

Pet Set Go!



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MIMS Capstone Project Report

May 2018

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Acknowledgements

We would like to thank the Berkeley Animal Care Services for their invaluable support and guidance throughout our project. In particular, we would like to thank Amelia Funghi, Leslie Smith and Kim Floresca for validating our content and contributing to our qualitative research. We are extremely grateful to our advisor Steven Weber for lending his expertise and guiding us through this project. We would also like to thank our colleague, Edward Yip, for his creative input on our product branding. Finally, we would like to thank all the individuals from the Berkeley School of Information who worked with us through multiple iterations of usability testing.

Problem Space

Approximately 6.5 million companion animals enter U.S. animal shelters every year. Of those, approximately 3.3 million are dogs and 3.2 million are cats [1]. A staggering 1 million households turn to pet rehoming every year [2]. Some of the primary reasons for rehoming are pet problems (46%), family problems (27%) and housing problems (18%). The most common “pet problems” are aggression (35%), destruction (29%) and health problems (26%) [2].

Our own user research revealed three additional key factors that contribute largely to pet rehoming:

- Many pet adopters have unrealistic expectations about how a pet should/will behave after adoption.
- Many pet owners do not take enough time to acclimatize their pet to their new home.
- Many pet owners have a limited understanding of pet behavior, and do not have access to proper tools to allow them to learn more.

Every pet has something special to offer their owners, but with such unique personalities and backgrounds, many new pet-owner pairs find the initial transition period following adoption to be difficult. Our research indicates that the first month is the most vital in initiating a strong and healthy bond. We'd like to limit the rate of pet rehoming by leading users through this essential learning process, and by supporting and

strengthening the bond between pets and owners to help establish meaningful, irreplaceable relationships.

Product Vision

Pet Set Go! was founded under the belief that something magical happens when pets and people connect. An extraordinary bond is formed that results in something powerful, not only between pets and people, but also in a way that makes the world a better place. Through our technology, we are working to ensure that this bond between pet and owner not only remains intact, but gets stronger with every passing day.

Product Description

Pet Set Go! is a mobile application that runs on iOS and Android. The application helps our users acclimate to life with their new pet, understand trends of their pet's behavior, and gain valuable insights into their pet's personality.

Users are securely signed into the app through an authentication process, and are presented with a series of intuitive onboarding questions. These questions target the pet's characteristics and behaviors, as well as the owner's experience and preferences. This information is used in a rule-based recommendation algorithm to provide users with a personalized plan of new activities to perform with their pets to help with acclimatization, training, socialization, and/or bonding. Each activity comes equipped with high quality multimedia content to help walk even the most inexperienced users through the process. Once complete, our users have the ability to journal the

experience and easily tag their pet's behavior. Cumulative behavior trends are then displayed for the user in a clear and understandable visualization, and journal entries are presented in a timeline capturing each special moment between the user and their pet to further reinforce their growing bond.

User Research

We can broadly divide the user research conducted for this project into two phases:

Phase 1: Generative research

With the intention to help reduce the rehoming rates of shelter pets, we set out to conduct user research to identify a white space in the period starting from pre-adoption of the pet to its return or rehoming. We decided to conduct a series of semi-structured qualitative interviews, competitive analysis and a survey. Our assumption was that this would help us identify a white space that would benefit from a technology-mediated approach to nurture the pet-human relationship leading to reduced rehoming rates.

Techniques used

- **Semi-structured qualitative interviews:**

Methodology

Semi-structured qualitative interviews with various stakeholders involved in the pet adoption process would reflect what are the different pain points in the pet adoption process and help us in gaining a better understanding of the entire adoption lifecycle.

Goals

Get a clear understanding of the pet adoption lifecycle in general and collect in depth data about the various pain points, seamless experiences and current solutions in place to address the issues to aid our idea generation process.

Recruitment

We recruited various stakeholders involved in the pet adoption lifecycle such as animal shelter staff, animal control officers, volunteers at the animal shelter, pet trainers, pet owners and potential pet adopters. We recruited these participants for our interviews as they were all involved in the adoption lifecycle at different stages, have different perspective and different levels of expertise with pets.

Key insights

- There are a lot of impulse pet adoptions that lead to pet parents being overwhelmed by the responsibility that comes associated with a pet and many a times leads to rehoming of the pet.
- New pet parents have the expectation that the behavior of their pet is ideal and hence are disappointed when reality does not meet their expectation.
- Once the pets are adopted, the first two to four weeks is the most crucial period for forming a strong human-pet relationship.
- New pet parents resort to the internet to resolve issues faced by their pets but there is an information overload. They also depend on word of mouth for solutions to various needs of their pets.

- Every pet has its own personality and it is hard to generalize their behavior. This gets magnified across different species of pets.

- **Competitive analysis:**

Methodology

Competitive analysis helped us evaluate existing solutions and approaches before being able to pinpoint the particular issue in the space of pet adoption and rehoming that we would address through our project.

Goals

Get a clear understanding of what was being done well by competing products in the space and areas that were in need of improvement.

Recruitment

We identified nearly 20 different products currently in the market and for each product we identified the useful features and pitfalls or pain points.

Results

- There are experienced players in the market aiding the matching of shelter pets to potential adopters and addressing the pre-adoption issues.
- There is no single consolidated repository of shelter pets across the US
- Many apps and websites that currently exist and address some of the pet management issues are poorly built in terms of both functionality and aesthetics.
- Post-adoption space has a lot more room for improvement.

- **Survey**

The survey helped us identify both qualitative and quantitative data from our respondents.

Goals

Identify pain points, avenues where pet owners receive their pet information from and time taken by pet owners to acclimate themselves with their pets.

Recruitment

We used Qualtrics to create our survey and used Amazon Mturk in order to host our survey. We received a total of 130 responses to our survey.

Key findings:

- The first 2 to 4 weeks post the adoption of a pet can be a stressful time for both the adopter and the pet. It is crucial at this point for the adopter to recognize the needs of their pet and address appropriate issues. This would help in building a strong and healthy pet-human relationship.
- Existing products and solutions in the post-adoption space lack both in terms of functionality and aesthetics.
- Although there is a lot of information out there on the internet, it does not help address the issues of pet parents easily.
- Different species of pets have completely different requirements and behavior quirks and these cannot be generalized.

Phase 2: Formative research

By studying the prior research about pet rehoming and the insights gained from our generative research, we identified the need for a technology-mediated approach to help nurture the pet-human relationship, particularly for new pet parents. Also, since our research showed that we need to keep the features of our product distinct for each species, we decided to limit the scope of the project to only dogs, given the time constraints. We generated three main themes to cater to our objective of creating a perfect pet-human symbiosis:

1. Acclimatization – Acclimatizing the pet to their new home acts as the very foundation of building a strong bond between the pets and the new pet parents. It is essential to get the pet accustomed to the new environment so as to avoid any stressful situations for either of them.
2. Behavior – It is important to acknowledge that the shelter pets generally have some kind of history that shapes their behavior. Pet parents need to put in time and effort to understand, monitor and mend certain behaviors of their pets.
3. Expectations – Our research showed that one of the main reasons for return or rehoming of a pet is because the adopters have this notion of an ideal pet and the reality often does not meet this expectation. Setting realistic expectations and providing positive reinforcement to pet parents about their new pets would help avoid the aforementioned situation.

We started the design and development of a mobile application with these three themes being at the core of it. This led to us framing a research plan to continuously

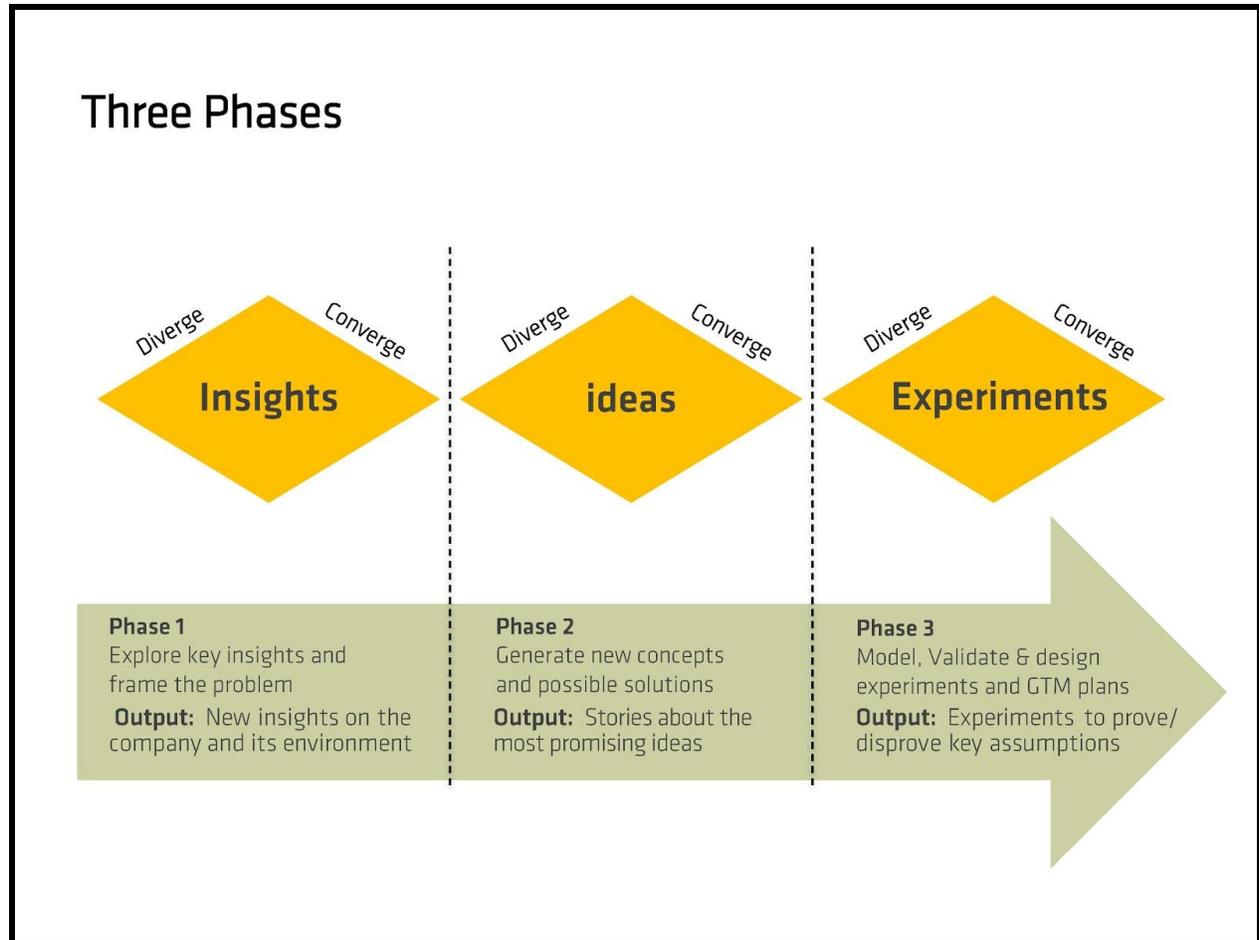
evaluate our designs and guide the development process of our app. We were seeking to answer the following **research questions**:

1. How is the app helping strengthen the human-pet bond?
2. How do we maximize the human-pet engagement through the app?
3. What keeps the user motivated to return to the app?

Ideation & Design Process

In order to develop innovative ideas that we could rapidly test and experiment with, we decided to use a design thinking approach for our ideation process. The process consists of three phases [-]:

- Phase 1: Explore key insights
- Phase 2: Generate ideas
- Phase 3: Validate ideas via prototyping



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Phase 1: *Insights*

In phase 1 we split our team into three groups (2 people in each group):

1. Industry orthodoxies and market discontinuities
2. Core competencies
3. White space identification

Industry Orthodoxies:

¹ Image adapted from slides created by Clark Kellogg for the Haas@Work class.

Under industry orthodoxies, we were trying to understand: What industry conventions or paradigms represent potential “rocks worth overturning”?

Key Objective: Turn “Industry Best Practices” on its head in order to see white space opportunities hiding in plain sight [4].

Market Discontinuities:

Under market discontinuities, we were trying to understand: What shifts might we observe and what insights might we identify in demographics, trends, lifestyle, technology, and other “contexts”?

Key Objective: Identify and understand significant “inflection points” that can create major disruptions, threats or opportunities [4].

Core competencies:

Under core competencies, we were trying to understand: What are our competitors' deep, leverageable and differentiated “know how”?

Key Objective: Identify the unique strengths we could leverage into new areas [4].

White space identification:

Under white space identification, we were trying to understand: What new growth spaces exist in or beyond the core business?

Key Objective: Identify potential growth areas previously unseen, often by “playing with a new set of rules” [4].

This part of the process took two weeks to complete. Each group performed an in-depth analysis wherein they referred to all relevant documents, conducted interviews with industry experts, and explored competitors' apps. A sample of a deliverable at the end of this phase can be seen below.

Name	Core Competencies	Orthodoxy and Market Discontinuities	White Space
Dog Food Advisor	-Has extensive data and reviews on many (all) dog food brands -Big User Base	1. They assume that you know what brand you want information on 2. Comments are ordered based on recency, are about people getting help for specific problems 3. Dog Food Calculator has many assumptions about current weight, conversion between metrics,	1. What if the user is a first time pet owner and wants recommendations of dog food? They have the data to build something like this. 2. To make comments useful and reusable, they can be ranked based on upvotes or have tags to make them searchable for other people with same problems 3. Has missing information about dog's current weight, breed, calorie levels in food
Dog Monitor	-Offers live HD feed of the pet - Can use voice recorded commands to talk to pet -Activity log	1. They assume it's only dogs that suffer from separation anxiety 2. They assume a video feed from one angle will solve the problem 3. They assume notifications to the owner will be a good thing and helpful 4. It is only designed for a dog	1. Pet parents might be the ones suffering from separation anxiety 2. What if the pet moves to a different room or stops responding to the camera 3. Notifications might become annoying. Maybe timing it would be better 4. Taking into account other pets people can have
FetchMyPet	- Smooth, fluid, beautiful design - Deals and Discover - Tracking can be integrated ++ - Report Missing - can be useful after big user base	1. Very Few reviews - unclear of size of user base 2. Assuming that users of the app are already accustomed to their pets and don't need any information on how to deal with them	1. get more users - MARKETING 2. Possible whitespace - Equip new pet parents with information that helps them acclimatize to newly pets
Bring Fido	-Finding dog friendly places - Providing events for dogs/owners -Pet travel experts	1. They assume you've figured out the flight/travel components 2. They assume you can manage your pet up until you get to the final destination 3. They are only tailored for dogs 4. TripAdvisor is the best place to source this data from	1. Can we apply this to other pets
The Pets Pal	-Pet info management -Sharability of dog info for sitters, doctors, etc	1. No relation between pet species and breed and the info provided 2. Paternalistic approach to app use 3. API used for info gathering isn't updated 4. One-way sharability	1. Species specific data 2. Better APIs to call with better data sources 3. Multiperson sharability - Pet sitter, Vets etc along with owner can update
Dogo	Design Gamification of the tricks Progression of learning	1. Proof of a trick feature is great 2. You need to go through the process step by step	1. The proof of a trick is way too much and can lead to attrition 2. Some users might already be advanced and want to skip steps

The next step in this phase was to generate a list of key themes under each category.

The team synthesized the information from the above artifact and extracted key insights, which were used to generate ideas in the following phase.

Orthodoxies and discontinuities	Core competencies	Industry whitespace
You know what information you are looking for	Database of all pet food	Underestimation of cost/time/effort
You dont know what information you are looking for	In depth understanding of animal behaviors (expert-based)	Introducing pets to new environments is hard
Comments section provides helpful information	Gamification of interface	Animal care in unanticipated situations - Owner surrenders
Dogs suffer from separation anxiety	Medical information	Expectations are of an ideal pet which is mostly not the case
App is only designed for a dog	Fluid API connection to yelp	Pet food and supplies - Where to look for it - no proper process
Trip advisor is the best source of animal friendly data	Live feed of pet	Medical needs and issues - Internet, Word of mouth, Vet
Rigid features that ask too much of the user	Deals on pet food/ pet activities	Trust in info online - Little to none
You own the ideal dog	Finding dog friendly places	No Pet readiness - Lifestyle, background, behavioral
Tracking your pet is a good idea	Sharability of dog info for sitters, doctors, etc	First time adopters - Training necessity
People need to go through each step of the app	Progression of learning	Seasoned adopters - Socializing pets
All dogs in the adoption center are the ideal dogs	Pet travel	Track the adopted pet - No existing processes
The dog doesnt need acclimatization once they come home	Finding dog events around you	Simulate pet adoption/ transition process
The information provided by the internet and shelter is sufficient	Sharing multimedia content with the pet	Re-homers skew younger in age (18-39)
Cost is a driver for determining purchases for the pet		Re-homers are more likely to use cell phones
		Re-homers tend to rent
		Most common rehoming problem: pet aggression
		"Aggressive" animals tend to be re-homed to a shelter
		Re-homers owned animal for < 1 year
		Re-homed pet is typically young (5 months - 2 years)
		Re-homed pets are typically not spayed/neutered
		Support/groups from specific pet-related scenarios

Phase 2: Ideas

This phase of the process involved three stages:

1. Raw ideation
2. Classification of ideas into categories
3. Generating features for prototyping

Raw ideation:

The team underwent an intense three hour ideation process wherein we used the data created from the previous phase to generate ideas. We used a random generator to pick one feature from each category (orthodoxies & market discontinuities, core competencies, and industry whitespace mapping), stitched them together, and generated ideas for one minute. The process was repeated for 1.5 hours. Approximately 175 ideas were generated during this process.



Classification of ideas:

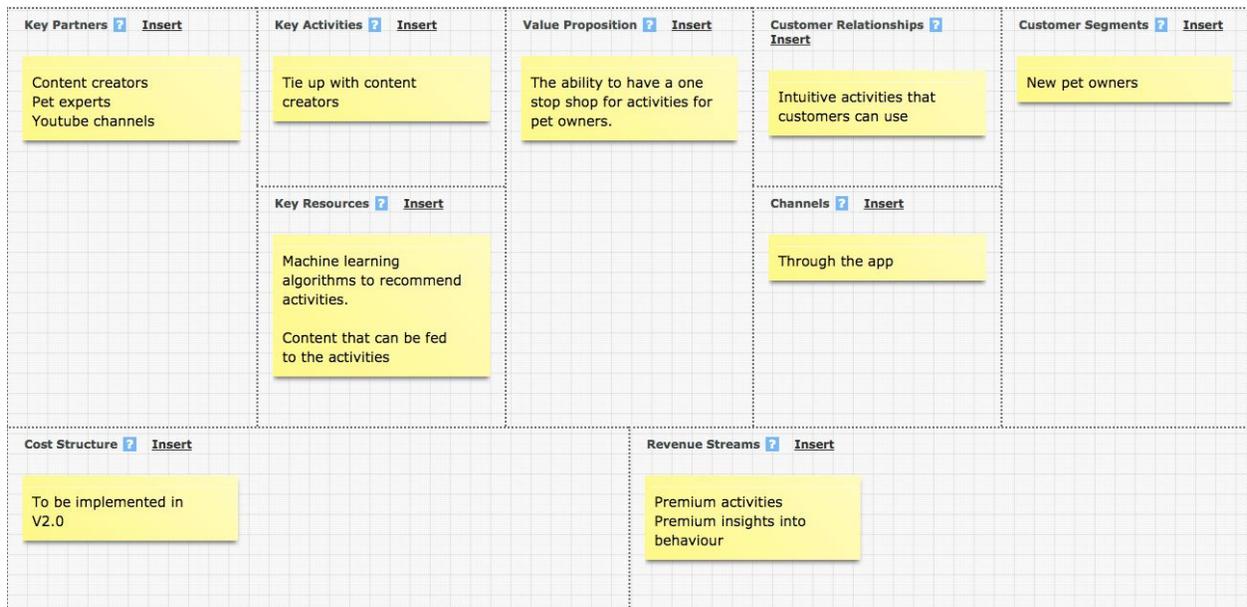
The next step in this phase was to identify key themes and categories and to classify the ideas under these categories. The ideas were broadly classified under 10 categories.



Generating features:

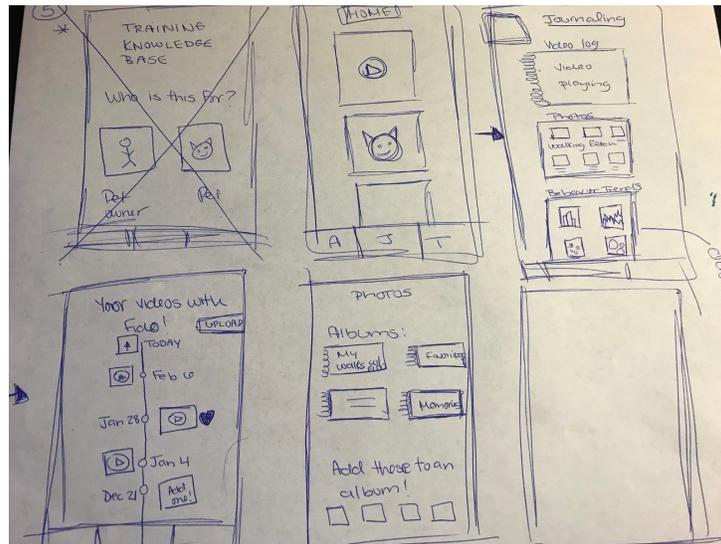
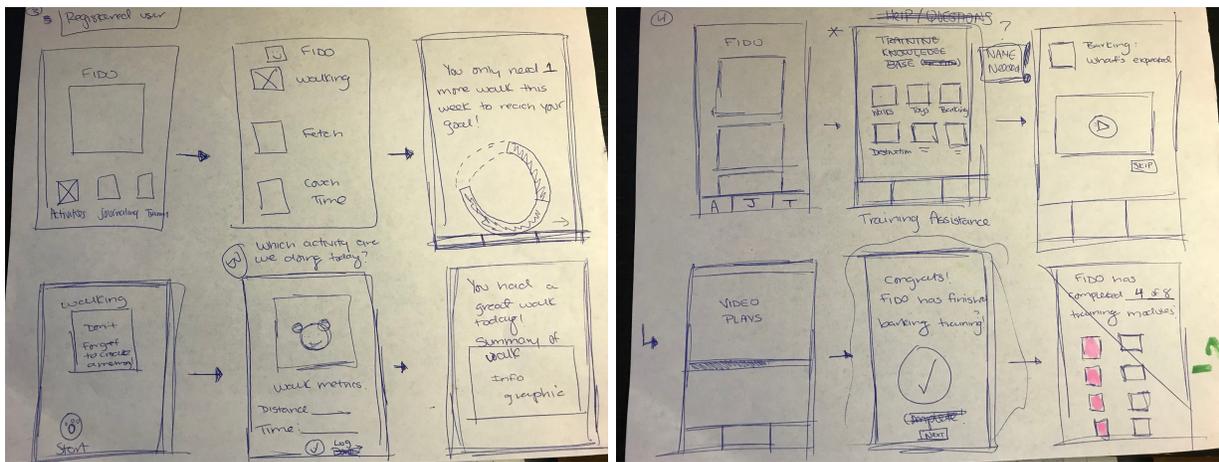
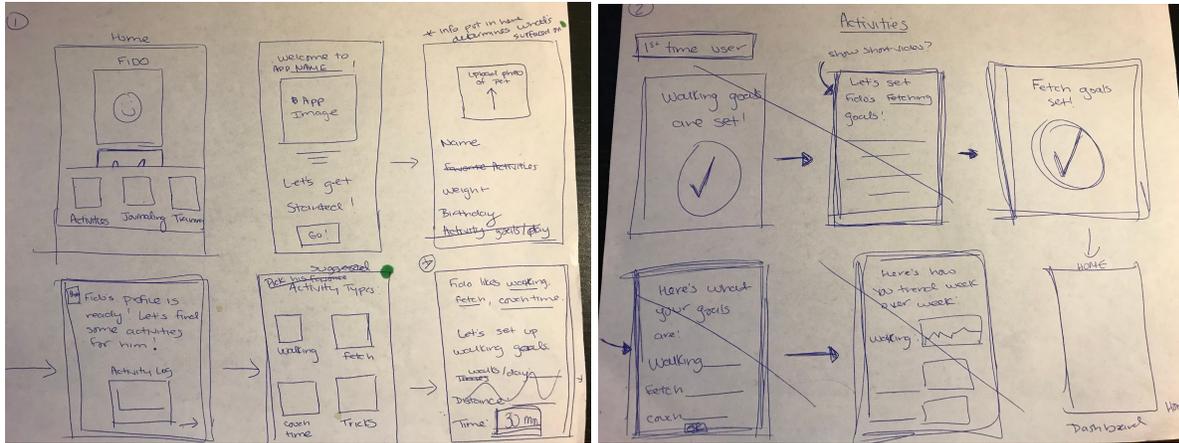
The next step was to generate features for each category. Each generated feature was evaluated against our broader product vision, and the resulting top ten features were selected. The features were also evaluated with the help of a business model canvas.

Sample artifact for the Activities feature:



Phase 3: Design and Prototyping

Based on the information we were obtained from the previous two phases we were able to start creating prototypes for the features that we had generated. We initially believed that we would offer training modules, an information repository, a journaling component, a community for new pet owners, and an activities section to support new pet owners.



Once we had these mockups in hand, we spent several meetings going through various user flows and experiences with these paper prototypes. From these exercises,

we were able to remove excessive screens and narrow the scope of options available to the user. For example, we eliminated the community section, the information module, and we modified our initial plan for the training sections. Through these walkthroughs, we decided that offering a community of pet owners to new users to engage with ran the risk of giving our users unregulated advice within a forum that did not have any sort of moderation. In addition to removing this section, we felt that an information repository would be too overwhelming for a new user to sort through, especially if they were a first time pet owner. We also felt that presenting the user with information in this manner would not have provided enough value to warrant its own section within the app. As a result, we chose to remove it.

Finally, rather than giving the user an activities module in which they had to complete a sequence of events we selected for them, we chose to modify this paternalistic approach to a gentler system. We updated this section so that the user can select activities of their choice from a pre-selected group. We selected activities that best support their pet's acclimatization process and allow the user to choose the frequency at which they do them. We also offer the user training videos and descriptions to support them throughout the process. Once they complete an activity, the user can log the details in the app and this data will populate their dashboard. This dashboard lives on the homescreen of the app and should be used to motivate the user to continue their activities.

We chose to keep the journaling component of the app as a way to maintain user engagement over longer periods of time. Once the pet has adjusted into their new

home, the user may not need guidance on how to build a strong relationship with their pet or on how to complete specific activities. We believed that by giving the user a media journal to which they could upload photos and videos, we could maintain a strong user base and a place where the user could come back to enjoy memories of their pet.

After this process, we had a better sense of the type of information we wanted to present our users with. Next, we had to decide how to best enable them to use the methods our app offers. As a result, we decided to research how apps targeted at influencing a person's behavior have approached the subject of positively shifting someone's habits. Apps like Strava, FitBit, and Headspace, which focus on building and maintaining healthy habits like walking, running, biking, and meditation, provided a foundation from which we were able to glean insights to guide our designs.

First, we discovered that introducing the element of goal-setting increases user engagement. We learned that by encouraging the user to set their own goals for themselves (rather than us mandating them) and by showing them their progress towards these goals, that they were more likely to use and enjoy the app and contribute content to it. Once we discovered this, we applied this thinking to PetSetGo!. We chose to onboard the new pet owner by asking them a series of questions ranging from their experiences with pet ownership to when they felt they would be able to do an activity with their pet. We used this soft paternalistic approach in an effort to provide new pet owners, who are presumably learning about pet ownership as they go along,

with the correct support and guidance in helping their adopted pet acclimate in their new home.

We also felt that showing the user's progress was important in holding the new pet owner accountable for the goals that they set for themselves. We designed information visualizations to display how far the user has progressed when it came to the activity goals they set for themselves and their pet. These visualizations provide gentle nudges to the user to encourage them to spend time with their pet to strengthen their newly forming bond.

We also felt that it was important to provide the new pet owner with positive reinforcement of their progress along the way. Through our user research, we discovered the new pet owners may feel insecure about their performance as a new pet parent. New owners may not know if what they are doing is right or if the activities they chose were actually helping the pet feel more comfortable. We felt that we could support the user in this area by including behavior markers and a note section for each activity. By being able to log and monitor behavioral trends over time, we hope that the user will be able to decipher which activities are best suited for their pet and which activities induce negative behaviors like aggression or anxiety.

Finally, with regards to the overall aesthetic of the app, we chose to take a more mature approach to the color palette, images, and typefaces we used. Through our initial research of existing products, we discovered that many companies approach the

topic of pet ownership as a cute, light, and an effortless endeavor. A mood board we created shows the current design trends across pet adoption apps and brands:

Mood board – Pet Adoption Inspiration I

Keywords: Excited, calm, inspired, proud, happy, love, connection

Visual Patterns: Soft, calm, round, warm tones

Key visual elements: loving feelings, building relationship, connection, warmth

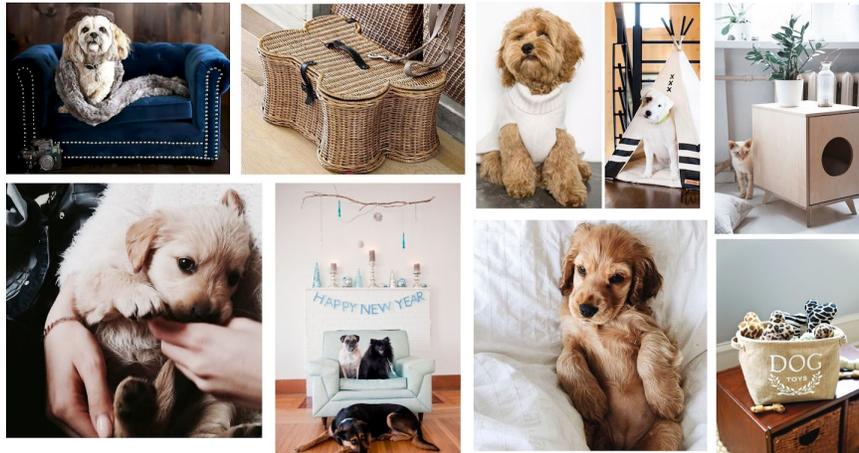


However, we wanted to highlight that this is not always the case and that, especially with adopted pets, the transition from shelter to a new home has its challenges. We decided to stay away from overly bright and playful colors and chose to focus on a clean, more grounded color palette which does not distract the user from the main goal of the app. Our next iteration of the mood board was as follows:

Themes & feelings to convey

- **Acclimatization** – calming, newness, exciting, soft, comfort, curious, exciting, growth, exploration, *anxious*, *worry*, mountains, clear, water, green, plants, blue
- **Behavioral** – teaching, learning, obedience, rewards, *fear*, *worry*, orange, red
- **Expectations** – warm, loving, *stress*, *worry*, success, support, joy, excitement, gold

This mood board consists of a **warm, loving**, and **cozy** environment that also communicates the *responsibility* and *seriousness* that go along with pet adoption.



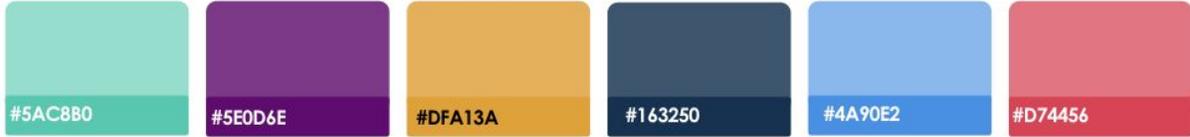
This mood board consists of a **cooler, independent, and adventurous** environment that expresses a more serious tone related to the *responsibility* associated with pet adoption.



We also chose to include actual photos of dogs across the app as a way to show the user the realities of having a pet. With the exception of our logo, we felt that using cartoons or playful imagery deviated from the realities of pet ownership.

Below, you can see final versions of our screens and our finalized color palette:

Primary Color Palette:



Secondary Color Palette:



Logo



Typography

This is Century Gothic Regular
This is Century Gothic Italic
This is Century Gothic Bold
This is Century Gothic Bold Italic

Size 15

0. 1. 2. 3. 4. 5. 6. 7. 8. 9

High Fidelity Prototypes

Welcome to Pet Set Go!

We noticed you've had Peanut for **3** days now.

Routine and consistency are important to help a new pet acclimate in a new home. We are here to support that process.

Let's set some weekly activity goals.

Here's what we recommend:

Category One

- 10 +

Category Two

- 10 +

Category One

- 10 +

Category Four

- 10 +

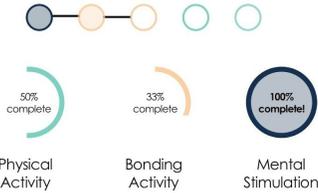
Next



Take Peanut's photo!

Location mm/dd/yyyy

You've completed **2** out of 5 activities for this week!



Behaviors:

●
Calm

●
Fearful

●
Happy

●
Joyful

●
Mellow

Notes:

DELETE
SAVE

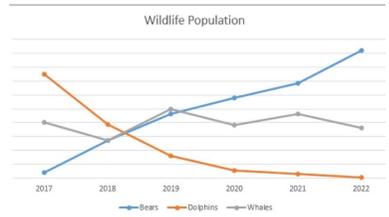
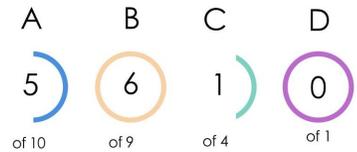


Peanut, 2 weeks ago January 7, 2018

Weekly goals

April 15, 2018 - April 21

Activities



Memories with Peanut

+

April 9, 2018

Peanut went on a run today and we reached our activity goals early!

March 8, 2018

Peanut sat for the first time so I gave him a treat!

March 1, 2018

I took Peanut to the vet today. He was a good boy and got all of his shots.

February 21, 2018

Today, we played fetch for the 1st time!

February 9, 2018

We had couch time today and Peanut slept for most of it :)

January 7, 2018

Adoption day!



Methods used for iteration

- **Usability testing**

Methodology

We conducted our usability tests using high fidelity prototypes. We wanted to gauge the effectiveness of the user interface and also the completeness of the user experience provided by our app.

Goals

To examine and evaluate how users perform specific tasks, guide the redesign and implementation of user flows, features and functionality. We focused our usability test on account creation and activity recording for two reasons: (1) we wanted our test to follow the logical flow of steps that a newly on boarded user would take, and (2) the recommended activities feature is going to be one of the influential features in helping new pet parents engage with their pets to strengthen their bond. The goal with this technique was to gather as much qualitative data as possible without hindrance from the moderators. This technique also allowed us to gauge the biggest pain points and successes of the prototypes. We were able to assess these pain points based on how difficult the tasks were for the participants to complete, how much guidance they needed, how long it took them to figure it out on their own, and how many questions came up in the process.

Recruitment

We targeted 20 something year olds, as existing research about rehoming of pets indicated that this group has the highest return rates. We chose a diverse set of participants who either own a dog or showed interest in adopting one.

Results

- The user interface was aesthetically pleasing and fairly intuitive
 - Some of the call to actions (CTAs) were not clear to the users leading to findability issues.
 - Placement of some of the features in the flow raised questions and created some confusion.
- **Cognitive task analysis interviews**

Methodology

We chose to conduct cognitive task analysis interviews to obtain opinions of experts about the content, design of our app, and to validate that the app was serving its purpose of strengthening the relationship between pets and humans. We asked the experts to think aloud while doing the tasks we provided. We also probed them at every step to understand what they anticipated by taking some action. the interviewees were asked whether they supported the content of the screen, the design of the screen, and if the features shown were conducive to building a stronger human-pet bond.

Goals

For the expert interviews and task analysis, our main goal was to get detailed feedback on the content of the app as it would be the soul of our story about nurturing the human-pet relationship. Apart from this, we also aimed to get

feedback about the aesthetics and user experience of our product. These experts had considerable knowledge about various issues faced by dog owners that ultimately led to rehoming. Thus, their feedback would help cater to the problems efficiently while also validating whether the features of our app really do promote a stronger bond between humans and their dogs. While questioning them we focused on whether 1) it was realistic and feasible for a person to utilize a certain feature and 2) whether utilization of the feature would have our intended benefit. We also made sure to ask about the potential long-term impact of bonding so as to keep our ultimate goal of rehoming in mind.

Recruitment

For the cognitive task analysis interview, our aim was to recruit participants who can be considered as experts in dealing with dogs and understanding their behavior. As a result, we chose to recruit both seasoned pet parents and professionals who work with dogs. Our assumption was that they would have a different perspective about the specifics of the human-pet bonding.

Results

- Validation of some of the content of the app and some recommendations to improve it.
- The experts agreed that the activities and the journaling coupled together is a good way to keep our users motivated.
- They recommended adding a rewards system since humans can greatly strengthen relationships with their pets through positive reinforcement mechanism

- The app should be more paternalistic in recommending activities, helping the user form a routine with their pets.

- **Diary study**

Methodology

Since our client's app has not been published yet, we designed a diary study containing different tasks, mirroring the app, to be performed by the participants. The idea is that our diary study would serve as a proxy to the actual app. We asked our participants to perform two activities with their dog daily for a period of 5 days and document details such as photos and/or videos, the behavior of the dog during the activity, and any notes or comments about their dogs in a document we shared with them. We then sent out a follow-up questionnaire to gauge the effectiveness of the tasks and their impact on the dog-human relationship.

Goals

Our goals for this test were to discover and learn more about the bond and relationship a pet has with their owner. We aimed to understand through the study about the effects of forming a routine, documenting the journey with a pet and its usefulness to the pet parents. By better understanding this relationship, we hoped to derive insights that we can incorporate as features in our app to facilitate a healthy, strong connection between a pet and their owner.

Recruitment

For this study, one of our main criteria was that we target pet owners of adopted dogs ranging from brand new pet parents to those who have had the pet for nearly a year or more. We did not require specific age ranges, genders, or parts of the country that our participants had to be from. However, having a diverse set of regions where the dogs live, age and breed does influence their activities, their behaviors, and potentially, the kind of human-dog relationship. We also ensured that the pet parents belong to different backgrounds professionally and are able to dedicate different amount of time with their pet.

Results

Through the study, we were able to understand the intricacies of the relationship between the dogs and their parents. Even though we got the data from only 6 participants, their everyday interactions with their dog was well captured and provided valuable insights. One of the most important outcomes of this study is the validation that our potential users found the proxy of our app fun, exciting and helpful in forming a routine and documenting their journey with their pet. No participant felt that our study was intrusive or too much work as it was already work and tasks that they were doing. Instead, they came to really enjoy the activities, documenting them, and they started to become accustomed to the nudges from the study. The photos were also a big incentive for the user to keep coming back to conducting their activities.

"After the study, I felt disappointment that it was over. I looked forward to taking a cool/fun photo of him."

“Just now, my partner said she would walk the dog for me and I thought, ‘Oh I need to walk him’ because of some subconscious urge to complete our activity for the day. But then I realized there was no forcing function and I stayed indoors instead.”

This last quote shows that the activities that are meant for the dog also play a role in motivating the owner to complete the goals they have set for the day. These activities and goals worked to keep the owner responsible, motivated, engaged, and excited to spend time with their pet. In turn, the pet gets exercise and gets to spend more time with their parent, thus, building a healthy and strong relationship between the pet and owner. This proves that we are indeed addressing the right problem space and also backs the need for our app, PetSetGo!. The post diary study questionnaire was also a positive reinforcement as the participants agreed that these nudges are helpful in forming a better bond with their pet.

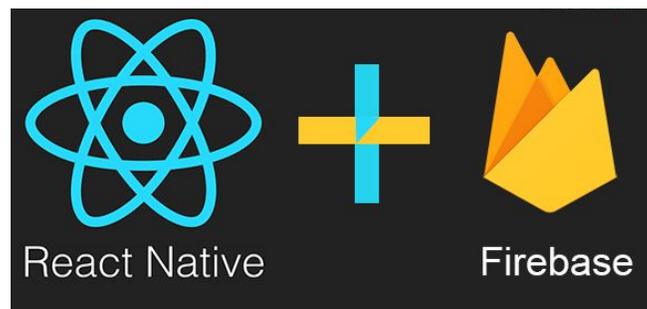
Key findings

1. The diary study acted as a proxy to our app and helped solidify the need for our app and in general a tech intervention to help strengthen human-dog bonding.
2. It also validated that the features embedded in our app would be an interesting and exciting means to document the human-dog journey and this documentation process is not considered to be an overhead.
3. Various usability and UX issues (findability issues, inconsistent designs, placement of features, etc.) were identified and we iterated over multiple versions of designs and prototypes to refine the features of the app.

4. Expert interviews helped in better structuring the content of the app such as activities, categories, recommendations, etc.
5. The research also helped us uncover the fact that the app needs to enforce soft paternalism with respect to goals and activities to help new users form a routine. This in turn helped us add the weekly goal setting feature in our app and tailor recommendations.
6. We found that our hypothesis of increasing user engagement by nudging them to take photos and log activity details was correct. This was revealed in our diary study when one participant disclosed that they began to miss logging their activities which encouraged them to take their pet for a walk.

Development : Tech Stack

All application development can be found at our project GitHub page:
<https://github.com/malavikasrinivasan/iPawed>



The mobile app was built using **React Native**, an open-source framework from Facebook for building native mobile apps using React, a popular javascript library. We made this choice for multiple reasons -

- Apps built using React Native have a native feel without writing platform specific native code using Swift or Android
- Syntax is based on Javascript, CSS-like styles and JSX which made it easy for team members with web development experience to quickly get started with development.
- Supports the development of both Android and iOS applications through a single codebase, only needing developers to add platform specific code for a few exceptions.
- Provides a lot of boilerplate code to easily get started along with iOS and Android simulators that have hot reloading capabilities to check the change real-time.

We built on top of React Native's boilerplate code and developed reusable components that appeared in multiple screens, setup a navigation stack and implemented individual sections of the app with multiple screens styled according to the designs provided by our designer. In this process, we also leveraged many React Native libraries for developing components and functionalities in the app, including but not limited to libraries for the timeline, vector icons, database connections, location services, rendering svg elements, image manipulation, navigation etc.

To support our React Native app, we wanted a data store to store all our application and user content. Our data store needs were threefold:

1. To provide some form of user authentication capability which would support email-password authentication and could be easily scaled to add third party authentication services like Facebook, Google etc.

2. To provide a storage space where we could store user uploaded media about their pets
3. To provide a data store of all the website content and user specific content

Following were the steps that went into implementing the backend:

Step 1: SQL vs NoSQL

Our first task was to decide the nature of the database that we were going to use. The decision between SQL vs NoSQL database. We decided to go ahead with NoSQL database given our requirement of iterative development and for the capability to scale with high amount of user generated content.

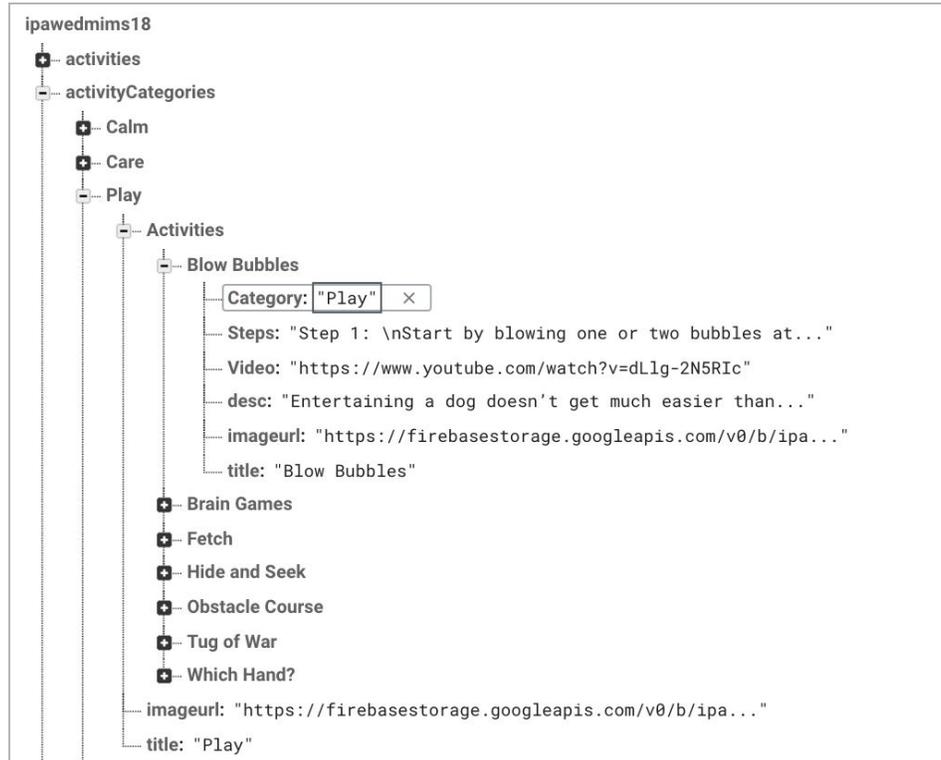
Step 2: Picking the database

Next, we chose to go ahead with the **Firestore** realtime database. This NoSQL database is hosted on the cloud. Within Firestore, we used the Authentication utility for user authentication, the storage utility for storing media content, and the database utility to store our app and user specific data. Because it is a cloud hosted database, and the data is in JSON format, we can connect to the database using a simple API call from our application, thus eliminating the need to keep a server running. The speed of data transfer and reliability were other factors which influenced our decision to go ahead with Firestore.

Step 3: Structuring the data

Following screenshots represent the application specific data that is stored in the database.

1. List of activities and their description:



2. User specific data:



Recommendation Engine:

The system we've implemented to personalize activity recommendations is a rule-based algorithm using activity progress data, as well as relevant owner and pet details collected during our onboarding process, to determine which activities a new

user might most benefit from. To illustrate our logic, a handful of features and corresponding category preferences are provided below:

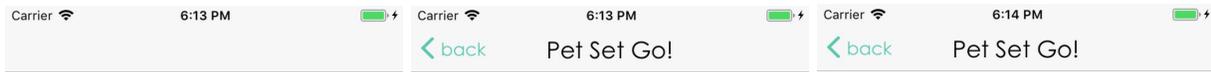
- **pet adoption date:** if a pet has been recently adopted (within the past 6 months), we increase the weight of training activities, as we believe new owners will be the most unsure during this period.
- **pet age:** if a pet is young (less than a year old), we imagine they will have an excess of energy, and so increase the weight of playtime activities; alternatively, if a pet is a senior animal (10 years or above), we increase the weight of calm activities to encourage a slower lifestyle ideal for aging pets.
- **owner experience:** if a user has indicated they have no experience in raising a pet, we increase the weight of training activities to help them learn more quickly; if, on the other hand, a user indicates they have much prior experience with raising pets, we decrease the weight of training activities, as these owners will likely find training modules less relevant.
- **weekly goals and progress:** if a user has reached their goal number of activities in a week for any category of activities, we remove the chances of seeing activities from that category in the recommendations altogether — unless, of course, *all* their goals have been met, in which case we default to all other logic to assign proper weights to each category of activities.

The above list is not exhaustive, but does illustrate the types of decisions we are making to provide users with a list of recommended activities. Note that currently, almost all of our factors work at a *category* level — that is, most factors either increase or decrease the weight of one particular category, which we later use to choose some number of random activities to draw from each of the four categories.

We are currently limited by a lack of real & rich user data, which might inform us about relevant recommendations at the *activity* level. We might, for instance, use behavioral markers over time to understand which activities promote which types of behaviors; or use many sequences of users' logged activities to understand if users like to repeat activities, and if so, after how much time?; or use activity trends of very active users as a starting template of new users with similar initial profiles. Once we begin gaining users and accumulating data, we believe we've constructed our database to allow an endless number of inferences in future application developments. We will continue to learn alongside our future users.

App Flow:

User signup & onboarding



Welcome to Pet Set Go!



Let's get you signed in:

E-mail address
Password

Login

New User? Sign up [here](#)
Developer? Skip [here](#)



Please enter your email address and create a password:

Name
E-mail address
Password

Signup

Existing User? Log in [here](#)

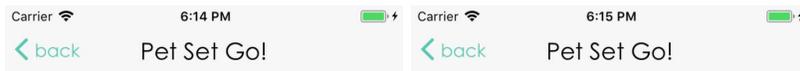


Please enter your email address and create a password:

Alex Smith
alexsmith@email.com
•••••

Signup

Existing User? Log in [here](#)



Let's build your pet's profile.



Take photo



Upload from library



Take photo



Upload from library

Name:	name
Breed:	breed
Color:	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
Weight:	weight (lbs)
Gender:	male/female
Adoption Date:	yyyy-mm-dd
Birthday: <small>(if you're not sure, guess)</small>	yyyy-mm-dd

Create profile

Name:	Coco
Breed:	Black Lab
Color:	<input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
Weight:	45
Gender:	female
Adoption Date:	2018-05-05
Birthday: <small>(if you're not sure, guess)</small>	2018-02-05

Create profile

What's your experience with pet ownership?

None A little A lot



NEXT

To the best of your knowledge, does your pet have any of these basic skills?

Responds to name Potty trained Can walk on a leash

Basic commands (sit, stay, etc) Nope, teach me everything!



NEXT

Do you know of any behavioral characteristics your pet has (e.g. social, anxious, timid, excited, etc.)?

Seems shy, but shelter staff told me she's really playful when she gets comfortable!



NEXT

When is your preferred time to do an activity with your new pet?

Setting a routine and building consistent habits helps your pet acclimate to their new home.

Morning Afternoon Evening Night



NEXT

Great! We'll send you reminders at:

6:00 pm



NEXT

Let's set some weekly activity goals.

Here's what we recommend for each category:

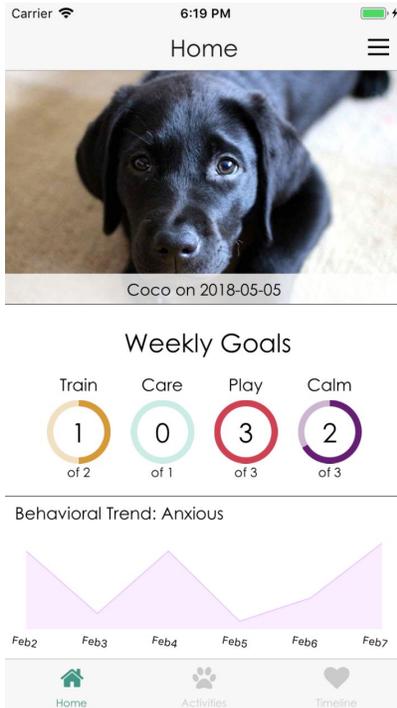
Train - 2 + Care - 1 +

Play - 3 + Calm - 3 +

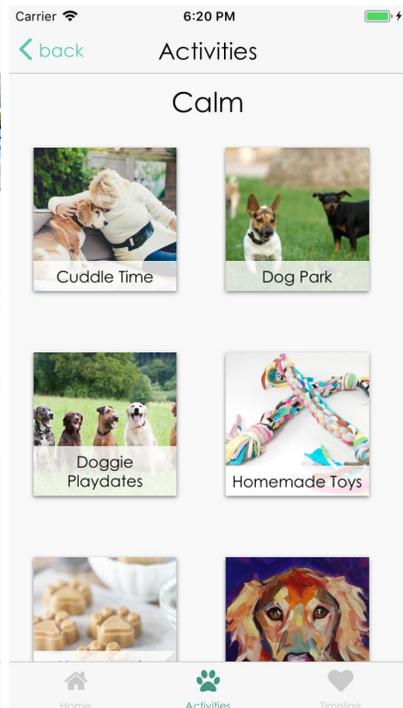
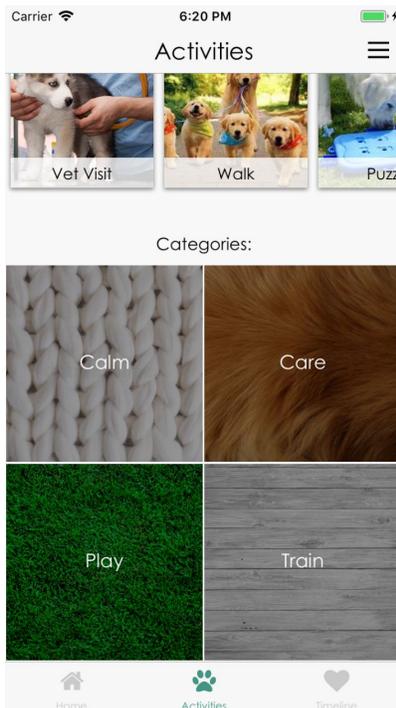
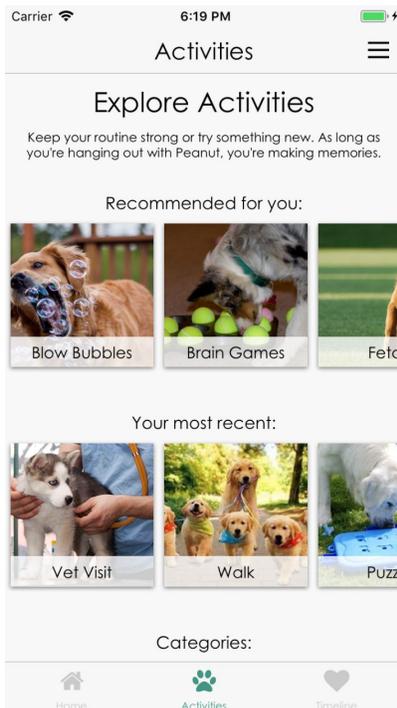


FINISH

Home screen



Activities



Carrier 6:20 PM

< back Activities

Cuddle Time



Cuddling deeply strengthens your bond with your dog. As fellow mammals, dogs have very similar reactions to cuddling and find it an equally great way to bond and show you how much they love you.

> How to:

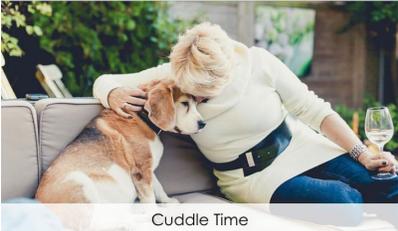
> Video:

Next

Home Activities Timeline

Carrier 6:20 PM

< back Activities



Cuddle Time

Weekly Goals with Coco
April 15 - April 21, 2018

Train	Care	Play	Calm
4 of 10	3 of 5	1 of 3	7 of 7

START

Don't forget to take a photo!

Home Activities Timeline

Carrier 6:21 PM

< back Activities

Take Coco's photo!



Berkeley, CA 2018-05-05

Behavior tags:

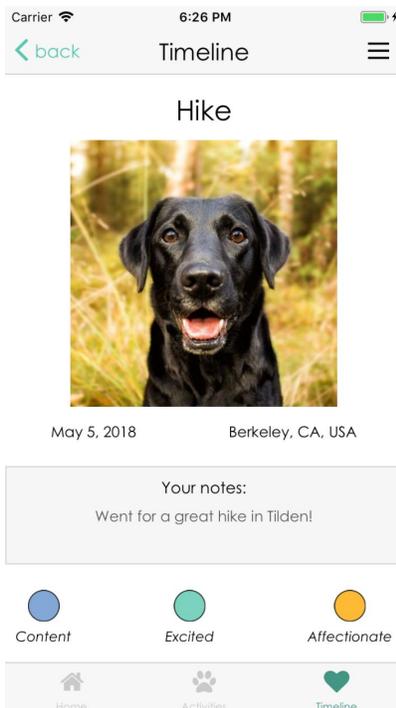
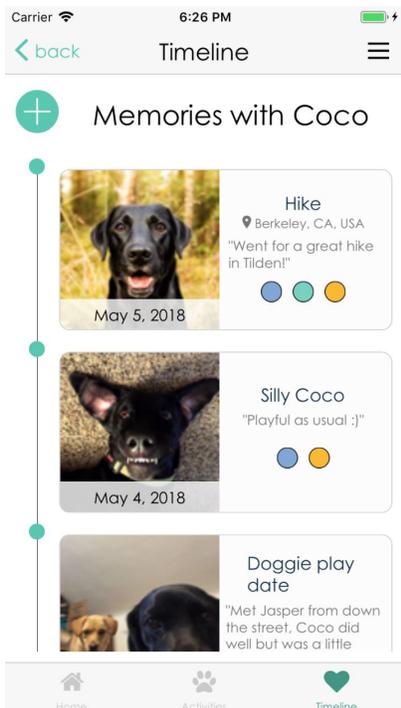
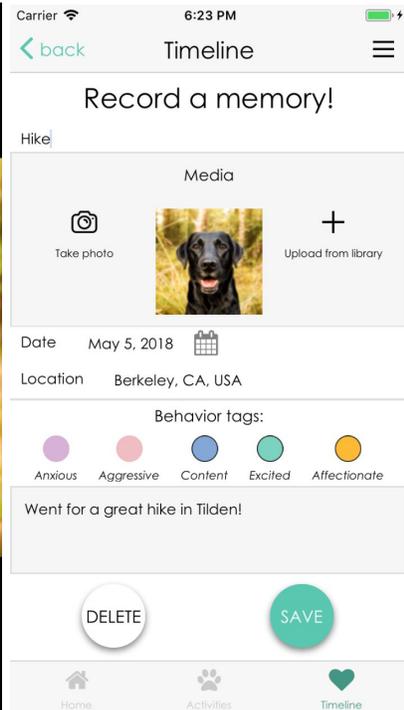
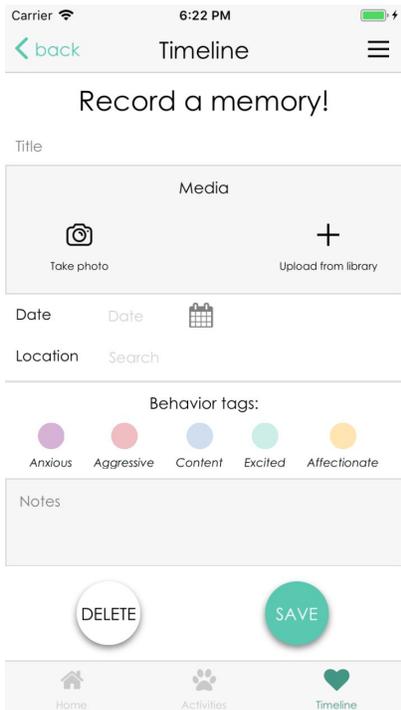
- Anxious
- Aggressive
- Content
- Excited
- Affectionate

Just cuddled on the couch, relaxing day :)

DELETE SAVE

Home Activities Timeline

Journaling & Timeline



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Z

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<https://www.youtube.com/watch?v=qFYihYN2cLU>

<https://www.youtube.com/watch?v=-wlaQD8Kzk>

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https://www.youtube.com/watch?v=TZ2pw_yLk68

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