

# AMBIESENSE

A Pandemic Prototype

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## PROJECT OVERVIEW

### Concept:

An in-home experience to help support mental health during a pandemic through AR/VR. Project a new environment into your home, while connecting with family and friends. Take a journey, find your meditative place, or simply revamp your space!

### General Aesthetic:

Name: **Ambiosense** (~~ambio = leisurely walk, in a public place~~)

**Ambisense** (~~ambi = both, around~~)

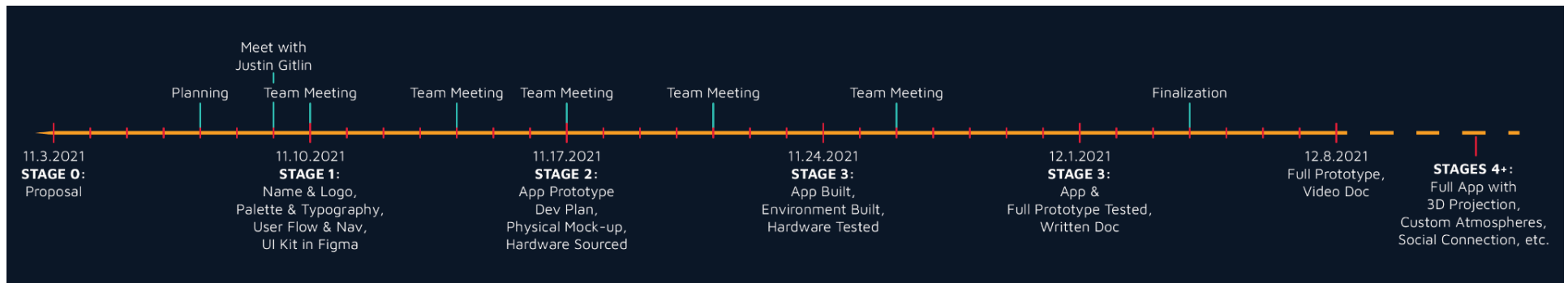
**Ambiesense** (from ambience = character or atmosphere of a place)

**Atmosense** (~~atmo = vapor or smoke~~)

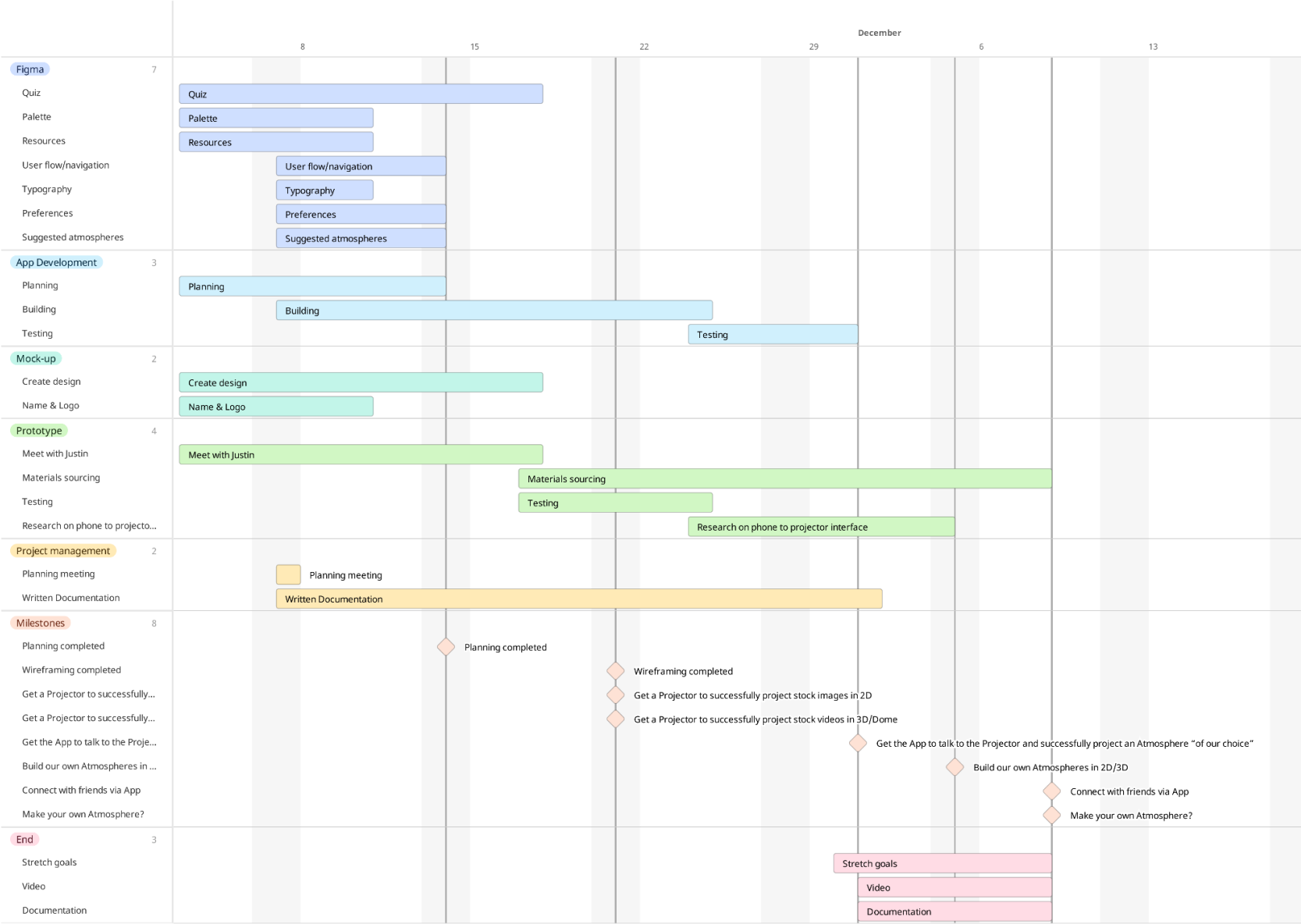
Key Terms: Accessible, approachable, comforting, clean, adventurous = warm, bright, light and dark contrast

Design Constraints: High contrast for mobile screens; Sans-serif, more easily readable

### Visual Roadmap:



Ongoing Roadmap:



View the Ongoing Roadmap [here](#) on Airtable (invitation only, see image above).

PALETTE, TYPOGRAPHY, & LOGO:

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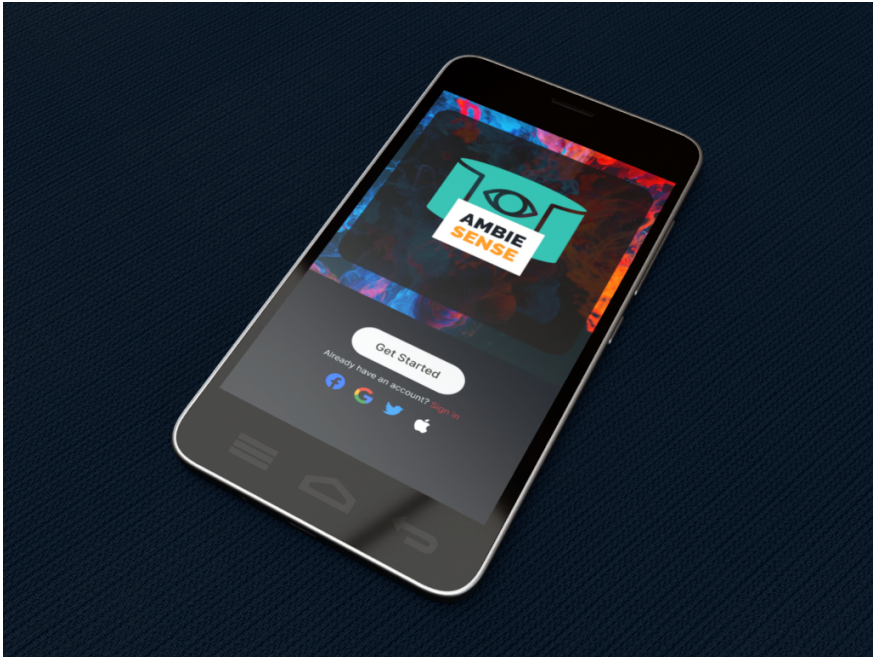
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## Project Videos:

- AMBIESENSE Commercial ([link](#))
- Prototype Walkthrough & Creation B-Roll ([link](#))

## Commercial Script:

### **[In sultry, calming tone]**

Did quarantine leave you feeling disconnected, lonely, or listless?

Try AMBIESENSE - a revolutionary AR experience that puts you right in the middle of any place you could imagine.

Experience the sights of the mountains, the sounds of the rainforest, and the smell of fresh coffee and pastries without even leaving your home.

Chat with friends in whatever environment you want or use AMBIESENSE to meditate, create the perfect atmosphere for studying, or upgrade your gaming space.

AMBIESENSE, a quarantine resistant way to enjoy life.

# PROJECT STAGES

## Project Goals:

- ☐ STAGE 0: Propose Pandemic Prototype
- ☐ STAGE 1: Design and Prototype an App in Figma ([link](#) here, by invitation only)
  - ☐ Design/Aesthetic: Palette, Typography, User Flow, Navigation, etc.
  - ☐ Content: Set-up Preferences, Questions, Suggested Atmospheres
- ☐ STAGE 2: Get a Projector to successfully project onto a flat surface with projection mapping
  - ☐ Using stock images in 2D
- ☐ STAGE 3: Get the App to talk to the Projector and successfully project an Atmosphere “of our choice”
  - ☐ Have 2-3 choices

## Future Goals:

- ☐ STAGE 4: Get a Projector to successfully project stock videos in 3D/Dome or switch to VR?
- ☐ STAGE 5: Build our own Atmospheres in 2D/3D
- ☐ STAGE 6: Feature: Make your own Atmosphere
- ☐ STAGE 7: Connect with friends via App
  - ☐ Interactions available within Atmosphere using [machine learning](#)
  - ☐ 3D Avatars
- ☐ STAGE 8: Create AR and VR Packages

## Questions, Etc:

- Hardware casing, render and print
- How to include the diffuser into the app - communication to start and manual scent inputs?
- Build-out accessibility options for app
- Move app from emulator to full Android application

## Individual Goals:

### Katie

- ☒ ~~Learn basics in Figma, help design the App~~
- ☒ ~~Create 2D/3D Atmospheres using stock images/videos~~
- ☒ ~~Get better at making professional, multimedia documentation~~
- ☐ Create our own 2D/3D Atmosphere(s)\*
- ☐ Create 3D Avatars, possible Tracking or Interactions\*
- ☐ Learn about the process of actually building an App\*
- ☐ Learn about hardware
- ☒ ~~Learn how AR projection works~~

### Jenny

- ☒ ~~Massive product management and organization of project~~
- ☒ ~~Prototyping in Figma~~
- ☒ ~~Logo design~~
- ☒ ~~Learn about hardware and app development~~

### Mark

- ☒ ~~Prototyping and wire framing in Figma~~
- ☒ ~~Interfacing software with hardware~~
- ☒ ~~Documenting things~~
- ☒ ~~Learn about projection mapping and how to integrate this with created atmospheres~~
- ☐ Create 3d atmospheres\*

### Priyanka

- ☒ ~~Came up with the initial concept! Brilliant!~~
- ☒ ~~Sourcing hardware and projection content~~
- ☒ ~~Design 3D printable housing to scale~~
- ☒ ~~Personal Notes [here](#)~~

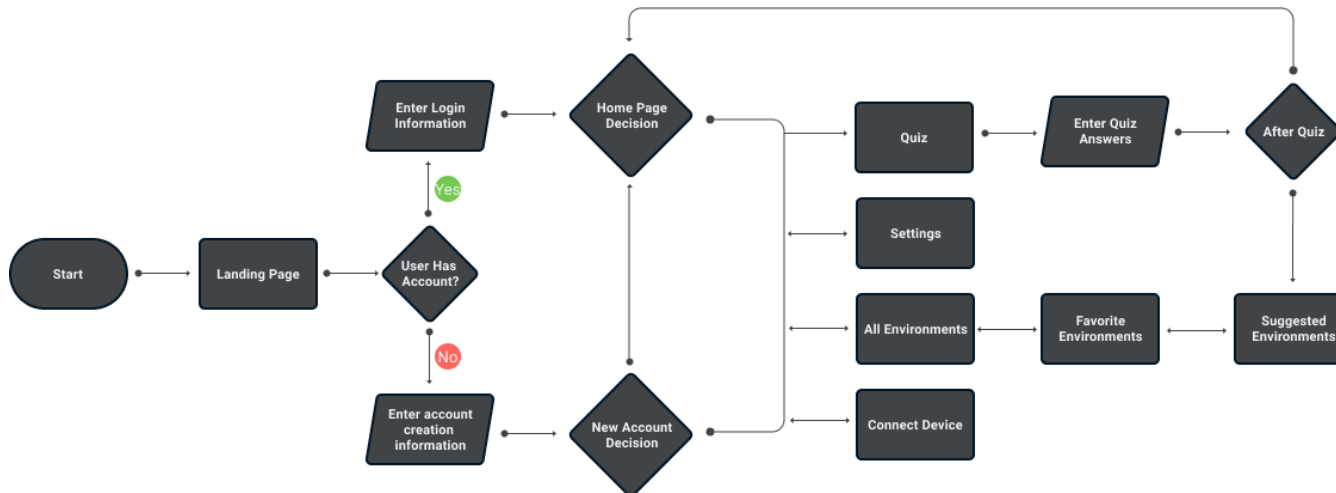
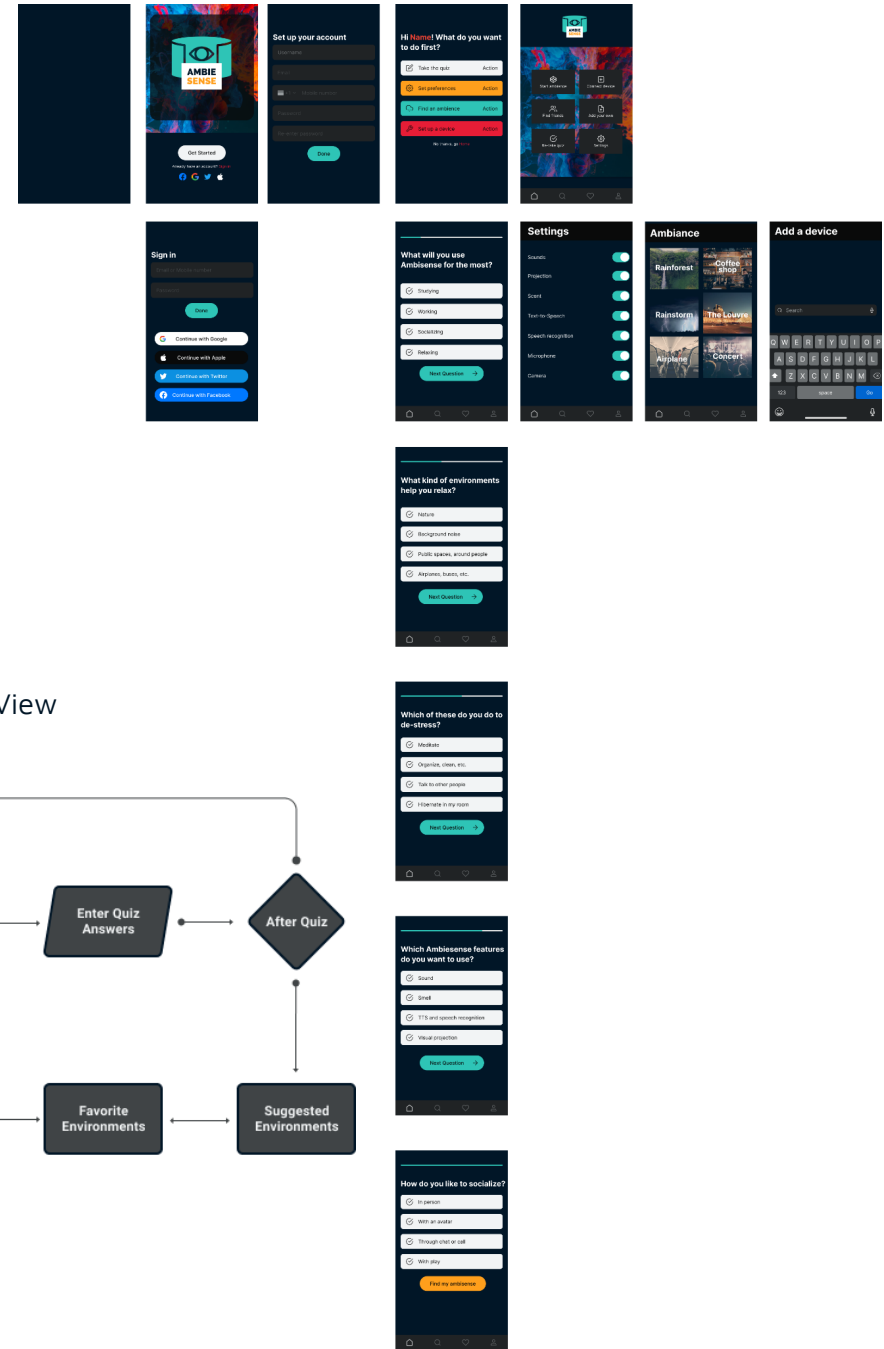
\*If we have the time to include this!

# PROTOTYPE

## Digital Prototype Navigation:

General: Pill/ Tab style navigation on top to switch between pages

- Landing/Login
  - Logo
  - ~~Loading Animation~~
  - Login Fields & Continue as Guest
- Create Account
  - User Input
  - Option to use Google, Apple, Social Media
- Atmosphere View
  - Simple list view of environments with options to select/ expand
  - Curate list options / filter
  - Suggested Atmospheres at top, based on Quiz
- Quiz Form
  - Form
  - Easy to answer and submit directly bringing to the Atmosphere View
- Settings / Account Preferences



## Customization & Preferences:

Demographic information:

- Student
- Mental Health tool
- General public

Self-Quiz to generate Suggested Atmospheres:

- What are you going to use this for?
- What environments are you most productive in?
- What do you do to de-stress?
- Would you like to use sound/audio/smell? (accessible?)

## Tools & Mental Health Supports:

- ~~Psychological research, etc.~~
- ~~Different groups that meet online in the area, that they can meet using the app/projector!~~
- ~~Reading body language, virtual concerts, etc.~~
- ~~Support groups~~
- Digital dance parties

Instead of therapeutic tools and mental health management, let's implement "play". Using posenet to:

- Speech to text, have camera and projector all at once
- Sketch with body movements
- Play sounds (digital dance parties)
- Play rock, paper, scissors (stretch goal)
- Use machine learning and 360 degree video capture to use bodies for play (stretch goal)



## Physical Prototype:

### Materials Needed:

- AuKing [Projector](#)
- Camera/stock footage to project
- [Diffuser](#) and essential oil scents
- Two computers, or one Android phone + system
- Mac to HDMI dongle

### Future Materials:

- 3D printed or otherwise fabricated hardware housing
- 360 degree projector and videos
- Physical dome or tent for AR
- Move from AR to VR - need VR glasses

## Application Development

Current topology (linked to github repositories):

[Mobile App](#) -> [Websocket server](#) -> [p5js sketch](#)

The mobile application is currently built and tested for Android but using React Native for possible iOS support in the future. At this stage there is very limited functionality within the app but it is set up for integration with a backend to support user logins and personalized accounts.

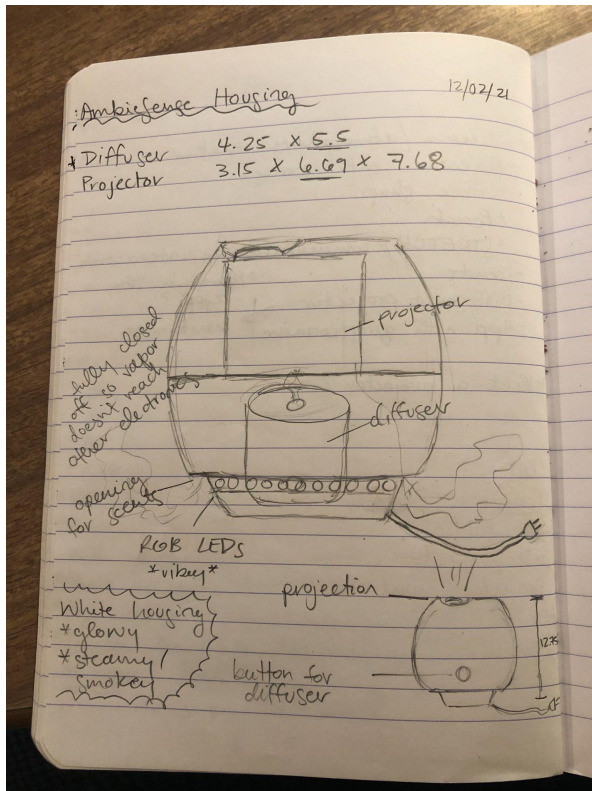
The mobile application communicates through a local websocket server to change an image in a p5js sketch running on the second system. This sketch is then projected onto a wall or surface through an HDMI cable connected to the second system. Currently the setup only allows communication between the app and projection if the devices are connected to the same network. As the server is very simple it will need to be expanded for better security and persistence.

The p5js sketch is used to easily utilize HTML canvas to display videos. It changes the video based on the data sent from the websocket server. Depending on how the future environments are developed this p5js sketch may be expanded or scrapped for a more robust library.

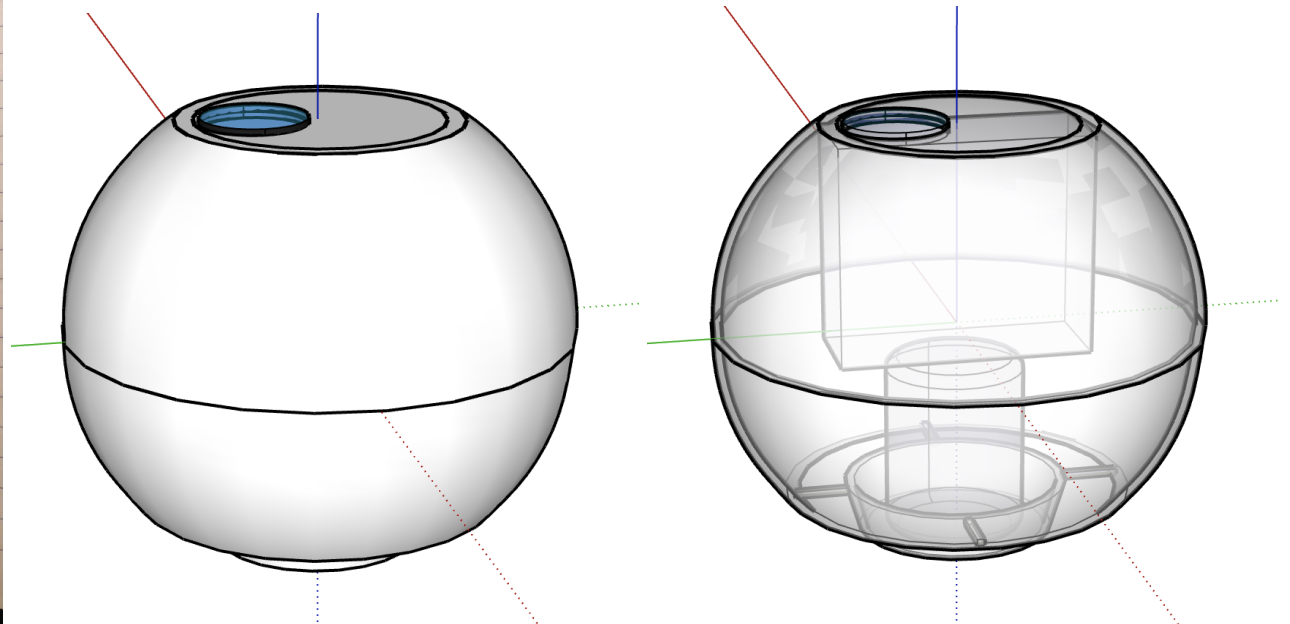
### 3D Modeled Housing

The housing for this product was drawn up in Sketchup, a web-based CAD software. It is designed to scale with the hardware we currently have (Auking projector and diffuser) and measures 15 inches in diameter. The projector and diffuser are kept separate from each other. The diffuser steam can escape through openings at the bottom of the sphere. Additionally, RGB LEDs can be added toward the bottom of the AmbieSense housing making it look glowy and modern and can add to the overall ambience. This design can be exported and 3D printed with white filament.

Initial sketch:



3D model:



# NOTES

## 11/09/21 Meeting with Justin Gitlin :

- Over local network- knowing IP address, websockets
- Mobile website, or android app built in android studio
- P5js can play videos and use websockets
  - Send JSON data
  - Mapping - play full screen in web browser
  - P5js projection mapping example
    - Draw 4 vertices - corner pinning
    - Mad mapper, OSC
  - <https://editor.p5js.org/cacheflowe/sketches/SJ1pWEvT9>
  - Need to subdivide the quad?
- For wireless
- Need a websockets server (1)-- setup with Node.js
  - Connect clients: Android app and p5js app (2)
  - Send/receive messages
- Socket.io - native libs for different languages
- Sourcing a projector
  - No clear answers
  - Long throw, short throw, ultra short throw
  - For projection mapping, you want to overshoot the surface
  - WHAT's THE SPACE?!
    - Rated distance for projector
    - Focus, zoom
  - Projector calculator for FOV of projector
    - How big of an image will it create?
    - <https://www.projectorcentral.com/projection-calculator-pro.cfm>
- <https://github.com/cacheflowe/haxademic.js/blob/master/src/solid-socket.es6.js>
- An entire websocket server - <https://github.com/cacheflowe/haxademic.js/blob/master/server/ws-chatroom.js>
- Client would connect here (p5js app) ws://192.168.1.101:3001
  - Add a query string to create rooms

## Writing Web Socket Servers:

- An application listening on any port of a TCP server that follows a specific protocol



## Tools & Resources:

- Generating Color Palettes: <https://coolors.co/>
- Figma, Workable Dropdowns: <https://www.youtube.com/watch?v=hZdOs8yNOIo&t=376s>
- Figma, Nucleus UI: [link](#)
- Looking at Threejs, cool example: <http://www.ro.me/tech/>
- Video:
  - <https://www.pexels.com/>
- Audio:
  - <https://www.videvo.net/royalty-free-sound-effects/background/>
  - [https://www.videvo.net/search/store/clip\\_type/royalty-free-sound-effects/](https://www.videvo.net/search/store/clip_type/royalty-free-sound-effects/)
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  - <https://mixkit.co/free-sound-effects/ambience/>
- Cacheflowe Projection Mapping Ex: <https://editor.p5js.org/cacheflowe/sketches/SJ1pWEvT9>
- Setting up websockets: [https://developer.mozilla.org/en-US/docs/Web/API/WebSockets\\_API/Writing\\_WebSocket\\_servers](https://developer.mozilla.org/en-US/docs/Web/API/WebSockets_API/Writing_WebSocket_servers)
- 3D printing tutorial: <https://learn.sparkfun.com/tutorials/getting-started-with-3d-printing-using-tinkercad>
- Sketchup tutorials: <https://www.youtube.com/channel/UCJafTeHBrRBL9tS-S-kRbpw>

## Deliverables & Rubric:

- ☒ Thorough Documentation (pdf)
- ☒ Functional Prototype
- ☒ Individual Reflections (including Contributions)

The project will be evaluated in four equally-weighted areas:

- Conceptual Merits:
  - Is the concept creative, unique, and compelling?
  - How well does the concept address the prompt of a "Pandemic Prototype?"
- Aesthetic Merits
  - How does the project look?
  - Does the overall aesthetic work with the concept?
  - Is the aesthetic compelling?
  - What does the aesthetic signify?
- Technical Merits:
  - How was this project developed technically?
  - Does it reflect a sophisticated use of technology and technological skills?
  - Is it produced professionally?

- Documentation:
  - How well was this project and its development documented?
  - Is the documentation robust, well-designed and self-explanatory?

This will be graded in three parts:

- ☒ ~~Final Project Proposal (5 points)~~
- ☒ ~~Working Critique (5 points)~~
- ☒ ~~Finished Project (20 points)~~

## Proposal Feedback:

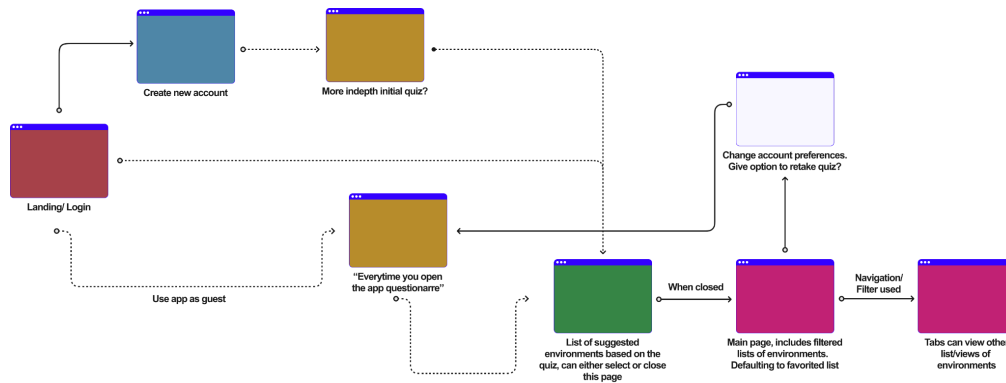
What is one thing you like about the proposal?	What is one thing that can be improved?	Other questions or comments?
Fun!	Aesthetic design	
Original idea with a projector creating any atmosphere that you need.	How many options will you have?	
This is a really interesting idea, with a novel concept.	Not sure if this is better than VR or if this is something that VR could be used with.	Really fun idea!
It is a great use of technology to improve a physical space versus stuff just saying on a screen!	How do you capture unique scents that otherwise might be hard to get? Such as beach smells or forest scents?	Good idea, I just wonder what types of scenes would be available. Is there a way to customize the scenes for the user?
Excellent use of imagery and animation. Simple explanation and problem most relate to	Speed of video for reading time. Question the feasibility of deliverable	
People are more and more wanting and needing more positive environments and mental health is being taken more seriously.	I think the app is great – I wonder if there's a way to take it a step further so that there can be some engagement with communities.	Seems complicated but I think a group of 4 can totally get it done!
I think this is a really unique concept.	Specify and think of who you want this to be for	
What martial of the device	Environment friendly materials	
I like the augmented reality of people showing up in your room, kinda like starwars	some info on how doable this is. Like tools or components that you can use for the projector	
I like the idea overall and am interested in how the diffuser is a worthwhile addition	Will have to be strategic about how this idea is brought to life since it could have challenges about correlating the app with the projections	
I need one of these, please and thank you!	I think this good!	
I like the idea of creating places to visit away from your own home	How will this physically be created for the final?	
love that its tackling mental health and the diffuser is providing a calming sensation	I think it'll be cool to include an ambient music or a podcast/voice over or just sounds of like what you would hear in a coffee shop or if your sitting next to a river.	
Giving the users the 360 degree experience is a great idea.	think of an idea to promote social distancing too	

## OTHER: ASSETS, IMAGERY, ETC.

Original Design Concept:



User-Flow, version 1.0:



### Pages required

- **Landing/Login:** Logo? Animation? Login fields with the option to continue as guest
- **Create Account:** Basic form to input user email ect...
- **Suggested environment(s) view:** More detailed list, maybe a modal, that can easily be closed if wanted.
- **Main list views:** Simple list view of environments with options to select/ expand on list items to view more details.
- **Questions:** Forum, or multiple choice type page. Easy to answer and submit directly bringing to suggested environment page
- **Settings / Account preferences**