

Special thanks to Kyle, Paul, Chris and Daniel for all the incredible teaching – and patience – over the past four years.

Work



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Opening Act

This project seeks to create an immersive sensory experience for the modern web, using audio-reactive visuals.

A play on the words 'synthesizer' and 'synesthesia' (which is a rare condition in which you experience sound as colours or shapes). The name came to me very early on in the product ideation stage and was almost too perfect to deviate from.

At the core, the product itself is a web application that visualises sound and music, which you can interact with.

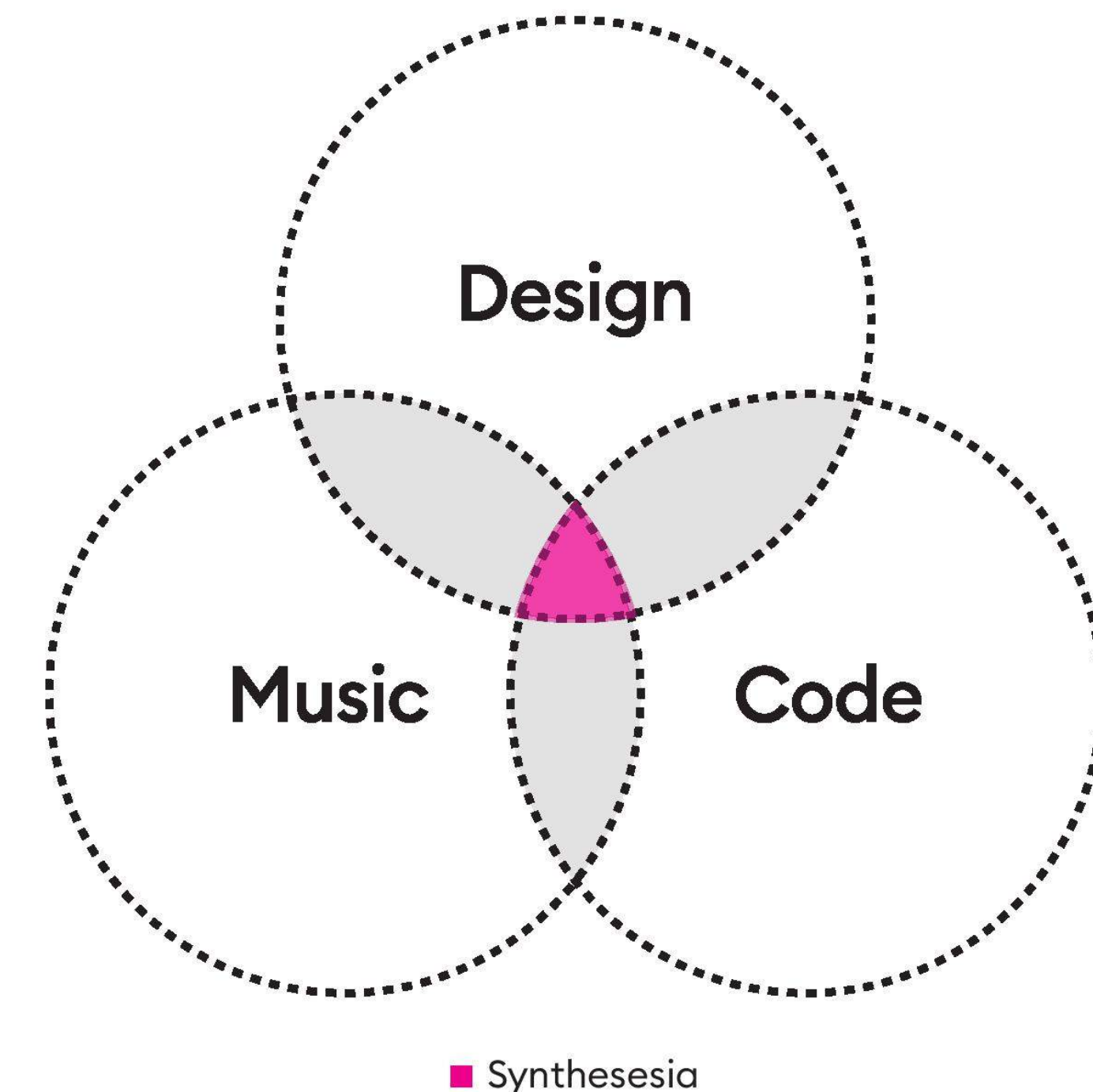
Aside from being a purely explorative project, there is a space for Synthesesia as a tool to generate album artwork or concert visuals for artists.

I decided to work on this type of experimental project for a variety of reasons. From the beginning, I knew that I wanted to work on something that I have not considered before.

With regards to product and user experience design, recently everything on the web feels homogenous and uninspiring, and frankly speaking I did not want to spend my final year at University working on anything related to Software-as-a-service (SaaS) or dashboards.

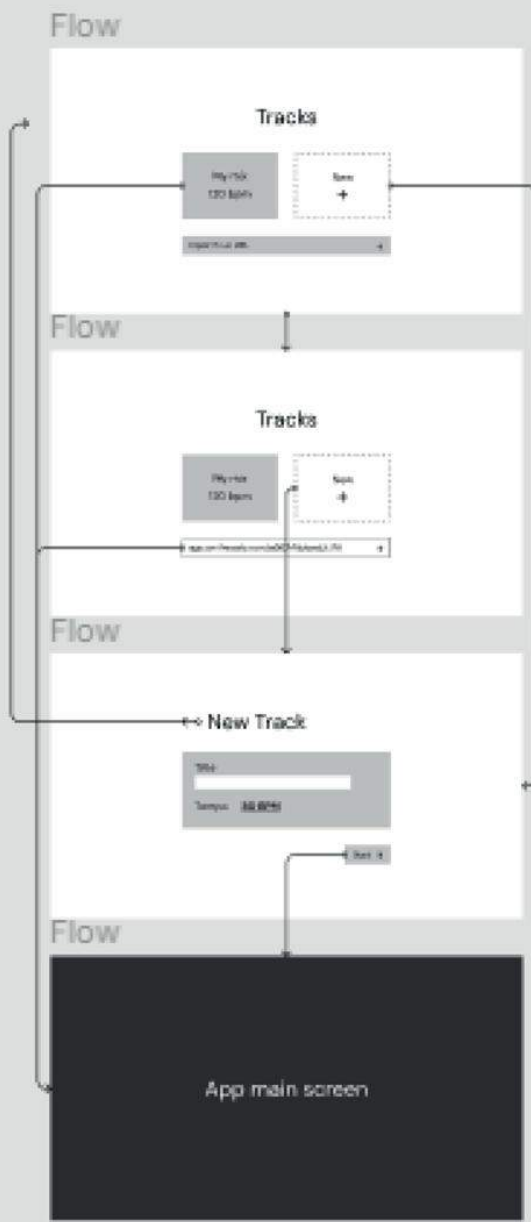
This presented me with perfect opportunity and space to research different mediums that I'm not experienced with.

In addition, the project combines three areas that I'm passionate about: design, code, and music. If I'm working on something for nine months, I may as well make the project enjoyable!

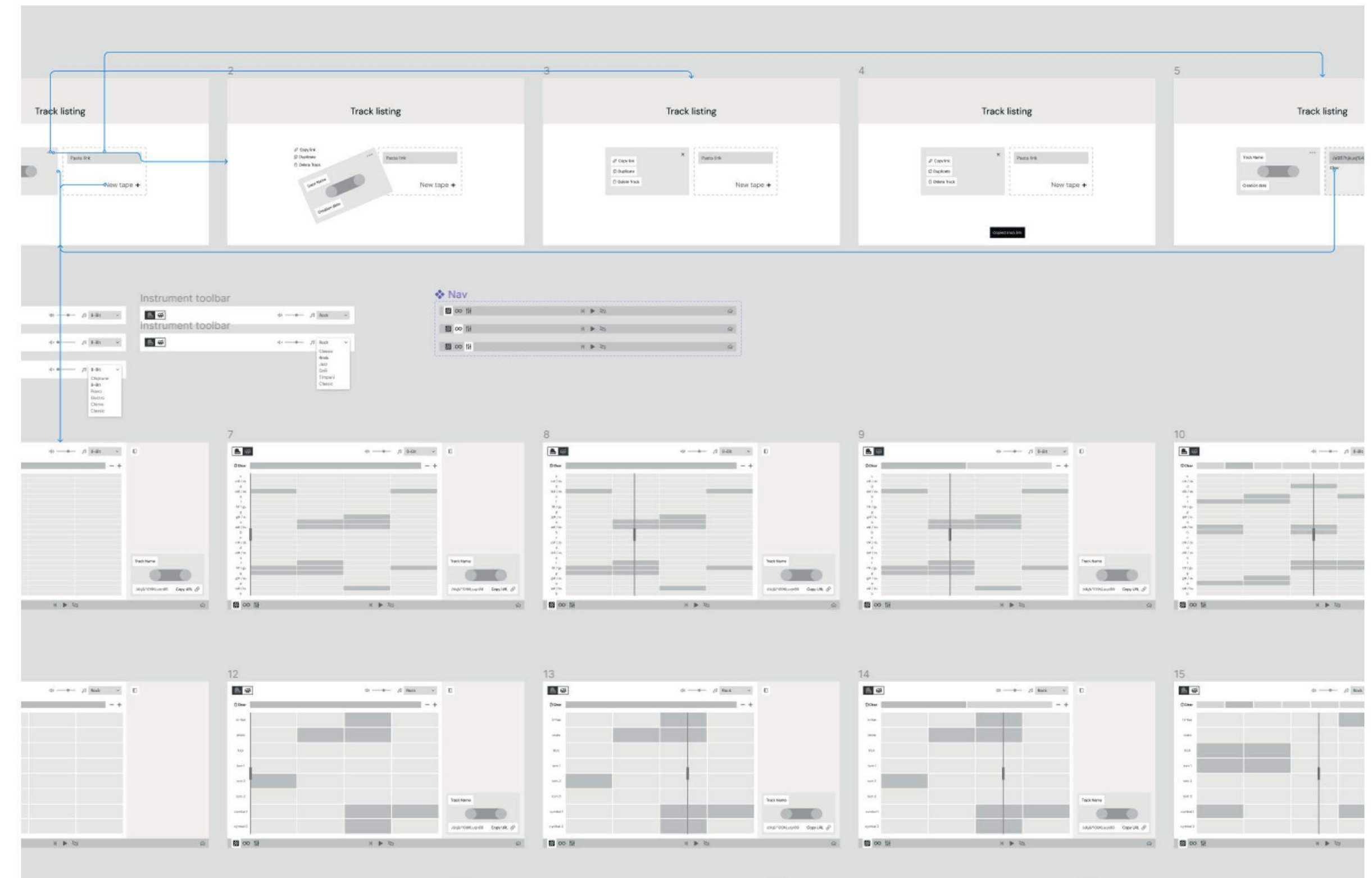


Strengths & Weaknesses

Over the course of this project I have found success in a range of different skill sets. It is also important to recognise and reflect on some of the shortcomings as well.



v 0.1

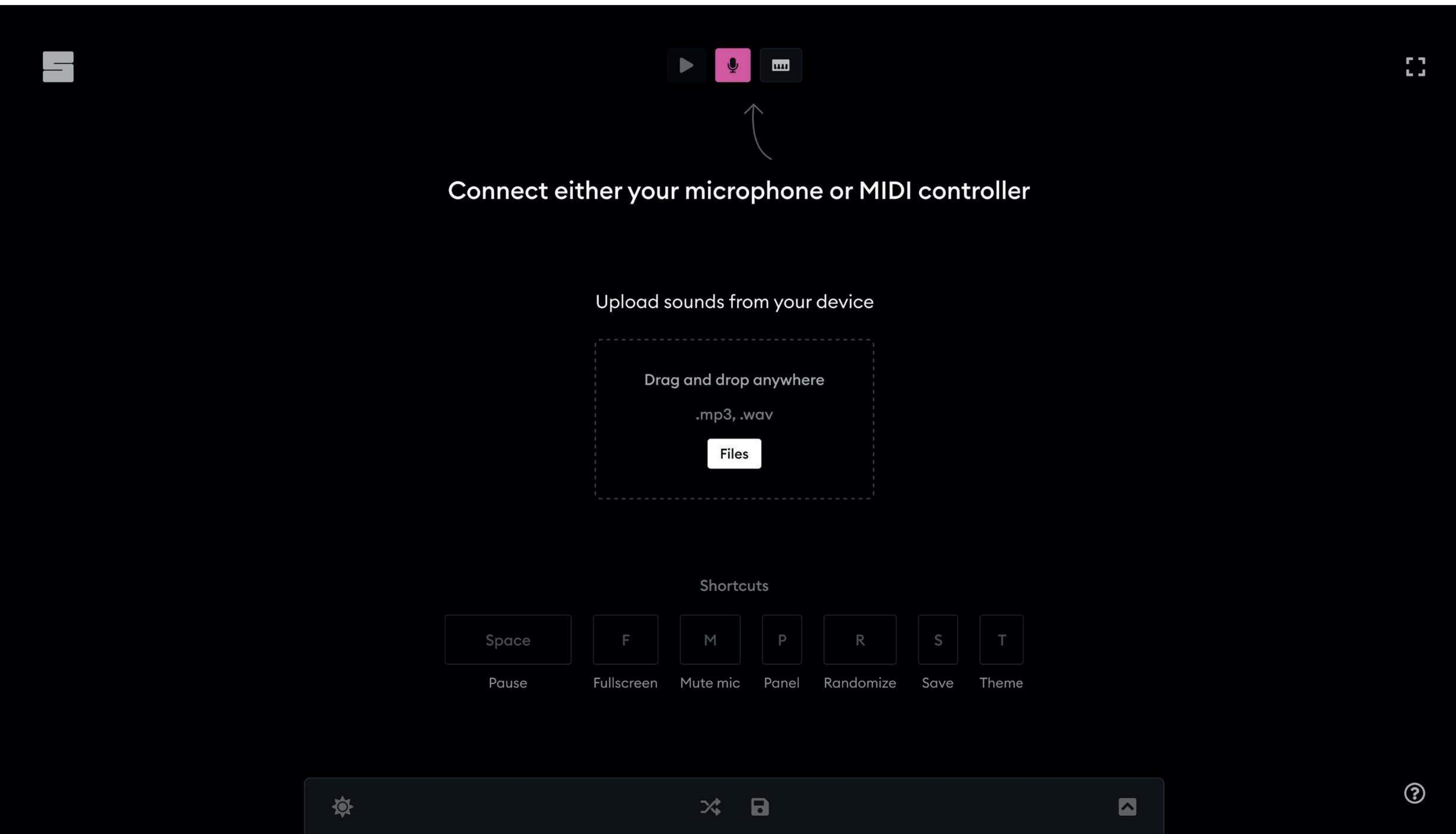


Rapid Prototyping & Ideation

Regarding early ideation, I found the process relatively easy to conjure up interesting project concepts and directions.

As well as this, having worked on a team for the past two years with varying project timescales and deadlines has also allowed me to iterate quickly and efficiently on prototypes at a high level.

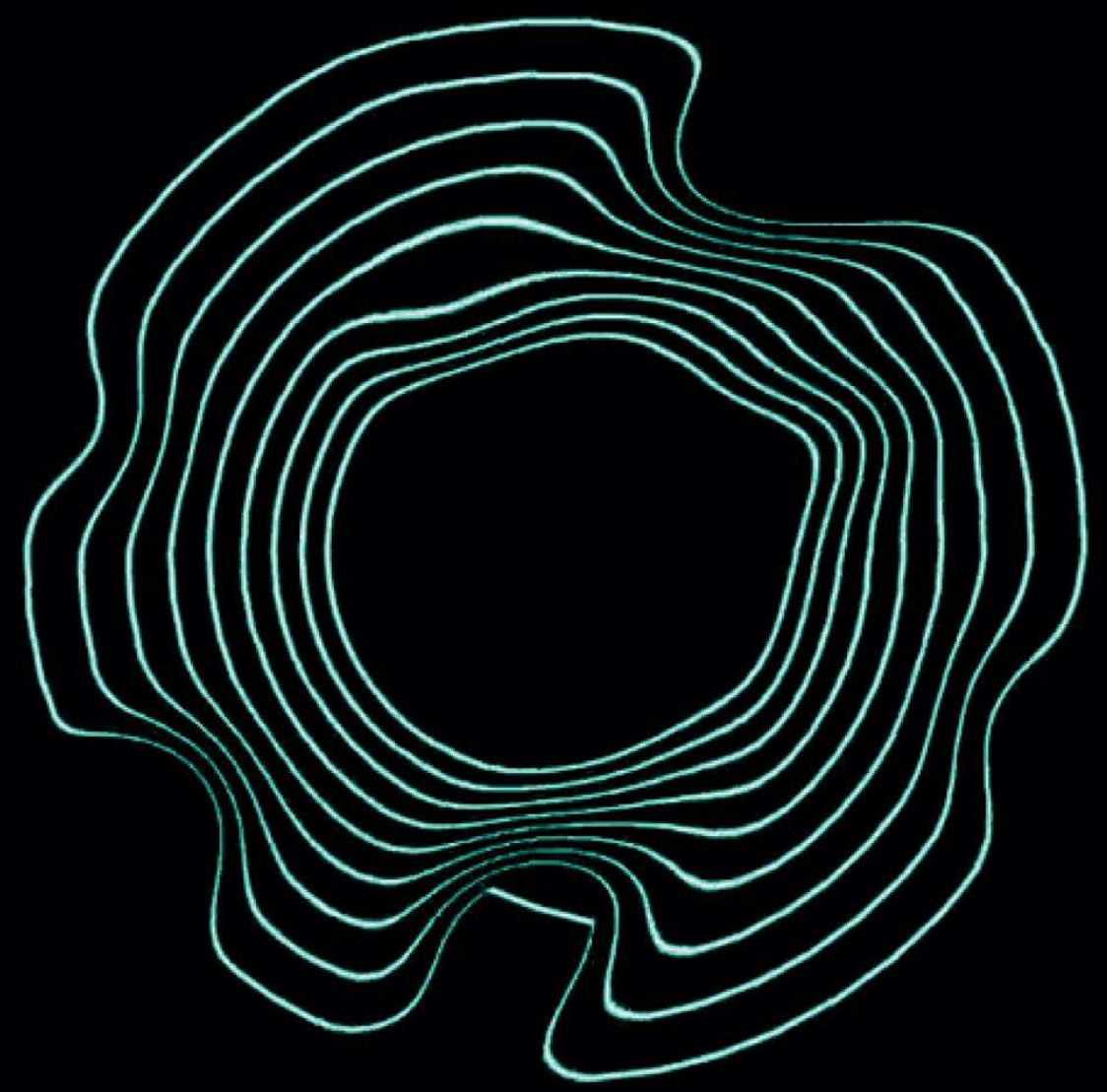
User Interface (UI) Design & Front-end Development



In combination with prototyping, I consider myself to be well-versed in UI design and front-end development, in which I'd label myself as a code-oriented designer.

This has proven to be extremely beneficial for this particular project, as it has empowered me to design things with real considerations for how features will be built.





Connect either your microphone or MIDI controller

Upload sounds from your device

Drag and drop anywhere
 .mp3, .wav
 Files

Shortcuts

- Space
Pause
- F
Fullscreen
- M
Mute mic
- P
Panel
- R
Randomize
- S
Save
- T
Theme



Weaknesses

There have however been some shortcomings of this project, due to the experimental nature of Synthesesia.

In particular, the prototypes have been heavily reliant on coded visuals, as the concepts are too complex to create in regular interface design tools.

At certain times this left a lot more questions than answers, as code would need to be written to fully realise ideas.

Another problem I have faced is sticking with a direction and just running with it.

There have been times throughout where I've been hit with "analysis-paralysis"^{*}, in which there are almost too many directions I could take the project that it became overwhelming to decide which way to go.

Aside from tutorials and lecture feedback, I do think that I could have been more open to sharing my work publicly out in the open.

I do not particularly enjoy posting on social media, which is detrimental to the idea of showing industry-folks what I'm working on.

^{*} "analysis-paralysis": overthinking a scenario to the point of inability to make a decision.

Lessons learned

On reflection, there are traits that I can take forward for other projects - and my career in general.

For example, I think that I excelled at experimentation and playing with novel ideas. Also, sticking to my strengths in visual design and code gave me a safety net and open space to explore wild ideas without fear of failure.

Independence and the ability to work without hand-holding also meant that I could get work done under-pressure and on time, which of course played a pivotal part for this project.

If I were to attempt a project like this again, one area in particular that I can improve on is being more forward-going and open for feedback.

Whilst I'm proud of the outcome of my work, if I had iterated earlier and more often from feedback would mean less pressure and stress at the tail-end of the project.

Challenges Faced

One of the biggest challenges that I faced on this project was at a technical and code level. Having never worked with audio on the web, or created many experimental visuals before, there were a lot of new frameworks and technologies to research and get acquainted with.

As mentioned earlier, a big challenge has been project pivots and changing directions throughout the process. Whilst this provided me with an opportunity to research a range of different areas, this also meant that key developments and milestones were delayed by a few weeks.

Because of this, the project struggled to get realised for a large amount of time.

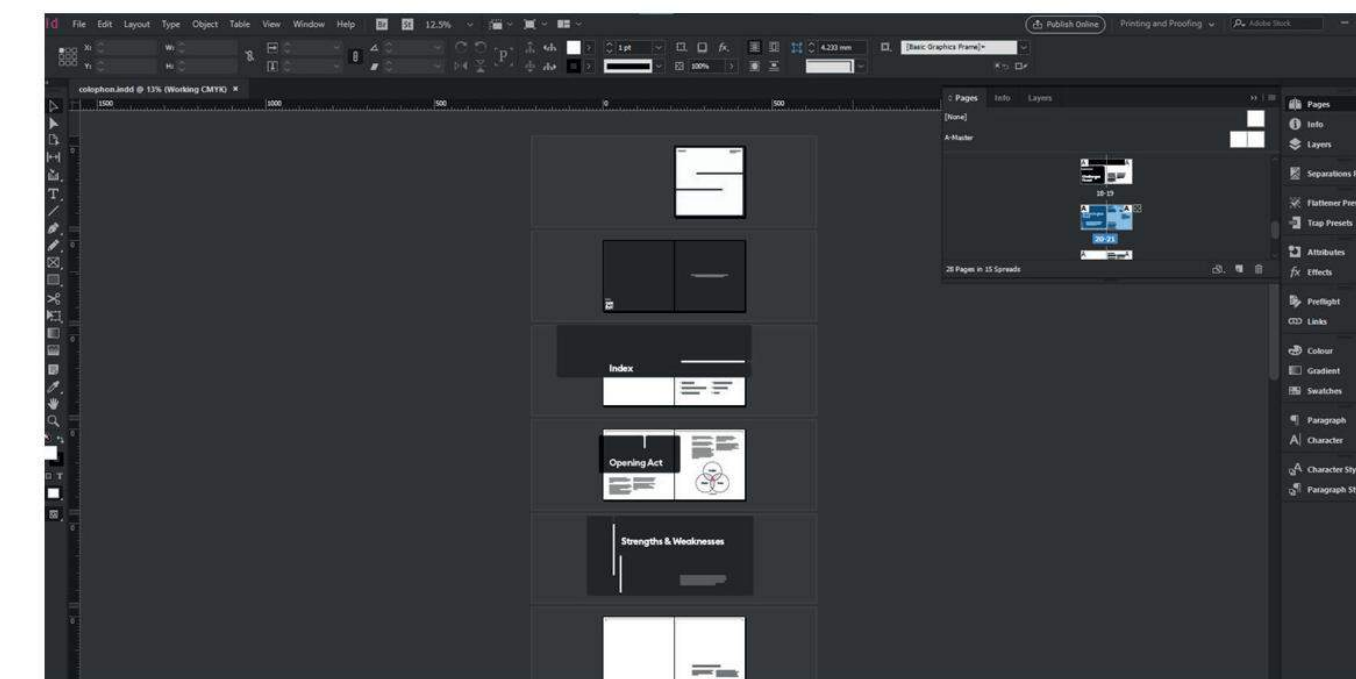
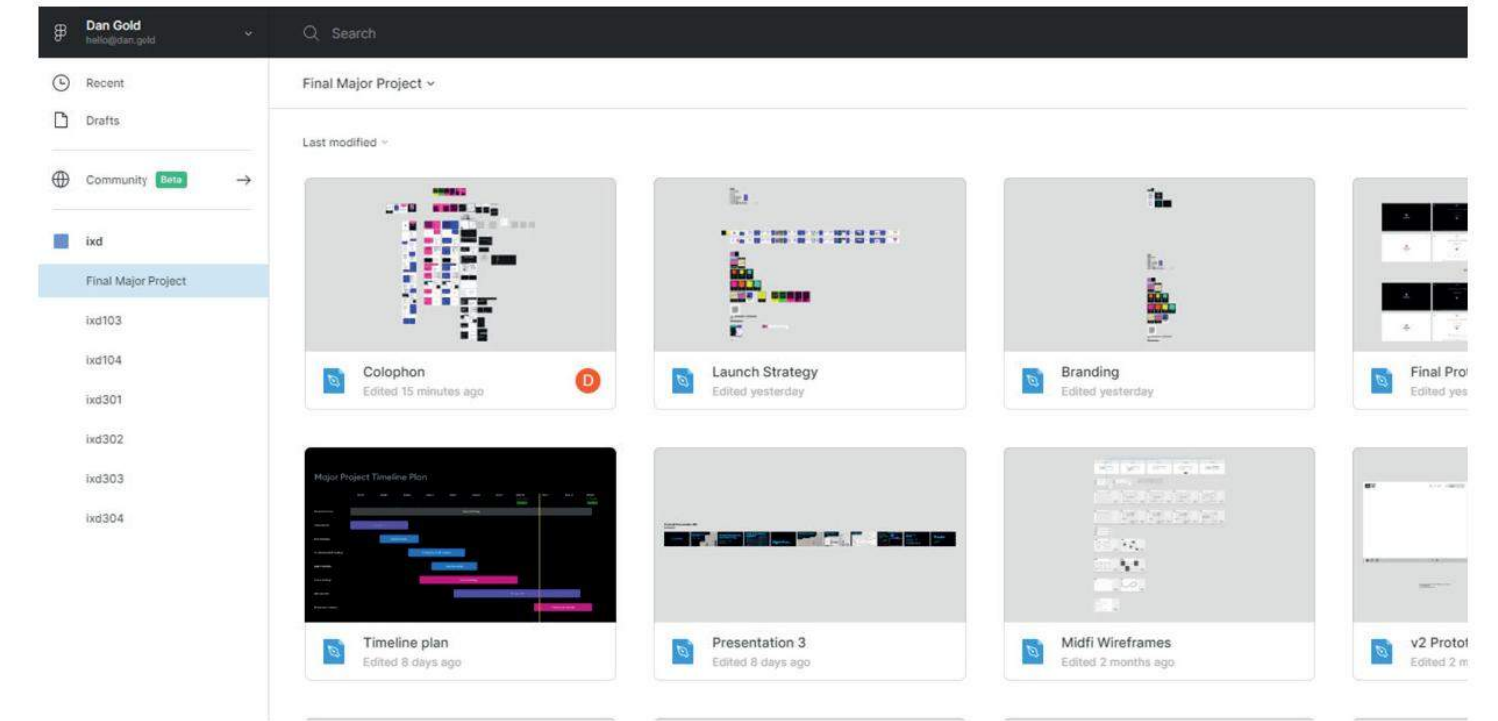
It is also worth noting that a major challenge personally this year has been burnout and finding the motivation to work during the current COVID-19 pandemic, whilst also balancing the workload in tandem with my professional job.

Technologies Used

This project encompassed a wide variety of technologies throughout, which has been a fantastic learning opportunity for industry-relevant skills.

Visual Design & Prototyping

Almost every touchpoint of the design of Synthesia was made in 'Figma'. From brand and logo design, to wireframing and hi-fidelity interactive prototypes, even slide deck presentations; Figma was powerful enough to manage everything with ease.



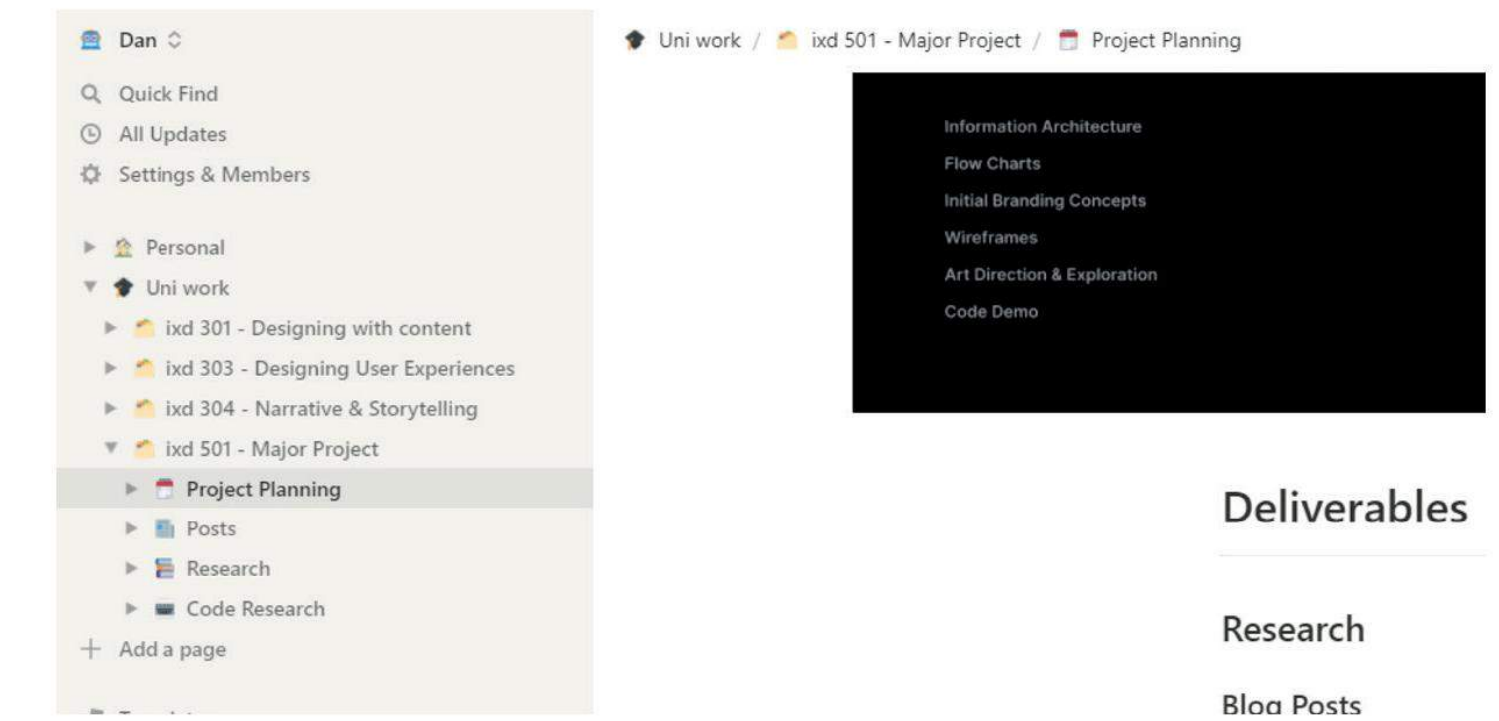
Print Design

I opted to use a combination of Figma and Adobe InDesign for creating printed materials such as this report, as they both provides all the utility needed such as print lines and colour management.

Project Management

Managing the workload proved to be a tricky task, from organising blog posts and highlighting key milestones. One tool in particular that helped greatly was 'Notion', which is an all-in-one notepad and productivity app.


Using templates such as kanban boards and gantt charts, I was able to organise all the project content in one place.



- Deliverables
- Research
- Bloa Posts

Settings for synthesesia

www.synthesesia.com
Deploys from GitHub. Owned by Dan Gold's team.



General
Build & deploy
Domain management
Domains
HTTPS
Analytics
Functions
Identity
Forms
Large Media
Access control

Domains

Use your own domain for your Netlify site for free

Custom domains

By default, your site is always accessible via a Netlify subdomain based on the site name. Custom domains allow you to access your site via one or more non-Netlify domain names.

- synthesesia.netlify.app**
Default subdomain
- www.synthesesia.com**
Primary domain
- synthesesia.com**
Redirects automatically to primary domain

[Add domain alias](#)

```

1 {
2   "name": "synthesesia",
3   "version": "0.1.0",
4   "lockfileVersion": 1,
5   "requires": true,
6   "dependencies": {
7     "@babel/code-frame": {
8       "version": "7.12.11",
9       "resolved": "https://registry.npmjs.org/@babel/code-frame/-/code-frame-7.12.11.tgz",
10      "integrity": "sha512-Z11yodBx1UcyiePMSKWNu4hPqhWq7hG1znFL1LeA3EUL+q2LQx16MISgJ0+z7dnm",
11      "requires": {
12        "@babel/highlight": "^7.10.4"
13      }
14    },
15    "@babel/helper-validator-identifier": {
16      "version": "7.12.11",
17      "resolved": "https://registry.npmjs.org/@babel/helper-validator-identifier/-/helper-validator-identifier-7.12.11.tgz",
18      "integrity": "sha512-np/LG3uARfYbkoHokJUmF1QfEvRVCpbmQeUqKow5cQ3xWv9i3rUHodKDJJQFTV",
19    },
20    "@babel/highlight": {
21      "version": "7.13.10",
22      "resolved": "https://registry.npmjs.org/@babel/highlight/-/highlight-7.13.10.tgz",
23      "integrity": "sha512-JoI625mPLnu52LHYjF8rUo2779L3Q4l888oV15dVzf9Sft8pUk7FJYUwY1Hr8wy7X1s8ByJAL+DU39n",
24      "requires": {
25        "@babel/helper-validator-identifier": "^7.12.11",
26        "chalk": "^2.0.0",
27        "js-tokens": "^4.0.0"
28      }
29    },
30    "@babel/runtime": {
31      "version": "7.12.5",
32      "resolved": "https://registry.npmjs.org/@babel/runtime/-/runtime-7.12.5.tgz",
33      "integrity": "sha512-X64ENy4AwrA3F7XyS9tUJCSEY9UfBgIvEnHb6PjXnKQ6u6WFr4bRo7Yh3ZrFvZ6YI8l1N7cgnbIVZBZ8w",
34      "requires": {
35        "regenerator-runtime": "^0.13.4"
36      }
37    },
38    "@babel/types": {
39      "version": "7.8.3",
40      "resolved": "https://registry.npmjs.org/@babel/types/-/types-7.8.3.tgz",
41      "integrity": "sha512-jL85olajYyhbkXc/WDpKE9SB8uIyyvCc4z9d5FR8MXnjP7pBYt0K654EMurpQzXq4zBX1Tj1IB6IPq8LZG8A",
42    }
43  }

```

Front-end development and hosting

My go-to text editor of choice for the longest time has been ‘VS Code’, which is perfect for handling coding projects of any size.

Regarding the languages used for the front-end build, I decided to use the framework ‘Next.js’. Built on top of ‘React.js’, it enables me to create web applications using components and live data with minimal configuration.

All the project content is hosted and served by ‘Netlify’, which is an incredible product. At the click of a button, changes can be made and almost instantly updated to the live application.

Netlify also provides the ability to create subdomains, so different parts of Synthesesia can live in different areas, such as ‘code.synthesesia.com’ and ‘app.synthesesia.com’.

API’s and libraries

Synthesesia makes use of a range of open-source libraries and API’s, which have been critical to the development process.

Firstly the ‘Web Audio API’, which provides a way of creating and playing audio inside the browser window, has been crucial for this project.

Learning how to create sounds and then serve that in a browser is something that will be a very useful string to my bow outside of this project. The Web Audio API can be used for small details and micro-interactions, which help elevate products to a different level.

‘Three.js’ is used for the interactive canvas element of the application, and also creates a 3D environment inside the browser. Again much like the other libraries, learning and experimenting with Three.js has a plethora of industry use-cases.

The ‘Spotify API’ is an incredibly powerful tool which enables a method of gathering song information and data that can be used programmatically.

REFERENCE

- Reference Index
- Search API
- Browse API
- Follow API
- Playlists API
- Library API
- Artists API
- Player API
- Markets API
- Personalization API
- User Profile API
- Albums API
- Tracks API
- Episodes API
- Shows API
- Objects Index

contains an **audio features** object in JSON format. On error, the header status code is an **error code** and the response body contains an **error object**.

[TRY IN OUR WEB CONSOLE](#)

Get Audio Analysis for a Track

Get a detailed audio analysis for a single track identified by its unique Spotify ID.

Request	HEADER	TYPE	REQUIRED
Authorization	valid access token from the Spotify Accounts service; see the Web API Authorization Guide for details.	String	Required
PATH PARAMETER	{id}	String	Required
	The Spotify ID for the track.		

Response

On success, the HTTP status code in the response header is **200 OK** and the response body contains an audio analysis object in JSON format. On error, the header status code is an **error code** and the response body contains an **error object**.

[TRY IN OUR WEB CONSOLE](#)

```

18   "type": "audio_features",
19   "id": "06AKEBrKuckW0KREUMRnvt",
20   "uri": "spotify:track:06AKEBrKuckW0KREUMRnvt",
21   "track_href": "https://api.spotify.com/v1/tracks/06AKEBrKuckW",
22   "analysis_url": "https://api.spotify.com/v1/audio-analysis/06",

```

```

GET https://api.spotify.com/v1/audio-analysis/{id}

```

```

1 // json response
2
3 {
4   "bars": [
5     {
6       "start": 251.98282,
7       "duration": 0.29765,
8       "confidence": 0.652
9     }
10  ],
11  "beats": [
12    {
13      "start": 251.98282,
14      "duration": 0.29765,
15      "confidence": 0.652
16    }
17  ],
18  "meta": {
19    "analyzer_version": "4.0.0",

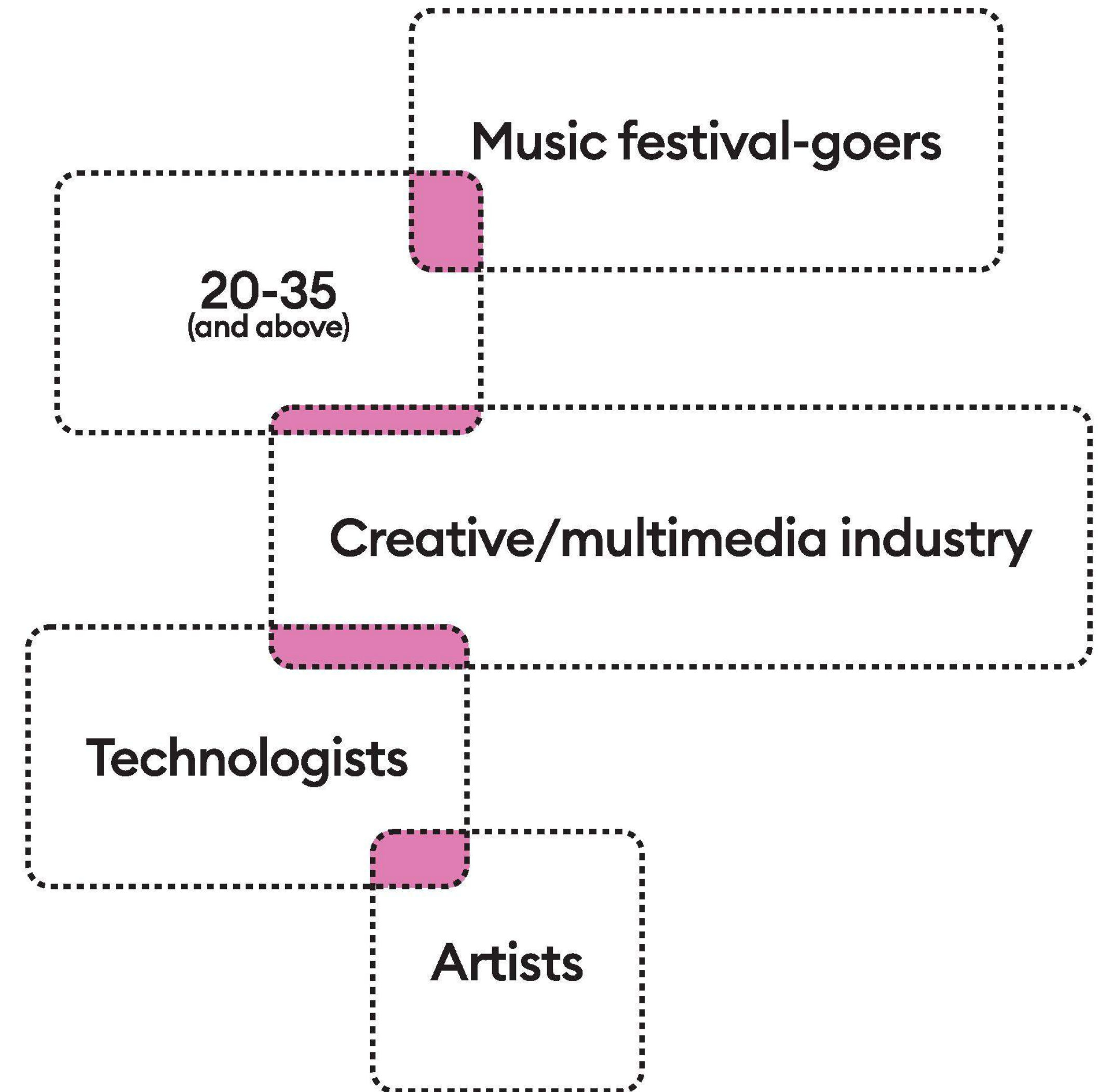
```


Target Market

When initially researching the market area, I found that user profiles on creatives in the industry were much more beneficial than from members of the general public, which helped to gain an understanding of what others are creating.

The generic target audience for Synthesia falls around the 20-35 age bracket. With that being said, the project is still focused on experimental work, which in theory should be accessible for all age ranges to have fun with.

As mentioned previously, Synthesia will be distributed via a web application, which keeps the barrier to entry extremely low and accessible, as it is not restricted by device or operating system. As this is purely experimental and more of a research piece, it is completely free to use.



Finale

This project has been extremely fun to work on. It has provided me with an opportunity to learn so many different tools and mediums covering music, generative art, and interactive web applications.

It is not the most conventional project, but over the course of this year it has re-energized my enthusiasm for Interaction Design, and the future for digital experiences.

Thinking further ahead, my goal for Synthesia is for it to have real-world usage, for example as a visual tool at live events, or in small gatherings as ambient artwork.

At a simplified level, I hope that people can use Synthesia as a means to experience sound and art in a more elevated way.