Reducing Separation Anxiety Through Dog Enrichment

Team P.A.W. | Fall 2021 | IACT 330

Our Team

Alicia Silhavy

Project Lead

Leah Jones

Lead Electronics Engineer

Emily Elz

Visual Lead

Leo Cayuela

Lead Software Engineer

Garrett Grainger

Lead Product Developer

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01

Topic of Interest

What space are we exploring?

Create a device that solves a problem using innovative interactions and materials.

Separation anxiety is triggered when dogs become **upset, depressed, and agitated** because of separation from their guardians, the people they're attached to.

Separation Anxiety

Separation Anxiety Causes

Guardian Leaving

Change in Schedule

Change in Residence

Change in Owner

Symptoms of Separation Anxiety

Barking

Destruction

Panting

Depression

Aggression

Hyperaction

02

Problem Area

What are we trying to solve?

Anxiety-Induced Health Risks

Separation anxiety may induce **Coprophagia,** which is the consumption of the dogs own excrement.

This presents some serious health risks, increasing the risk of contracting an infection or a parasite.

Hepatitis and **Parvovirus** can also be transmitted through excrement.

www.aspca.org, dogcare.dailypuppy.com

Impact on Quality of Life

Other destructive behaviors,

Such as chewing, getting into trash, digging and scratching at doors and walls, and chewing on themselves

Can cause further health issues.

Including the risk of digesting foreign material, getting stuck/asphyxiation, and self harm.

1. A dog undergoes change and begins to experience **separation anxiety.**

2. The dog has undesirable behavior while left alone, causing a **heightened reaction** from its owner when they return.

3. The dog now experiences **more anxiety** as they wait for their owner to return and exhibit those heightened emotions.

Separation anxiety creates a cycle.

Dogs experience separation anxiety due to change and require reconditioning to build a habit of desirable behavior.

Problem Statement

03

Research

What solutions exist in this space?

Who are our users and what do they need?

Secondary Research

What solutions exist in this space?

Researched Solutions

Routine

Creating structure and predictable patterns helps dogs to feel confident.

Environment

Small modifications to a dog's environment can provide enrichment, which helps them to stay engaged.

Working for Rewards

Intrinsic motivation and training builds confidence and reinforces healthy owner-pet dynamics.

Counter-Conditioning

Providing high value treats while in stressful separation situations causes pets to associate separation with the treat, not the anxiety.

Vcahospitals.com, aspca.com

Routine

Ensuring the dog has a **predictable daily routine** is one of the most important aspects of caring for your dog.

When the daily routine is unpredictable, the dog becomes **more anxious and distressed.**

Reliable & predictable routine is scientifically proven to **reduce boredom, depression, and separation anxiety** in dogs.

vcahospitals.com, animalhumanesociety.org

Working for Rewards

Researchers reference the need to work for food as **“contrafreeloading”**.
The behavior has been observed in multiple species, but with dogs specifically, the motivation can be broken down into either **extrinsic behavior** or **intrinsic behavior**.
A lack of intrinsic motivation and feeling of accomplishment in dogs can lead to stress.

psychologytoday.com

Environment

Changing a dog's environment is a good way to provide **structured enrichment.**
Changes in environment, such as giving new ways to see outside, introducing new sounds, sights, and smells, and modifying where a dog can rest or sleep can engage dogs to **distract from their anxiety.**

Counter Conditioning

Counter Conditioning is essentially changing the animal's fearful and anxious reaction to a **pleasant** and **relaxed** one.

Ways of achieving a positive reaction can be done by providing enrichment to the animal while the owner is away.

It is important that upon arrival, to **remove** the enrichment.

Dog Enrichment

Cognitive

Activity that requires using multiple senses at once.

Social

Engaging with new people and other dogs.

Sensory

Visual, olfactory, and auditory changes.

Physical

Providing the dog various ways to expel energy.

Feeding

Encourage dog to forage & search for food.

Environmental

Making the dog's living space stimulating.

www.taxvetpets.org, www.akc.org

Current Market Solutions

Furbo Feeder

See, talk, and toss treats to your dog.
✓ Engaging
✖ Short-term action

DogTV

Visual and Auditory enrichment.
✓ Sensory stimulation
✖ Repetitive

iFetch

Auto ball launcher
✓ Engaging
✖ Short-term action
✖ Repetitive

Market Analysis

Market Strengths

The current market has a large variety of dog enrichment toys that perform well in their own areas --

Market Weaknesses

-- but no toy engages multiple dog senses in a routine but non-monotonous way.

Market Opportunities

Smell

Although it's scientifically backed, no toys are using smell to enrich pets.

Multi-Output

Most toys focus on only one or two types of enrichment, not multiple.

Structure

Most toys are repetitive and high-energy, which does not contribute to a routine.

Engagement

Most toys require some form of active engagement or tasks.

Market Risks

Market Saturation

Lots of dog products are already on the market.

High Cost

Consumers might be deterred by the high cost of pet tech.

Unclear Results

Results take time to build and often aren't immediately -- if ever -- visible to owners.

Unneeded

Because anxiety happens when separated, some owners might not know they need a solution.

Primary Research

What do our users expect from a solution?

Survey Demographics

- 46 responses
- 21.7% aged 18-25
- 54.3% aged 26-32
- 15.2% aged 33-39
- 8.7% aged 40-50

Survey Results

6 - 9 Hours

Majority of dog owners spent 6-9 hrs away from their dog daily.

93.5%

Of owners have noticed symptoms of separation anxiety in their dog.

56.5%

Of owners report significant increase in dog's symptoms when gone longer than normal.

71.7%

Of owners want the ability to monitor their dog while separated.

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43.5%

Of owners reported that their dogs **bark** when experiencing anxiety

43.4%

Of owners reported that their dogs experience **hyperactivity** when experiencing anxiety

30.4%

Of owners reported that their dogs engage in **destruction** when experiencing anxiety

Interview Demographics

- 24 y/o, F, Finance Associate
- 26 y/o, F, Influencer
- 26 y/o, M, Non-Profit
- 30 y/o, M, Electrical Engineer
- 43 y/o, F, Stay at Home Mom
- 55 y/o, M, Business Owner
- 70 y/o, F, Dog Behavior Consultant

Interview Insights

Behavior

Interviewees feel guilt and frustration over their dog's behavior.

Enrichment

Interviewees care about providing meaningful enrichment for their dogs.

Routine

Interviewees want their dogs to have a predictable schedule.

Environment

Interviewees want their dogs to be able to relax in their environment.

Interview Insights

Credibility

Users want to know the product is credible.

Customization

Users want to ability to customize the product.

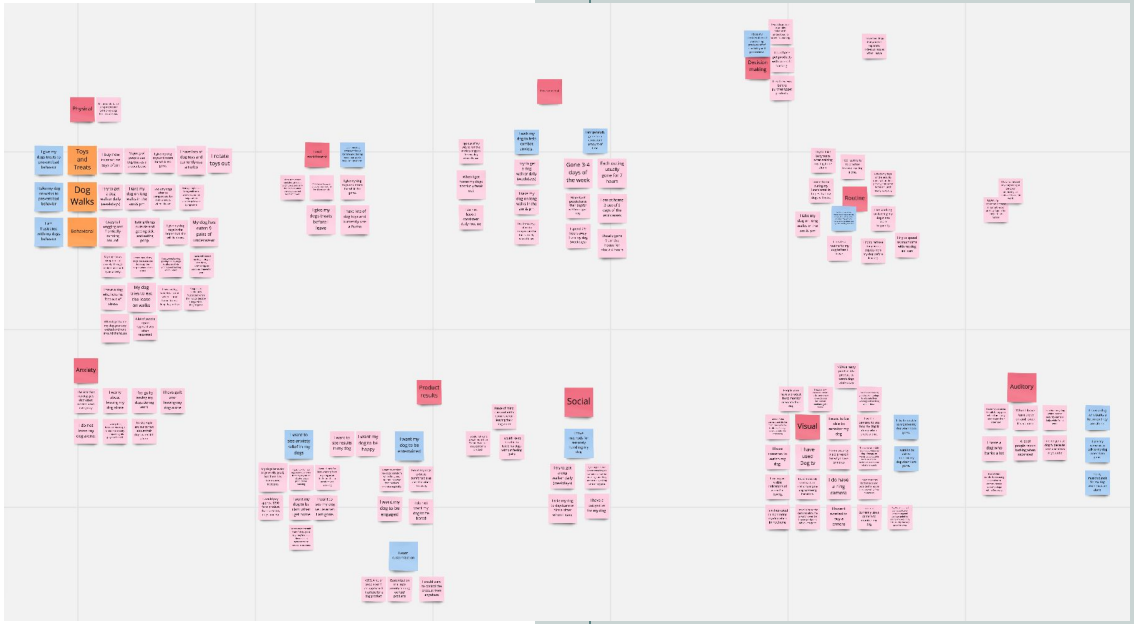
Monitor

Users want the ability to monitor their dog.

Pink Data Points (113)

Red Categories (10)

Blue Insights (14)



02.
Affinitize

Blue insights (14)

Orange HMW Questions (7)

How Might We Questions

Leverage scientific studies to establish credibility?

Reinforce routine for dogs when their owners are away?

Monitor dogs remotely?

Alter a dog's environment while alone to mimic enrichment while on a walk?

Improve dogs' behavior when left alone?

Enrich dogs while left alone?

Primary How Might We Questions

Leverage scientific studies to establish credibility?

Reinforce routine for dogs when their owners are away?

Monitor dogs remotely?

Alter a dog's environment while alone to mimic enrichment while on a walk?

Improve dogs' behavior when left alone?

Enrich dogs while left alone?

04

Users

Who are we creating solutions for?

Target Users

- 20 - 40 y/o
- Career focused
- Single
- Tech savvy
- Pet owner

Unmet Needs

Enrichment

Don't have the ability to provide enrichment activities.

Behavior

Struggle to correct undesirable behavior caused by anxiety.

Routine

Unpredictable work schedule causes lack of consistent routine.

> I love my dog, but I don't get much time to be with him.

Bio

Geoffrey is a hedge fund manager living in NYC. His job takes up most of his time. Geoffrey wants to be sure his dog is happy despite his busy lifestyle.

GEOFFREY ALFRED

25 • Hedge Fund Manager

Values

TRUST	* * * *
HIGH TECH	* * * * *
HAPPY PET	* * *

Goals

- To enrich his dog while away
- to be confident his dog is safe and happy

Pain Points

- too many dog devices
- doesn't know if devices work

Bryan Jarrinsky

26

Tech Entrepreneur

San Francisco, CA

"I love my dog, but I'm always so worried about him when I'm away. I want to make sure he's not bored."

ABOUT

Bryan is a 26 year old tech entrepreneur living in San Francisco, CA. His dog, Biscuit, has shown some symptoms of separation anxiety as a result of Bryan's unpredictable work schedule. Bryan started to pick up on some of Biscuit's symptoms when he got home and saw that Biscuit got into the trash while Bryan was gone. He's now concerned that his pet is bored and stressed while he's at work and wants a solution to help build both of their confidence.

♡ LIKES

Being with Biscuit
Spoiling Biscuit
Going on walks with Biscuit
Playing games with Biscuit

☹ DISLIKES

Lack of confidence in Biscuit when at work
Visible anxiety in Biscuit
Gimicky solutions

GOALS

- To help build Biscuit's confidence
- To help calm Biscuit during his work day
- To provide Biscuit with enrichment
- To manage Biscuit's anxiety symptoms
- To build a stronger connection with Biscuit

ABOUT BISCUIT

Lazy — Hyper

Dependent — Independent

Calm — Anxious

Loner — Social

PET MOTIVATORS

Food

Affection

Praise

Toys

FAVORITE TOYS

KONG

Nylabone CHEWS BEST

Furbo Dog Camera

Monica Potters

29

Small Business Owner

Atlanta, GA

"The only thing crazier than my job is my dog -- I love them both, but I'm struggling to balance the two."

ABOUT

Monica is a 29 year old small business owner living north of Atlanta, GA. She's frequently attending meetings at strange hours of the day. One of her favorite parts of her job is that no two days are the same, but this has resulted in undesireable behavior in her pet, Zeke. Zeke has always shown symptoms of separation anxiety, which has gotten worse as her business starts to take off. Monica is searching for a way to keep her dog calm while continuing to run her business.

♡ LIKES

Hanging with Zeke
Hiking with Zeke
Working
Cuddles with Zeke

☹ DISLIKES

Leaving Zeke alone
Lack of routine for Zeke
Unnecessary solutions/ excessive toys

GOALS

- To help build Zeke's confidence
- To help calm Zeke during last-minute meetings
- To calm Zeke while left alone
- To manage Zeke'e anxiety symptoms
- To build a stronger connection with Zeke

ABOUT BISCUIT

Lazy — Hyper

Dependent — Independent

Calm — Anxious

Loner — Social

PET MOTIVATORS

Food

Affection

Praise

Toys

FAVORITE TREATS

DENTASTIX™ DAILY ORAL CARE TREATS

LOVED SINCE 1908 MILK-BONE®

Cadet®

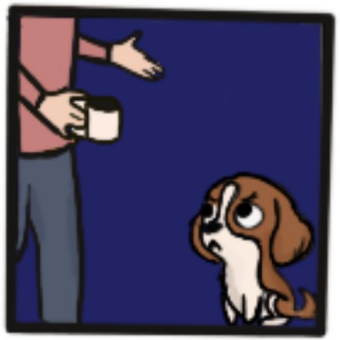
Bryan is a young Tech Entrepreneur & his schedule is becoming unpredictable.

Bryan's dog, Biscuit, is becoming depressed & anxious.

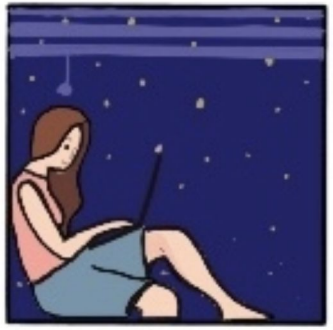
Biscuit's symptoms are getting worse & Bryan feels guilty because he can't change his schedule.

One day, Bryan had to work later than normal & it caused a spike in Biscuit's anxiety.

This spike caused Biscuit to tear up the couch.



Bryan got home to see his ccouch destroyed & realized he has to do something to prevent this behavior.



Monica is a small business owner and has to work strange hours.

Her dog, Zeke, is showing undesirable behavior as a result of her crazy hours.

She is struggling to manage Zeke's behavior and her job.

Monica is searching for a long term solution & finds (insert product name).

(product) helps keep Zeke engaged and on a schedule while Monica is working.

Over time, Zeke's behavior starts to improve as he becomes less anxious.

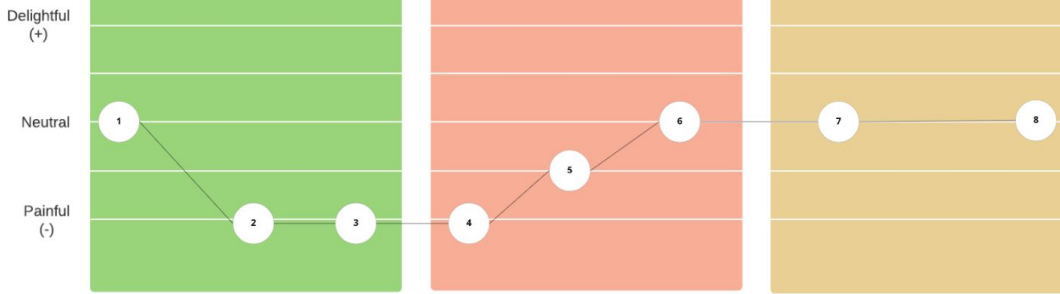
User
Consumer Journey Map

Bryan Jarrinsky
26 y/o
Tech Entrepreneur

Scenario description

Bryan is looking for a way to lessen his dog, Biscuit's, separation anxiety. He has to work long hours and has an unpredictable schedule. Bryan wants to help build Biscuit's confidence and keep him calm during the work day.

Phase 1	Phase 2	Phase 3
1 Bryan spends a lot of time working, and he has an unpredictable schedule.	4 As Biscuit's symptoms worsen, Bryan begins to worry more.	7 Bryan has high standards for what he puts in his home, and does not want to use a gimicky solution to help Biscuit.
2 Bryan has noticed that his dog, Biscuit, is displaying behavioral issues.	5 Bryan is unable to change his busy work schedule, and is concerned that biscuit is bored and stressed while alone.	8 Bryan needs a solution to help him lessens Biscuit's symptoms of seperation anxiety.
3 This causes Bryan to think that Biscuit is developing separation anxiety due to his unpredictable schedule	6 Bryan wants to help lessen Biscuit's symptoms to help keep him calm and happy while he's alone	



- **I think...** my dog is suffering.
- **I feel...** worried about the changes in my dog's behavior.
- **I feel...** upset that I cant provide my dog with a predictable schedule.

- **I feel...** responsible to lessen my dog's symptoms.
- **I feel...** concerned that I am not able to help my dog while I am gone.
- **I am... unable** to change my busy schedule

- **I feel...** discouraged by the gimmicky solutions already available to me.
- **I am...** concerned that I will not be able to provide my dog with help.
- **I am...** tired of searching for the right solution

User
Consumer Journey Map

Monica Potters
29 y/o
Small Business Owner

Scenario description

Monica is kept on her toes by unexpected meetings, long hours, and her beloved dog, Zeke. Zeke's behavior is starting to show negative signs of separation anxiety, and Monica wants to find a reliable solution that works.

Phase 1

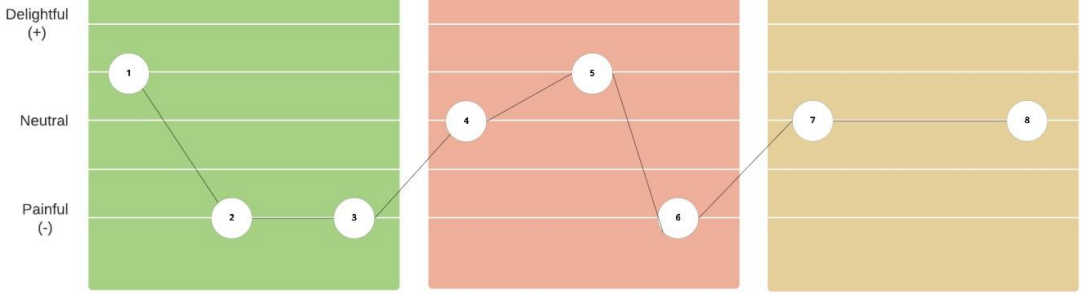
1. Monica is a small business owner and has to work strange hours.
2. Her dog, Zeke, is showing undesirable behavior as a result of her crazy job hours.
3. She has to devote a lot of her time and energy managing Zeke's behavior and her job.

Phase 2

4. Monica starts searching for a way to improve Zeke's anxiety induced behavior problems.
5. Since Zeke is strongly food motivated, she tries out the Furbo feeder.
6. Zeke quickly becomes bored of the furbo feeder and Elizabeth does not see any improvement in his behavior.

Phase 3

7. Monica wants a long term solution to help reduce Zeke's behavioral issues and build his confidence with being alone.
8. Monica needs a solution that provides enrichment for Zeke that will prevent him from getting bored quickly.



- **I feel...**worried that my strange work hours are having a negative impact on my dog.
- **I feel...** overwhelmed by work and my dog's behavior issues.

- **I feel...** hopeful that there has to be a solution out there.
- **I feel...** disappointed that the product I bought did not help my dog.

- **I am...**tired of trying unnecessary solutions
- **I feel...** worried that none of the options on the market will keep Zeke's attention

05

Product Iterations

How might we help our users solve their problem?

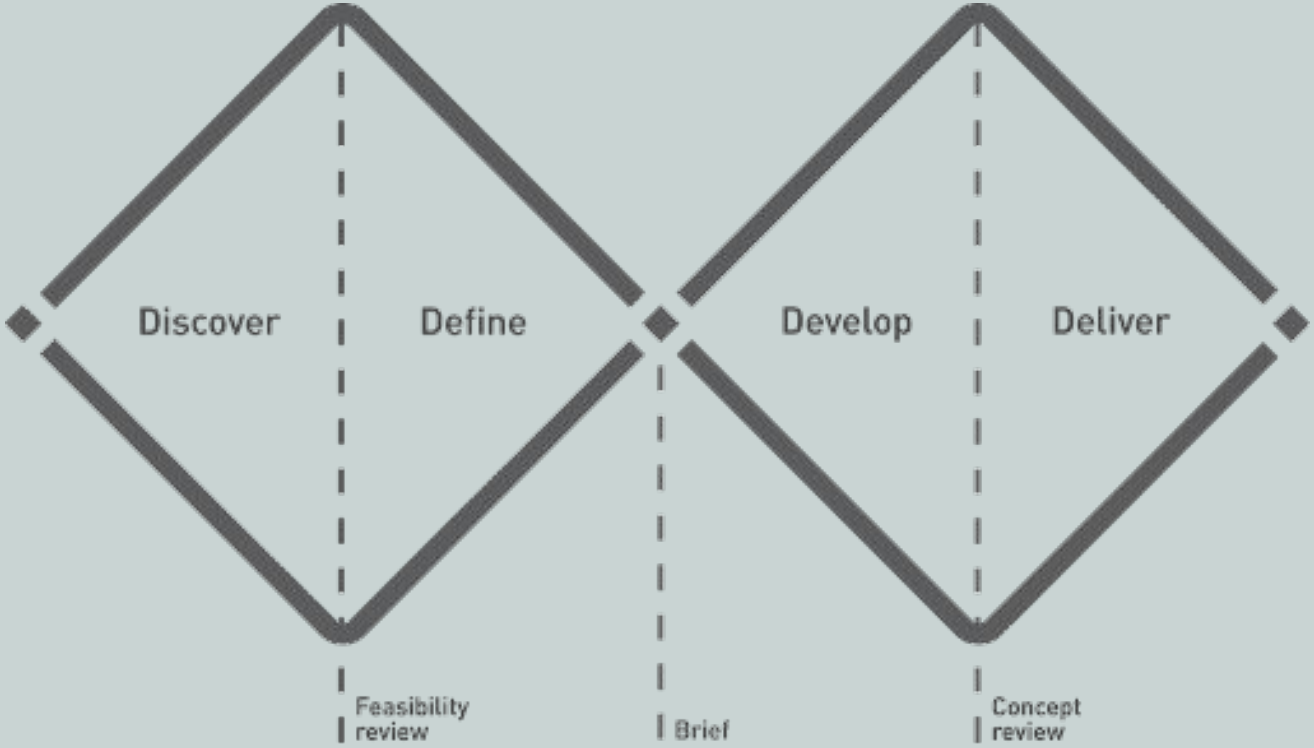
Product Hypothesis

We believe that we can **decrease symptoms of separation anxiety** in dogs with enrichment techniques.

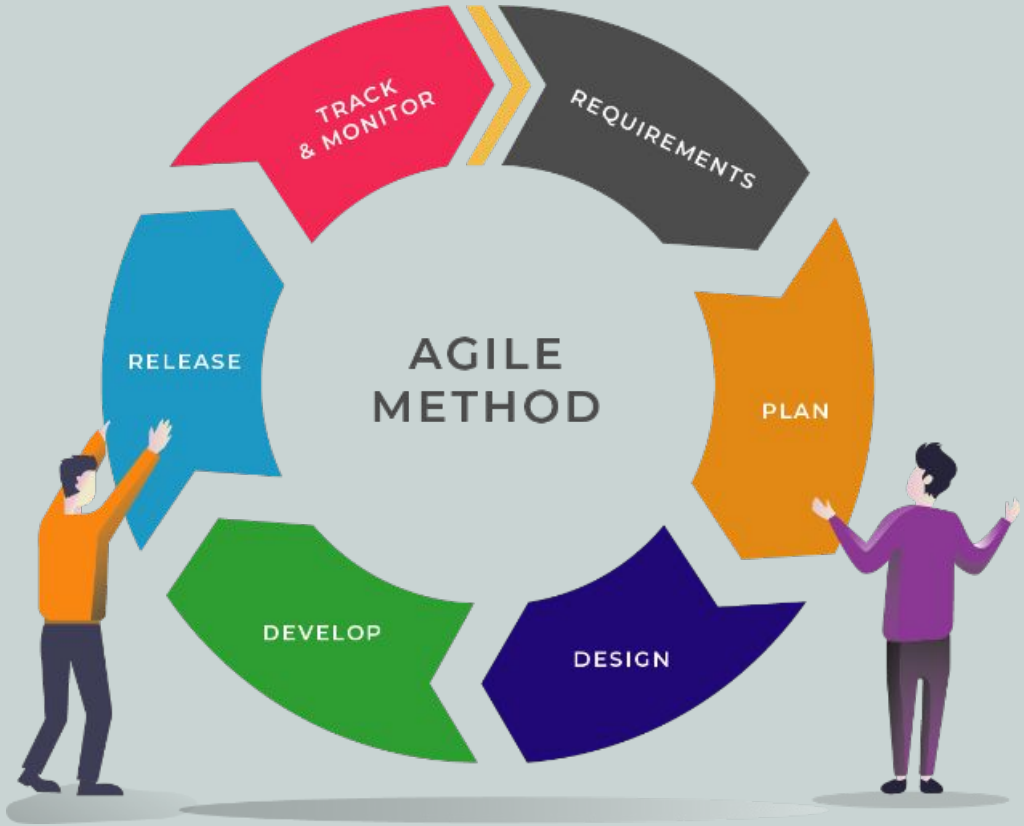
We will achieve this result by employing **environmental and ambient enrichment** to create an engaging routine.

We will have succeeded if **destructive and anxious behaviors in dogs decrease** during use of this product.

Double Diamond Method



Agile Method

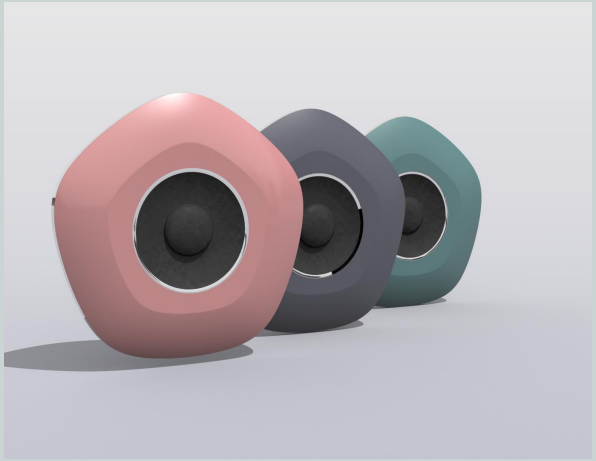


Concept Requirements

1. Customization
2. Dog-friendly material
3. Camera monitoring
4. Audio stimulation
5. Scent stimulation

Iteration 1

Iteration 1



Color customization.

Custom speaker mounting.

Personalized treatment.

Material

Physical Material

Made of FDA approved, high density, food-grade natural rubber.

Scents:

- Lavender
- Bergamont
- Chamomile

Camera Monitoring

Camera located on the **wall mounted** hub.

The camera can be accessed through the app.

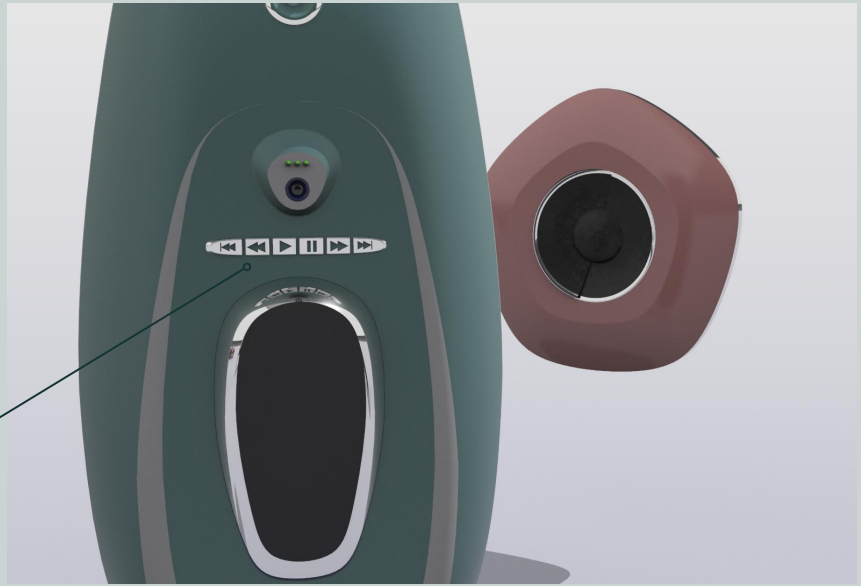
Allows user to **check in on their pet.**

Audio Stimulation

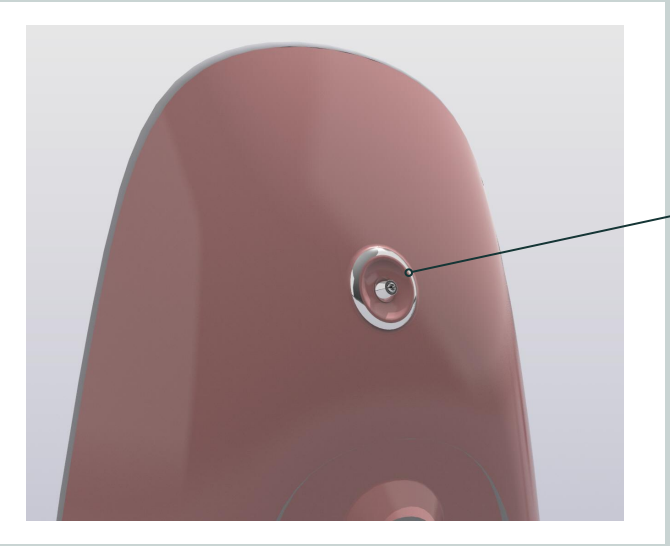
Audio provides a form of **passive enrichment** for the animal.

The speakers are connected to the hub via a **bluetooth connection.**

The speakers can be controlled in the app or on the hub



Scent Stimulation

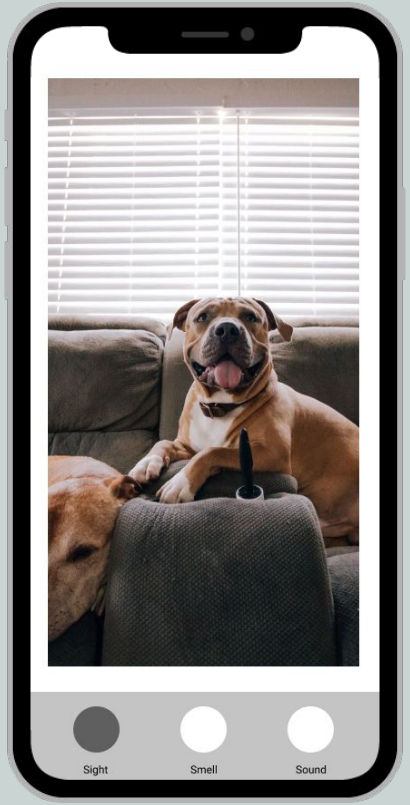


The hub houses a **fluid reservoir** for the scents.

Scents are sprayed out of the hub from an **internal pump.**

Scents can be controlled from the app or on the hub.

lo-fi Interface



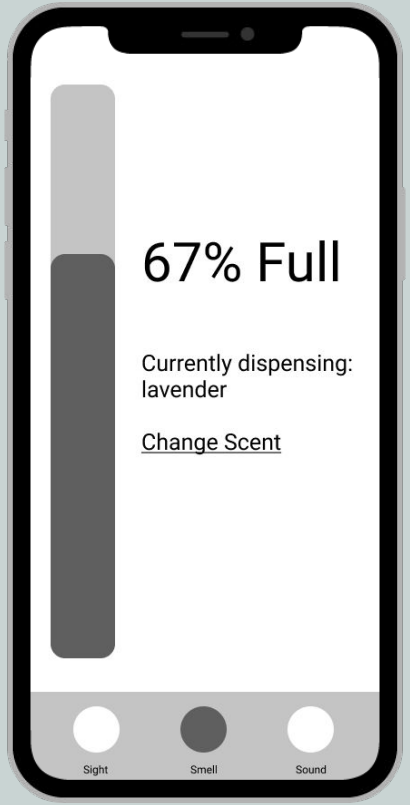
Use the app to...

monitor your dog while your gone.

customize and track the scent.

play & control the sounds.

lo-fi Interface



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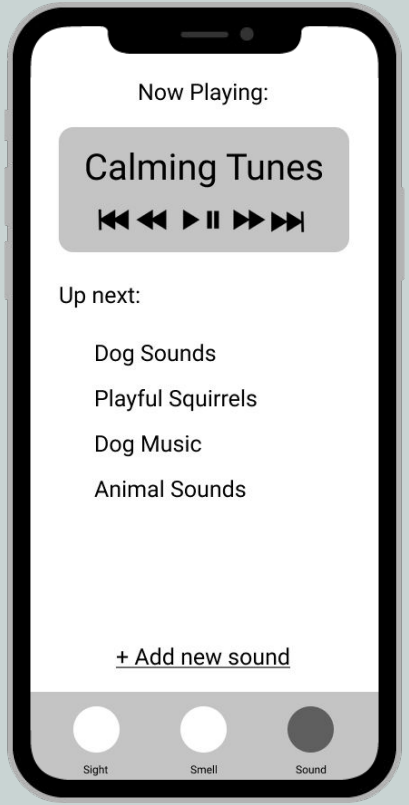

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Connection to HMW

Leverage scientific studies to establish credibility?

Improve dogs' behavior when left alone?

Enrich dogs while left alone?

By relying on **calming scents and sounds** studied by scientists and animal experts.

Iteration 2

Concept

Customization

Automation

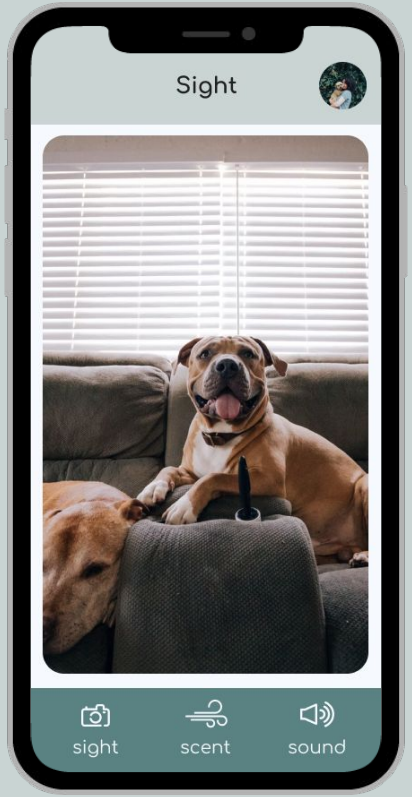
Material

Camera Monitoring

Audio Stimulation

Scent Stimulation

Hi-fi Interface



Use the app to...

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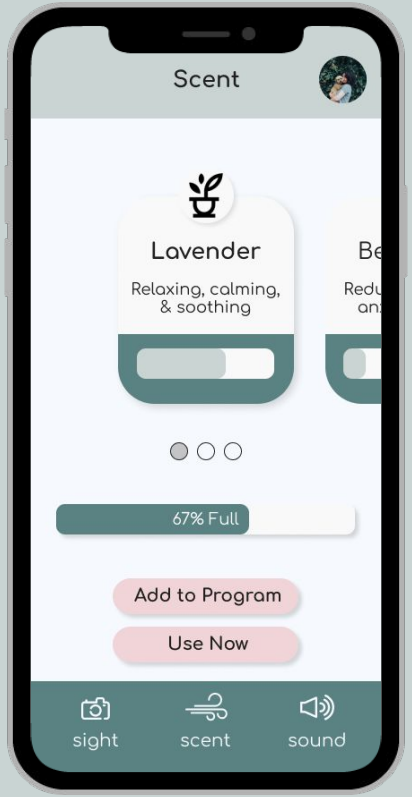
customize and track the scent.

play & control the sounds.

Create programs to run while you're away.

Hi-fi Interface



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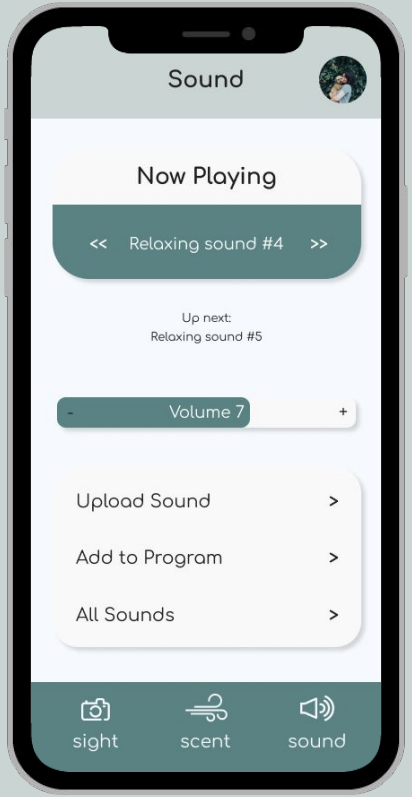

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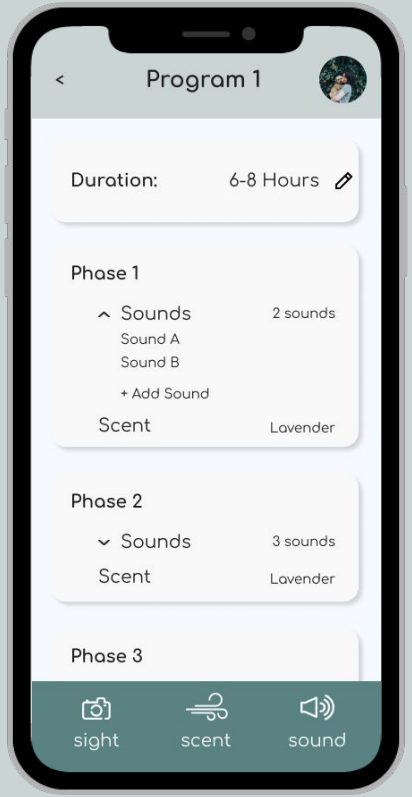

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play & control the sounds.

Create programs to run while you're away.

User Testing Goals

Prove

That dogs have a reaction to subtle changes in environmental ambiance.

Determine

What features and abilities users want from Hushpup.

Identify

See and identify problem areas in our UI that users struggle with.

User Testing Methods

Visual Observation

Recorded and watched dog's before & after auditory and olfactory enrichment.

Contextual Inquiry

Discussed with dog owners what issues they faced & observed their dog's reactions via video.

Usability Testing

Real users to interacted with our app UI to help us uncover it's pain points.

User Testing Feedback

Sound

Dogs had a visible change in behavior when classical music was played.

Scent

Dogs had no negative reaction to olfactory stimulation, but results were inconclusive.

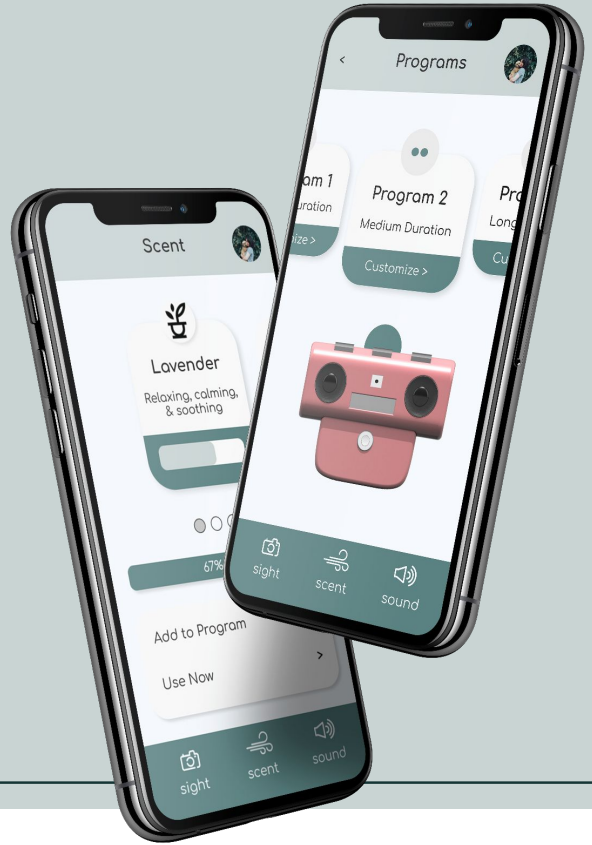
Simple UI

Users liked a simple to navigate app that did not feel overwhelming.

Clarity

Users want more clarity on what Hushpup does from the app.

Final Iteration



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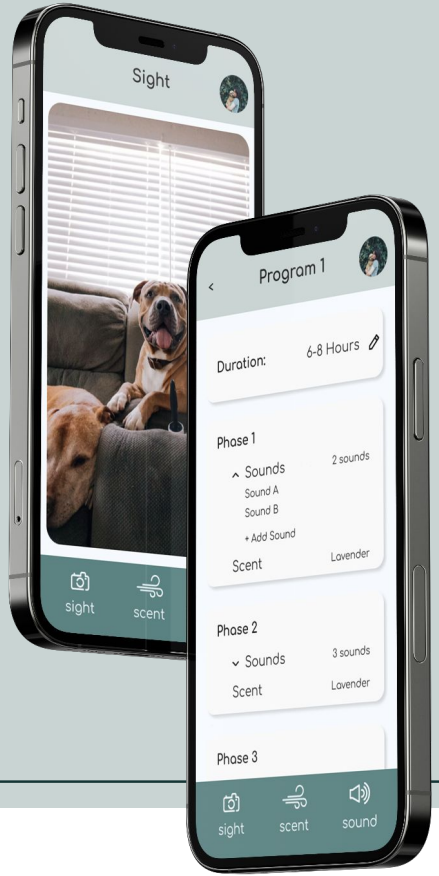


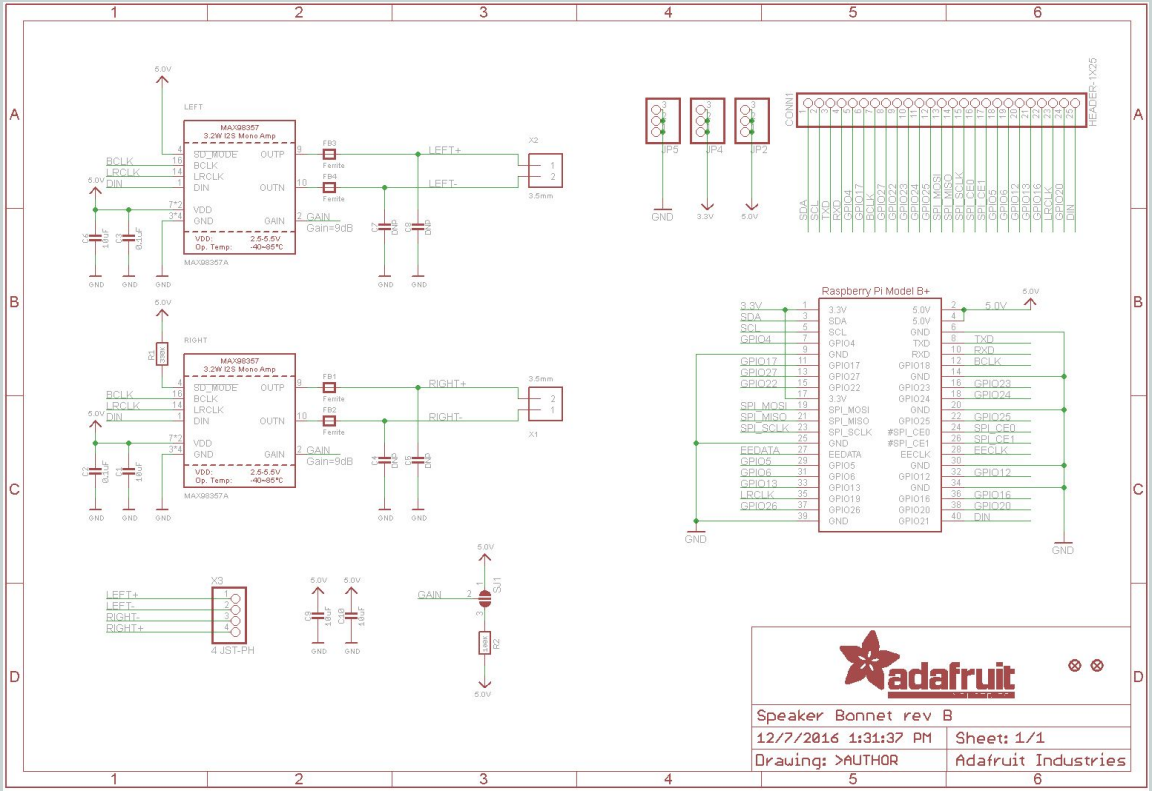
Final Iteration

Materials

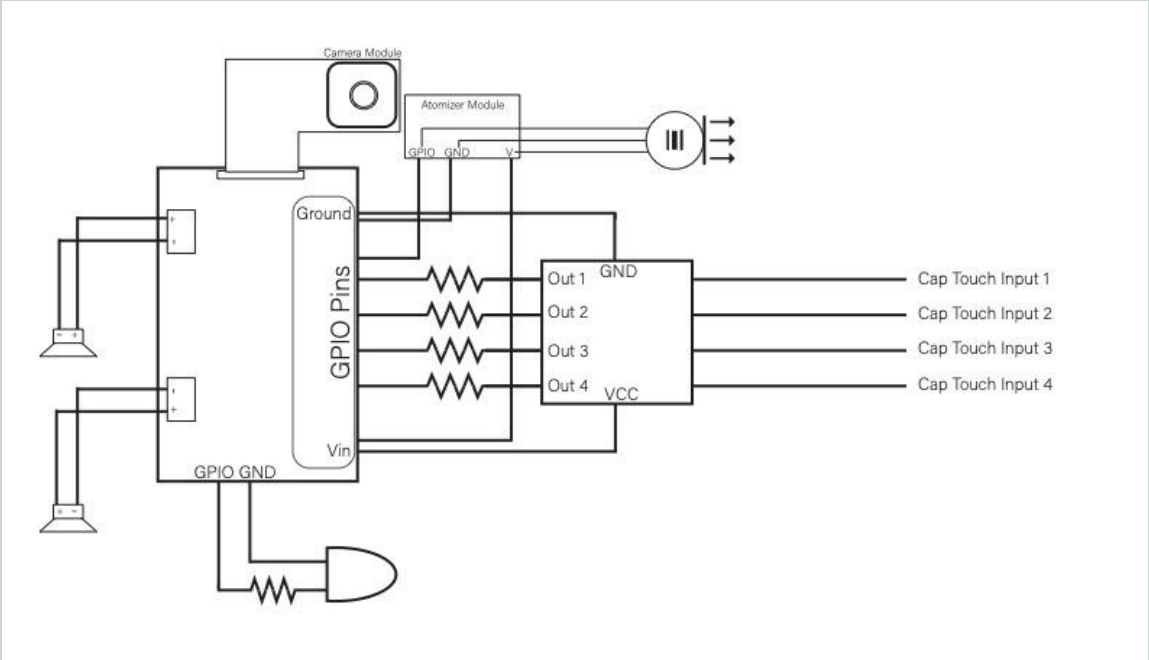
The materials chosen are an assortment of woods and ABS plastic

Wood provides a calming aesthetic for the user and the dog.

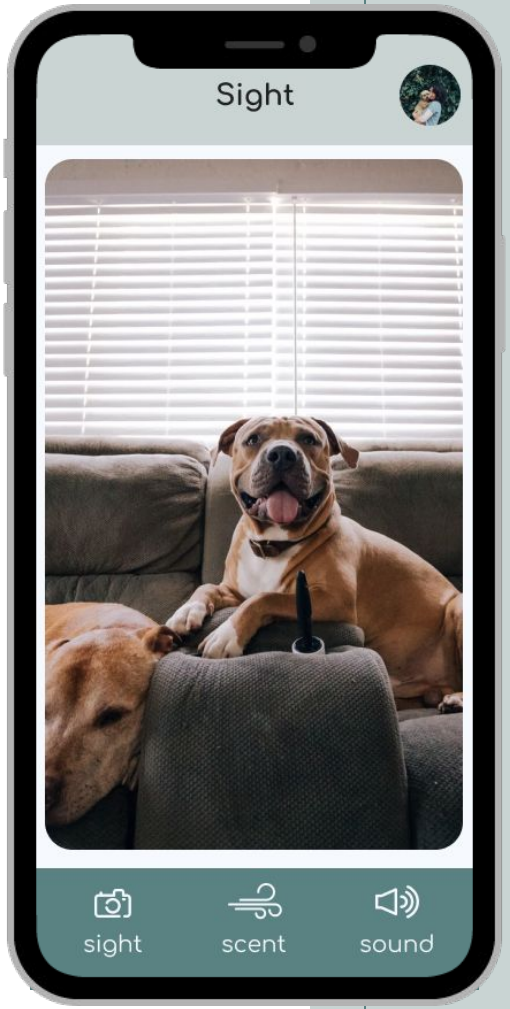
Wiring schematics



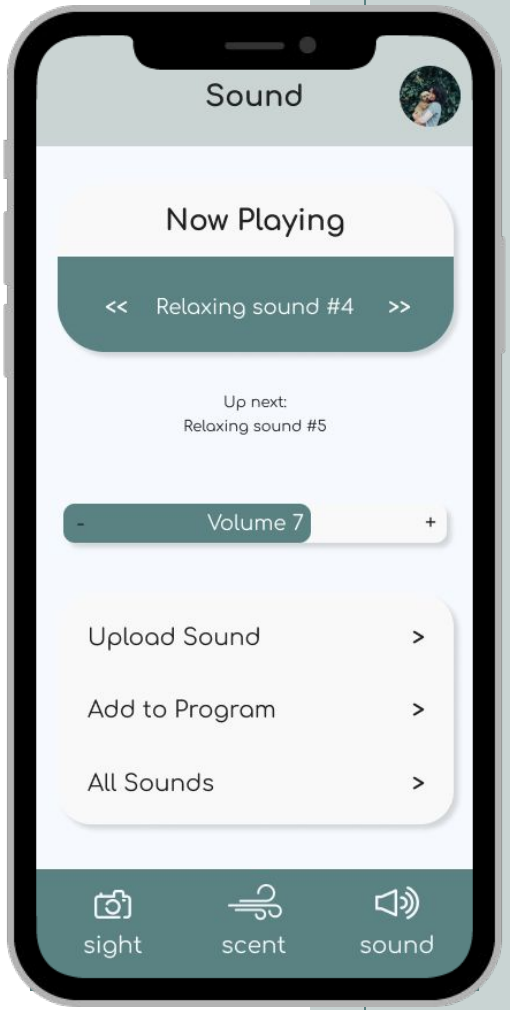
Wiring schematics



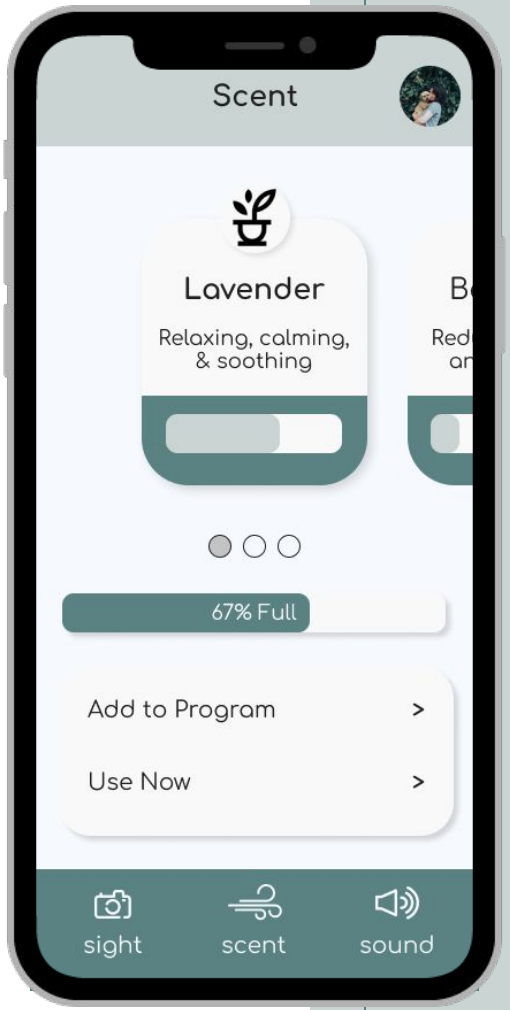
Sight UI



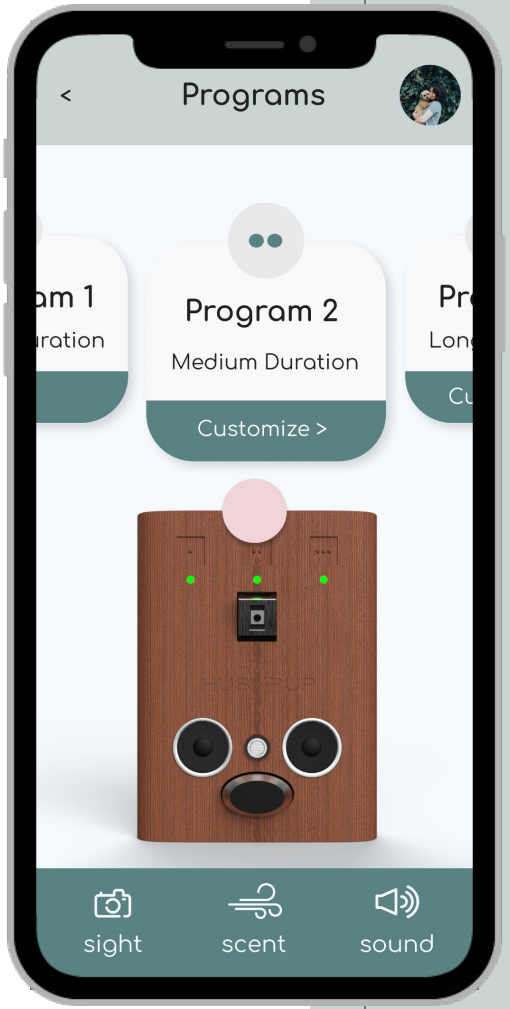
Sound UI


Sound
Now Playing
<< Relaxing sound #4 >>
Up next:
Relaxing sound #5
- Volume 7 +
Upload Sound >
Add to Program >
All Sounds >
sight
scent
sound

Smell UI


Scent
Lavender
Relaxing, calming, & soothing
67% Full
Add to Program
Use Now
sight
scent
sound

Structure UI



Final Deliverables

HUSHPUP
HUSHPUP
HUSHPUP
Sight
Scent
Lavender
Add to Program
Use Now
HUSHPUP
Sound
Now Playing
Upload Sound
Add to Program
All Sounds
Programs
Program 2
Medium Duration
Customize

Lookbook

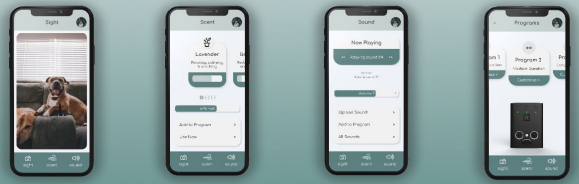
HUSHPUP

Anxious pup?

No matter how much **we love our pets**, we can't be there for them 24/7. Our **unpredictable schedules** and busy lives can trigger **separation anxiety** in our furry friends. This separation anxiety is often manifested in **undesirable behavior** such as destruction, accidents, or even self harm. Our users are desperately searching for a way to **combat separation anxiety** in their pups.

Hushpup is the solution.

Hushpup uses scientifically proven **enrichment techniques** to develop an engaging **routine** for your pup. It combines scent and sound to **modify a dog's environment**, and allows the owners to access pre-programmed routines that dynamically cycle. Hushpup creates a balance between **engagement** and **structure** that helps a dog to know what to expect and when.



The ultimate dog gadget.

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HUSHPUP
HUSHPUP
HUSHPUP

Thanks!

Process Book
Look Book
Vision Video
Executive Summary
Project Description

Alicia Silhavy, Project Lead
Emily Elz, Visual Lead
Leah Jones, Lead Electronic Engineer
Garrett Grainger, Lead Product Developer
Leo Cayuela, Lead Software Engineer

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