9 April 2020

Mood Cube
User & Domain Analysis

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Executive Summary

Mood Cube is a device that combines the features of a desktop speaker, an oil diffuser, and a mood lamp into one sleek and convenient cube, all controlled and customized by the users themselves on an accompanying app. As the delivery of the first working Mood Cube is scheduled for June 2020, our team has spent the past few months conducting research to gain insight for the design of the product.

Through stakeholder interviews, focus groups, individual interviews, and consulting outside resources, we were able to pinpoint exactly which types of music, scents, and lights users associate with different moods. This information gave us great insight into how Mood Cube could be used to create mood-enhancing atmospheres for users, which is ultimately our goal. We also learned more about the difference for users between actively and passively listening to music, which told us more about how users would be interacting with Mood Cube.

Also very importantly, we received a lot of feedback on the voice command feature which, as we heard through numerous interviews, can make users feel quite uneasy and invaded. And through examining a competitive analysis of different features and functions across different oil diffusers, we found out more about what is already on the market and what users are/are not enjoying. Through all of this research, we were able to develop multiple personas and accompanying context scenarios and requirements to project the needs, wants, and behaviors of the average Mood Cube user. In the end, we now know specifically which scents, music genres, and light colors users would like to control for specific different moods, and we see how, why, and when users would be interacting with Mood Cube.

The main concern we have moving forward is the same concern that we have had since the beginning of this project: that users would actually enjoy these three parts-- a speaker, oil diffuser, and lamp--as separate devices rather than in combination. This will still be a risk that we will have to assume moving forward; however, our interviews with both stakeholders and potential users have so far seemed to suggest that users would enjoy the convenience of the Mood Cube and do see a place for this device on the market. As such, we remain very confident and optimistic about the project, moving forward. Additionally, we received some uneasy feedback regarding devices with voice command; so we will have to make a decision regarding

whether or not to include the voice command feature in this product. Our next steps in this process will be to conduct team meetings within the next couple of weeks, during which we will take into consideration all of the information that we have gathered and will use this to inform our first Mood Cube design.

Introduction of the Product Idea and its Project Parameters

Mood Cube is a device that brings together an essential oil diffuser, lamp, and Bluetooth speaker in a way that should be more user friendly and convenient for clients because they can program the uses of these three devices in conjunction. Instead of having to individually prepare each of three devices for a full experience of scent, sound, and light, users would now be able to conveniently program what they want on the accompanying app right from their smartphone, press "go," and watch everything come together all at once. The idea behind Mood Cube is that the sum is greater than the parts and one convenient interface for your essential oils, music, and lights is more valuable. Mood Cube will create an atmosphere for users; the cube's simple user interface will allow users to fully customize the look, feel, and aroma of any indoor space.

Our biggest risk is that we are taking three existing devices (the lamp, essential oil diffuser, and speaker) and combining them into one, and this idea may not take off. There is, of course, the possibility that people prefer these three products separately rather than in one device. So, whether or not people respond well to our product and design is a huge risk. However, we would argue that the combined experience our product will bring to everyday homes is desirable enough to distinguish our product from our predecessors; and with a user-friendly, simple and straightforward design, Mood Cube will provide a far more convenient atmosphere-creating experience than any simple oil diffusers, lamps, and/or speakers on the market. Additional concerns to keep in mind and to take into account are common issues associated with these three devices. For example, users often complain that when their speakers don't have great sound quality, their essential oil diffuser is messy, and/or the color scheme of their color-changing lamp is lackluster. As such, we will need to be very careful to keep these features in mind throughout our design process in order to avoid similar problems with Mood Cube.

The set-back schedule for the design, development, manufacturing, and delivery of the Mood Cube is as follows:

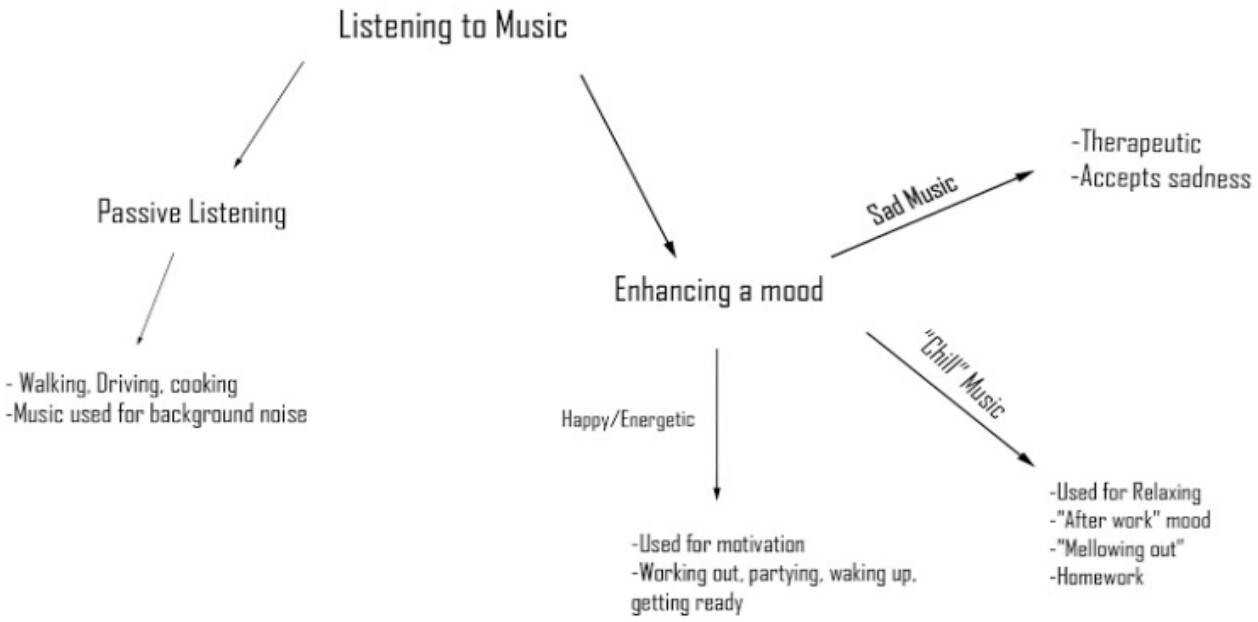
- Design Process: February through the end of April 2020
- Prototype development and manufacturing: May 2020
- Delivery of the first working Mood Cube: June 2020

Research Methods and Rationale

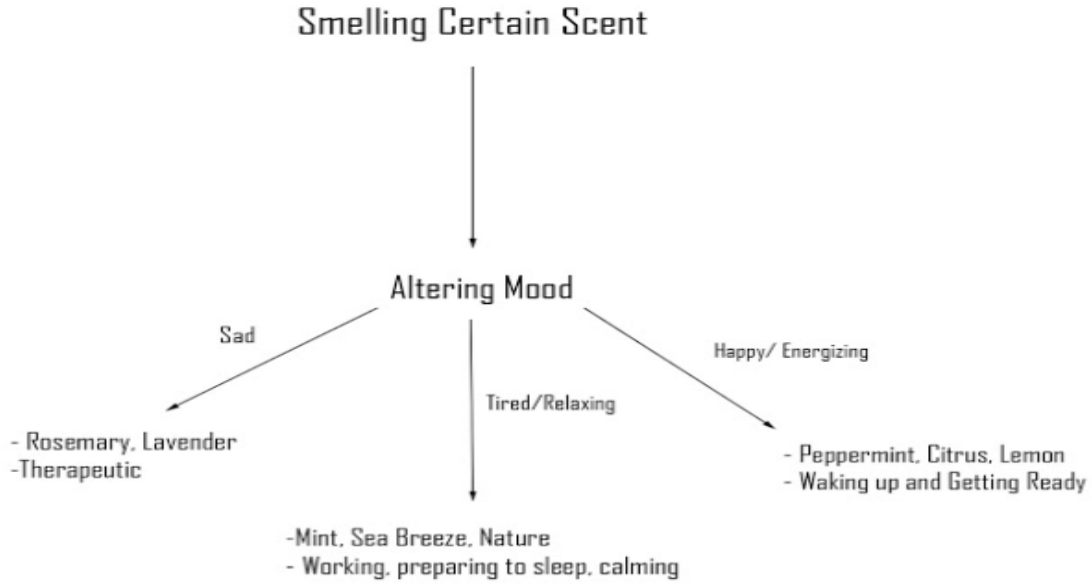
1. Stakeholder interviews
    a. Were used to get more information from stakeholders and project managers about the project/ product. Trying to find things like time horizon, budget, and goals for the idea.
2. Focus groups
    a. Used to get input from customers on ideas surrounding the project. Not focused on the actual product at all, trying to learn participants' emotional responses to how they use similar products. Can be used to find out what users actually need, not what they think they want.
3. User Interviews
    a. Used to get more in-depth information than what was learned from focus groups. One-on-one conversations with users will be a truer experience, and interviewees will be much less to be influenced by other people. Still seeking emotional responses, trying to find out what customers actually need from the product.

Summary of Research Findings

1. Stakeholder interviews
    a. Learned about the focus of the project. Is going to be directed to an upper-class, wealthy user base. This is a luxury product. Needs to work well and fit user needs in order to be worth it. Not going to attempt a lower price model as that is against the point.
    b. Some possible worries
        i. People wouldn't buy this product over the competition
        ii. Design would be too complicated
        iii. Not user friendly
    c. Complaints with similar products
        i. Speakers are not great
        ii. Essential oil diffusers are messy
        iii. Color scheme is lack luster
2. Focus groups
    a. Music and Moods
        i. Listens to sad music to "wallow in sadness"
            1. Sad music: "music that makes me emotionally feel sad or feel okay with feeling sad"
                a. Old country with "sad undertones", alternative/emo rock, Marilyn Manson, sad Irish rock songs
            2. Doesn't often use happy music to cheer himself up when sad, wants to do that more.
        ii. Music is "a mood enhancer:" used to initiate or intensify emotions

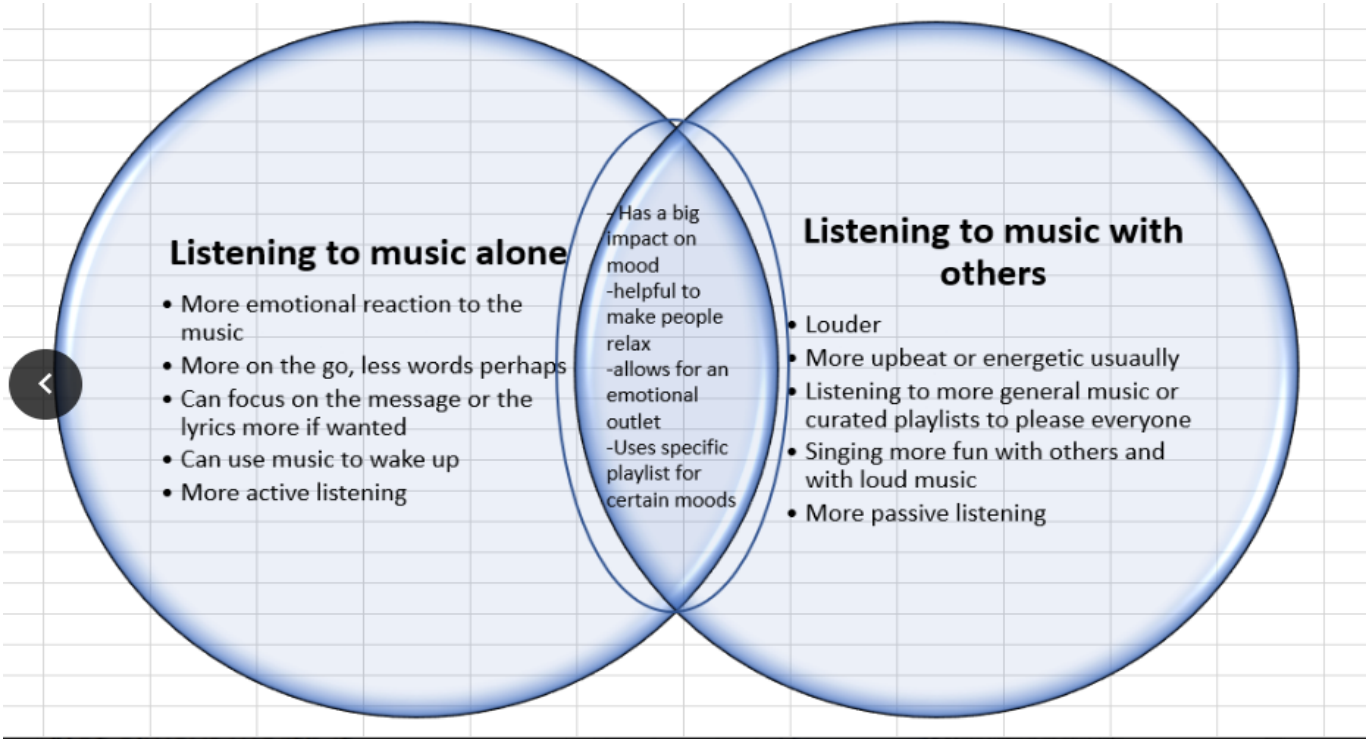


b. Voice commands
    i. "companies aren't honest with how often their microphones are really on and what they do with the data collected from the microphones being on"
c. Oil diffuser/smells and moods
    i. Uses incense to invoke a calming, focused emotional response
        1. Good for doing work or "mellowing out" and reading a book/ relaxing into whatever he's doing
        2. Hasn't done "this incense thing" in a while: "can't be bothered" → doesn't have as much of an emotional effect as music



d. Colors and moods
    i. Happy
        1. Warm tones
    ii. Sad
        1. Cold dark tones
    iii. Angry
        1. Red
    iv. Confident/ Energized
        1. Bright/ yellow
    v. Tired/ relaxing
        1. Earth tones

3. User Interviews
    a. Music and Moods
        i. Happy
            1. pop/ hip-hop
        ii. Sad
            1. Country/ R&B/ Emo rock
        iii. Angry
            1. Rock/ Hip-hop
        iv. Confident/ Energized
            1. pop/ hip-hop
        v. Tired/ Relaxing
            1. Jazz/ lofi/ podcast

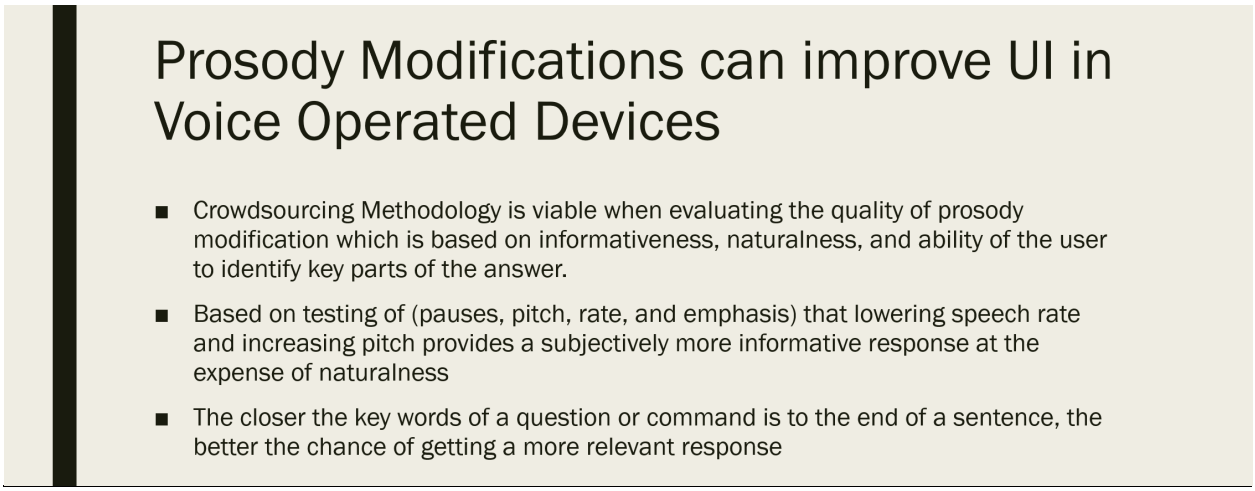


b. Oil diffuser/smells and moods
    i. The smell of coffee triggers her to “not want to kill people” (relaxing)
    ii. Happy
        1. Peppermint
    iii. Sad
        1. Rosemary/ Calm scent
    iv. Confident/ Energized
        1. Citrus/ Lemon
    v. Tired/ relaxing
        1. Greenery/ Sea breeze
c. Voice commands

Pros of voice commands	Cons of voice commands
Can control music without having to get up	Don't always work properly
Don’t have to use phone	Companies arent always honest with data collection
Can be more comfortable	Makes people nervous
Easier to access more minor things	Not always worth it
	Sometimes do the wrong thing
	Have to speak to loud
	Has a learning curve

d. Colors and moods
    i. Not a ton of information about different colors. Also, worth noting that some information is mixed between the focus groups and user interviews as they had similar results.

4. Outside Sources



Chuklin, Aleksandr, et al. "Prosody modifications for question-answering in voice-only settings." *arXiv preprint arXiv:1806.03957* (2018).

Common Essential Oil Diffuser Features

Space	Time	Size	Water	Weight	Rate of Diffusion	Noise Level	Features
Close Area: 20%	<5Hours: 40%	Small: 10%	>15ml: 20%	<1lb: 60%	>30ml/hr: 50%	<30dB: 20%	Timed Shut-Off: 80%
Medium: 60%	5-10Hours: 40%	Medium: 60%	>200ml: 60%	1-2lb: 20%	>70ml/hr: 30%	<44dB: 70%	Ambient Light: 90%
Large: 10%	20Hours: 10%	Large: 30%	>300ml:10%	<=5lb:20%	Adjustable: 50%	<60dB: 10%	Remote Control: 20%
Variable: 10%	Variable: 10%		N/A: 10%				

A competitive analysis of different features and functions across different oil diffusers.

A Cross-Table analysis of our findings regarding the relationship of moods to different scents, colors, and types of music:

MOOD CUBE	How do these moods	correlate to the music	scent or color?	
What are some moods	Mood/Emotion:	Music:	Scent:	Color/Light:
or emotions you can	Happy	Pop/Hip-Hop	Peppermint	Warm Tones
think of that correlate	Sad	Country/R&B/ Emo Rock	Rosemary/Calm Scent	Cold dark tones
with some of our	Angry	Rock/Hip Hop	N/A	Red
natural senses?	Confident/Energized	Pop/Hip-Hop	Citrus/Lemon	Bright/Yellow
	Tired/Relaxing	Jazz/Lofi/Podcast	Greenery/Sea Breeze	Earth tones/darker

Personas

We as a group decided to go for the typical persona that really chimes in on the average user, unlike someone who'd be better suited for the customer persona. Our cases involve regular people who simply need or want a device that provides all the services they can get into one place.

Anna Zeng

Nineteen-year-old Anna is an Accounting student who is waiting to graduate in two years and in the mean-time, works as a front desk receptionist in a SPA located at the heart of Manhattan, Lexington Ave. She remembers her first iPod back in middle school when she was obsessed with One Direction, Justin Bieber, and Nicki Minaj. She always had a personal deep connection with music and implemented it in all aspects of her life.

Numerous individuals at that age can agree music is arguably a lifeline that can shift one's mood. This transition in implementing all forms of music depending on time of day or routine had developed with her along the years. Now, she has a playlist for different routines, whether it be working out, finishing college assignments, or simply relaxing after a long day of work. Anna comes back home after a long day of work and decides to tone things down by lying down in her bed. She asks her google home for the latest news with the white house after seeing a small notification on her phone about something unspeakable her president had done the same morning. Exhausted from already working and now hearing the news, she wants to light up a candle of a sea breeze smell to calm her down and relax.

Anna next decides to turn off her light and switch her low light lamp on. After some time relaxing, Anna realizes that she has got a couple of assignments under her way that are due relatively soon. She turns the light back on, takes out the candle and grabs a cup of coffee to prepare her for the colossal amount of work she has got to do. Anna takes her headphones out to shut out any external noise that might hinder her focus, and starts up her lofi playlist on Spotify. Anna then realizes that she has to go to several different sources to set her up for the next task, and how much easier life would be if everything were just done in one transition.

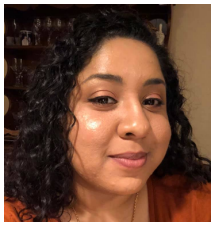
Anna's goals:

-**Have a set of candles or scents to help her with her moods**. Anna has a candle that helps ease her mind, but she has to light them out and light a new one every time.

-**Shut out noise to focus.** Anna enjoys her playlists for different moods and scours through spotify looking for them given every single mood or routine.

-Have all her mood shifting ability done in one swoop. Anna wishes her switching candles, playlists, and lights all be done in one easy transition.

Bianca Fernandez



Twenty-Nine-year-old Bianca is a visual media production manager who rarely gets quality rest due to her multitude of responsibilities. She works so much and so often that she really values the quality of her downtime. She also finds that with the late hours that she works, that she requires a huge amount of effort to motivate herself out of bed. Some of the rituals she chooses to indulge in on

Her downtime includes: Playing her favorite playlists on Spotify (principaly lo-fi and hip-hop), dimming the lights for ambiance, lighting lavender or eucalyptus incense or diffusing various essential oils in her humidifier, and falling asleep while calming music plays softly.

She's come a long way since her Walkman CD which she used to listen to just before bed. She now owns Amazon Alexa devices and regularly asks her to play "Sleep Music" and enjoys the interactivity. She enjoys the interactivity with Alexa despite the clear data mining and subsequent marketing which follows. Before she falls asleep to the music she asks Alexa to set music to an alarm for the morning, "almost like saying goodnight to someone".

She wants to get a smart light that will connect to her Alexa device so that she can get more ambient variety than simply using her dimmer switch. However, she feels that individual bulbs are too expensive to warrant purchase. She has read up on Color-Mood associations and is intrigued with the idea of combining color and sound to aid in her relaxation time.

At one time she would always light a stick of incense upon coming home but had some issues with certain brands that gave her allergic reactions and now only rarely uses essential oils along with her humidifier, which she has also stopped using due to the effort it takes to fill a large tank of water.

Bianca's Goals:

- **Combining various colors and music playlists to more effectively relax after a long day.** She wants to buy a set of smart lights to link to her Alexa but feels they are too expensive.
- **Wants to be able to interact with her Alexa without fear of targeted ads.** Very much enjoys the interactiveness of her Alexa but feels somewhat uncomfortable with the prospect of constantly being listened to.
- **To incorporate various quality fragrances into her night-time routine.** Used to use incense but had issues with the quality of materials effect on her allergies and wants something easy and accessible.

Denise Phan

Twenty-three-year-old bartender, Denise Phan, is a heavy phone user and an apartment owner. Additionally, Denise prefers to use a speaker. Denise works tirelessly through two jobs that have not only sustained her, but provided more than enough assurance to be able to own an apartment to herself. Her two jobs leave her with very minimal time to herself during the weekdays.

When she does, however, get back home from work late at night, she loves to go into meditation to release all her tensions as well as stress. She dims the lights at home because as a bartender she gets tired of flashing lights at the club. By turning the lights to a dimmed state, she feels she's in a completely different world from the one she was just exposed to.

Denise absolutely lives and breathes through candles at home because she feels it's essential to destress from all the hard work she's put in throughout her day. Depending on her mood, she finds herself putting on a winter candy apple because she can't remember where she had put her greenery scented candle. She gets annoyed that after a long day of work, she has to exert more energy into finding the candle she specifically wants in that given moment.

Denise as a routine has to queue songs from different playlists at times because of her distaste in some of the locked-in songs in playlists. She wishes she could just have Spotify have the perfect set of songs panned out for her, especially given her mood. She believes music acts as a background noise, sometimes leveling the world out so she can be in her own fantasy.

She loves using Siri on her phone as she's an avid Apple user. She feels that sometimes her love for the Apple ecosystems hinders her ability to look at other options and implement them for her routines.

Denise's Goals:

-Veer away from the Apple ecosystem and bring in more options. Denise feels as though there's a possibility of honing in all tasks into a system, regardless of their company.

- Not have to exert energy into looking for candles. She has got numerous candles for different occasions and moods, and having to look for them after a long hard day at work leaves her feeling frustrated.

-**Playlist derived from machine-learning.** Machine learning A.I can allocate streams of data and interaction and put forward an accurate playlist for Denise.

Context Scenarios and Requirements

Anna's Scenarios:

Upon returning from a long day of working at the Spa, Anna notices the drastic difference in aroma from her less than fragrant dorm room which is beset on either side by two sets of loud and smelly boys. Before she gets frustrated she takes a breath and calls out, "Hey Mood Cube, start my *'Just got home routine!"*". She liked being able to label her different "moods" however she wanted. Immediately the large cube resting on her desk lights up orange her favorite color and starts cycling through various colors she has tailor picked for this mood. Starting to hear the latest news from NPR drown out the noise coming from her hallmates. Instantly she begins to calm down and go about her business. Slowly she begins to smell a citrus lemon instead of dirty gym socks and she finally feels relaxed.

She then calls out to her mood cube to initiate her "*work-mode routine",* and the lights change to much cooler white tones, her lo-fi study beats playlist begins to play, with the citrus smell continuing to fill the space. She however finds the light tones to be too jarring and opens her Mood Cube app to adjust the tone of the light to be slightly warmer. She also asks Mood Cube to pair her bluetooth headset which she prefers for this "Mood".

After finishing her work she asks her Mood Cube to start her *"Bedtime Routine"*. The music shuts up as she had previously specified on the app, lights begin to dim and rotate between warm dark colors like deep blue, purple and red. She asks Mood Cube to start her *"Morning-Workout Routine"* at 7:00am before falling asleep to the smell of sea breeze.

The following morning she's awoken by the somewhat startling sound of Intentions (ft. Quavo) and asks Mood Cube to set the first song in this routine to Yummy which starts off more gently. As she begins to get up, the music progressively gets more high energy and she feels motivated to exercise in her room. Feelings fulfilled and motivated, she calls out to Mood Cube to power down as she leaves her dorm for classes.

Bianca's Scenarios:

On the train home from working very late that night, Bianca knew that she'd need a strong alarm to get her out of bed the next day. So before going to bed she decided to customize a brand new "Mood" in her Mood Cube app entitled *"Wake Up Damn It!"*. She sets the colors to yellow, green, and light blue all with cool tones, appreciating the versatility of colors options rather than a simple rgb rotator. Knowing that she'll need something loud to actually get herself out of bed she sets Mr. Blue Sky as the first song to be played and to shuffle her favorite playlist. She likes being able both set certain songs in order as well as shuffle playlists.

After setting the scent to Oranges she sets the Mood to start at 6:30am and directly sets the mood to "*SleepyTime*" since she was close to home. She likes the fluidity of the app UI and

Speech to Text. She feels that being able to use prepared commands as well as be able control the device from anywhere makes it much more versatile.

As she enters her apartment she is delighted to see that the mood cube has already set the atmosphere. However she realizes that the scent of lavender is far too strong due to it being set in advance and commands the Mood Cube to shut off its oil diffuser. She knows she could adjust the timer on the diffuser within her app but decides that she'll do so based on the situation. She gently falls asleep to the sound of Spotify's Binaural Beats playlist as the room pulses between a warm dark Blue and Red.

She wakes up the following morning as expected, and despite wanting a few more hours of sleep, forces herself out of bed. She thinks to herself that without the added ambiance of color and scent, she may have just snoozed through the music. As she prepares for the long day ahead of her, the aroma and music gradually make her feel more motivated to go to work than she otherwise would have.

Denises' Scenarios:

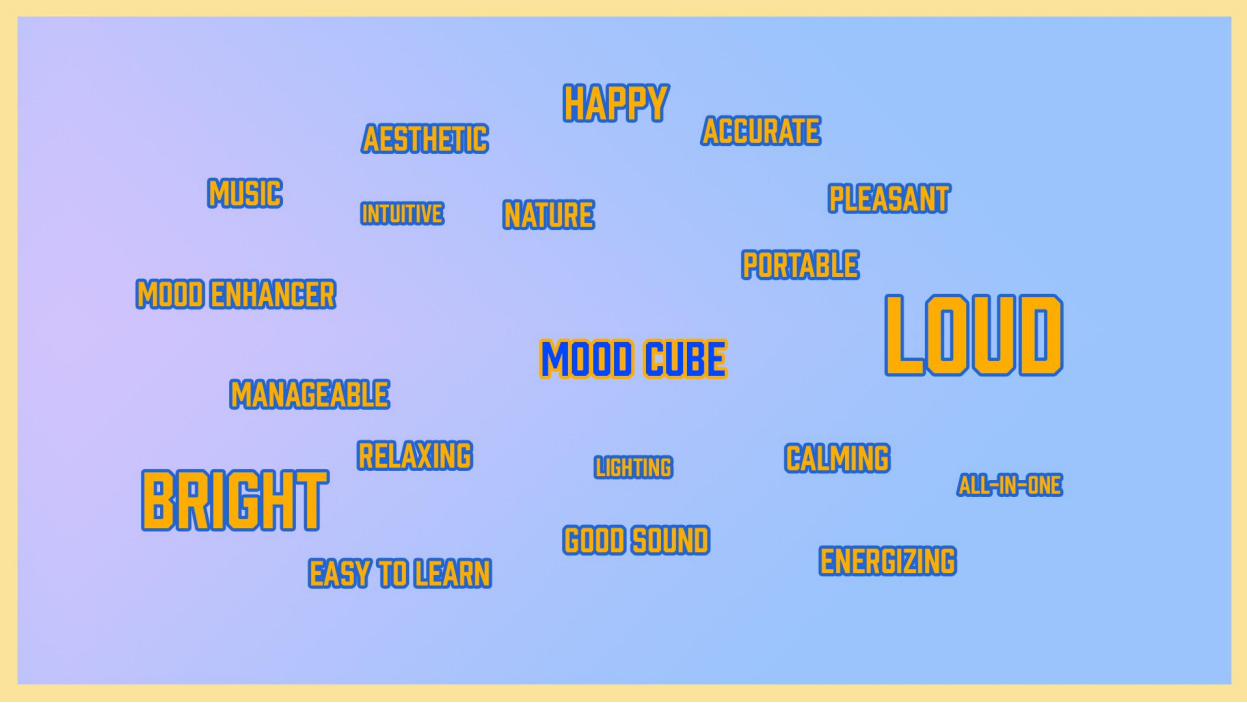
After a long evening of serving drinks to baligenrant men who would constantly hit on her, Denise feels gross, smelly, and nauseous. She checks the ETA on her Uber driver, and decides to preset her Mood Cube to begin *"Meditation"* within her app. She is glad that the UI is as practical and easy to use as voice command which she doesn't feel very comfortable with. Thankfully she configured her Mood Cube to only be activated via her phone.

Finally reaching her apartment, she starts to feel a headache and hurries to the door seeing the rotating lights through her door frame. She still feels weary of the constant strobing lights and deafening club music so she changes her meditation settings to only one dim warm tone and no music.

She opens the door to a fragrant burst of eucalyptus leaves. She likes the simplicity of the essential oil diffuser and the ability to order various fragrances via her Mood Cube app. She feels that it is a lot less work to replace cartridges every few weeks rather than scrambling to find the right candles.

She decides to set some music before taking a shower. She likes how the Mood Cube can generate new songs from Spotify based on her previously liked music and feels like she's branching out to new genres. However, she can't change songs while not on her phone and wonders if she should try the voice command features of the Mood Cube.

Experience Attributes



Loud: This is an attribute that is very crucial to some when conducting user interviews. Since our product is part speaker. Many of our interviewees expressed that it was critical to have a speaker that can fill a space with sound at a high quality.

Mood Enhancer: This term was also expressed when conducting our user interviews. Our interviewees expressed how music, scent, and lighting can cause a shift in their emotions or enhance their current emotions. With our product, we want to ensure that we can allow our users to express themselves with sight, smell, and hearing.

Accurate: With a product that has voice command capabilities, many of our interviewees expressed an emphasis on accuracy. Accuracy ensures that users can have a smooth experience with our product as some users want a smooth “hands off” experience
Bright: This word was brought up many times in our user interviews. This applies to both the actual lighting capabilities of the Mood Cube but also the app component. Users expressed interest in having lighting sources be able to fill all spaces. Users also expressed having an app that has a good aesthetic so it is approachable to use.

Easy-to-use: Interviewees want to be able to easily figure out appliances and apps. This makes the experience of the Mood Cube enjoyable so the users can do less reading and more doing with their units.

Next Steps

Moving forward, the Mood Cube team will be developing an informed design of the first Mood Cube, influenced by all of the feedback that we have gathered. Thoughts and ideas for this initial design will be discussed during team meetings occurring within the next two weeks. During these meetings, we will take everything that we have learned through our research and we will use this to draft a device that satisfies all of the users' and stakeholders' expressed wants, needs, and concerns, and caters to the user behaviors that we have discovered. Additionally, we will be able to use our newfound knowledge regarding how users associate different music/scents/colors with different moods in order to draft different sets of these three elements that, in combination, will reflect the mood-enhancing atmospheres that our users desire. These combinations will exist on the Mood Cube app as presets that users can utilize for various mood atmospheres-- in addition to customizing their own, of course.

Something that we will have to ponder greatly in our upcoming discussions will be the voice command feature. During our focus group and individual interviews, we received a lot of feedback on the use of voice command in existing devices, and said feedback was quite mixed. Though users find an amount of convenience in utilizing voice command, many also expressed a certain weariness concerning data mining and these devices constantly "listening" in a very invasive manner. We will have to make an informed decision now on whether or not to include the voice command feature in our initial Mood Cube design. Additionally, we will have to be sure to design around the common complaints about similar devices that were expressed by our interviewees, including: speakers that don't have great sound quality, messy essential oil diffusers, and color-changing lamps with lackluster color schemes. As this information reflects the likes and dislikes of potential Mood Cube users, we will have to closely heed this advice as we move on to designing our product.

Colophon

Olivia Banc
Team Lead

Contributions to U&DA:

- Division and assignment of roles/sections for modeling and for U&DA
- Organization and design of document
- "Executive Summary" section
- "Introduction of Product Idea and Project Parameters" section
- "Next Steps" section
- Formatting of U&DA
- Extraction and organization of direct quotes from research (modeling)

Dylan Phan
VisD

Contributions to U&DA:

- "Experience Attributes" section
- Decision trees (modeling)

Vikram Gupta
IxDS

Contributions to U&DA:

- Contributed to "Personas" section
- Contributed to "Context Scenarios and Requirements" section
- Located outside research sources (modeling)

Liam O'Leary
ID

Contributions to U&DA:

- "Research Methods and Rationale" section
- "Summary of Research Findings" section
- Venn Diagram and T-chart (modeling)

Aftab Hossain Musaa
IxDG

Contributions to U&DA:

- Contributed to "Personas" section
- Contributed to "Context Scenarios and Requirements" section
- Cross-table analysis (modeling)