scripts. The only scripts I was interested in were hand tracking and spatial audio as they were beneficial for enhancing the experience's immersion, so I worked on setting them up and incorporating them in the key-framing test file to create a miniature proof-of-concept/test run project. Setting up spatial audio was very quick and was just a matter of selecting a few audio settings in the project settings window. Setting up hand tracking however was a long and complicated process of replacing the default camera objects in Unity with the Meta camera module that contained two cameras set at the right distance for the headset (and presumably automatically adjusts to the user's interpupilary distances on the headsets)
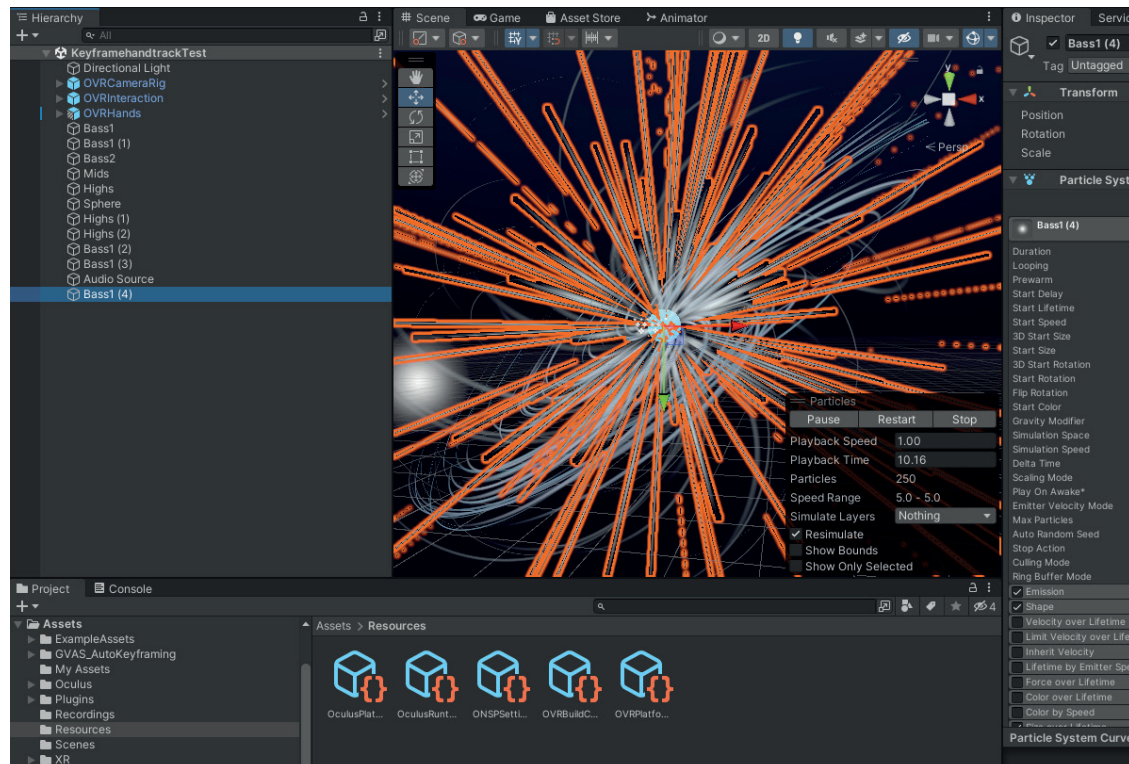
Meta SDK Unity workspace
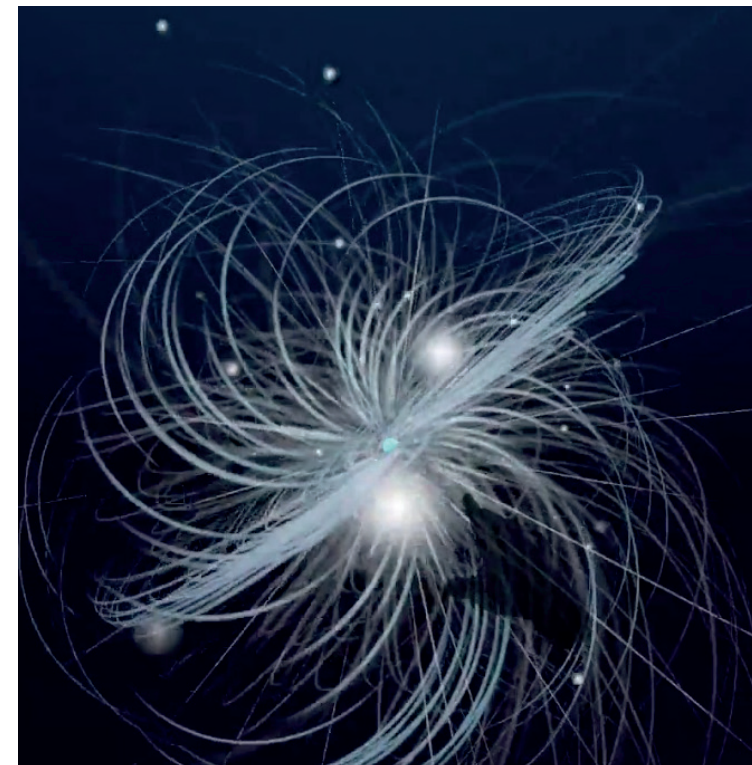
Experience screenshot
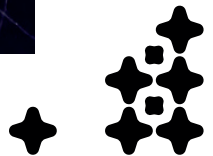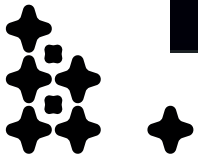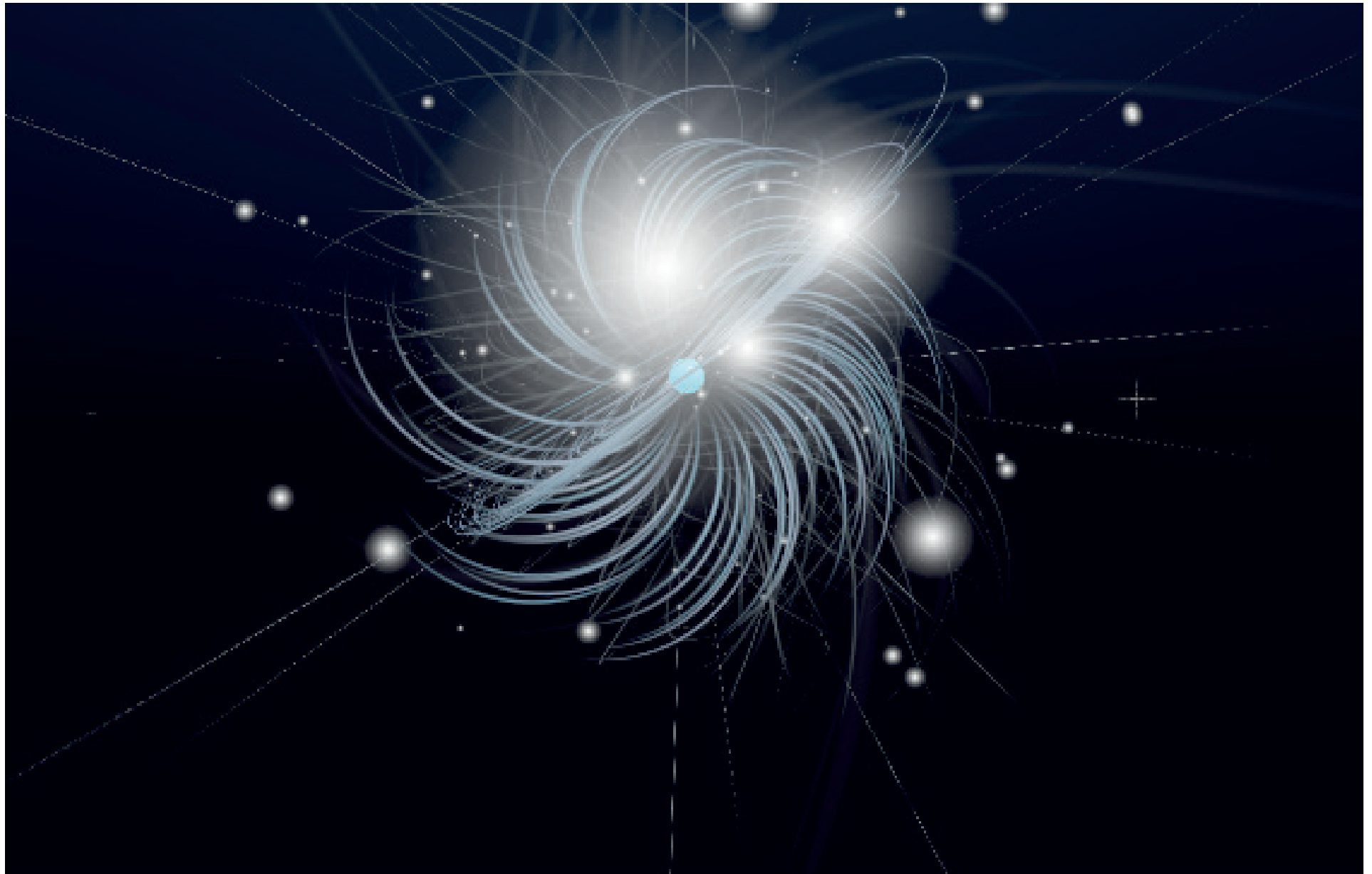
Public Project Update 2.0

This project update was about the tests I had completed for the build-up to the development of the main project. I covered each test file, and paired them with video screen recordings of each. The update page can be found at www.camwilliamson.net/sophievr

Project update 2.0 screenshots
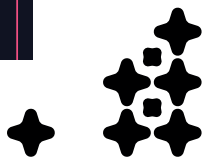
UCA Computer Day 1

IT had come and set up a computer for me in the university's TrakLab, a room that was used for VR and Kinect tracking. I came to check and test the computer that had the programs I needed for my project. I found that it had an error with the graphics driver so I couldn't open the programs. It also had a strange error saying that any changes on the computer would not be saved due to a sign-in error. The first thing was fixed remotely after getting in touch with IT, the second was fixed with a computer restart. Another issue I had was that the cable I had been using wasn't USB 3.0, so it wasn't detected between the headset and computer. I bought a better cable to solve this issue. I also wanted to keep the project remote, and I wasn't sure if it would be saved natively on the computer as the computers have a 24hour memory wipe policy. However I tried to load a unity file on my portable HDD and it took hours and was way too slow, so I decided to open a file on the C drive and leave it over night. Luckily all the data was stored so I decided to go ahead with keeping it natively on the computer. I also use OneDrive on my laptop as a form of backup, so I linked the folders on this computer to OneDrive to back it up too.


UCA TrakLAB

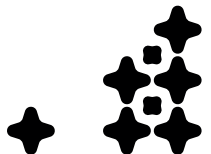*The computer provided by UCA*

Setup Requirements

Now that I had completed some tests on my computer, I understood what was required to begin development on the university computer. I needed a computer with dedicated graphics to run Oculus Link, alongside a suitable cable, the Meta Development hub to help identify any processing and graphics issues on the Meta Quest headset, the most recent Unity long term support: 2021.3.23f1 lts, with Android Build Support, OpenJDK and Android SDK and NDK tools. Additionally I needed the Meta SDK with hand tracking, spatial audio and build optimisation and the Auto Key-framing Scripts SDK from Surfknasen on Gumroad. The last script was free to use on any device after I had purchased it. Scripts were available to download and use but downloading programs required an admin login. The only way to access the correct android packages was via the Unity installer which also required an admin login, so these added further delay as I was required to get an IT technician to enter the admin details during the install process for unity and the android packages. After this everything I needed was available and working as expected.
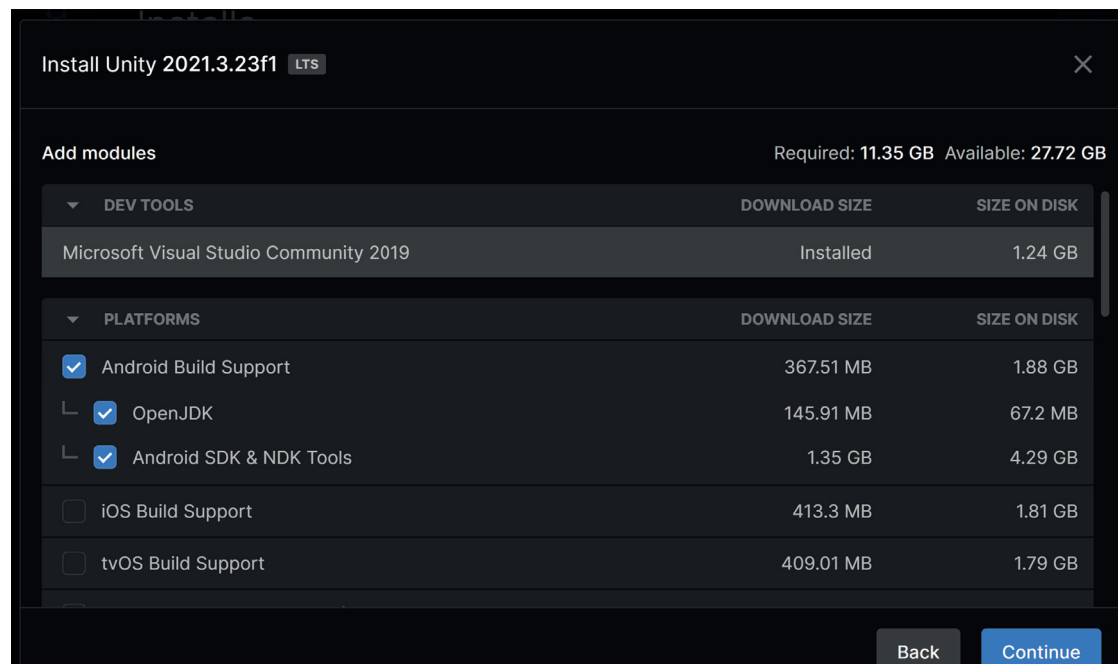

Unity version requirements

Adapted Design Plan

Waiting for the right programs from the university introduced a large time delay, due to this I decided to re-think my design plan from the descriptive set of experiences that I had written in my notebook, to a more focused set of visual effects. Instead of my design development being linear with the mix, I will design individual visual effects to reuse for different sound textures, music energy and pace. For example, some elements of the mix include ambient sounds which would work well with a fog effect, where as others include fast intense electronic noises which would work well with strobe effects. This approach would be much more efficient and streamlined, and the attention will be on quality of these effects over the quantity and complexity of the experience.
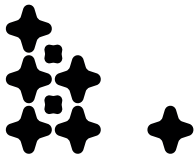
Package Conflicts

I found that the key-framing package and the Meta package had a conflict of some kind but I couldn't find the solution, so I decided to adapt the development process further to avoid this. Hopefully my final process plan was to open a separate project dedicated to key-framing, allowing me to run the key-framing script and save animations and then import those animations and prefabs into the main file to then tweak where needed. Having these scripts separate streamlined development and removed any errors.
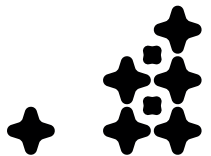
Development iteration

I also needed to split the experience into sections to key-frame, as I couldn't listen to the whole mix to key-frame it as that would be way too inefficient, so I decided to split the mix, and subsequently the development process, into scenes or "cuts" in adobe audition. I made sure the cuts were at distinct changes in the mix like a distinct transition between "energies". I ended up with 13 "cuts" for each scene I wanted to key-frame and design, the last being the homage section. These cuts could then be imported into the key-framing project and worked on individually, each with their own folder of assets, animations and materials, which could be brought into the main file and transitioned between the other cuts. This approach was much more efficient and organised than trying to approach the whole mix, and I think in turn, will produce an varied array of visuals with clear distinctions. However combined with sharing assets there will be visual consistency too. Helping with the modularisation of this project and my plans for each cut was a storyboard plan I had sketched out in a notebook. I listened through the whole mix and described ideas for each part with visual effects to match the way each one sounded. I then planned to use this as inspiration for the visuals when designing each one in Unity.
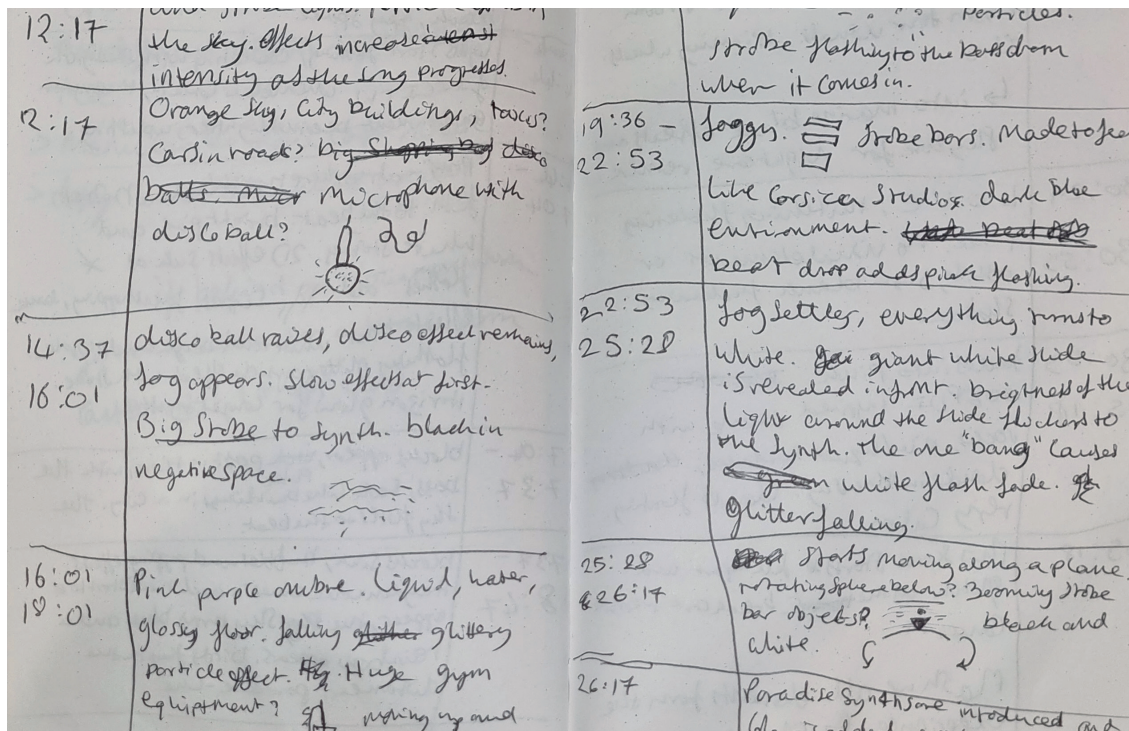
*Sketchbook Containing the different sections and ideas for their visuals.*

The mix cuts
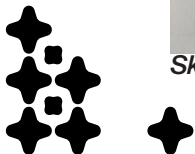
Single VS Multiple Scenes

Another aspect to developing the unity project was the decision to keep the experience on just one scene. Scenes are like sub-files in a unity project that can be opened in the compiled experience or game, however they result in loading screens because they need to be loaded in and out of the device. One aspect to developing this experience could be to separate different parts of the mix into different Unity scenes, which may help streamline the development process, however, it would break the immersion by creating hard cuts in audio during the experience while each scene loads in. I decided this was too much of a risk and down-side, and decided despite extra complications during development, and a longer initial load sequence, seamless audio and full immersion was one of the most important aspects to the effectiveness of this experience.
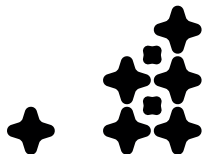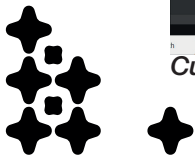
Cut 1

The first cut of the mix contained the Its Okay To Cry Requiem and Is It Cold in the Water - Flume Remix. This section was designed to have an expansive and slow gradual increase in energy to introduce the user to the experience, and a visual way to represent this fittingly included using fog and clouds. Due to processing constraints I couldn't use traditional fog effect methods used in higher-end games and hardware, so I looked for a processor-efficient way to do this and found a tutorial showing how to make realistic fog with just a particle effect. I followed the tutorial and then tweaked all the settings to my liking and eventually resulted in some very effective fog effects. I also decided it would be fitting to have a title sequence for the introduction, as there was a lot of time to appreciate something like Sophie's logo, so I found an image online, and via Adobe Illustrator I converted it into an SVG file. With this file I could then create a mesh in Blender, and extrude the surface to create a logo object. I then exported this as an .OBJ file which I could open in Unity and apply custom materials to. I applied an animation to this logo to make it slowly move towards the user and programmed the fog to come in and out at different points. I wanted to make use of the powerful bass in Is It Cold in the Water, so I made a sphere object and used the key-framing script to make it strobe with the bass in the music. This was very effective and I then animated it to come in as that part of the mix came in. I found there were rendering issues with the sphere being transparent. Firstly I needed to flip the normals for it to show up in the background, then I found that using a transparent or fade material that would let me fade the object in and out culled all the objects inside it. I eventually had to use a cut-out material that would allow me to render objects inside the sphere but this meant it was either on or off and I couldn't fade it in naturally. After exporting this file I ran the Meta Quest Development program and measured the performance. Frames never dipped below 60fps which was ideal, but it was important to keep an eye on this through further development as frame rate dipping is a factor that would break immersion.
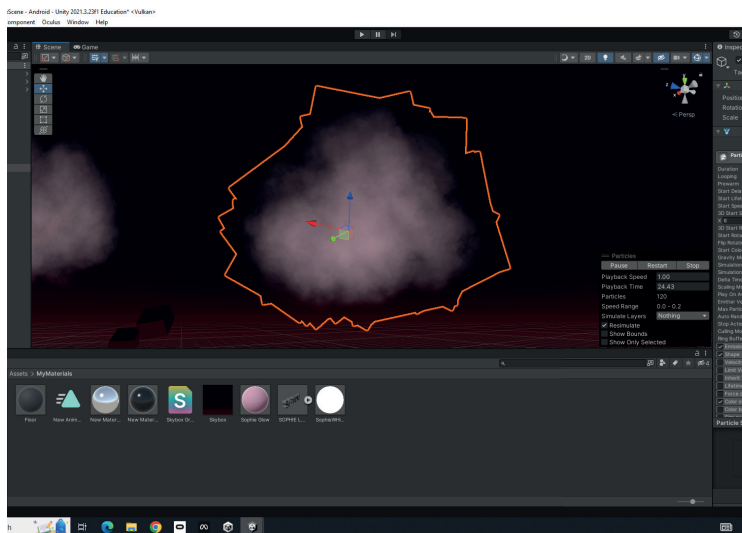
Custom cloud prefab from a particle emitter

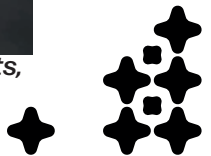*Experimenting with the Sophie logo 3D model*

Final title start sequence

The second half of cut 1 contains sparkles and strobe effects, but this is very hard to show in a still image.

Cut 2

Cut 2 contains the songs Ponyboy, Faceshopping and Queen of this Sh*t and is the first burst of energy in the mix (and probably the most intense). With big metallic sounds and rumbling bass, ponyboy and faceshopping feel very mechanical and sonically overwhelming and QOTS ends the section with a more pop-y take on Sophie's harsh sounds, paired with raw swearing vocals which match this sections attitude well. To visually emphasise this I needed something visually intense and overwhelming. I liked how the strobe effect looked and it's intensity in the first cut so I decided to make use of the visual effect again in the form of a blurred circle object which I made in illustrator by creating a circle and applying Gaussian blur. I then exported this as a PNG and converted it into a sprite object in Unity. The goal with this was to create an illusion of staring at a bright strobe where the eyes can't adjust. I also added another particle effect but this time to produce a ring particle emitter that would create rings (also made in illustrator as rings with a Gaussian blur applied, and then exported as a PNG) that fly around the user, the goal for this was to create fast movement by making it look like the user was falling through a tunnel. I animated it to a higher frequency to match with the snares of the beats, while the strobe would flash to the bass. This scene was very simple but visually bold. The songs in this part of the mix and in Sophie's discography in general contain a lot of negative space, and use it to emphasise the strength of the sound design, so I think the visual simplicity pair well. There are moments when the silence in the songs creates a lack of visuals and a plain black void.
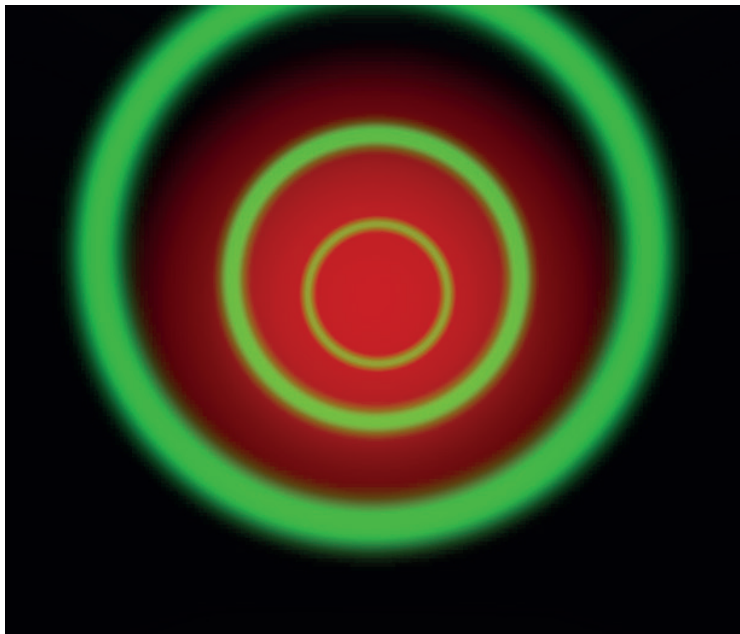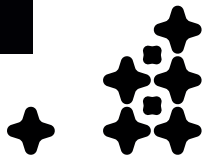

Cut 2 screenshot
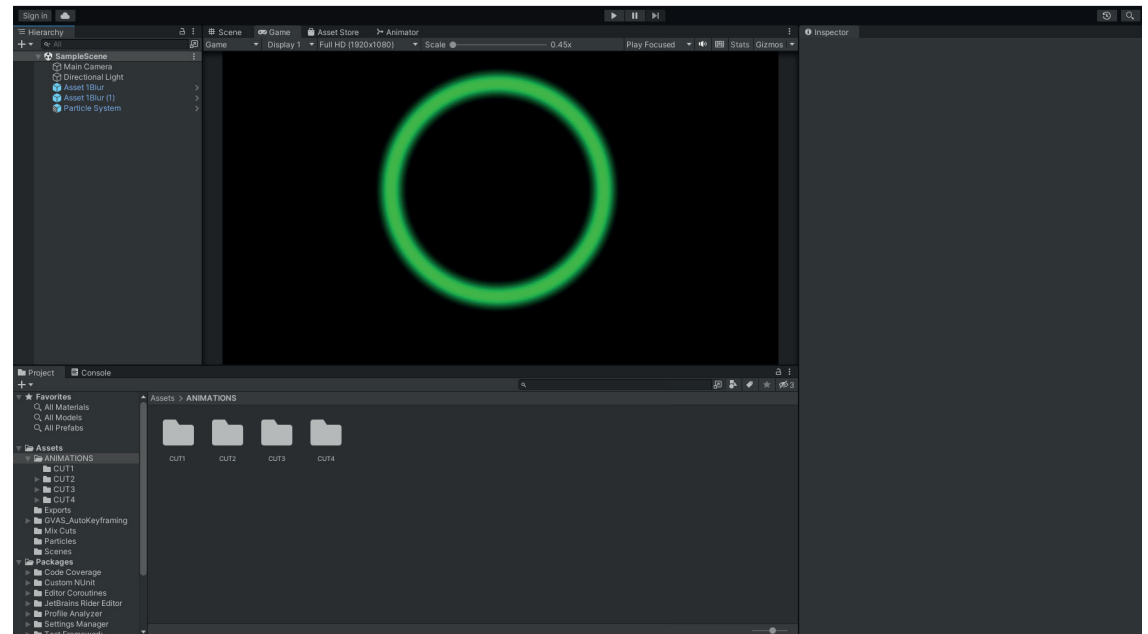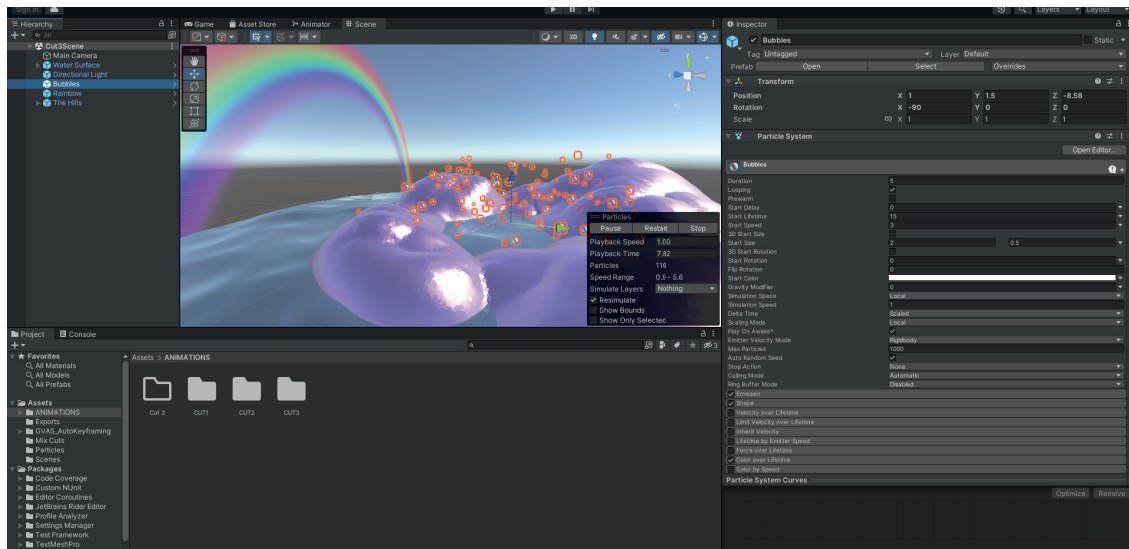

Unity workspace screenshot
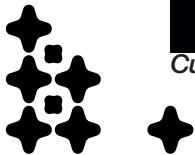
Cut 3

Cut 3 is dedicated to QT. QT was a persona by Sophie and Hayden Dunham to promote a fictional energy drink. The project was designed to play with the idea of a super-synthetic pop sound and was one of the original songs of the sub-genre Hyperpop. Due to this and the sonic characteristics of the transition and the song, I wanted to emphasis the camp-ness and plastic-like qualities of the song with its squeaky voice and energetic cheerful melody and rhythm. The opening sequence to this section includes a part with bubble-like sounds and I wanted to recreate this as a visual element. I went into Illustrator and designed the shape and colours of this bubble. I wanted it to look synthetic and plastic-like. I took it into Photoshop where I added a Gaussian blur to it and a border to give it an edge. I finished it by giving it some reflections. I exported this as a PNG and turned it into a particle sprite, and then played with the particle settings like noise to make the particles move like bubbles. I also wanted to add to the camp nature of the opening sequence and found that it was creating this synthetic-paradise like scene, so I thought some clouds and a rainbow would fit this well, so I made a rainbow asset in illustrator and imported it as a sprite and animated it to the beat of the music. I also copied in some of the clouds from the fog effect in the first cut. I also wanted there to be a physical landscape, so I went into blender and designed some hills and imported them, and I also used the ocean generation to create a lake in the middle of the hills. I thought setting the hills to a pink metallic colour was fitting to make it more synthetic but also to match the QT brand colours.

Finally I made the hills stretch to the beat like they were dancing, and the bubble effect to release bursts and change speed to the beat too. I also made the ocean asset turn so it looked like the water was moving, and I animated it to stop and start turning to the beat too. The result was to allow the opening sequence to build the scene and before going into the song where everything was dancing and reacting to the sounds.
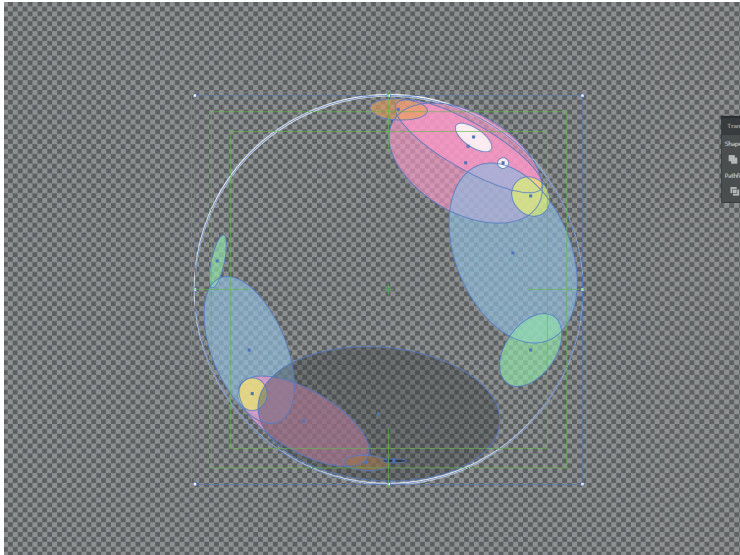

Unity workspace screenshot
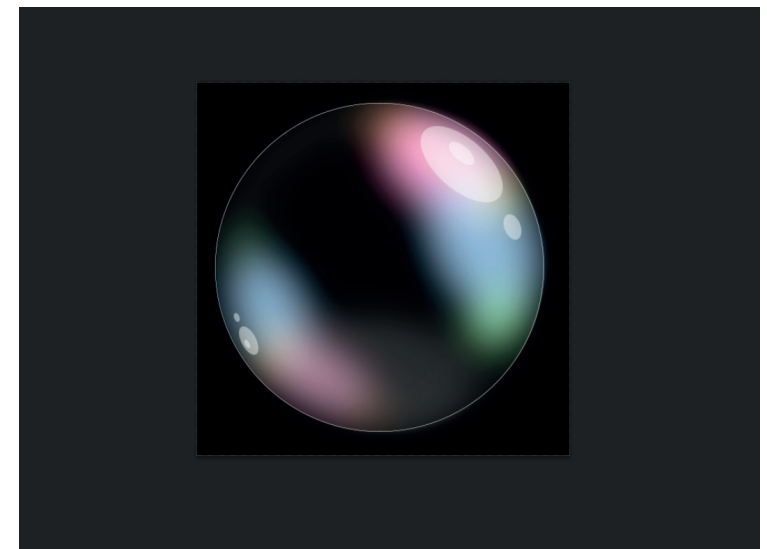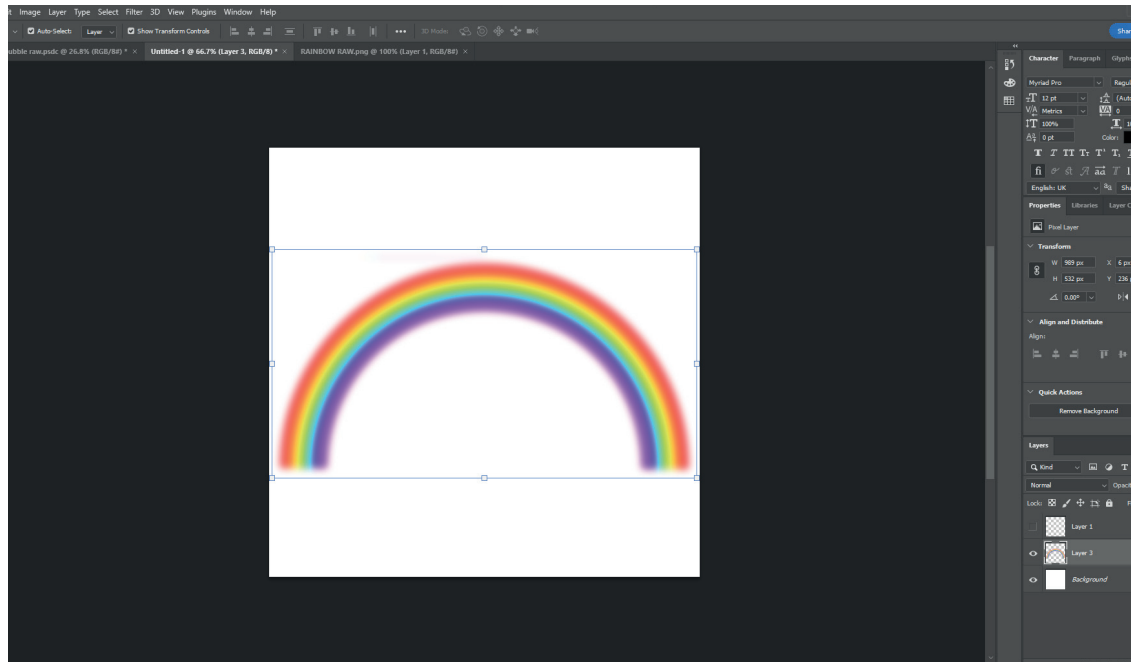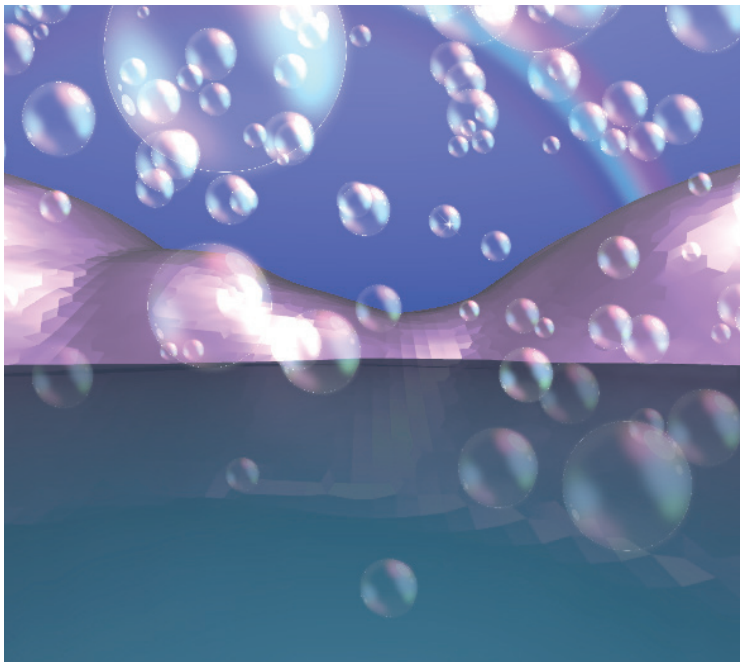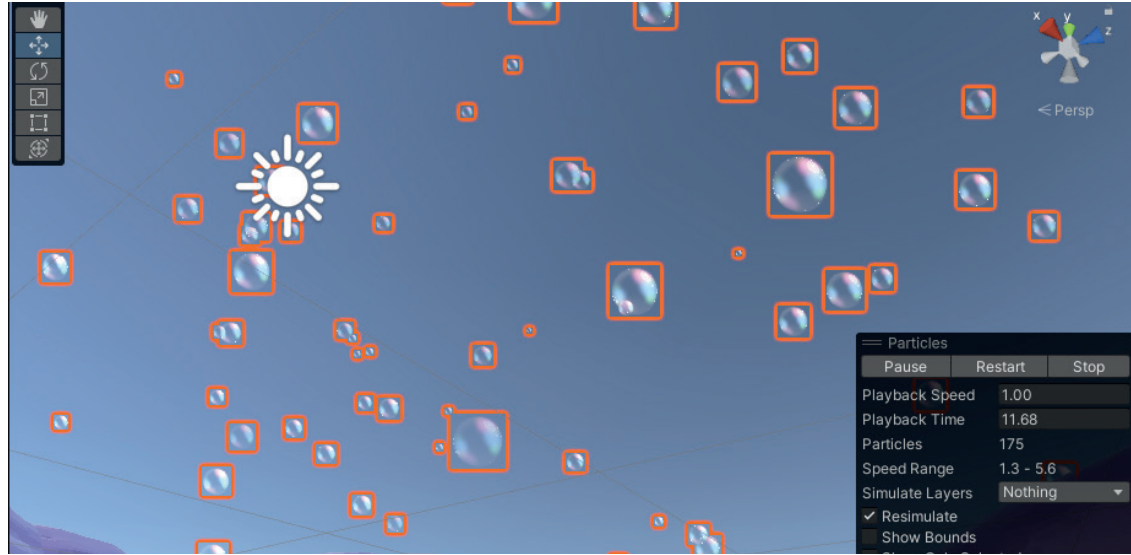

The custom designed bubble sprite
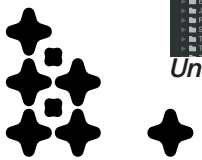
*The bubble sprite designed in illustrator*


Rainbow sprite in Photoshop

Cut 4

Cut 4 contains Girls Night Out by Charli XCX. This song was one of the first publicly released collaborations between Charli XCX and Sophie. It was meant to be released as part of the XCX World album, an album largely produced by Sophie for Charli XCX, that got cancelled and leaked. Girls night out was then released officially along with a handful of other singles from the album, and marks an important period in Charli and Sophie's work together. The single art and promotional material featured bright oranges and purples so this was something I wanted to visually reference in this part of the experience. The lyrics also describe a night out, clubbing and catching a taxi and getting dressed up, and I visually wanted to show a city moving by like watching skyscrapers in a taxi on the way out/back from a club. In Photoshop I designed a building asset which I then used as a sprite in a particle simulator to create an illusion of buildings growing and shrinking as they move by. I also created some particles that react to the music that would fly above and below the user to create a moving ground and clouds. I applied a trail that connected them to create a grid effect which I though looked quite cool and helped make the ground look like it was moving below the user. The next step may be to add outlined features of a taxi like the windows. I transitioned all the objects by changing the colour of the sphere and shrinking and enlarging objects in-time to the song transition, which ended up being a nice smooth transition.

Building model in Photoshop
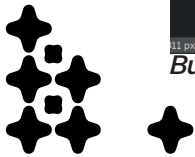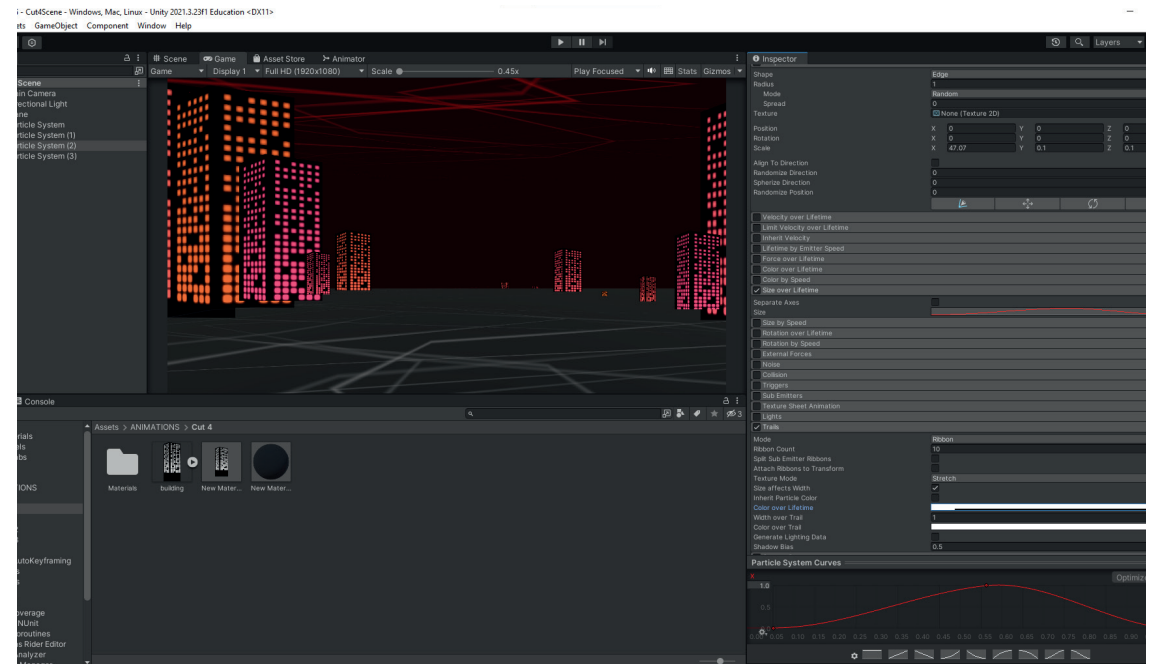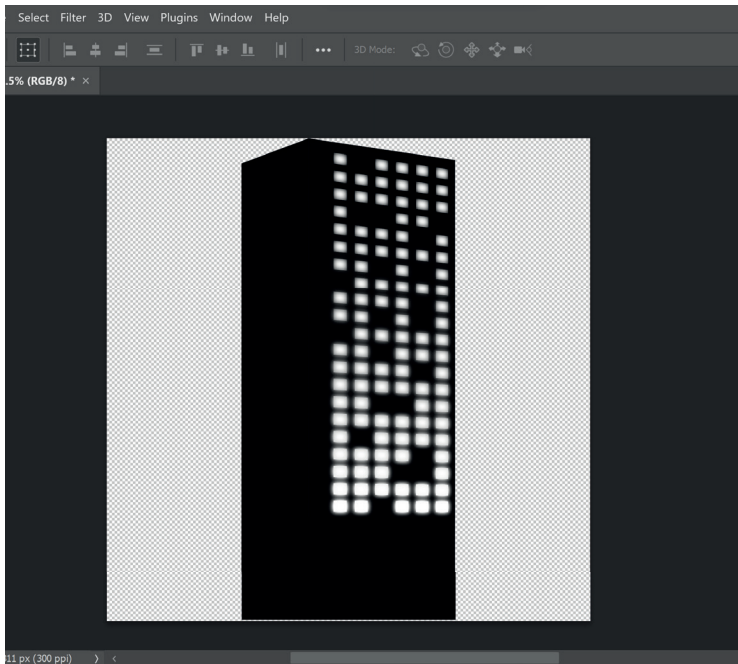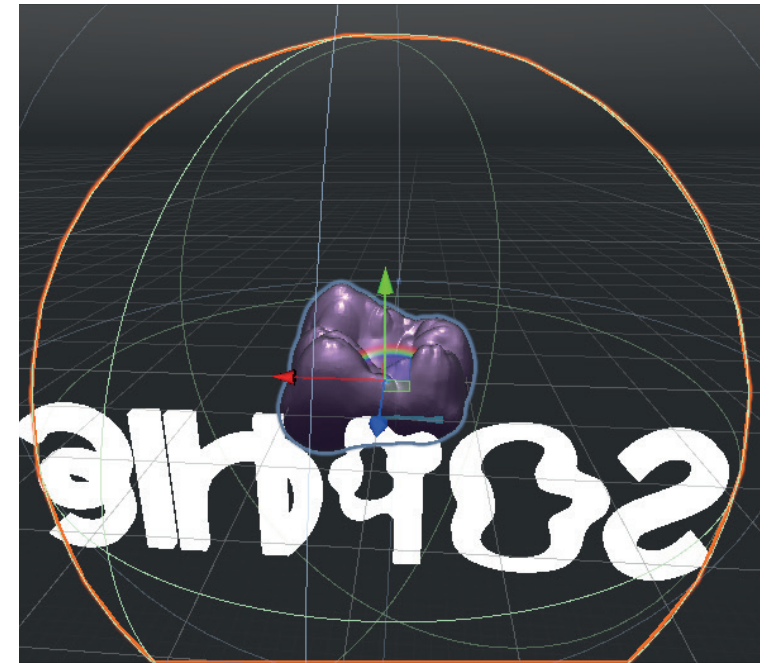

Scene development in Unity.
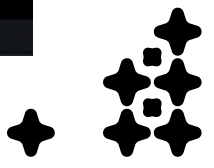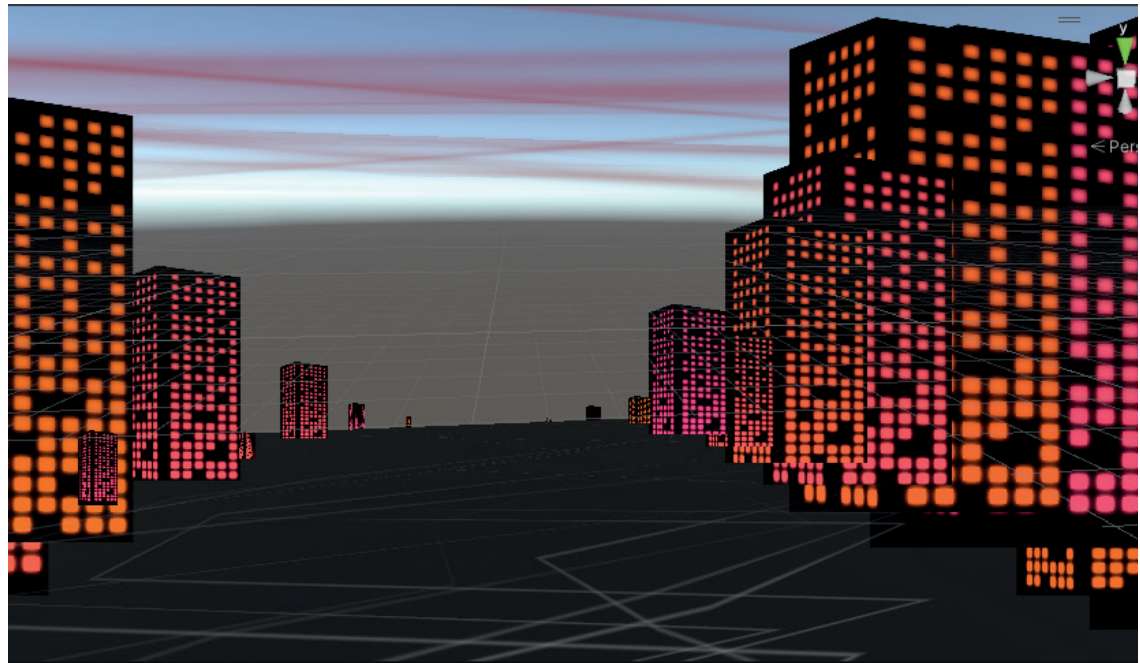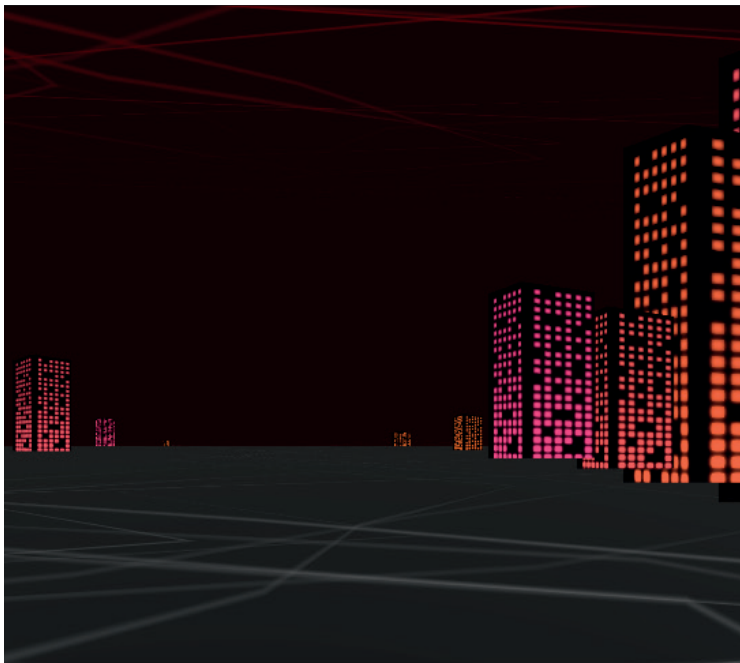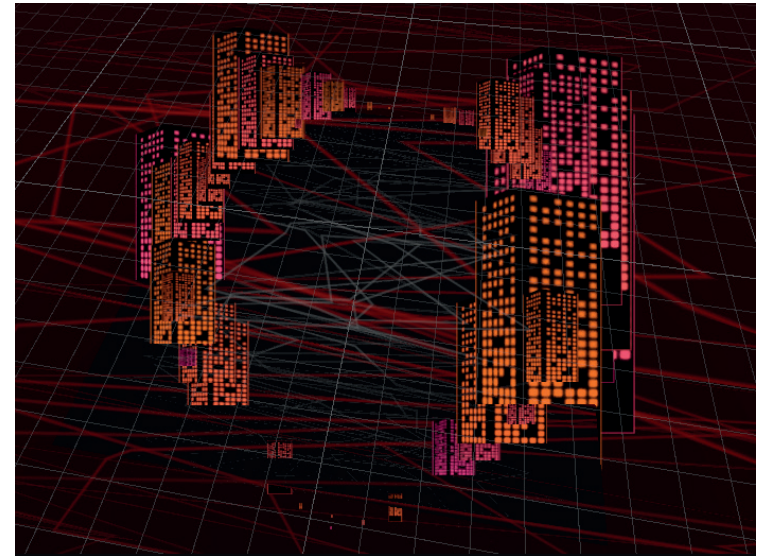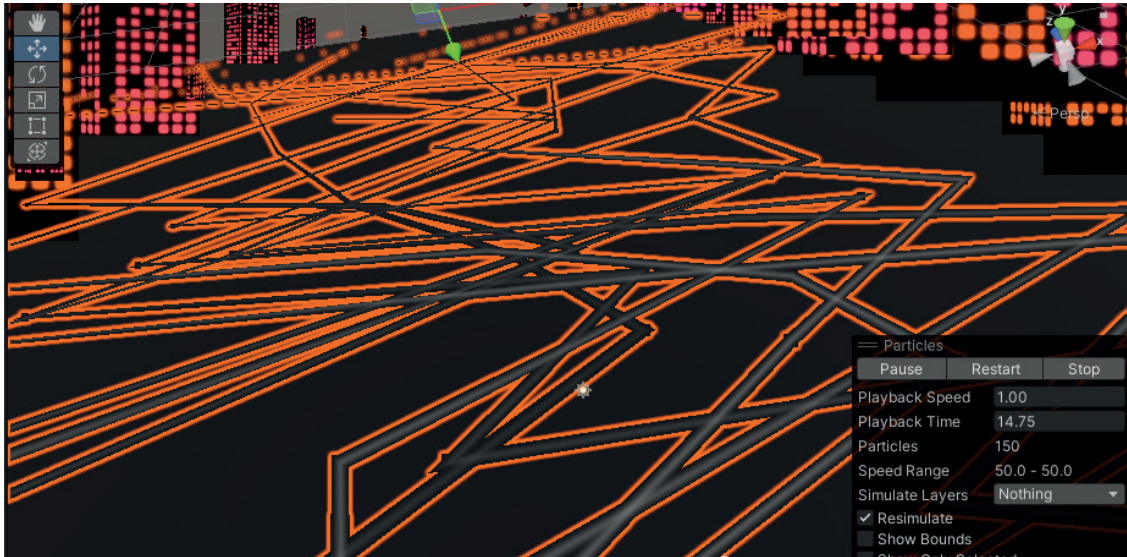
Main Project Development

Continuation past submission

Time constraints and a delay in this project meant I didn't get as far into the development as I had originally planned, however as I was getting deeper into the development, I realised to what extent this had become a very meaningful and personal passion project, and in order to do it justice and become something I was satisfied in, I needed to give care and attention to the whole experience, so my plan shifted to demonstrating my skills and the concept for this submission, but then continuing past submission and refining and producing the experience as a whole over the summer. I want to get to a point with it where it really celebrates Sophie well and my effort and passion for the project can be felt by the user or anyone who finds out about it. I also hope this project becomes a strong representation of my skills when looking for jobs and for that to happen I need to give myself time and flexibility to build and refine it. While plans and timetables are good, through university and reiterated during this project, I have learned that my personal project ideas and plans usually require more time than I am given. Of course, this wont be an issue if a job gives me projects to complete that have gone through other people for a better judgement of time, or in a group where development is more efficient. Another factor that would also be eliminated would be the infrastructure, where software requirements and access to hardware will be quick due to different processes and protocols to universities.


Screenshot with all assets enabled


All assets selected
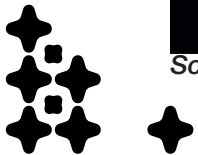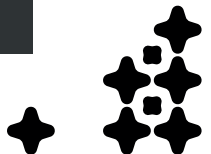
The project design process

During the development, I created a common design process that I continued to refine with each section of the mix. With this design process I learned the steps and the development structure required for this project. It started by breaking the mix and process down into sections, then starting two Unity projects, one for building and animating the scenes for each section, and the main project file. I import the mix sections one at a time into the animating/key-framing project where I could easily build an environment and animate objects to the music without having to wait through the whole mix to get to that section. Often I would make 2D assets in illustrator and Photoshop, and I came up with different ways of making use of particle effects to create a range of visuals, so these 2D assets were mostly used for these particle effects. Sometimes I also needed to use blender to create 3D files such as the Sophie logo, and found that my overall workspace consisted of Illustrator, Photoshop, both Unity files and Blender all being used in conjunction with each other. I had set up dedicated folders for each section of the experience, and this allowed me to approach each section as mini-projects. Finally, I had to come up with a formula to figure out the placement of the visuals with the mix, I did this by finding the transition in Adobe Audition, and working out the difference in the delay in unity and converting it to unity's time scale: (Time in Audition × 3600)+10. This formula wasn't exact and was in constant refinement. It will become more confident when I can get more correct timings in the experience to test it against.
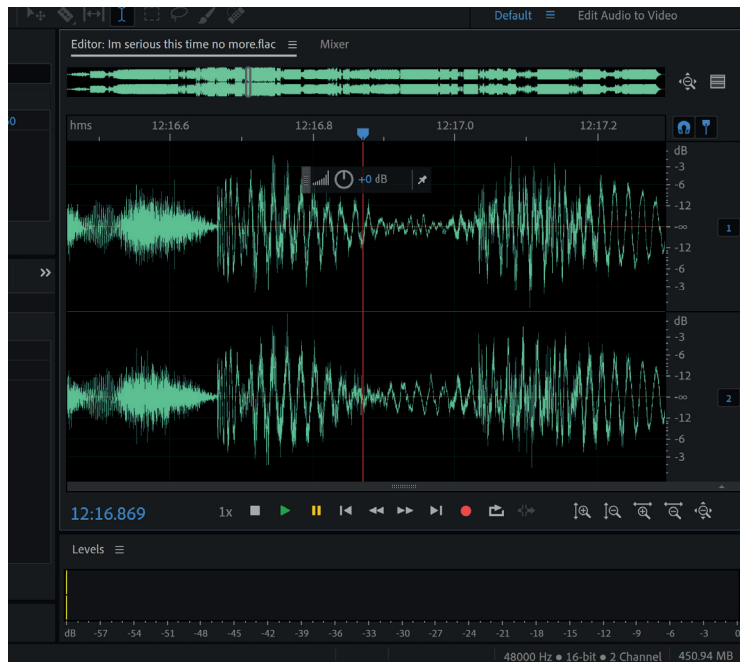

Waveform in Adobe Audition
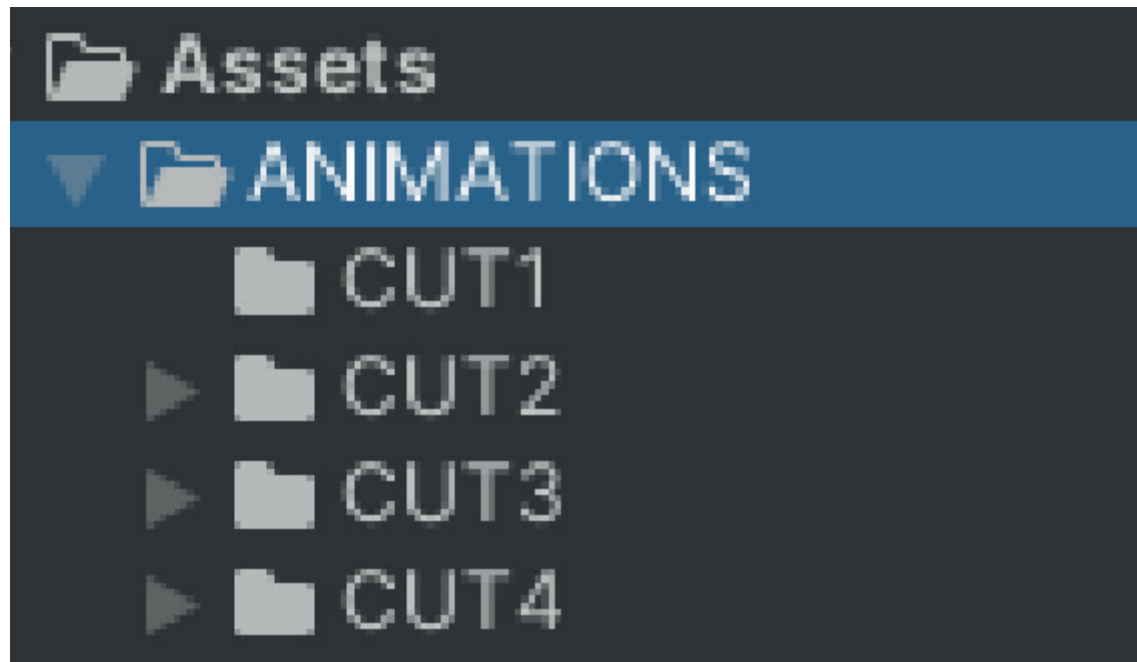

Separated project folders

Planning analysis

With obstacles encountered during this project, my original timetabling was thrown off and my plan changed. I found in this project, once everything was ready, I could easily work in 'sprints', such as with KC when we had limited time together, we worked non-stop on the mix, getting it done quickly and efficiently and giving us extra time for refinement. Despite the obstacles for development of the visuals, the same can be said, and the last few weeks I worked hard and efficiently on creating a demonstration on my brief plan and the variety of visuals and skills I could produce. I based my timetable on estimates of my development speed from the test files (I started the test files during the planning and brief-writing stage), and these estimates remained accurate even towards the end, as during the last development sprint I was working at about 10 minutes of the mix per week, with a 15 minute experience being produced in a week and a half. I believe if I started production when planned, I would have a rough, but complete, beta version of the mix from start to finish, possibly with time to produce a menu and loading sequence, however I don't think not achieving this has taken any value away from this project, as I have learned the same processes and planning steps, as well as overcoming hurdles during a large project development, that I would have whether I completed production or not. Ending my submission with an unfinished project, but a strong plan, has enabled me to look ahead, and think about adapting my project to work on it at home, and not feeling pressure to work against the deadline might even help the project become better, more thought out and more valuable to employers and people who might be interested in my work. While I was waiting for facilities I also found that the program I started using, Microsoft project planner, was both difficult to read and write plans with, and eventually I stopped using it. Instead I found use in my phone's notebook app, and a stripped back app called Noterly that places notes in android's notifications until they're completed, a testament to the fact that the best productivity tools, particularly for me, are the most accessible and simple to use ones. When thoughts came into my head, I wanted to write them down fast and scribble them out easily, and the notes app was the best place for me to do this. Being able to write all my thoughts became extremely useful, and something I hadn't done enough during my time at university. It was a lesson I learned that, even if marked work, or design development isn't being carried out, even thinking about the projects, discussing them with people, brainstorming ideas, is all extremely valuable, and writing them down to then be included in documentation makes the overall process so much more seamless. These notes and thoughts then lived as a widget on my home-screen, along with a deadline countdown widget, and my to-dos in my notifications. These tools combined with a modular development approach streamlined this project, and are techniques I would carry out in other similar projects and furthermore in the continued development of this project.
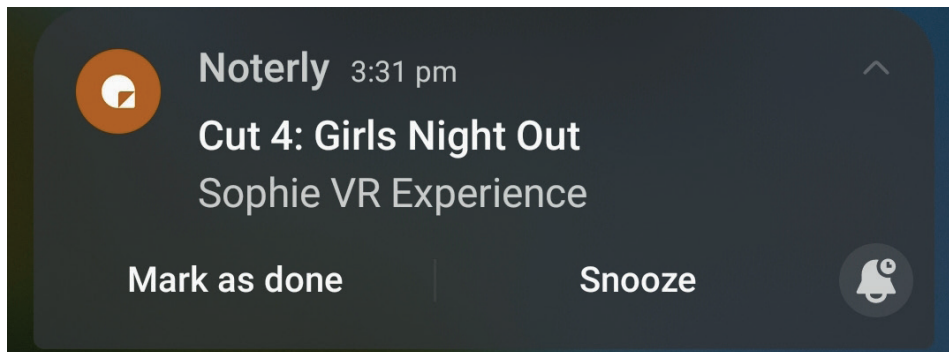
Noterly notification
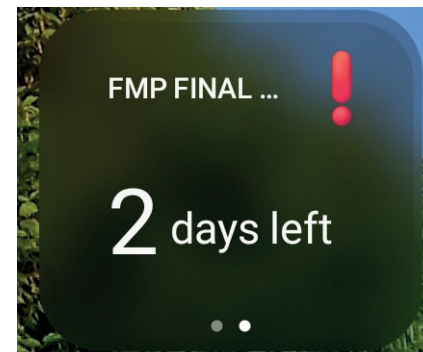
*Deadline countdown*
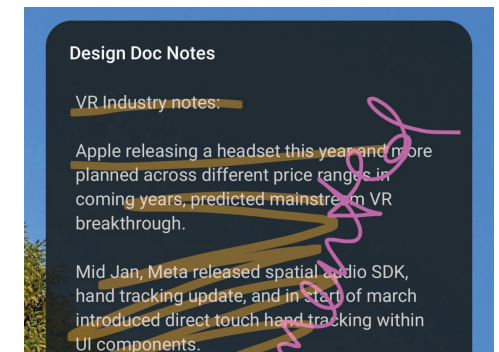
Notes widget

Retrospective Analysis

Social media communication

A key part of community engagement during this project, besides the public project update page, was my use of social media posts and updates on Instagram and Twitter. I started making use of social media for my work during the CoLab and Pitching and Prototyping modules, and continued it with this project. I contacted artists like Isaac Cohen on instagram, who responded and showed interest in my project (Isaac Cohen is the visual artist who works for PC Music, specifically Hayden Dunham AKA QT), as well as contacting Sophie adjacent fan pages such as @xcxshake and @xeonparadise on instagram. Both pages shared my work and information on their stories which helped me reach the target audience and receive another music submission, a remix of infatuation, from a fan. I also posted stories for project updates on my websites, drawing traffic to the page, and video snippets of my development. The goal was to keep my development process as publicly transparent as possible. I also opened some polls to gain insight for next steps, such as where to open the Sophie Project Update page, which everyone voted to keep on my main website.

*Twitter posts*
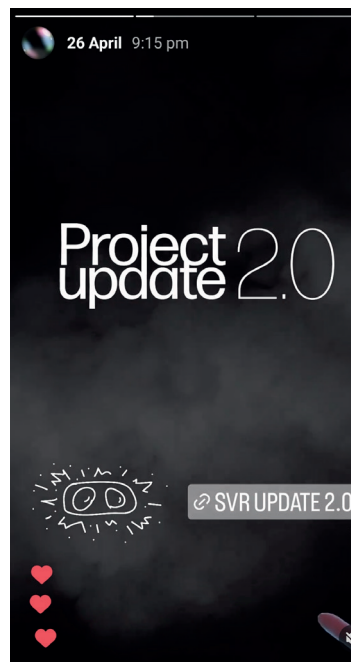
Instagram story posts
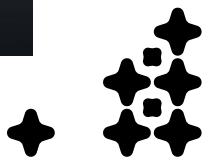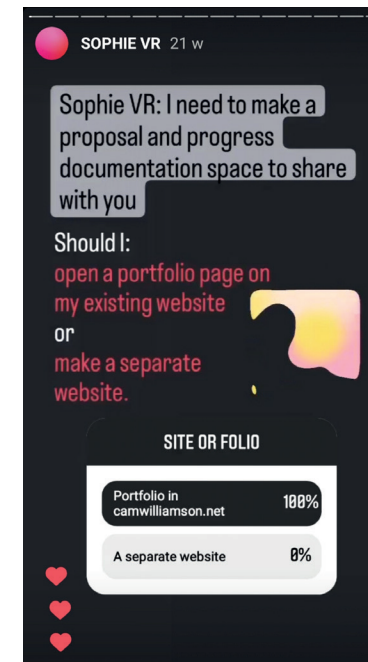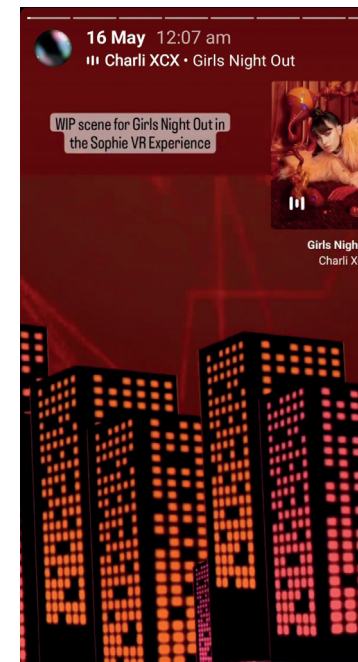
Conclusion

What went well?

The biggest success of this project has been how much I have learned, considering this idea and VR development as a whole was a complete unknown to me. I had only used Unity 3D once before and so beginning this project was a total leap of faith. I've learned and developed the fact that I seem to be confident when learning new digital mediums, programs and design processes, and this was the ultimate test and evidence to myself that this is true. I also think this is evidence enough to an employer that I can pick up totally new mediums and have confidence in the face of a new design system and process. This project has also given me so much confidence in the industry I'm interested in, extended reality, and even from the short time developing, it's given me a huge understanding of how one might design in this field. When I look at other XR projects, I have some level of understanding of how they may have been created, or how I might go about creating them myself, instead of the process being a mystery to myself. Aside from learning more about Unity and the technical skills involved in this project, I entered a very personal and meaningful part of my life which is the music and community I feel a part of, and creating something for this space has been a dream, and is an ongoing goal for myself. Just from the beginning of this project, I have seen how it has helped me connect with fans and other artists on a small scale, and I believe as this project evolves more over the summer, more connections will develop and my network within the community will broaden. Celebrating a subject as sensitive as an artist who has passed away was also difficult and emotional to approach, but my passion for this project, and the combined excitement and support from others who liked the sound of it confirmed to me that it has been approached well. I made sure to keep the development process as clear and transparent as possible, calling for submissions and working with KC to make this a collaborative effort instead of a personal and reserved project. The goal was a love letter to the community as much as it was a celebration of Sophie and I believe I have taken the right steps to make sure this had a collaborative and community focused process. Being in a three-person course with similarly collaborative course-mates showed me that I enjoy group and collaborative work so that experience was what I built on, especially during the mix development.

The mix was also a huge learning experience but KC and I had a good creative bond and the ideas that we had for transitions and song placements created a really special final result and a very solid base for the visuals to build on. My initial test programs helped me learn more about the time needed for development, as well as getting the hang of setting up the scripts I had found for the project, and the process of using them for a VR experience. These became so important not only as proof-of-concepts but to help me plan accurately and go into the main project development with confidence.

I think my modular approach to the project reflects how a large project would be carried out in a job or even a team. Seeing each section as its own mini-project let me focus on development and fine-tune it, before introducing it into the main file and then being able to focus on incorporation separately. For other future large projects I will also take this approach, finding ways to split it down into areas of focus. The mix made this process easy for me as it was, by nature, a timeline with clear cut sections, but there would be other ways to break a project down in this nature, for example in a multi-scene VR experience, I could focus on each scene, or break the scene down further into features of the scene to approach one-by-one.

Overall, despite not finishing the whole thing, I think I have demonstrated a wide range of newly developed skills such as mix making, online project communication, large project planning, modular development processes, Unity VR development and Unity key-framing. This project had been an idea for a year and with nothing but excitement, it developed into the beginning piece of work that I am already extremely proud of.
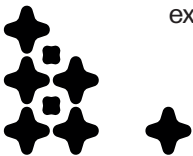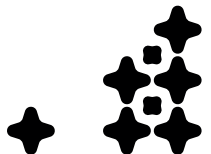
Conclusion

What could be improved?

Despite being very proud of this project, there are definite areas of improvement. The first issue I encountered early was in my lack of research and though about the planning tools I would use for this project. I went straight into using Microsoft Planner, and found that it was clunky to use and hindered my plan and ability of following my timetable. To avoid this I should have tried a couple of planning tools or though about what is the easiest and most convenient for myself in this project. Approaching the planning system with more research would have given the rest of the project a stronger starting point.

I also believe I should have carried out more testing building up to this project, and diving into such an ambitious project idea was a gamble. Luckily I learned the tools and processes quickly, but I could have easily ended up biting off more than I could chew, and experimenting and familiarising myself with Unity more before the start of this project would have given me more confidence going in. Overall this wasn't an issue and I can say that I have learned a lot by not knowing the many of the processes before the project.

The biggest area of improvement and cause of delay for this project was the fact that UCA can take a long time to give access to hardware and software. They have strict procedures for allowing new software to be downloaded on computers, and the need for admin to install required programs makes the whole process quite slow. I wasn't really aware of this going into this project, but I should have been more prepared and contacted facilities and staff about gaining access to the required software and computers before the project started, to give myself more wiggle room and the ability to keep on top of the timetable. However, to an extent I see this delay as a positive, as it allowed me to take a proper step back from my plan and approach the development and documentation with more care. I have a habit of getting too involved in the design process that I forget to write the documentation until the very end, but being delayed half-way through this project meant I had time to document and write out all my thoughts, and overall this has helped me write a more precise design document over other projects during my time at UCA.

Another factor holding me up in this regard was my confidence when approaching staff I was unfamiliar with at university. My confidence is still an area I need to improve on when asking for help and if I pushed myself a bit more I would have sorted out issues quicker. This is something I'll be forced to overcome at a new job, but it's easy to fall back into the comfort zone in a small course in a small uni, and I think it's shown a negative in this regard (however my experience has been incredible overall, and small courses and universities also have huge positives).

Conclusion/Project Screenshots

This idea was chosen over my excitement for cutting edge technology, especially the immersive nature and creative benefits of extended reality, and my love for electronic music, and the queer roots and subcultures within this music community that make it so experimental and future-facing. I believe this final project has done a good job in placing me in this space, both network-wise, and skills wise, and to a personal level it has allowed me to express my appreciation for a very meaningful creative and huge source of inspiration in a project I am extremely proud of. This project has sparked the beginning of a new stage in my career and life, and also marked the end of one, and as I continue development on it over the coming months and continue though life, it will be the landmark piece of work to symbolise my time at UCA.
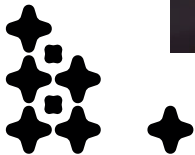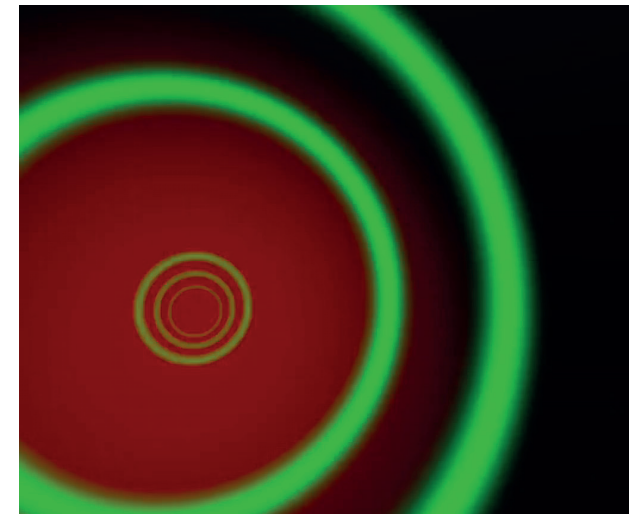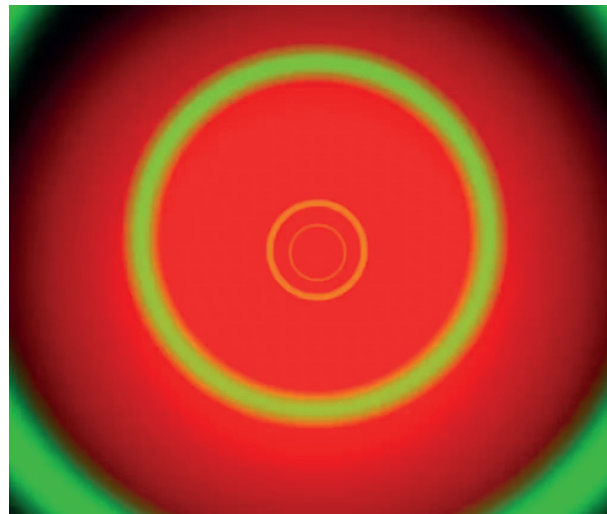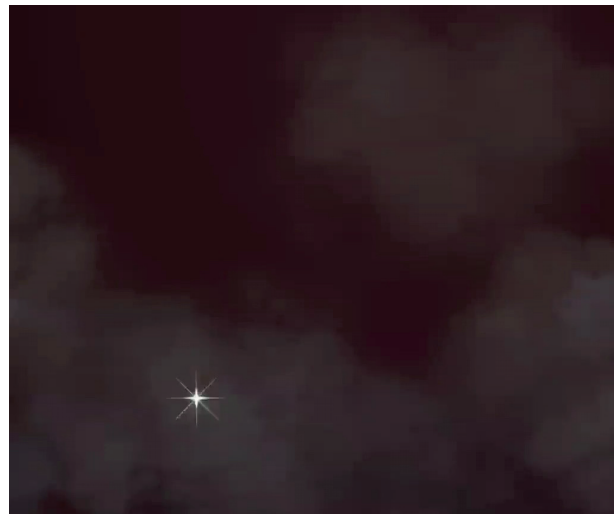
Project Screenshots
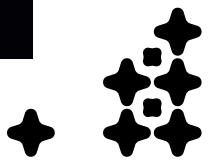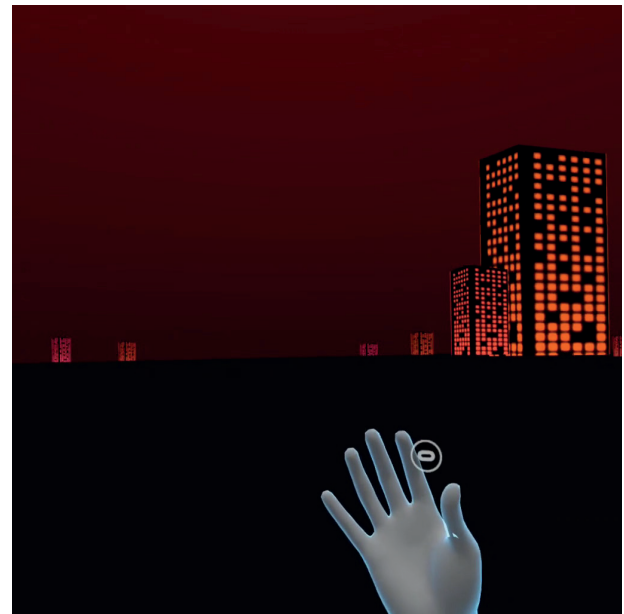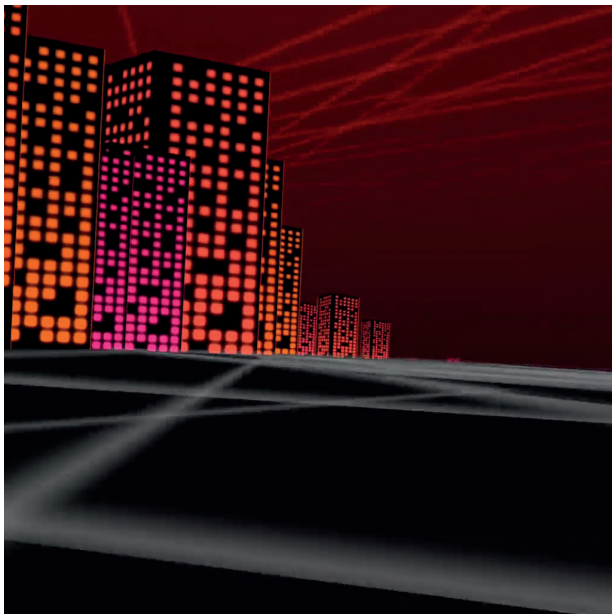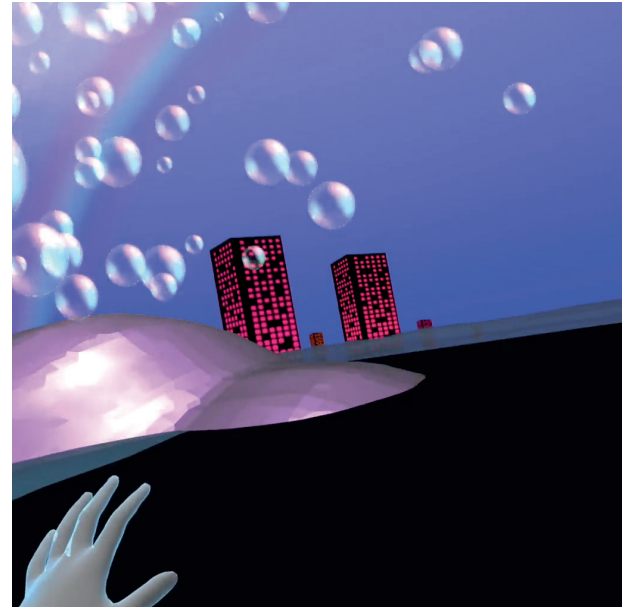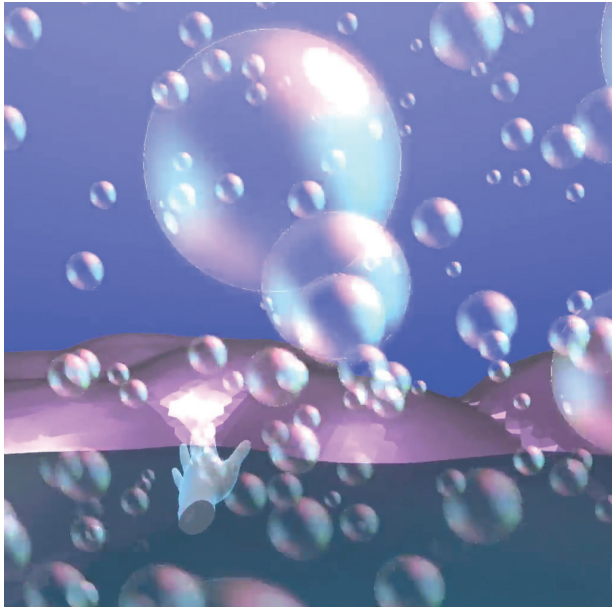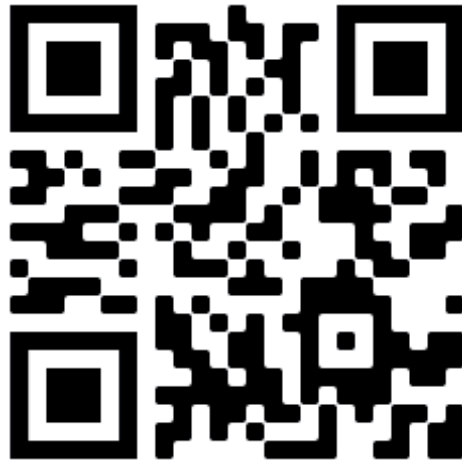
Scan this code to visit the final screen recording on Youtube.