

# beauk<sup>h</sup>

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MIMS 2019 Capstone Project Report

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# Acknowledgments

This project started out as a simple idea. To bring animals into the digital world. Over the course of this past year, this idea has morphed into an app that allows users to create and build profiles for their pets, share and explore animal related information, and connect with other people and animals. While we still have a long way to go, none of this progress would have been possible without the help, guidance, and encouragement of so many selfless and genuine individuals. While we have limitless people to thank, for the sake of page length we have decided to condense our individual callouts to three people.

First, thank you to Professor Steve Weber, our faculty advisor, for your guidance, leadership, and trust. You not only helped guide us and place us on the right path but gave us the autonomy to explore and test new and crazy ideas. Second, thank you to Professor Coye Cheshire. You selflessly devoted a lot of your time to helping us understand and appreciate the importance of trust on our platform. Further your encouragement, excitement and insights were the launching pad that propelled us out of our mid-semester rut to push ahead with rapid app development. Third, thank you to Steve Trush (and his loyal companion Ralphie!) for your continued willingness to speak with us and share your insights. When we first spoke to you we had many ideas, but limited clarity on this app's potential value proposition. Your insights and ideas throughout this year helped provide us with needed focus, organization, and vision.

We also wanted to thank the many people who endured our long interviews, tedious usability studies, and pestering prompts to try out our app. Finally, last and certainly not least we wanted to thank the many animal shelter and rescue organizations who lent us unimaginable amounts of their time to tour their facilities, speak with their leadership, and of course play with their adorable animals. Seeing and hearing about their work, their thought processes, and their ideas was truly inspiring. They are real heroes who work day and night to save animals' lives and get them to caring and compassionate homes. We hope one day our app can help these organizations and the amazing people who work there.

# Problem Space

The pet care industry is an incredibly fragmented space. From the initial stages of getting a pet (shelters/breeders/etc.) to the multitude of services needed to care for a pet (veterinary/boarding/walking/feeding/information/etc.) people must navigate a variety of disjointed and oftentimes inadequate services to provide care for their animals. As of yet, there is no centralized hub for pet information management and no resource to foster connection between the animal welfare industry and pet owners. Any attempts to foster and harness pet related communities are often makeshift. As a result a major opportunity exists for an adequate and usable pet-specific platform that can address these needs.

A recent survey revealed that half of pet owners in the US, which equates to about 40 million households, do not go on vacation because of inadequate pet care solutions<sup>1</sup>. This inadequacy is not necessarily a result of pet-related services getting worse, but rather of pet owner expectations increasing, as more and more people treat their pets as family members<sup>2</sup>. With higher expectations, trust becomes ever more important in how the services are conducted and who is conducting them. Promoting trust is not easy though<sup>3</sup>. Many companies have tried to establish trust between users through a variety of design tactics from badges, verifications, usage history, and many others. However, each one of these companies have specific value propositions that attract users to their platform. The users therefore must weigh the costs and benefits of trusting and using the service.

These problems impact a large number of people and animals. According to the North American Pet Health Insurance Association (NAPHIA)<sup>4</sup>, 85 million, or 68% of households in the US have a pet. 60 million households own a dog, and 47 million households own a cat. In East Bay alone around 2 million households own a pet<sup>5</sup>.

Our project developed because we all love animals and wanted to find ways to enhance animal welfare. Through all of our research and work we built a much greater appreciation for the challenges required to navigate the animal welfare industry, which represents a vast, fragmented, and complex space. However, this challenge has also

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<sup>1</sup> <https://www.petguide.com/blog/dog/survey-many-pet-owners-dont-travel-due-to-inadequate-boarding-options/>

<sup>2</sup> <http://fortune.com/were-treating-pets-like-humans/>

<sup>3</sup> <https://www.pewinternet.org/2017/08/10/the-fate-of-online-trust-in-the-next-decade/>

<sup>4</sup> <https://www.iii.org/fact-statistic/facts-statistics-pet-statistics>

<sup>5</sup> Note: this assumes a population of 3 million in East Bay, which was 2.5 million per the Census in 2010, times the national average of household pet ownership.

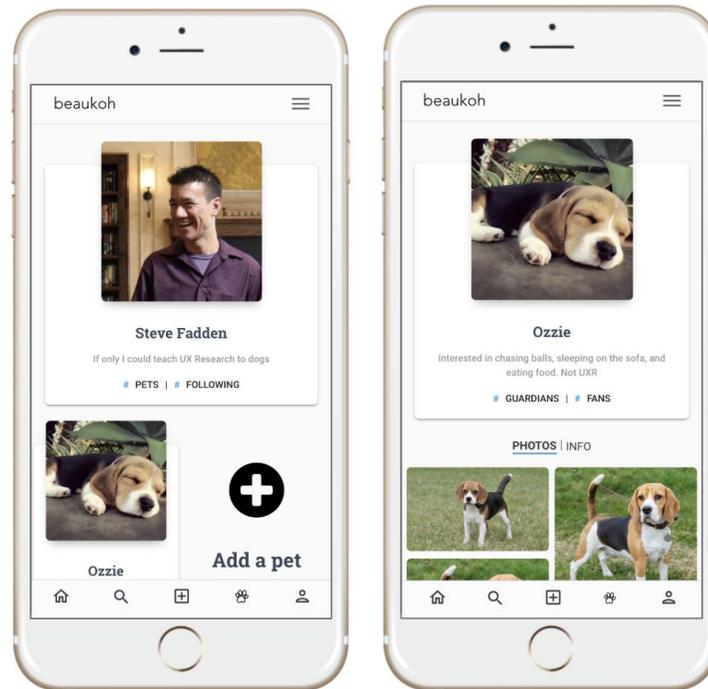
compelled us as the potential impact from a well-thought-out, well-designed, and well-crafted app is immense.

## Product Description

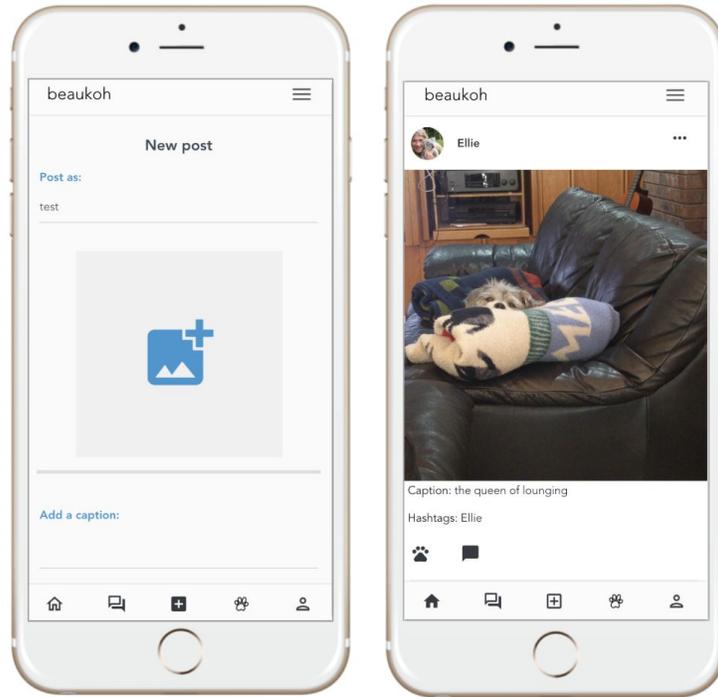
Beaukoh is an app that aims to enhance the relationship and care between animals and their guardians/owners as well as improve the access to relevant animal related information. Beaukoh allows users to create and build profiles for their pets, share and explore animal related information, and connect with other people and animals. In order to get started on the platform, users first create a "guardian" profile for themselves. We chose to call our users guardians because it represented how we felt users should view themselves in relation to their pets. Rather than owning their pets, our users guard and protect their pets and help and support other pets and animals. We think this distinction is important and hope it will help build a bonded community that focuses on collective care.

After finalizing their profile, guardians can then create and manage their pet's profile. This profile is significantly more robust than the guardian profile. The guardian profile merely contains the users name, bio, and their pets. The pet profile on the other hand contains the pet's name, bio, photos, and specific information. All of these fields can get updated or added onto in order to keep the profile up-to-date and alive.

The guardian and pet profiles are the two main building blocks of the app. All other functionality is built on top of or around them. While some pet-related social media platforms only consist of pet profiles, which are unattached or indirectly linked to a person, we thought it was important to incorporate both the guardian and the pet profiles. Ultimately, the guardian is the voice for their pet. Our platform allows for pets to post and communicate, but we felt it vital that the guardians can also communicate directly to each other whether to set up playdates and pet sitting, or to communicate vital medical or best practices information regarding pet care.

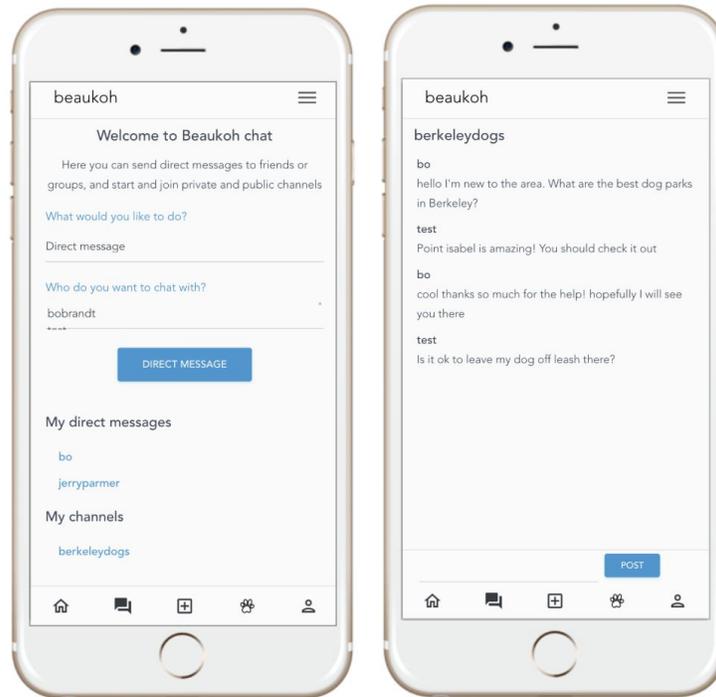


Once these profiles are built, users can then post photos of their pets, explore and engage with posts from those they follow, and chat with other users. When posting users can elect to post as themselves, the guardian, or as one of their pets. After selecting a picture and adding a caption users can then tag their pets and decide whether to make this post public or private. The post will be sent to the tagged pet's profile regardless of the public or private selection. However, if the post is public, the post will also be placed in the news feed for their fellow guardians and followers to see. If it is private it will not, only the guardians of that specific pet can see it. We decided to incorporate this public and private feature because we do not want users to restrict themselves when making a post. On certain social media platforms, users will often select only the best photos to post and discard the rest. We want users to post all the time whether public or private and use Beukoh as a repository for their pet's information. If users are posting frequently they can use their photos as a log or timeline of their pet's activities, which could even be used to track their pet's health, medical, and behavioral activities.



Finally, we felt that sharing and exploring information is vital to caring for your pet, so we built a chat application on Beukoh. This chat app allows users to send direct messages to other users, create group messages, start public or private channels, or join public channels already created. Users therefore can send messages to their friends or family directly. They can set up group chats with friends where they can organize play dates or rotate pet sitting responsibilities. They can join public channels that are focused in their local area like #berkeleydogs or join channels that have a broader appeal like #dogs to explore information such as serious medical issues, common remedies, or general frequently asked question. Finally, they can start private channels, where as an example shelters could centralize all of their volunteers communication.

The chat functionality connects all of the disparate parts on Beukoh. It allows users the flexibility to connect directly on a more personal level and indirectly on a much larger scale. The chat feature represents the central hub of information, where users who have developed important knowledge from experience can provide insights, help those around them, and make a significant and far reaching impact from their past experience.



## Next Steps

While we have built a well functioning app, we have much grander visions for Beukoh that we hope to actualize post graduation. There are three main categories we plan to focus on going forward. (1) Improving and adding more functionality in the app. (2) Enhancing the features and capabilities in chat. (3) Initiating business development opportunities.

## General application features

There are many different features we would like to add to Beukoh. These include adding notifications, multiple photo uploads at one time, dynamic photo cropping and enhancement, likes on the newsfeed, and following of guardians and pets. However, we have some bigger more foundational aspects that we want to initiate.

First we want to enabling the sharing and transferring of profiles. Pet care is not a singular activity. In many cases more than one person shares the responsibility of caring for a pet whether a family or couple. We want to bring this aspect into Beukoh, where pets can have more than one guardian. As a result the guardians independently or collaboratively can post, update, and share information for that pet and collectively

seek and provide the best care. Further, we also want to incorporate the ability to transfer profiles. Ideally shelter/rescue organization and fosters will build pet profiles on Beaukoh to highlight their companion and seek a new guardian to take over permanent care. We want these organizations and fosters to have the ability to seamlessly transfer these profiles to the new guardians so information is not lost and the profile is maintained. For the new guardian, we think receiving a pet along with their Beaukoh profile will make care easier. They will have access to not just the pet's historical information, but also the network of people who have cared for it along the way. These people know the animal. They have dealt with them and are best suited to knowing their tendencies and behaviors. This is the ideal network for the new guardian to tap into to get the necessary information and solve problems if they arise.

Second, we want to incorporate creative, fun, and earned badges for pets. Badges add unique aspect to each pet profile. It can show the pet's proud history. For instance, if the pet was adopted from East Bay SPCA, the pet can proudly wear its East Bay SPCA badge with honor as it went through a difficult and stressful time and came out on the other end in a loving and caring home. These particular badges also provide great brand identity for shelters, rescues, and fosters. They not only can show off their alumni, but the people with these pets can remember how helpful these organizations were in finding their loving companion and build a strong bond with the local shelter. Also, pet's can earn badges for new tricks they've learned. While we have ideas for how this could get verified it nonetheless would incentive users to train their pets. Ultimately, we think these badges could have a very positive impact on the platform. They would improve engagement between people and their pets and they would help educate and tell the story of the pet. This added information can only help guardians when they are looking for pet sitter, playdate, or just want to show off all they have accomplished with pet.

Lastly, we want to allow for further inputting of pet information around health, medical, nutrition, and interests. Right now the pet profiles only contain a limited amount of information. However, we have learned that guardians want to add much more information. Similar to badges we believe the added information can only help improve the pet care of the animal as the guardian can remember the pertinent information as well as share it with others such as dog walkers or vets to educate them on how best to care for their pet. Farther down the line this information could turn into a very useful and valuable body of knowledge that could collectively aid the pet welfare community.

## Chat application features

We similarly have a lot of features to add in our chat application. To name a few these include building out and incorporating threads, replies, emojis, and photo and link uploads. However, we again feel there are more foundational aspects of chat that we must focus on, which we think can really enhance its value proposition.

The first is search and organization of channels. We think the chat application will really add value from both a local perspective as well as from a national perspective. The types of information people will seek from those types of channels will differ. For instance, from a local channel a user might be looking to meet other people in the area, or find great places to go on a walk and the best dog parks to go to. In a more broad channel, guardians may look for more specific and pertinent information that they hope a wider audience can answer. The value add by getting people to use the right channels is immense, but we need to make sure that people have ways to find the channels they desire. Therefore, we need to implement both a better organizational structure around the channels as well as a smarter search functionality to find those channels. Also, we would like to proactively suggest different channels to users that we think might be of use to them. This type of prediction problem will need to incorporate different data science techniques and applications, but we think it would truly enhance the experience of a user on our platform.

Secondly, we want to find way to integrate trust more into our platform, particularly in chat when people might seek out important information. One way to achieve this is by more explicitly showcasing different aspects of a guardian profile such as number of pets, the various badges their pets have achieved, and previous usefulness of post history. Further, we would like to find more creative ways to link the poster with their pet. For instance if Ozzie a beagle has not been feeling well and his guardian Steve goes to post on the chat application, Steve should easily be able to post on behalf of Ozzie. It would make his message of seeking out information more direct, so perhaps other perhaps other beagle owners would see the message and be more inclined to offer assistance. We have not figured out how best to incorporate trust, but if we can figure out appropriate ways to build it we think the chat application will be very valuable to a lot of pet guardians.

## Business development

Finally, our last major steps entails business development. When we first set off on this path we envisioned working with local animal shelters in the Bay Area. To us, focusing on adoption shelters made sense because many shelters already create basic profiles of their adoptable animals. These profiles typically include the animal's name, a short description, and a couple of pictures. Our platform would not only simplify the process of creating these animal profiles, but also allow the shelters to transfer these profiles to the adopters, creating a connection between the shelter and the adopter. In order to create this link we need to partner with the shelter and figure out how to plug into their animal software system to extract the necessary information to build these profiles. While we have developed amazing connections with animals shelters in the Bay this might also require that we speak with the animal shelter software companies to build a partnerships.

We believe that this link is beneficial to all parties. The animal shelter can monitor the animal's progress in their new home, provide useful reminders on check-ups and best practices, and stem any issues that arise in the early days of the adoption. The adopters now not only have access to a centralized portal of information and resources for their new pet, but also can also share its progress and exciting instances for their friends to see. Since the animal profiles will last, instead of going inactive post adoption, the shelter will have an added incentive to include more information on each animal, particularly medical information. With these robust profiles people, and those who serve the animal, will be better informed on how to treat the pets and overall care will improve.

## User Research

### Overview

We conducted four types of user research: semi-structured interviews, initial market research, competitive analyses and usability testing. We began with semi-structured interviews with shelters, rescues, pet boarding facilities, fosters, and pet owners. The goal of our interviews was to understand the pet industry, and the pain points and needs that emerge for these key players, particularly pet owners. For the initial market research, we created a business model canvas to help conceptualize our ideas

following interviews. Our first competitive analysis helped us broadly understand what technology and services exist for pet owners and where gaps may be. Our second competitive analysis allowed us to understand best practices of promoting trust and credibility amongst users on forums or group like platforms. Finally, our usability tests allowed us to gather feedback and improve upon the usability and design of our app.

## Semi-structured Interviews

### Shelters/Rescues/Fosters

*See Appendix A for the interview guide*

We conducted 15 semi-structured interviews and, when possible, site visits with many local shelters, rescues, pet boarding facilities and fosters around the Bay Area. We spoke with 9 shelters and rescues, 3 boarding facilities, and 3 fosters. Though our initial target users for Beukoh are pet owners, we saw value in speaking to other individuals in the animal industry. First, these companies and organizations serve as an important touch-point with adopters and could be an avenue to reach initial users. We also believed it was vital to consider the entire pet industry ecosystem when designing Beukoh. We wanted to identify any needs or pain points Beukoh could address regarding the relationship between these organizations and adopters. These interviews also presented an opportunity to learn about observed behaviors and needs from individuals who have a unique view into new and existing pet owners.

The interviews consisted of questions related to animal information management such as the intake of a new animal and the input of animal related medical and behavioral information into systems by employees and volunteers. We were also particularly interested in the transfer of information from organization to foster, and back, and from organization to adopter. Finally, we delved into the the process or preference for communication (or lack thereof) between shelters, fosters, and adopters post-adoption.

Of the insights that emerged from the interviews, there were a few prominent themes:

(1) Everyone uses different software and systems for animal management

Our interviews helped us understand the complexity of the animal management technology industry. There were four or five main softwares for animal management that were mentioned throughout the interviews, all of which vary greatly in terms of sophistication, usability and affordances. Furthermore, these

tools are not all encompassing, which forces shelters to sometimes use as many as five or six different platforms and tools to manage animal information, veterinary services, volunteers, marketing, and more. It became clear to us that there is a greater need for standardization and cooperation within the industry before the larger challenges of animal management software can be addressed. We ultimately decided this was a larger problem than we could tackle, but focused on other ways Beukoh might be able to aid shelters and rescues.

## (2) Information transfer systems are incomplete or difficult

There are a few main points of information transfer in the adoption process: shelter-to-shelter, shelter-to-adopter, and pet owner-to-shelter (in the case of animal surrender). Through the interviews, we learned that information transfer between shelters can be quite difficult, in large part because each shelter uses a different software, and these softwares are not compatible with each other. This results in shelters sharing information through PDF's or hard copies, and then manually entering information into their chosen shelter management software. In some cases, this process was described as "time consuming" and "cumbersome." There is great incentive for shelters to work together in order to increase likelihood of saving animals lives, but the difficulty of information transfer can complicate or hinder this process. The information transfer points we were most interested in were shelter-to-adopter and pet owner-to-shelter. Adopters either receive a PDF over email or a hard copy. This transfer does not often include photos of the pet before adoption or the profiles. However, through our interviews, shelters shared that one of the main things adopters want to know is the backstory of their pet. Adopters are interested in the lives of their pets before them. However, it's not often that shelters have much backstory and the current system isn't conducive to collecting a detailed backstory. For animal surrenders, there is often very little information transfer, oftentimes due to the sensitive or variable nature of animal surrender. It seems there's an opportunity and need here for a more seamless method of information transfer between all parties involved.

## (3) Desired communication and relationship with adopters

There is a definite interest in forming and maintaining an ongoing relationship with adopters. Shelters and rescue organizations are interested in how the adopters and new pets are settling in together, and make themselves available should there be any issues or the adoption not work out. Additionally, an

important reason for maintaining a connection with adopters is for the possibility of donations. Shelters and rescues rely heavily on donations to support their services, but adopters don't often become donors. There's an interesting opportunity to test if a strengthened connection between shelters and adopters might increase the likelihood of financial contributions. Lastly, many volunteers and fosters, who spend considerable time with these animals, expressed interest in staying up to date about the animals they cared for but lacked an organic way to do so.

These interviews demonstrated the interest in and potential importance of strengthening the connection between shelters/rescues/fosters and adopters. Animals arrive at a shelter, a profile is created, and considerable time and effort goes into caring for those animals. Once they're adopted, those profiles and connections go inactive or disappear. Our hypothesis is that a living, digital profile that is actively transferred from one group to another might ease information transfer and create an organic and sustainable connection.

## Pet Owners

*See Appendix B for the interview guide*

We conducted 10 semi-structured interviews with pet owners, 6 had dogs and 4 had cats. Our goal was to gain an understanding of the processes, behaviors and experiences of pet owners at different points. These interviews would give insight into possible needs and pain-points that Beukoh can address. The topics covered in the interview included:

- (1) Pre-adoption process (criteria, what were they looking for)
- (2) Search process (resources, experiences)
- (3) Adoption (application process, information provided by and to adopters)
- (4) Communication with shelters post-adoption (type, frequency, interest)
- (5) General pet ownership experiences (challenges, what has been helpful, etc.)
- (6) Technology use (types, interest)
- (7) Community formation due to pet-ownership
- (8) Big Picture Question 1: what pet owners think they want to enhance their pet ownership experience

(9) Big Picture Question 2: what kind of technology they think would be helpful

Of the insights that emerged from the interviews, there were a few prominent themes:

(1) People care immensely about their pets (emotionally, financially, amount of time)

It was clear throughout the interviews that people care immensely about their pets. All interviewees had highly memorable and emotional stories about the moment they decided to adopt their pet, and were excited to recount those memories. One participant reminisced, “we locked eyes, and he looked at us as if we were already his mom and dad.” The reference to ‘pet parents’ and comparison to parent-child relationships was not uncommon when speaking with pet owners. Pet owners also spend a significant amount of time and finances on their pet. Having a pet can be a significant financial commitment, considering the various expenses for food, veterinary care, accessories and toys, etc. Two interviewees had obtained pet health insurance, others purchased technology like cameras to monitor their pets or, in one instance, an self-cleaning litter box. Regarding time, some interviewees shared that their time and availability changed significantly due to being a pet owner. When asked about the challenge of being a pet owner, one interviewee shared “it’s changed what me and my husband are able to do. Now we plan out who can be home with our dog, and will choose not to do things we used to do to make sure our dog is cared for and not alone for too long.” The commitment pet owners have to their pets suggests that they are willing and interested in obtaining the best tools, services and resources to help them care for their pets.

(2) It’s difficult for pet owners to find trusted individuals to support their pet

When asked about the challenges of pet ownership, all interviewees stressed that it is very difficult to find trusted individuals to care for and support their pet. Existing solutions which aim to connect pet owners with these kinds of services come with their own challenges. Sometimes this lack of trust was around whether a pet sitter had the appropriate space to care for their pet or could be trusted to stay in the pet owners home. Most often, this lack of trust was around whether this person would adequately care for and give attention to their pet.

Therefore, most interviewees rely on family and friends to care for their pet but even that option can be challenging. One interviewee mentioned feeling guilty for asking friends to pet sit, not wanting to take advantage of their time. Finding trusted, reliable caretakers for their pets is clearly an important need for pet owners and one that we would like Beukoh to address.

(3) Pet owners primarily use Google and trust information from actual pet owners

Pet owners rely on Google for their pet-related informational needs. Often if there's an issue or question they have about their pet, they'll do a quick Google search which leads to articles, forums or YouTube videos. Some pet owners did not find shelter related resources as helpful because they were often broad, whereas pet owners wanted specific answers that might relate to breed, age, etc. When discussing how they evaluate the credibility of information, most pet owners relied on information from actual pet owners. Additionally, a few interviewees stressed that they were less likely to trust information that came from pet-related companies. If a specific product is mentioned, or is backed by a company, they worry the information is biased or more marketing than wellness driven.

(4) Community: pet owners use it but don't feel they are part of it

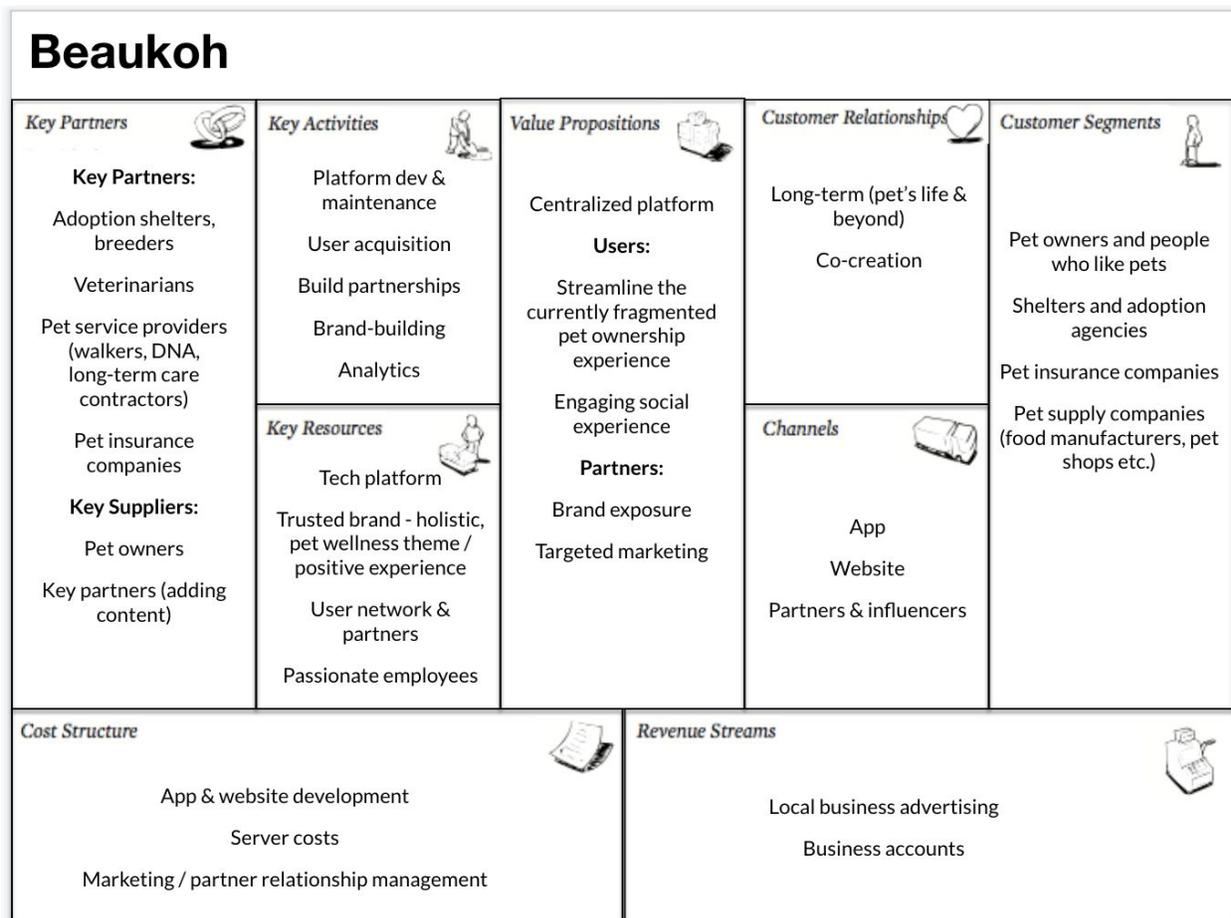
We believe having a pet opens the possibility of joining a community, but found during the interviews that many pet owners don't view themselves as being part of the community. They often recognize that animal or pet related communities exist, and they use them as resources, but do not view themselves as being part of it. Additionally, pet owners feel that having a pet has strengthened their existing relationships but hasn't necessarily extended to new connections.

(5) Technology use: pet owners don't use often, but are open to it

In general, pet owners do not use much technology related to their pets. Oftentimes, that technology is tangible, like camera monitoring, instead of platforms or apps. The platforms or apps they do use are not often pet specific (i.e. Google Photos, Instagram, Facebook etc.) However, they also demonstrated a willingness to try new technologies that may support them and their pets. For example, one interviewee expressed interest in technology that would help her schedule and manage pet-sitting friends. Another felt that an app that allowed him to track the medical history of his pet would be useful to

have. Though technology does not yet play a huge role in pet care, this willingness is promising for the potential adoption of Beaukoh by pet owners.

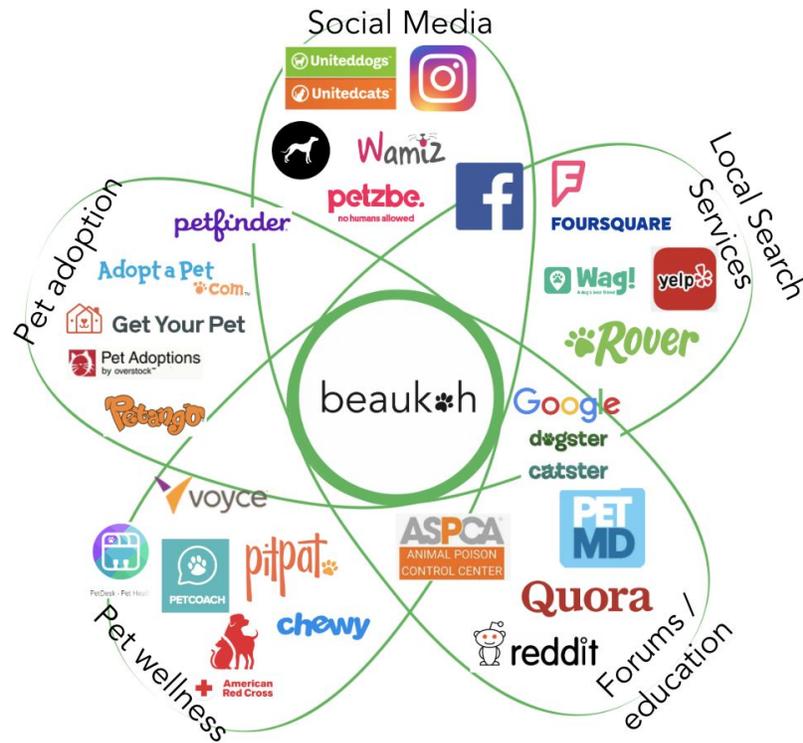
## Initial market research



We completed a business model canvas early in the ideation phase to try to gain a better perspective on the value add of Beaukoh and the potential challenges this idea might face in the market. Ultimately this exercise was very useful in helping us get a bird's eye view of the market. It allowed us to recognize the opportunity for a centralized platform dedicated to pet and animal welfare. Also, it allowed us to pinpoint which key partners, particularly animal shelters, we should reach out to in order to get better educated on the industry and understand the various challenges key stakeholders faced. Finally it helped us realize the need for a solution that can provide a local community feel with a wide national reach.

# Competitive Analysis

## Pet Related Technology



When evaluating the competitive landscape for Beaukoh, we focused on companies that directly or indirectly cater to pet owners. Ultimately we grouped the competition into 5 different verticals: social media, local search services, forums/education, pet wellness, and pet adoption.

The major players in social media are unsurprisingly Facebook and Instagram. The services they provide are not specifically for pet owners, like Pack, Petzbe, or Wamiz, but their platforms are flexible enough to allow pet owners to use different components for their pet needs. For instance, on Instagram many people have started creating profiles for their pets<sup>6</sup>, and on Facebook many people use groups to communicate information or schedule events.

Similarly, in the local search services vertical Yelp dominates, even though the business is not specific to animal care. From our interviews most people and businesses rely on Yelp when making decisions about where to go regarding vets, animals hospitals or

<sup>6</sup> <http://fortune.com/2016/09/09/when-your-dog-is-famous/>

services like doggy daycare or boarding. More recently Wag and Rover are penetrating this space, but the services they provide, mostly dog walking and dog sitting, are more narrow and seek to solve one aspect of dog care.

The forum, education, and information space is very fragmented. While most people begin their information search on Google, the plethora and options presented can lead to a feeling of paralysis. While different sites like Quora, PetMD, dogster, and Reddit all contain various aspects of pet information, the information is not only very disjointed and hard to find, but also very difficult to trust. While the information might seem good, it is difficult for a user to verify the usefulness.

The pet wellness vertical contains some overlap with the information vertical given that many people seek out wellness information for their pet. However, certain companies like Chewy, which is an ecommerce pet food site, post wellness advice and information to help educate their customers. On the other hand, companies like PetCoach, which allow users to speak to a vet virtually, and PitPat, which monitors your dog's activities, provide specific wellness services. From an outsider's perspective it is difficult to understand the take up rate for many of these services.

Finally, within pet adoption aggregator sites, petfinder.com and adoptapet.com are the clear leaders. However, when speaking to many people who went through the adoption process as well as the shelters who plug into these aggregators, many have qualms with these sites. For instance, the site is not always current so animals that are already adopted might still show up on the site. Also, people oftentimes do not hear back after applying for a pet on these sites, whether a confirmation or denial. As a result, many people are left with a sour taste when seeking pets on these sites.

## Trust and Credibility Practices on Platforms

*See Appendix F for a link to a spreadsheet with documentation of the competitive analysis.*

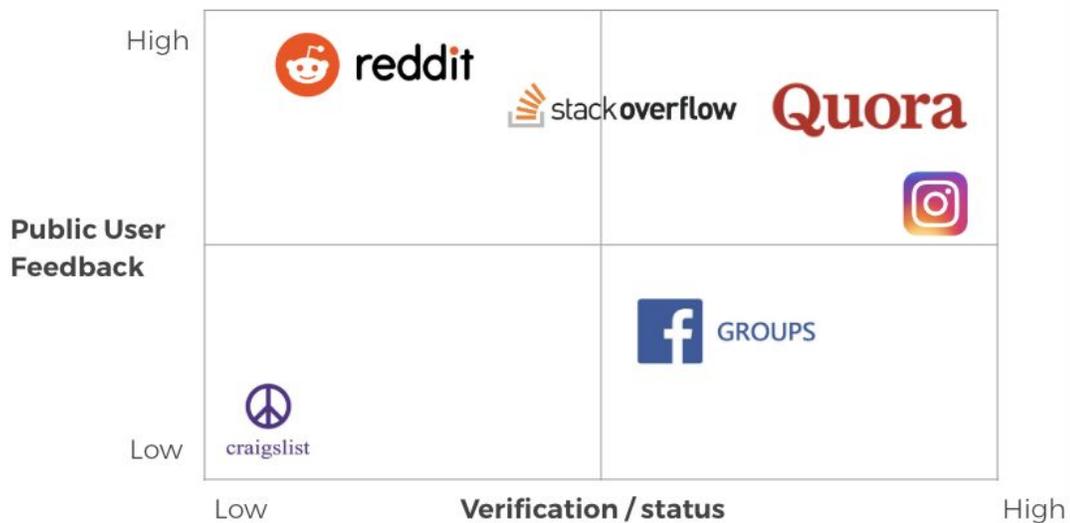
We conducted a competitive analysis based on findings from our interviews. One topic that came up consistently as an important need for pet owners is finding trusted individuals to care for their pets, trust being the key factor. For this competitive analysis, we evaluated how other platforms fostered or communicated trust and credibility among users and for user-generated content. While we recognize the importance of looking at trust on pet-specific platforms, for this competitive analysis we

intentionally started broad. Our goal was to understand and identify the practices used to demonstrate trust, regardless of industry or type of platform.

We evaluated 6 platforms: Reddit, Quora, Facebook Groups, Stack Overflow, Instagram, and Craigslist. We evaluated each platform in terms of:

- (1) Verification - Does this website incorporate verification of users? How? What's the process of verification?
- (2) Public User Feedback - How, if at all, do users provide public feedback on user-generated content?
- (3) Private User Feedback - How, if at all, do users provide private feedback (anonymously or not) on user-generated content?
- (4) Highlighting Posts - How, if at all, does the platform highlight or showcase popular posts or users?
- (5) User Profile Status - How, if at all, does the platform communicate status, rank or reputation on user profiles?
- (6) Credibility Search - are there articles or anecdotes about how users perceive trust and credibility on this platform?
- (7) Personal Overall Impressions - What is the researchers general impression of this platforms approach to trust and credibility?

In order to understand the landscape of these platforms and where Beukoh should sit, we created a 2x2 diagram. On the x-axis is verification and status: to what extent does the platform provide verification of users and indication of status, rank or credibility on the user's profiles. Oftentimes this could be communicated through a symbol (like the blue checkmark on Instagram), or through an official title or description that communicates relevance to a topic (like in Quora). On the y-axis is public user feedback: to what extent does the platform allow users to provide feedback publicly about user generated content. Public user feedback types include upvoting, downvoting, commenting, liking, favoriting, or providing awards or support for favored content.



As shown above, Craigslist is low on both axes, providing no form of verification and no way to publically provide feedback about user generated content. Reddit does not provide verification of users, but does indicate implicit reputation on user profiles such as the number of posts a user makes, or how long they've been a member of the platform. Stackoverflow and Facebook do not provide much verification, though Facebook's real identity requirement to create a profile does provide some form of verification. Finally, Quora and Instagram provide verification of users through a specific title or standardized symbol like the blue checkmark. In terms of user feedback, Facebook was slightly below the rest because of the privacy barrier - a user must be part of a group to provide public feedback through liking, reacting or commenting. The rest of the platforms provided increasing options for providing public feedback. Instagram allows liking and commenting, and Quora and Stackoverflow allow for commenting, upvoting and downvoting. Reddit was the highest because in addition to those same practices, they also allow users to give other users 'awards' which support content they find trustworthy or useful.

Given this diagram, Beukoh would ideally be placed around where Quora is located. We want users to easily determine the credibility of another user and the content they share, and thus plan to include a form of verification that will provide users with opportunities to engage with and support content. Because pet owners indicated that they trust information from actual pet owners, we also believe that the demonstrated link between guardian profiles and pets profiles will aid other users in determining the credibility of a user as a fellow pet-owner. We are still building out chat functionalities, particularly for larger groups and communities. As we continue working on this project,

we'll refer back to this competitive analysis to determine what kinds of feedback and interaction designs we want to incorporate.

## Usability Studies

### Usability Study Round 1

*See Appendix C for Usability Study Round 1 Protocol*

The goal of the first round of usability testing was to evaluate our design and identify pain points or confusions in the sign up and onboarding process. Sign up and onboarding are the first interactions a user will experience on Beukoh and we wanted to make sure these user flows were usable and easy to follow for users. In addition to the sign up and onboarding flow, we included hypothetical questions to identify user expectations of features we were considering but had not yet designed.

We conducted five usability studies with pet owners recruited through our networks and acquaintances networks. Three had dogs, two had cats and one had a rabbit. One usability study was conducted remotely, while the other four were done in person. All five usability studies were conducted with a mobile device. We utilized a think-aloud protocol, which allowed us to understand the decision process, impressions and user understanding of the app.

The usability test consisted of the following five tasks:

- (1) Sign up for an account (first name, last name, email, username, password)
- (2) Create a Guardian profile, a profile for the pet owner (bio, gender, birthday)
- (3) Create a Pet profile (bio, birthday, adopted or foster)
- (4) Evaluate the navigation bar (what users expect each icon to lead to)

For our hypothetical scenarios we asked users:

- (1) What additional types of information would they like to store in their pets private profile?
- (2) What kinds of badges would they like to see on the app, and where
- (3) How (which icons or buttons) they would post? What would they post?

Of the insights that emerged from the usability tests, there were a few prominent themes:

(1) Users need context to feel comfortable joining a platform

For our usability study, we crafted five distinct tasks. While we described the purpose of Beukoh at the start of the study, users found it uncomfortable and confusing to go straight into the sign-up process. Users felt they lacked context for what Beukoh is and how they should use it. These findings stressed the importance of including value propositions in the next iteration to more thoroughly explain what Beukoh is and to create an onboarding flow that guides users through the profile creation process with necessary context.

(2) Ambiguous navigation bar icons: the paw print

While most icons we included on the navigation bar are common for other apps, we included one that wasn't: a paw print. The paw print leads to a pop-up with a list of the users pets so they can quickly access pet profiles. When asked what people expected the paw print to do, users were unsure. One guessed, with uncertainty, "maybe it leads to posts I've saved for later, but I'm not sure." Once users were made aware of the paw prints purpose, they questioned whether it was necessary. "How often will I need to go to the pet profile?" or "why wouldn't I just go through the guardian profile?" While users were initially unfamiliar with the paw print, they did note that this is something they can quickly learn and start using.

(3) Users are interested in having badges for guardian and pet profiles

We were interested in the ability for users to add badges to their profiles or their pets profiles, but we weren't sure if this was something of interest for users. We received a very positive reception to the idea of badges, especially those that celebrate the accomplishments of the pet or signify the pets membership in a particular group. Other ideas included: where they were adopted from, quirky badges, superlatives, fosters, and health status. In future stages, when the foundational features of the app are set, we'll plan to add in badges.

(4) Pet profiles should include tabs for medical and behavioral pet information

We used the usability test as an opportunity to see what kinds of information pet

owners would privately like to keep record of on the pet profile. The three tabs themes that emerged were: (1) medical information and history, (2) behavioral information and history, and (3) information relevant to the care of their pet by others (like a pet sitter). These responses aligned with our initial assumptions that medical and behavioral information would be especially helpful. We'll keep this information for future iterations of the app when the internal pet profile is built out.

## Usability Study Round 2

*See Appendix D for Usability Study Round 2 protocol*

The goal of the second round of usability tests was to evaluate our revised sign up and onboarding process, and test out a new feature of the app: making a post. We were able to quickly implement necessary changes based on the first round of testing. For the sign up and onboarding process, we aimed to alleviate the confusion users had around context and provide more thorough guidance and information about how and why to use this app. We also simplified the profile creation process by focusing on the pet profile during onboarding since users were most excited about that part. Since the posting process was new, our goal was to evaluate users' understanding of the various components of the posting page and identify any confusion or pain points regarding posting. Once again, we employed a think-aloud protocol and conducted 5 remote usability tests with dog owners.

The usability tasks included:

- (1) Sign up (first name, last name, email, zip code, username, password)
- (2) Onboarding process (three step breakdown: add a guardian profile picture, create pet profile, make your first post)
- (3) Posting (post as, select photo, write a caption, tag a pet, select public or private)

Of the insights that emerged from the usability tests, there were a few prominent themes:

- (1) Users liked the guidance of the onboarding flow

Following the first usability test, we created an onboarding flow to guide users through the creation of their pet profiles. Users expressed appreciation for the onboarding flow, with one user saying "I really like how you have all the steps

up front.” User commentary while going through the onboarding flow often mentioned simplicity, straightforwardness, and clarity of the instructions.

(2) Users appreciate the clean user interface design

Throughout the usability tests, we received positive feedback regarding the look and feel of the app. Users described it as “clean,” and simple,” which aligned well with our design goals. The simplicity of the design meant that users could focus on the tasks at hand, with one user sharing “I like that its clean and neat, it’s not overwhelming.”

(3) Add explanations and justification for information collection wherever possible

The value propositions and onboarding flow aided users in better understanding the context and use cases for the app. However, users still questioned the reason for providing certain information, and what various features or terminology meant. For example, in the sign-up flow we ask for zip code with the hope that we can use that information to help form local connections. Without that knowledge, users were unsure of how adding their zip code would aid their experience. Many users suggested adding some kind of explanation. One user noted “even if I don’t look at the explanation, it’s nice to have it there and signals to me that you’ve really thought through what you’re asking for.” In future iterations, we plan to add a “?” icon and pop up that provides explanations for why and how certain information will be used.

(4) Initial understanding of ‘private’ is based on other apps’ practices

On Beukoh, you can post your picture publicly or privately. Selecting private means that your posts are only visible by you or other guardians of that same pet. When asked what private meant, users provided different answers often assuming ‘private’ referred to the post only being shared with followers. Following our explanation of what private means, users expressed interest in that feature and viewed it as a unique feature that sets it apart from other platforms.

(5) Users want to add more pet information during onboarding

Nearly all usability test participants expected to be able to add more information about their pet during the onboarding process. Some of the

information they wanted to add included interests, the name of the shelter and behavioral style of the pet (who does the pet play best with, how does it play). Particularly for the name of the shelter, numerous participants liked the idea of adding their shelter name because it shows an affiliation and would be an easy way to support their shelter.

(6) The date of celebration does not apply to all pet owners

When creating a pet profile, we ask guardians to provide a birthday or adoptiversary of their pet. Following our first round of testing, we changed the phrasing to “what date do you celebrate?” with the option to select birthday or adoptiversary from a dropdown. Additionally, we allow users to choose the date format. During this round of testing, we found that users either (1) didn’t know what date we were referencing before they opened the dropdown and (2) disliked the assumption that you have to celebrate any date at all. However, all appreciated the variety of date formatting. We still believe it’s useful to include a birth or adoptiversary date, but want to make sure that users have flexibility and aren’t pressured into providing a date. For future iterations, we’ll change the phrasing to “Do you celebrate a birthday or adoptiversary?”

## Usability Study Round 3

*See Appendix E for Usability Study Round 3 protocol*

The third round of usability testing, still ongoing, evaluated the chat and group features. In Beukoh Chat, users have the option to: direct message another user, create a private or public group, or join an existing channels. For this usability test, in addition to ensuring the chat feature is usable and intuitive to users, we also sought feedback regarding the interface design of Beukoh chat. So far we have conducted 3 usability tests with dog owners.

The usability tasks included:

- (1) Start a direct message with another user
- (2) Join a public channel

Of the insights that emerged from the usability tests, there were a few prominent themes:

(1) Easy to send a direct message and join a channel

Users were able to complete this task easily, with very few pauses or hesitations. It was clear to users that they needed to select what kind of messaging type (direct message, channel, etc.) and then select users to join.

(2) Information and hierarchy suggestions for chatting screens

The primary goal of the usability test was to examine the functionality of Beukoh chat, however, we received helpful feedback about how we could improve the design of chat. Many of the suggestions were about the hierarchy of the page. For example, users wanted a profile picture next to the name of the chatter and a clear distinction between the username and the message being sent. In future iterations, we'll add these key design elements to chat now that the core functionality has been tested.

(3) Users can see using chat functionality in useful ways

During the usability test, users provided helpful use cases in which they would use chat which aligned with our own assumptions for how it can be used. Some examples included "setting up a playdate" with a new connection and their pet "joining a local group in a new cities to find good parks or resources."

## UX and Visual Design

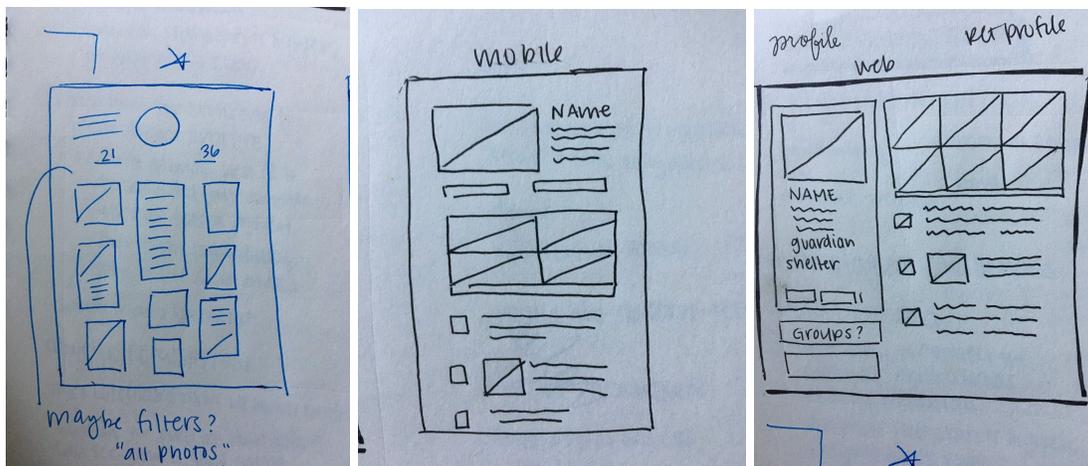
### Design Process Overview

Our design process, from wireframing to logo creation, was collaborative and iterative. The design of each feature and component of the application started with hand-drawn sketches, followed by hi-fidelity, static prototypes. Those designs were then used as a guide for the building process, which utilized components from Material Design Kit. Each group member provided feedback throughout the process, and each feature went through at least one round of usability testing which led to frequent improvements in usability and design.

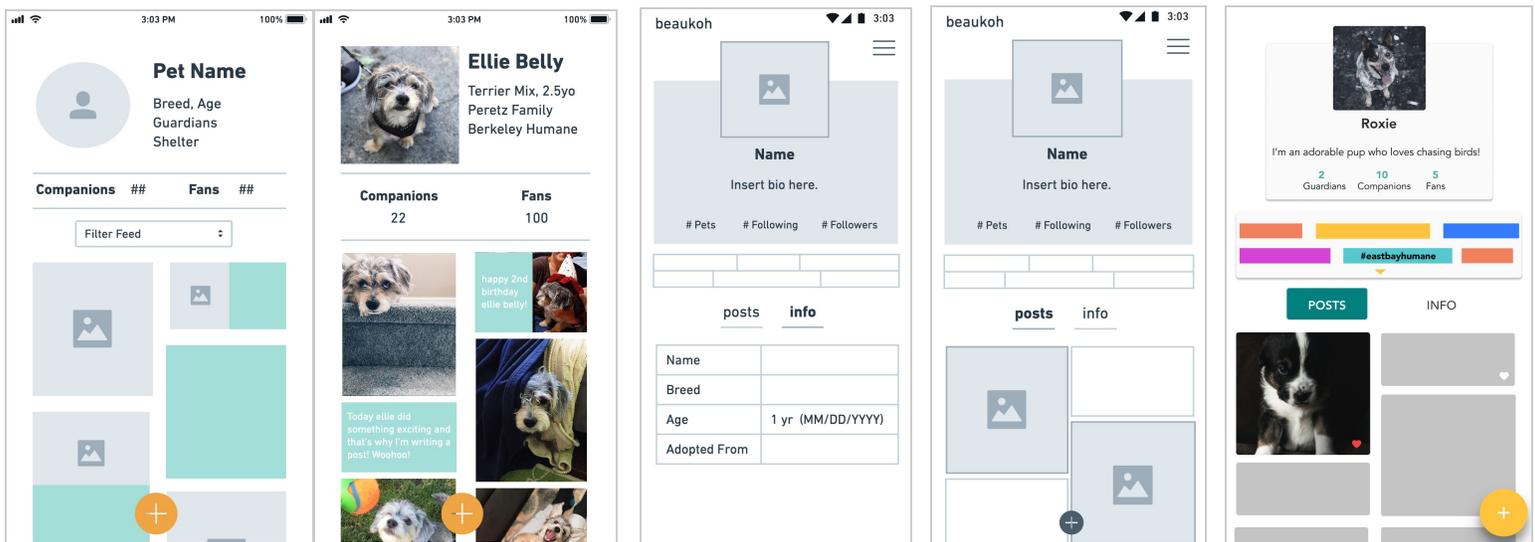
# Iterative Designs

As mentioned, our design process was highly iterative. We relied on feedback within the team and usability testing to guide our final designs. Below is an example of our process. Specifically, how we designed the pet profile from hand sketches, to high fidelity designs to the final design currently on the app.

For our initial sketches, we knew we wanted the pet profiles to include the name of the pet, a profile photo, other photos and basic information. However during the sketching we explored possible mobile and desktop differences, various layouts and other types of information that might be included.



Through these initial sketches, we were able to choose some designs to move forward with. We liked the idea of the photos and posts displaying as tiles, a display tactic we haven't seen on many social media apps. We recreated our sketches on platforms called Whimsical and Figma which allowed us to further flesh out specific details with varying levels of fidelity.





For the typography, we experimented with many different styles. Ultimately, we decided to use the sans-serif font, Avenir. In some cases, designers will use a serif and sans serif font pairing to indicate hierarchy of text. We chose to use the weight and color of our font, Avenir, to communicate hierarchy in the UI.



We combined our typeface and color palette to create a stylish but inviting logo. We incorporated a paw print into the design as it is an easily recognizable signal of something animal related. Even if users are unsure of what the name or app is at first, the paw print gives them their first indication that this is something for them and their pets.

## Development - Tech Stack

Given our goal to continue working on Beaukoh after graduation and eventually launch it to the public, a lot of thought had to go into its technical implementation.

The main determining factors for our approach were the following:

- (1) Reach the maximum number of users in the optimal format from a usability perspective.

The 1st factor meant that we would need to build an app that users can access on their mobile devices. Furthermore it meant that we would need to create an app accessible at least from the two major mobile OSs (Android and iOS).

- (2) Ease and speed of development according to our current skill set and capacity to improve it moving forward.

The 2nd factor meant we would need to proceed with a Web stack, which we are intermediately proficient in, as opposed to coding an app in Swift or Java for native execution on Android or iOS.

- (3) Future scalability.

The 3rd factor meant that there would need to be a significant architectural design phase preceding any technical implementation to ensure that we will not face any unexpected needs for major infrastructure migrations and not hit exponentially growing complexity as we scale our app. Furthermore it meant that all our code would take advantage of the object oriented approach of python and be carefully designed as modular components that can easily be swapped with minimal integration issues if need be in the future.

#### (4) Security and privacy concerns.

The 4th factor meant that we would:

- Strictly limit data collection to the minimum needed;
- Ensure utmost security in storage and transfer of data;
- Provide full transparency and clear explanation to the user on what data is collected and how it is used, while at the same time allowing full deletion of any data requested by the user.

## A Progressive Web App

We live in exciting times when it comes to app development. The newest trend on the scene is that of Progressive Web Apps (aka PWAs). Needless to say, we mention this because these developments suited our project needs perfectly and we are proud to be early adopters of this new technology!

PWAs are a fast growing paradigm of app development that aims to solve the fragmented user and development experience faced today. In summary they are web apps which, thanks to a host of developments in web standards, can now take advantage of functionality that allows them to provide a uniform, cross-platform experience equally rich with that of native apps.

From the developers perspective PWAs allow for the development of apps using any Web stack, while at the same time allowing for the use of hardware features traditionally reserved for native apps. Because PWAs use the Web stack, the developers only need to build the app once and it will offer the same uniform experience on any device with any browser or OS. This allows for the development and maintenance of a cross-platform app with only a single codebase.

From the user standpoint the app can be accessed by any browser and as of that moment can be installed on any device, whether mobile or desktop, and accessed in

the same way as a native app. After installation the user experience is indistinguishable from the immersive experience of a native one as it is presented in its own independent environment.

## Major Benefits of PWAs

### (1) Cross platform

PWAs are run through the browser, which means that they can run on any device regardless of form factor or operating system.

### (2) Seamless installation and updating of app

PWAs can easily be installed without the need to go through an appstore. Furthermore, updates can be pushed out over the air and manifest immediately with no installation needed, as they are not compiled.

### (3) Access to hardware APIs

Similar to native apps, PWAs allow the developer to utilize all hardware and sensors of the device they run on, such as cameras, GPS, accelerometers etc.

### (4) Web workers

PWAs can make use of the growing assortment of standardized web workers that allow for computation to run on the client side. This allows for important features that give a "native" feel, such as background processes, caching, push notifications etc.

### (5) Offline capability

Thanks to service workers, a type of web workers, PWAs can offer offline capability, similar to native apps, for times when there is not internet access.

### (6) Small size

PWAs take up only a fraction of the space required of native apps on the device. This makes them accessible to users with storage space limitations due to lower end hardware.

### (7) Security benefits

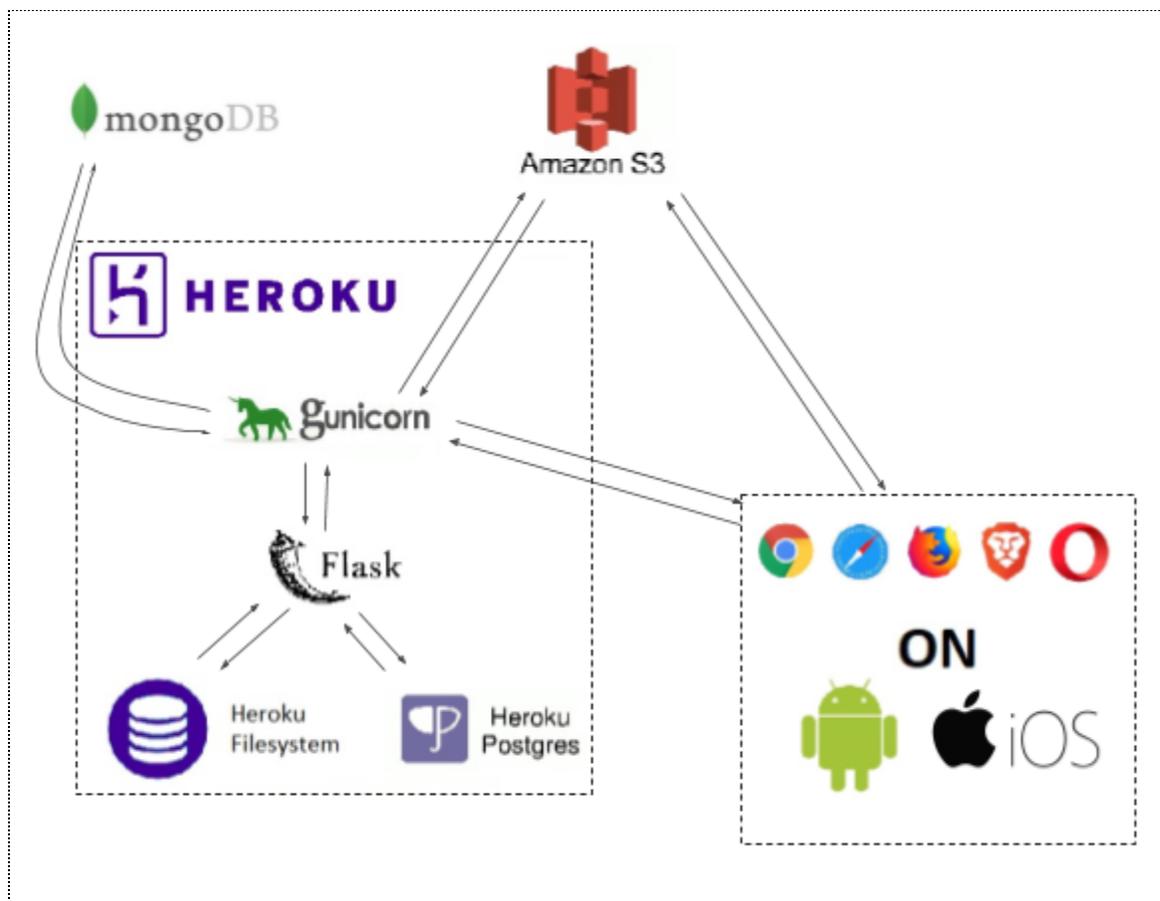
PWAs work only over HTTPS and have strict data origin guidelines adding, which protect user data and block tampering.

## Support for PWAs

Community support for PWAs is growing fast, and is backed by major companies as well. Google is their biggest proponent and is aiming to soon make them the standard paradigm of app development. Major companies that already offer PWAs are Twitter, Spotify, Slack, Pinterest, and Hulu, with many more having one in the works.

## Technical Architecture

Our current architecture can be seen in the graph below:



## Backend

### Flask "Microframework"

On the server side we use Python's Flask "microframework" to handle all server side functionality and routing. Flask was our first choice, because of our experience with it and confidence in using it which allowed us to get going really quickly. Furthermore,

Flask is the most flexible Python web framework when it comes to extending it through libraries and domain specific modules.

### Gunicorn Web Server

To meet production scale needs for handling requests and serving content we placed our flask setup behind a Gunicorn web server, which allows for seamless horizontal scaling of capacity as needs grow in the future.

### Heroku hosting

The whole server side implementation is hosted on Heroku which offers a very convenient environment for hosting python apps by abstracting away the need to manually assign resources for the needs of various operations. Furthermore, as needs for computational capacity increase, Heroku is very easy to scale horizontally.

Heroku offers a robust compute layer, but comes with a very limited “ephemeral” filesystem for persistent storage. This works for hosting our static files during development, but eventually they will be moved to a CDN upon reaching a production release.

### MongoDB Atlas

For the storing of all textual user data we went with MongoDB Atlas. This is a Database-as-a-Service offering of the popular MongoDB NoSQL database. We went with a NoSQL solution for this because of its unmatched flexibility in terms of data structure, which allows us to easily add new data points, which we can not currently predict, down the line. MongoDB Atlas was also a good solution because of the easy horizontal scalability offered which allows a seamless extension of capacity as needs grow.

### Amazon S3

For media and static file storage we use an Amazon S3 implementation. This is where we host all the images and videos uploaded by our users. S3 was a good choice because of the unmatched combination of functionality and price it offers compared to any alternatives. Furthermore, given that media will be heavily featured on our platform we can really take advantage of Amazon’s extensive global presence that can significantly cut down in content delivery and loading time.

### Heroku Postgres

For data from our communications (currently just chat) module we went with a SQL approach. This is because for chat we have a strict schema we can adhere to, and from which we can benefit for data validity. Furthermore, the very frequent writes expected of a chat system would not work very well on a simple NoSQL database such as MongoDB.

For this we went with Heroku's own Postgres offering which comes as a convenient add-on to its hosting service. This allows us to place it right next to our web server and thus minimize network time between it and the server.

Eventually this implementation will have to be replaced with a more complex one, due to SQL scalability issues. That would most probably combine a NoSQL solution with some in-memory datastore such as Redis. But for our current needs it works well and allows us to move fast.

## Frontend

For the frontend of our app we went with a multi-page approach using Flask's handy built-in Jinja templating system along with the jQuery JavaScript library for manipulation and interactivity. This is a bare bones toolset, which as it turns out allowed us to build all the functionality we need very fast and with great quality.

A good alternative could be using the React framework, however none of us had experience using it, so it would add significant delays to our development. If need be down the line, it is really easy to retrofit all our routing to accommodate for a React implementation for which Flask would serve as the API backend.

For ease of development on the styling front we utilized Material Kit from Creative Tim<sup>7</sup>. Material Kit builds on the well established Bootstrap framework for frontend styling and offers a collection of CSS and JS styling modules based Google's Material Design language.

## Future additions

### Process Queue

As computational load grows with more users, and as we add more time consuming functionality, such as image manipulation etc we will need to add a background

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<sup>7</sup> Material Kit: <https://www.creative-tim.com/product/material-kit>

process component to our server. This would most probably be in the form of a Redis Queue or similar.

## CDN

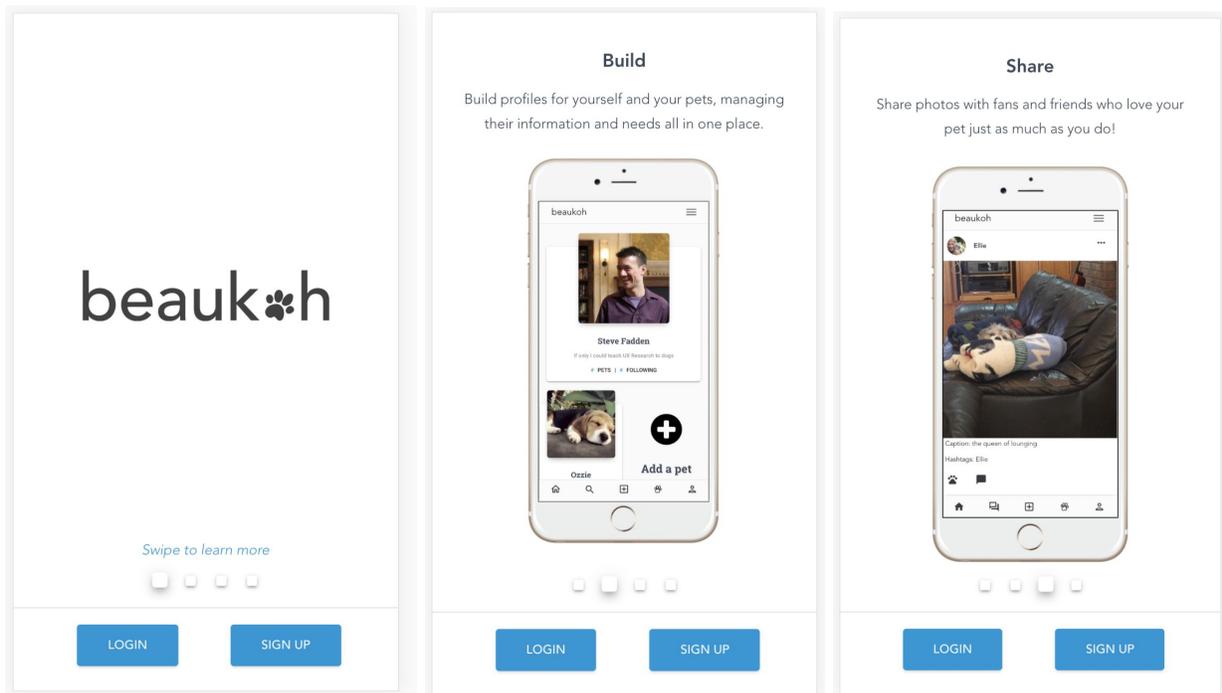
As the amount of stored media increases and user base grows across regions we will need to ensure the fastest possible content delivery via a CDN. For this we will be able to conveniently tag on Amazon's Cloudfront to our existing S3 implementation.

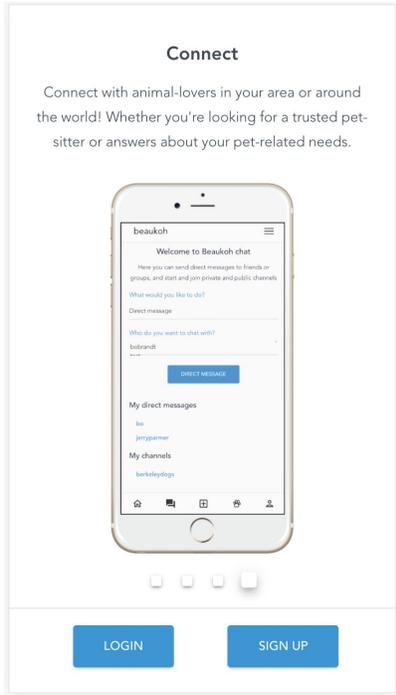
## Graph Database

Given the social nature of the platform and the increasing number of connections created between entities on it, we may consider adding a graph database to better allow us to understand and manipulate said connections.

# User Flow

## User signup and value propositions





## Login or register

**Log in**

Username

Password

**LOGIN**

Not a user? Sign up [here](#).  
Go back to our home page [here](#).

**Create an account**

First name

Last name

Email

Zip code

Username

Password

I agree to the [terms and conditions](#).

**SIGN UP**

Already a user? Sign in [here](#).  
Go back to our home page [here](#).



Add pet profile info

Bio

Nothing holds me back. Proud graduate of East Bay SPCA. Woot! Woot!

Do you celebrate their birthday or adoptiversary?

BACK NEXT

Add your pet's profile picture



BACK NEXT

Congrats! Ozzie's profile is all set up

Now onto the final step: make your first post

NEXT

Tired of this already?  
Head straight into Beukoh by clicking [here](#).

Go back

Step 3: Make your first post

Feeling ambitious? Post a photo, or photos of your pet on Beukoh. You can share this with everyone or just keep it private.

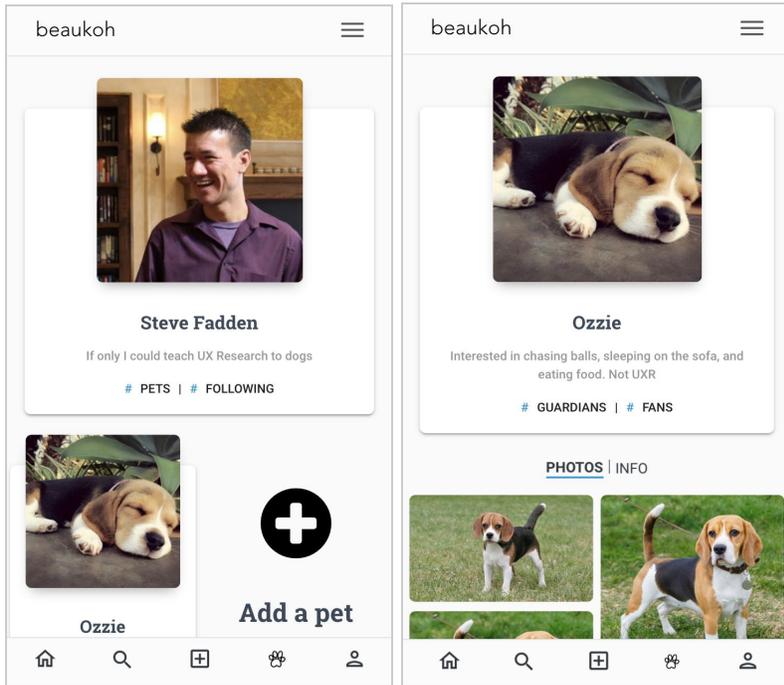


MAKE A POST!

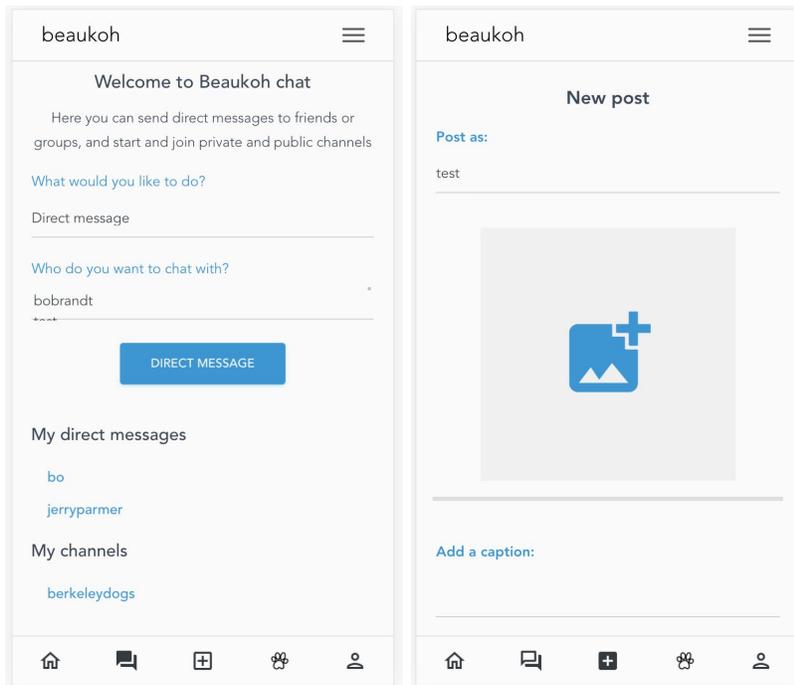
Still not ready? No worries.  
Head straight into Beukoh by clicking [here](#).

Go back

## Guardian and pet profiles



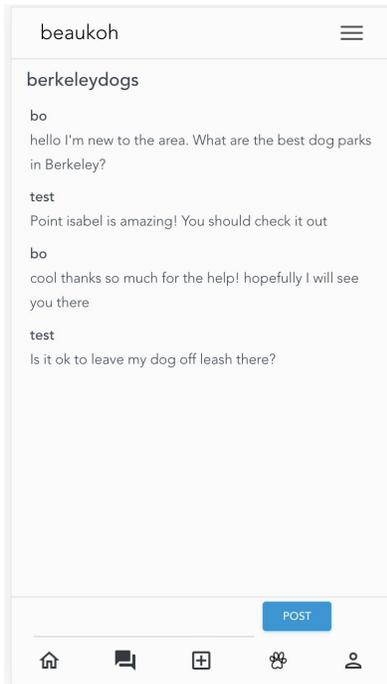
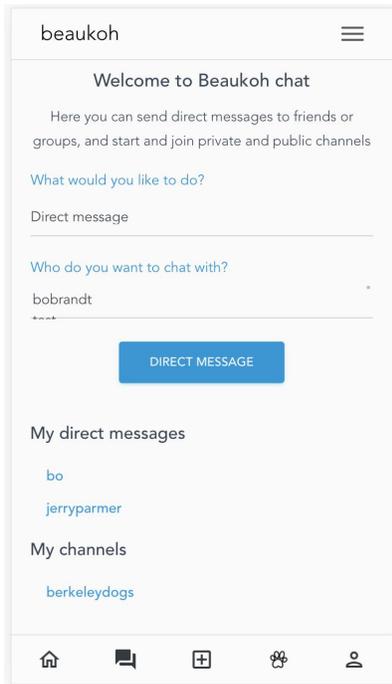
## Posts page



## News feed



## Chat app



# Appendix

## Appendix A: Semi-structured Interview Questions Shelters

A rough list of questions we used, though the interviews were more conversational

- Can you tell me about your role here at the shelter?
- Can you walk us through what happens when a new animal comes to the shelter:
  - What kind of information do you start with?
  - What information do you collect?
- What's the adoption process like at [shelter]?
- What, if anything, do you like about the current adoption process? (do you think works well about...)
- What pain points, if any, have you experienced in your current adoption process?
- What happens to the information about the animals once they're adopted]
- What, if any, kinds of software or platforms do you use to manage pets and facilitate pet adoption? [maybe ask them to list off all that they can remember]
- What, if any, third party platforms or products do you use?
- Do you use petfinder.com as an example?
  - Do you know how they collect your adoptable pet's information?
  - Do you have an API that they use?
- Follow up: why do you use those / that particular software / platform?
- Can you describe the process of using this software/platform? [pick one]
  - What, if anything, do you like about that software / platform?
  - What pain points, if any, do you experience with that software / platform?
  - What kinds of data / stats do you have? How do you use them?

- If there is one thing you could change about the current process or tools available, what would it be?
- Do you work with any trainers or vets or recommend them to new pet owners?
- Is there anything we haven't asked you think we should have?

## Appendix B: Semi-structured Interview Questions Pet Owners

### INTRO:

Hi, thank you so much for taking part in this interview, we really appreciate your help! We are interested in learning more about your experience as a pet owner. We hope to understand all aspects of pet ownership from the process of adopting your pet to the day to day care you provide them. I encourage you to be totally honest during the interview today - there are no right or wrong answers! We're just interested in hearing about your experiences from your point of view. Before we start, I want to check and make sure it's okay with you if we record this interview. This is purely for our team to review later. Is that alright with you?

### WARM UP

- Great, to get started, I'd love to learn a little bit about your pet(s)!
  - How many do you have?
  - What is their name / What are their names?
  - How old are they?
  - What breed?
  - How long have you had your pet(s)?

### PRE-ADOPTION

- What were you looking for when you decided to adopt?
  - What were your expectations about the kind of pet you wanted?
- What, if any, resources (people, websites, books, etc.) did you use?

### SEARCH PROCESS

- What information was important to you when deciding on a potential pet?
- How did you decide where to look?
- What resources did you use to aid your search?
  - If websites - which websites?
  - What, if anything, was helpful?

- What, if anything, was unhelpful?
- What, if anything, did you like about the search process?
- What, if anything, did you not like about the search process?

#### ADOPTION PROCESS

- What factored into your decision to move forward with adoption?
- Can you walk me through the adoption process?
  - Interactions with shelter
  - Application
  - Etc.
- What information did the shelter provide you with during the adoption process?
  - How was that information provided?
  - What did you think of the information they provided you?
- What, if anything, did you feel was helpful about the adoption process?
- What, if anything, do you wish was different about the adoption process?

#### COMMUNICATION POST PET ADOPTION / BREEDER

- Did the shelter/breeder follow up with you after you got your pet?
  - If they contacted you what type of communication was it? Phone call? Email?
  - What was the purpose of the communication?
- Was the follow up communication helpful?
- How frequent was this communication and how long did they continue to follow up?
- How much communication would you prefer to have with the shelter after adoption?
  - And what is your preferred mode of communication?

#### GENERAL PET GUARDIANSHIP

- What, if anything, has been challenging about being a pet caregiver?
- What, if anything, has helped you as a pet caregiver?
- Tell me about a time you had a question about your pet (i.e. medical, food related, behavioral) - how did you go about answering that question?
  - Where or who did you look to for answers
  - How did you assess the credibility of those answers
  - What did you like about that experience
  - What didn't you like
- What, if any, services have you used for your pet?

- How did you decide which services to use and from whom?
- Tell me about the last time you used one of those services:
  - What did you like?
  - What did you not like?

## TECHNOLOGY

- How, if at all, do you use technology as part of your pet caregiving?
  - What kind of technology?
  - (if they don't mention apps) Are there any apps your use or have heard of?
  - How did you find them?
  - How did you decide what to use?
- Do you share information about your pet? Either on social media or another source (e.g. photo sharing, talking to others)?
- Does your dog have a social media account?
  - What prompted you to create one?
  - Tell me a bit more about your experience
    - What do you like about having a profile for your pet?
    - What don't you like?
  - What kinds of interactions do you have through your pets social media account?

## COMMUNITY

- How has pet facilitated connections, if at all?
- Tell me about a recent time when your pet facilitated meeting / connecting with another person
  - How did you feel about the experience
- Have you formed a community around your pet?
  - If not, would you like to have a community around your pet?

## CONCLUSION

- If there was one thing you could have that would enhance your pet ownership - what would it be?
- Is there anything about pet ownership you think technology could help with? Whether it's an app or a tool.

## Appendix C: Usability Test Round 1 Protocol

### INTRO:

Thank you again for taking the time to participate in this study! Today we'll have you do a few tasks on Beukoh - an app that allows users to create and build profiles for their pets, share and explore information, and make connections with other people and animals. During this session, I'll give you a few tasks to complete around creating profiles on Beukoh - one for yourself, which we call the Guardian profile, and another for your pet. During each task there are times when I'd like you to "think aloud" and times when I'll ask you more specific questions. For "think aloud" tasks, I'd like you to speak your thoughts as often as you can. Please feel free to let me know at any time if there's something you like, dislike, if you're confused, etc. It's important to know that we are only testing the site, and not you. You can't do or say anything wrong. And please let me know if you have any questions throughout the session today. Before we start, we need to record this session for later review - is that alright with you?

### Task #1: Sign Up

- Scenario: "Please sign up for a Beukoh account."
- Moderator Questions: what did you think about the sign-up process? Was it what you expected?
- SEQ: Overall, how difficult did you find this task?

1 Very Difficult	2	3	4	5	6	7 Very Easy
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- Why did you give that score?

### Task #2: Create a Guardian Profile

Scenario: "You have just joined Beukoh, please create a Guardian profile for yourself."

- Moderator: [click 'create guardian' on bottom screen to prep user]
- Participant Think Aloud:
  - [participant should: fill out form, add a photo, view guardian page]
- Moderator Questions:
  - What did you like / not like about the process of creating a Guardian profile?

- Is there information you expected to be asked when creating a profile?
- Is there anything you feel is missing that you'd like to add to your profile?

- SEQ: Overall, how difficult did you find this task?

1 Very Difficult	2	3	4	5	6	7 Very Easy
---------------------	---	---	---	---	---	----------------

- Why did you give that score?

### Task #3: Create a Pet Profile

- Scenario:
  - "Now that you've created your Guardian profile, please add and create a pet profile."
- User Think Aloud:
  - [participant should: add pet, fill out form, add photo, fill out profile, explore]
- Moderator Questions:
  - What did you like/dislike about the process of creating a pet profile?
  - Is there information you expected to be asked when creating a pet profile?
  - Is this what you expected to see on your pet profile?
  - Is there anything you feel is missing that you'd like to add to your pet profile?
  - What would you expect to add on the 'info' tab? How would you expect to edit it?

- SEQ: Overall, how difficult did you find this task?

1 Very Difficult	2	3	4	5	6	7 Very Easy
---------------------	---	---	---	---	---	----------------

- Why did you give it that score?

- Moderator Hypothetical Questions:
  - While we haven't built this yet, we want to provide users with a public and private pet profile view. For the private view - only accessible by the pets guardian - we want to provide other tabs to help with pet management. What categories or topics would be helpful for you as a pet owner?
  - We're also interested in adding badges to pet profile pages that users can earn for their pet:

- What kinds of badges would you expect to add to your pet profile?
- Where would you expect the badges to show up on your pet profile?

#### Task #4: How would you post?

- Scenario - "We won't have you actually do this, but if you wanted to post something to Beukoh, how would you go about posting and what would you post?"
- User Think Aloud:
  - [Participant should: indicate what button they might press, where it would be located]
- Moderator Questions:
  - What button would you press?
  - What button would you expect to allow you to post?
  - Where do you think your post will show up?
  - What would you want to post?

#### Task #5: Navigation Bar

- Scenario: "Please go through the navigation bar and tell me what you think each icon represents and where it might go?"
- Moderator Questions:
  - Is this navigation bar what you expected on this app?
  - Are there any icons we're missing on the navigation bar?
  - Is there anything you would remove from this navigation bar?

### Appendix D: Usability Test Round 2 Protocol

#### INTRO:

Thank you again for taking the time to participate in this study! Today we'll have you do a few tasks on Beukoh - an app that allows users to create and build profiles for their pets, share and explore information, and make connections with other people and animals. During this session, I'll give you a few tasks on Beukoh. During each task there are times when I'd like you to "think aloud" and times when I'll ask you more specific questions. For "think aloud" tasks, I'd like you to share your thoughts out loud

as often as you can. Please feel free to let me know at any time if there's something you like, dislike, if you're confused, etc. You'll be completing these tasks on our app but these are still a work in progress so there may be some aspects that aren't fully functional yet. I'll try my best to guide you through them, but please share what you might have expected to happen or how you would react based on those expectations.

It's important to know that we are only testing the app, and not you. You can't do or say anything wrong. And please let me know if you have any questions throughout the session today. Before we start, we need to record this session for later review - is that alright with you?

### Task #1: Sign Up / Value Props

- Scenario: "Please click through our value proposition screens and sign up for a Beukoh account. "
- Moderator Questions:
  - What did you think of the initial value proposition screens you looked through?
    - Is this something you typically look at when signing up for a new app?
    - What did you expect?
  - What did you think about the sign-up process?
    - Is there anything we didn't ask about that you thought we would? That you would like to be asked?

### Task #2: Onboarding Flow

Scenario: "Now that you've signed up for an account, continue with the onboarding flow and follow the instructions to create your profiles.

- Moderator Questions:
  - How did you feel about the 3-step instructions?
  - Do you feel prepared to move forward with using this app?
  - What did you like / not like about the process of creating a Guardian profile?
  - What did you like / dislike about the instructions for finishing your Guardian profile?
  - Is there information you expected to be asked when creating or finishing a Guardian profile?

- What did you like / not like about the process of creating a Pet profile?
- How did you feel about the instructions and flow for creating a pet profile?
- Is there information you expected to be asked about when creating a pet profile?

### Task #3: Make a Post

- Scenario:
  - "For your final task, I'd like you to make a post."
- Moderator Questions:
  - What did you like/dislike about making a post?
  - Did this experience match your expectations of how you thought you could make a post?
  - How did you decide what is public versus private? What do you think those mean?
  - What do you think you would post? (photos, text)
  - Where do you expect your posts to show up?

### Appendix E: Usability Test Round 3 Protocol

#### INTRO:

Thank you again for taking the time to participate in this study! Today we'll have you do a few tasks on Beukoh - an app that allows users to create and build profiles for their pets, share and explore information, and make connections with other people and animals. During this session, I'll give you a few tasks on Beukoh. During each task there are times when I'd like you to "think aloud" and times when I'll ask you more specific questions. For "think aloud" tasks, I'd like you to share your thoughts out loud as often as you can. Please feel free to let me know at any time if there's something you like, dislike, if you're confused, etc. You'll be completing these tasks on our app but these are still a work in progress so there may be some aspects that aren't fully functional yet. I'll try my best to guide you through them, but please share what you might have expected to happen or how you would react based on those expectations.

It's important to know that we are only testing the app, and not you. You can't do or say anything wrong. And please let me know if you have any questions throughout the session today. Before we start, we need to record this session for later review - is that alright with you?

### Task #1: Direct Message

- Scenario:
  - "I'd like you to start a direct message with someone."
- Moderator Questions:
  - What did you like/dislike about this experience?
  - Did this experience match your expectations of how you thought you could send a direct message?
  - What about this experience would you change?

### Task #2: Join a channel

- Scenario:
  - "I'd like you to join an existing channel."
- Moderator Questions:
  - What did you like/dislike about this experience?
  - Did this experience match your expectations of how you thought you could find and join a channel?
  - What about this experience would you change?
  - How might you use this feature?

## Appendix F: Competitive Analysis of Platforms

### Spreadsheet:

[https://docs.google.com/spreadsheets/d/1l\\_g739RdCNp2cUbF72xbMJJaH-12cOaaMyFqdK6bdqB8/edit?usp=sharing](https://docs.google.com/spreadsheets/d/1l_g739RdCNp2cUbF72xbMJJaH-12cOaaMyFqdK6bdqB8/edit?usp=sharing)

- Does this platform incorporate user verification? If so, how?
- How do users provide private feedback on user-generated content?
- How do users provide public feedback on user-generated content?
- How does the platform highlight or showcase user-generated content?
- How does the platform communicate the status or credibility of individual users?