



GROUP 8

IS 6410 – SYSTEMS ANALYSIS & DESIGN

SPRING 2021

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Team Organization

Team Member Introductions:

Group Name: Furrever Family

Brian Truong: Currently works as a Banker at KeyBank in Park City, Utah after graduating with his BS in Business Administration in 2017 from the University of Utah. He has not had much experience with IT besides the basic knowledge from the MSIS courses but knows how vital this industry and knowledge is to the ever-growing digital drive world.

Cindy Giang: Pursued her undergraduate studies in Architecture and Urban Planning. Upon graduation she started working for a local firm in Salt Lake City, Utah. After 3 years of being in the construction industry she felt the need to expand her knowledge in IT and business. Therefore, she went back to her alma mater for the growth she is seeking. She has basic background in IT (SQL, R Studio). Love animals ever since she was a kid. She is passionate about adoptions and caring for animals because she has two furry best friends herself.

Susan Truong: Graduated in 2019 with her BS in Kinesiology. She worked at the University of Utah Neuropsychiatric Institute for 7 years before leaving her job to pursue her master's degree in Information Systems. Her current job at the U-Card office requires her to cross reference data through multiple platforms before delivering the final products to customers. She has little experience in IT prior to her acceptance into graduate school but is excited to learn and expand her knowledge for the world of Information Technology.

Trevor Shepherd: Employed as a financial analyst for a large investment banking firm. Currently works on a small amount of business intelligence type work in day-to-day role and is looking to expand upon that knowledge through the MSIS program.

Skills: SQL, Alteryx

Project Selection & Requirements Analysis

Project Usage:

This project is a novel idea created and used solely for IS 6410 Group Project assignment.

Executive Summary:

Business Opportunity: In a 2019-2020 survey conducted by the American Pet Products Association, 44% of all dogs adopted and 43% of all cats adopted came from a shelter or rescue. This is a rather antiquated form of pet adoption with a lot of pressure involved for the potential pet owner. In the same survey it stated 18% of dogs and 21% of cats were acquired from friends or relatives¹. A recent survey shows approximately 70% of dogs and cats are purchased around the holiday seasons as “gift wrapped pets”, with an unfortunate turnover of three pets per hour being put up for adoption shortly after the holiday seasons. Most new pet owners are blinded by the puppy/kitten phase of and overlook all the responsibilities that comes with being a pet owner³. Americans adopt roughly 3.2 million pets from shelters each year². Given that many adoptions still come from shelters and or familiar people, we believe that there is an easier way to connect prospective pet owners to pets in need of homes. Enter the Furrever Family mobile application.

Proposed Solution: According to an American Veterinary Medical Association survey from 2017-2018, 80% of surveyed pet owners consider their pets to be family members¹. The Furrever Family application’s values are rooted in this metric. We want prospective pet owners to be able to conveniently search through a wide range of pets in need of homes and match with those potential new family members profiles based on their own user profile and how the current pet caretaker views them as a good fit. Think modern dating app meets pet adoption. This is a low pressure, friendly environment that allows for users to search for pets from the convenience of an app and if they match with a prospective pet, the ease of asking follow-up questions without providing too much personal information before the adoption process begins.

Measurable Impact: The impact of Furrever Family will be easy to measure through our applications metrics. How many successful pet matches have we had over time? How many of those successful pet matches turned into full on adoptions? How many new users are we acquiring over time and how long are they typically active for? These are all things we will be able to convey and more once we have enough user data to draw insight from. We will also be able to solicit feedback from the shelters and organizations that we partner with on the direct impact our application has on their typical operations.

Target Actors:

Actor Name	Responsibilities	Type
Pet Owner	The pet owner will use the app to make a profile for their pet (dog/cat). The user will have to fill out a series of questions and provide pictures of the furry friend they are trying to rehome. The app will allow the owner to cycle through local adopters that suits the pet's behavior and needs. The app users will swipe through profiles of adopters to find someone that best suits the companionship they are seeking for their pet.	Primary Actor
Adopter	The adopter like the owner will also have to make a profile when they first login. However, the adopter will create a profile for themselves for what they are looking for in a four-legged friend. The adopter will interact with the app by swiping through profiles of pets they like.	Primary Actor
Shelter/Organizations	Organizations can interact with the system slightly different. They will have the ability to make multiple profiles for all the animals they have on hand and save adopter profiles saved for future adoptions. By using this system shelters are able efficiently locate potential suitors nearby.	Primary Actor
Administrator	Administrator's main interaction with the app is to keep it running smoothly. The admin will keep the app secure and produce new updates to keep the app interesting for the end users.	Primary Actor
Maps and Location Database	Furrever Family will partner with a mapping database to located where the users are from. This feature will allow users to search for nearby profile to avoid shipping the pet to unreasonable locations. Privacy settings will be control by the users.	Secondary Actor
Application Database	Furrever Family will utilize a cloud service (such as Azure or AWS) to host our applications data and information.	Secondary Actor

Requirement Gathering:

Survey: http://eccles.qualtrics.com/jfe/form/SV_2m1aLAUCslg8jFc

In hope of gathering sufficient data and information for the creation of our mobile app, our team decided to implement online surveys/questionnaires and conducting face-to-face interviews via Zoom. The surveys will consist of X participants to better understand what factors individuals are analyzing when considering which animal to adopt.

Requirement Gathering Techniques:

Our group utilized two of the most common techniques found in the requirements gathering suite. We believe that the questionnaire and interview methods are most impactful when developing a novel idea and trying to solicit a wide range of potential actor feedback. The questionnaire was used specifically to gather information from potential individual application users. It was used to identify what they sought in an adoption process and in uncovering what they found important to know about a potential Furrever Family member.

The interview was utilized to specifically address the concerns and intended usage of animal shelters on our platform. We know they are already the industry standard for adoption practices in this field and wanted to better understand how we could partner with them and further their impact in the community.

Through both our interview and questionnaire methods were able to address potential concerns and problems that may surface while using our application. Whether the concerns are about our application itself or regarding our partnering organizations, we believe we have the resources needed to accommodate those concerns while keeping our high standard for user satisfaction.

Detailed Summary of Questionnaire Findings:

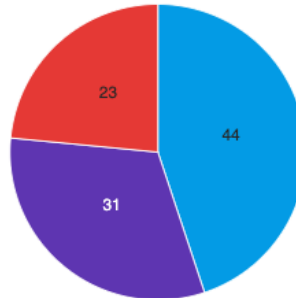
We will be addressing key findings question by question with our 0-10 rated questions graphically represented for maximum understanding.

1. Most of our survey respondents were either somewhat familiar or very familiar with swipe and match type mobile applications.
2. Most respondents deemed a friendly app community to be moderately important or above.
3. Most respondents deemed they were either neutral or comfortable with users being able to share their adoption profile with other users.
4. Most all respondents deemed it was moderately important or above to be able to view past profiles already viewed.

5.

On a scale from 0-10, how likely are you to adopt a pet from an animal shelter?

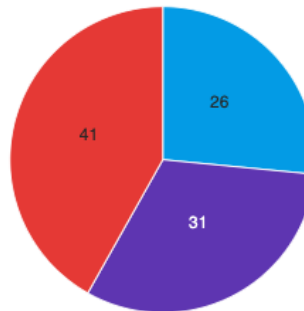
● Likely ● Neutral ● Unlikely



6.

On a scale from 0-10, how likely are you to adopt a pet from an individual?

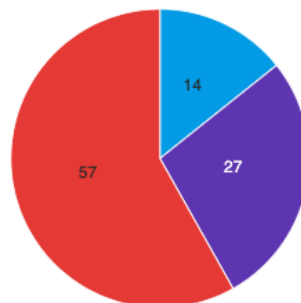
● Likely ● Neutral ● Unlikely



7.

On a scale from 0-10, how much does travel distance affect your willingness to adopt a pet?

● Affects ● Neutral ● Does Not Affect



8. The responses on looking for a hypoallergenic pet were very mixed, but the majority said it did not matter to them.
9. Animal breed was moderately important or above for most respondents.
10. Pets age was moderately important or above for most respondents.
11. Pet weight was slightly important or above
12. Pets being house trained was very important and above
13. Pets being spayed/neutered was moderately important and above
14. Knowing the animals background was moderately important or above
15. Majority of respondents want a pet that has a mixture of being active and relaxed
16. Some of the key findings from our open-ended question were:
 - a. "As much information about the pet as possible and where/how they're cared for"
 - b. "No breeder background"
 - c. "Lots of photos"
 - d. "Quality people, quality pets"
 - e. "User Friendly/Ease of use"
 - f. "Trustworthy information"
 - g. "Animal temperament"

Detailed Summary of Interview Findings:

We interviewed representatives at *A New Beginning Animal Rescuer* to get more information about their adoption process, and to get an input of what they think of our project. We asked the representatives a series of questions, ranging from how they run their adoption organization, to what they believe are some of the most important aspects of pet adoption in general.

The first couple of questions were regarding different types of protective measures we should take to keep our application, data, and animals safe from scammers, and the best method to use when pairing animals and adopters together. We decided to start off with these questions because we felt it is important to build a strong foundation for our Furrever Family application from the start. The questions about protecting our data/animals from scammers and people who might adopt animals for the wrong reason were made more secure with a membership fee that was suggested by the representative at *A New Beginning Animal Rescuer* organization. She said something that made us realize how important it is to charge potential users a membership fee. She said, "if users are serious about finding the right pet for their family, they won't mind paying a small fee up front." The membership fee will be the perfect way for us to keep our Furrever Family application for serious inquiry only.

Once we have determined a way to keep a strong foundation for our application, we continued to ask the representative about ways to determine whether a potential adopter is the perfect match for animals at the shelter. We found out that about 21% of animals that are adopted are returned to the shelter and 14% are found in other shelters within a year of being adopted. Two of the main reasons for these unfortunate events are the animals not being the right match for the families, and families are no longer able to properly care for the animals. For these very reasons, the match making process for these animals are extremely important when it comes to adoption. We were informed that the best practice when it comes to finding the right home for the animals is spend most of the adoption process getting

to know the potential client through interviews. More often than so, people want to adopt animals because they are cute or they think they want a pet in their life. They do not take into consideration the time and effort it takes to care for an animal, owning an animal is equivalent to a full-time job. The interview portion of is a critical step in preventing adopted animals from being returned to the shelter.

Through interview representatives at we were able to *A New Beginning Animal Rescuer*, we were gain valuable insight into the process of animal adoption. There are many small factors that must occur first before we are able to release animals to their new families, and each step must be performed carefully to prevent the possibility animals being returned to the shelter. Some takeaways from this interview are communication is key, taking preventive measures as much as possible, and all the choices we make will affect the animals, so we must perform every task with care.

Survey:

Forms of distribution:

- Email
- Text
- Social Media

Survey Questions:

Questions	Answer Options
<ul style="list-style-type: none"> • How important is an active and friendly app community to you? • How important is the ability to revisit past profiles you have already viewed? • How important is animal breed to you? • How important is the pet's age to you? • How important is the pet's weight to you? • How important is the pet being house trained to you? How important is the pet being spayed/neutered to you? • How important is knowing the animals background to you? 	<ul style="list-style-type: none"> • Extremely important • Very important • Moderately important • Slightly important • Not at all important
<ul style="list-style-type: none"> • On a scale from 0-10, how likely are you to adopt a pet from an animal shelter? • On a scale from 0-10, how likely are you to adopt a pet from an individual? • On a scale from 0-10, how much does travel distance affect your willingness to adopt a pet? 	<p>0 – Not likely at all 10 – Extremely likely</p>
<ul style="list-style-type: none"> • How familiar are you with swipe and match type mobile application? 	<ul style="list-style-type: none"> • Very familiar • Somewhat familiar

	<ul style="list-style-type: none"> Not familiar at all
<ul style="list-style-type: none"> How comfortable are you with users being able to share your adoption profile with other app users? 	<ul style="list-style-type: none"> Extremely comfortable Somewhat comfortable Neither comfortable nor uncomfortable Somewhat uncomfortable Extremely uncomfortable
<ul style="list-style-type: none"> Are you looking for a hypoallergenic pet? 	<ul style="list-style-type: none"> Yes No Doesn't matter
<ul style="list-style-type: none"> Which pet lifestyle would you prefer most? 	<ul style="list-style-type: none"> Active pet Relaxed pet Mixture of active and relaxed pet No preference
<ul style="list-style-type: none"> What are you specifically looking for in a pet adoption service? 	<ul style="list-style-type: none"> Open ended – fill in the blank

Interview Questions:

Questions	Answers
<ul style="list-style-type: none"> What fees and costs would you suggest we have on the application? 	<ul style="list-style-type: none"> We would suggest you add a user application fee. The reason the fee would be a great idea when it comes to profile/matching applications is because if users are serious about finding the right pet for their family, they will not mind paying a small fee up front. This would be another way of weeding out users wasting your time. The fee we would charge users would be \$10-15 for a membership. Additional costs will be subject to which animal they want to adopt, such as fee for the adoption process, vaccination, microchip, etc.
<ul style="list-style-type: none"> How do you mitigate risks and protect yourself from scammers? 	<ul style="list-style-type: none"> To mitigate risks, we require each applicant to fill out an application that is about 5 pages long. After we receive their applications, our management department would review the application, and if we seem like they could be a great fit for one of our animals, we will call them in for an interview. If we proceed to bring in the applicant and determine they are not a great fit after the interview, we will terminate their application.
<ul style="list-style-type: none"> What process or system do you use to pair animals and their potential adopter? 	<ul style="list-style-type: none"> The applications have an option to state which animal they are interested in adopting (we have a website they could view potential adoptee). If they make it through the interview process, we have volunteers that works with every applicant. Whether they already have a pet in mind or are option to suggestions, these

	<p>volunteers will be the main mediators between joining the applicants with their forever animals.</p> <ul style="list-style-type: none"> The volunteers will talk to them about what they are looking for, what their situation is, what their needs and wants are and we try to match them up with an appropriate animal.
<ul style="list-style-type: none"> What are your main mean communication methods with the adopters? 	<ul style="list-style-type: none"> The potential adopters can fill out their applications online through our website or through petfinder.com, and through their application, we will have their phone number and email address where we could reach them. We would first call them to schedule an interview if their application is up to our standards, and we see them as a potential fir for our animals. However, if we cannot reach them by phone, we will proceed to leave them a voicemail insisting they call us back. We will proceed to send them an email regarding their application after we hang the phone up. This way we are sure that our information will reach them one way or another. If we were to reject the potential adopters' application for any reason, we will send them an email indicating why we do not think they are a fit for our animals.
<ul style="list-style-type: none"> What are the main contribution factors for faster pet's adoption time? 	<ul style="list-style-type: none"> We want to get the animals into their forever home as soon as possible. Something we do to speed up this process is once we have confirmed a perfect match for our animal, we will call the adopter to ask them some finalizing questions, seeing if they want any additional procedures done to their animals such as spade/neuter, administer vaccine, etc. Once all these factors have been covered, we will setup a time for the adopter to come into our office to sign a contract, pay final fee, and send them on their way with their new family member.
<ul style="list-style-type: none"> What are your thoughts about our pet adoption application? 	<ul style="list-style-type: none"> We think it is a wonderful idea, and a wonderful way to get more animals into their forever homes. However, you must be careful and very thorough when it comes to the interview process. If an animal is placed in the wrong family, it not only affects the family, but it will also affect the animal. We think your project has a lot of potentially and could be the push people need to look more into adaption then purchases from breeders.

High Level Scope:

User Stories:

Through our requirements gathering, we identified some key insights that helped drive a few of our major scope functions. The first insight we gathered was around a friendly application user community

and the sharing of information. This led us to include a user story regarding users sharing profiles that they believe other app users would be interested in. We also later included some features in our UCD/Use case narratives around users being able to report lost or found pets to relevant community members. The next major insight gathered was around what type of information is important to know about a potential Furrever Family member. The user story we included was being able apply filters to allow users to narrow down their search to match their preferences more closely. We also expounded upon this later in our ERD through the attributes Pet Owner applications users will need to provide when creating their pets profile. The last major insight we took from our requirements gathering was centered around one of our survey participants comments “Trustworthy information.” We expounded upon that comment through our UCD and our use case narratives to include functionality that focuses on the following 1. Users can report suspicious profiles/activity 2. Shelter profiles will be vetted and verified through the Administrator before being able to interact with the community 3. Lost and found reports will also be vetted through the Administrator before being posted to the community 4. Lastly, adoption event promotions being sent by shelters will be vetted through the Administrator before being posted to the community.

<u>Functional/Non-Functional</u>	<u>Story ID</u>	<u>Title</u>	<u>Actors</u>	<u>Description</u>
Functional	1	Creating Profile	Pet Owner, Adopter, Shelter/Organization	As a pet owner and or potential adopter, Shelter or organization, I want to create my profile/pets' profile so I can begin the adopter/adoptee process
Functional	2	App Notifications	Pet Owner, Adopter	As a pet owner/adopter, I want to receive notifications for application activity that is relevant to matching and speaking with other users about the adopter/adoptee process, or about shelter events taking place, so I can act accordingly
Functional	3	App Notifications	Shelter/Organization	As a shelter/organization I want to receive notifications for application activity that is relevant to individuals who express interest in one of our pet profiles and or our adoption events so I can act accordingly

Functional	4	Returning to Past Profiles Viewed	Pet Owner, Adopter	As a pet owner and or potential adopter, I want to be able to return to profiles I may have swiped through before so that I can change my decisions if I so choose
Functional	5	Searching for Pet/Adopter	Pet Owner, Adopter	As a Pet owner and or potential adopter, I want to be able to search through relevant profiles so I can begin conversations that may lead to the adopter/adoptee process
Functional	6	Applying animal/user profile filters	Pet Owner, Adopter	As a pet owner and or potential adopter, I want to be able to apply filters on the profiles I am seeing so I can narrow down the scope of profiles relevant to me
Functional	7	Sharing User Profile	Pet Owner, Adopter	As a pet owner and or potential adopter, I want to be able to share another user's profile with someone else in the app community so they can see if that profile is a good fit for them
Functional	8	Location Settings	Pet Owner, Adopter, Shelter/Organization	As a pet owner and or potential adopter, I want to be able to apply filters on the location of the profiles I am seeing so I only have to travel the distance I am willing to for the adopter/adoptee process, including individuals and shelters/organizations
Functional	9	Post-Match Conversation	Pet Owner, Adopter, Shelter/Organization	As a pet owner and or potential adopter, I want to be able to converse with another user I have matched with so I can proceed with the adopter/adoptee process if I so choose, including individuals and shelters/organizations

<u>Functional/Non-Functional</u>	<u>Story ID</u>	<u>Title</u>	<u>Actor</u>	<u>Description</u>
Non-Functional	1	Application Scalability	Admin	As an Admin, I want to be able to easily scale my application to accommodate many potential news users as well as expand server bandwidth during high traffic times if needed, so users are pleased with our service
Non-Functional	2	Data Security	Admin	As an Admin, I want to ensure the data transmitted between our server/database to users is encrypted and that only relevant information is provided so that users can trust us and are pleased with our service
Non-Functional	3	Server Response	Admin	As an Admin, I want my servers to adhere to 99.999% uptime for availability and response time to be less than 1 second so users are pleased with our service

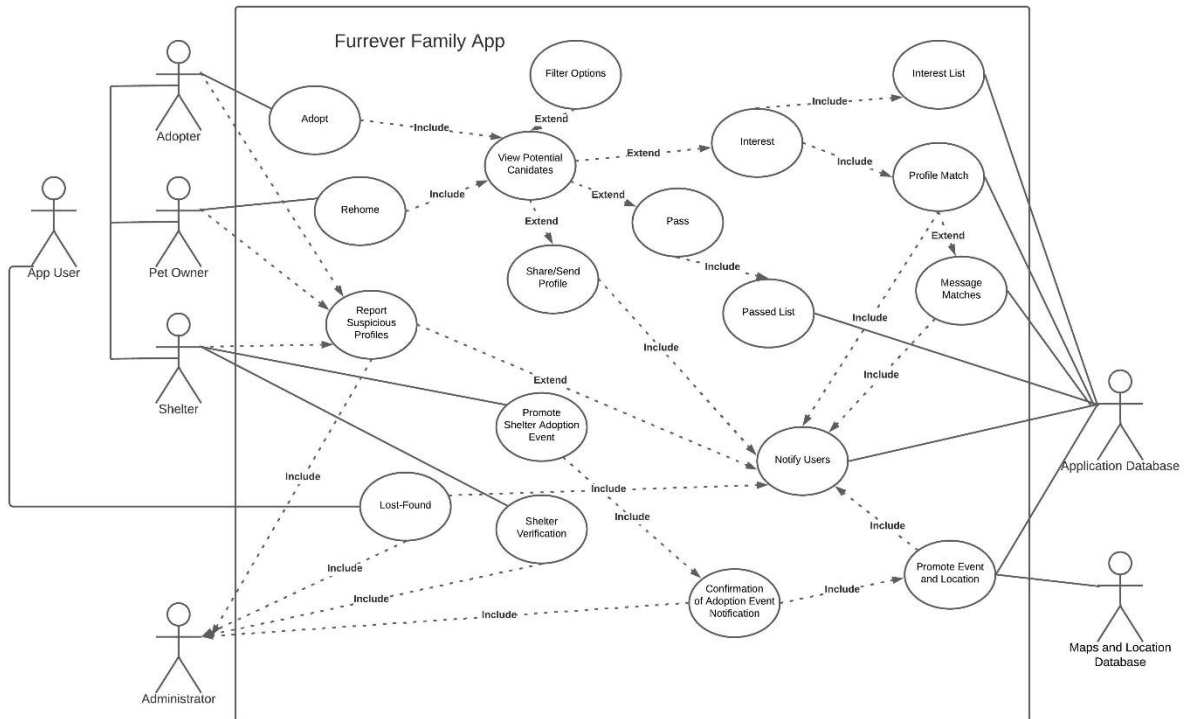
Acceptance Criteria:

<u>Functional/Non-Functional</u>	<u>Story ID</u>	<u>Title</u>	<u>Actors</u>	<u>Description</u>
Functional	1	Creating Profile	Pet Owner, Adopter, Shelter/Organization	Given that I am a new app user, when I log into the app, then the system will prompt me to create a profile for either myself, my animal or my organization
Functional	2	App Notifications	Pet Owner, Adopter	Given that there is activity occurring in the app when matching and speaking with other users about the adoptee/adopter process or shelter events taking place happening, the system will notify me of the activity

Functional	3	App Notifications	Shelter/Organization	Given that there is activity occurring in the app when individuals who are interested in our pet profiles or organizational events happening, the system will notify me of the activity
Functional	4	Returning to Past Profiles Viewed	Pet Owner, Adopter	Given that I have viewed and swiped left or right on other profiles, when I want to revisit one, I swiped left on, then the system provides me a "Pass" tab that I can view specifically for these profiles
Functional	5	Searching for Pet/Adopter	Pet Owner, Adopter	Given that I would like to view pet and or potential adopter profiles, when I use the search functionality in the app, then the system provides me with relevant profiles
Functional	6	Applying animal/user profile filters	Pet Owner, Adopter	Given that I would like to narrow the scope of profile options, when I apply animal/user profile filters, the system will only show me profiles that meet that criteria
Functional	7	Sharing User Profile	Pet Owner, Adopter	Given that I would like to share another user's profile when I find one relevant to another member of the app community, then the system allows me to forward that profile as a message
Functional	8	Location Settings	Pet Owner, Adopter, Shelter/Organization	Given that I would only like to travel a certain distance when I find a profile that I am interested in, then the system allows me to filter for profiles within a certain mile radius of my location,

				including individuals and shelters/organizations
Functional	9	Post-Match Conversation	Pet Owner, Adopter, Shelter/Organization	Given that I would like to communicate with the pet owner/adopter/shelter when matched with their profiles, then the system will set up a message where I can communicate directly

<u>Functional/Non-Functional</u>	<u>Story ID</u>	<u>Title</u>	<u>Actor</u>	<u>Description</u>
Non-Functional	1	Application Scalability	Admin	Given that the users depend on a growing community when trying to meet more pet and adoption needs, then the system will communicate to our cloud provider to expand accordingly
Non-Functional	2	Data Security	Admin	Given that our users depend on us to protect their data and information, when they are utilizing our app, the system will then encrypt all information and provide relevant security measures
Non-Functional	3	Server Response	Admin	Given that our users depend on our servers for functionality when using the application, then the system will respond in a timely manner



Use Case Narrative/Descriptions:

Use Case Name	Creating a User Profile
Last Revised	March 7,2021
Description	A user has to create a profile for themselves before viewing Adoptee's profile. Adopter must provide pet preferences and answer a series of "Get to know you" questions to build their profile.
Actors	Primary Actor - App User (Adopter, Pet Owner)
Pre - Condition	User will have to create a profile through the App
Post - Condition	User will be able to access to view another user's profile
Basic Success Flow	
<ol style="list-style-type: none"> 1. User can access the link to download the app on the Furrever Family website or user can find the application on their mobile app store. 2. User launches the app, then clicks on "Create A Profile" 3. User agrees to terms and conditions 4. Build your preference profile 5. Fill out "get to know you" questions 	

6. Upload a profile photo 7. Ability to start viewing and swiping on another user's profile	
Variation in Success Flow	
No Variant in Success Flow	
Alternate Path	
1. User already have an account <ul style="list-style-type: none"> a. Click on the "Forgot User" or "Forgot Password" button b. User will have to input their email address c. System will send out verification for user profile d. User resets password e. User login to the system 	
Related Use Case Names	Adopter creating a profile

Use Case Name	Individual Rehoming Pet
Last Revised	March 7, 2021
Description	User seeking for a new owner for their pet.
Actors	Primary Actor - App Users (Individual Rehoming Pet)
Pre - Condition	User must create a profile for their pet
Post - Condition	User can access potential adopter profile and find a match for their pet
Basic Success Flow	
1. User login to the system 2. User clicks on "I have a pet to rehome" button 3. Create an account for their pet on the app 4. Fill out get to know you questions for the pet (ex: physical characteristics, reason for rehoming, behaviors, etc.) 5. Upload a couple of photos of the pet 6. Ability to start viewing and swiping on adoptee's profile	
Variation in Success Flow	
No Variation in Success Flow	
Alternate Path	
No Alternate Path	
Related Use Case Names	User creating a profile for their pet

Use Case Name	Shelter Creating a Profile
Last Revised	March 7, 2021
Description	Shelter creating a profile process
Actors	Primary Actor - App User (Shelter)
Pre - Condition	User will have to fill out a form of interest on the website prior to creating an account.
Post - Condition	User will be able to create and monitor multiple pet profile.
Basic Success Flow	
1. User will have to access the Furrever Family website and fill out an Organization Verification form	

2. User will be notified through e-mail when account have been verified 3. User will be given a username and temporary password. 4. User logs in through the app or website	
Variation in Success Flow	
No Variation in Success Flow	
Alternate Path	
2.Admin unable to verify the shelter a. Contact admin for further instructions	
Related Use Case Names	Shelter creating their user profile

Use Case Name	Shelter Hosting Events
Last Revised	March 7, 2021
Description	Shelter hosting events for adoption purposes
Actors	Primary Actor – App User (Shelter)
Pre - Condition	User will have to register for event through the website
Post - Condition	Event will be posted, and notification will be sent out to users near the events
Basic Success Flow	
1. Shelter will access their account online and click on the “Events” tab 2. Fill out form (Information needed: location, date, description, etc.) 3. Sent the form in for verification 4. Event approved by administrators 5. Event will be posted 6. Notification will automatically be sent out to users within 30 miles of event 7. Host the event	
Variation in Success Flow	
4. Event needs more information a. Administrator will send the Host updates and ask for missing information b. Host provides missing details c. Event approved by administrator	
Alternate Path	
4.Event duplication a. Event matches another one that have already been submitted b. Notification received from Administrator c. If events are similar but not the same event host will have to provide more information to verify it’s a separate event d. Resubmit for review e. Approve / Deny event a. Deny: contact Administrator for more information	
Related Use Case Names	Posting adoption events

Use Case Name	Administrator Approving Events
Last Revised	March 7, 2021

Description	Administrators will review and approve events submitted by shelters
Actors	Primary Actor - Administrator
Pre - Condition	Administrator will receive event application from shelter
Post - Condition	Administrators will approve and denied event
Basic Success Flow	
<ol style="list-style-type: none"> 1. Administrator will login into their portal 2. They will click on "Pending Applications" 3. Administrator will thoroughly review applications according to their guidelines for an event 4. Administrator will approve event on the portal 5. The Portal will send out approval email and in application notification to shelter 	
Variation in Success Flow	
<ol style="list-style-type: none"> 4. Administrator will deny the event <ol style="list-style-type: none"> a. Administrator will provide detailed reason for denial b. The Portal will send out denial email and in application notification to shelter c. Shelter will have 7 days to additional requirement information d. Administrator will review the new information provided e. Administrator will approve / denied event 	
Alternate Path	
<ol style="list-style-type: none"> 4. Event duplication <ol style="list-style-type: none"> a. Event matches another one that have already been submitted b. Administrator will notify host of duplicate event c. If events are similar but not the same event host will have to provide more information to verify it's a separate event d. Administrator will review the new set of information e. Approve / Deny event 	
Related Use Case Names	Administrator Event Application Review

Use Case Name	Individual with Lost Pet(s)
a. Last Revised	March 7, 2021
Description	Users will list a lost pet on the application in hope to find the pet
Actors	Primary Actor - User
Pre - Condition	User lost their pet makes a profile for their lost pet
Post - Condition	User finds their pet with the help of local community
Basic Success Flow	
<ol style="list-style-type: none"> 1. User will create an account through the application or website 2. User click on "I Lost A Friend" 3. User will fill out details about their lost pet (species, color, size, types, etc.) 4. User will add a photo of the pet 5. The Lost pet listing will be posted 6. Notification will be sent out to all users within 15 miles of pet's found location 7. Owner will be reconnect with7 pet 8. User will update status of listing to "I am reunited with my friend" 	
Variation in Success Flow	
No Variation in Success Flow	
Alternate Path	

7.Can't find pet <ul style="list-style-type: none"> a. After 14 days of idle account, the user will be given a list of contact information for nearby shelters b. User can call the shelter in hope that pet have been found but not listed on application c. Owner will / will not reunite with pet 	
Related Use Case Names	Help lost pet reconnect with their owner

Use Case Name	Individuals with Found/Abandoned Pet(s)
Last Revised	March 7, 2021
Description	User searching for the owner of found pet
Actors	Primary Actor - User
Pre - Condition	User stumbles upon a lost pet
Post - Condition	User uses the application and reconnect the pet with their owner
Basic Success Flow	
<ol style="list-style-type: none"> 1. User will create an account through the application or website 2. User click on "I Found A Lost Friend" 3. User will fill out details about the found pet (species, color, size, types, etc.) 4. User will add a photo of the pet 5. The Found pet listing will be posted 6. Notification will be sent out to all users within 15 miles of pet's found location 7. Owner will be reconnected with pet 8. User will update status of listing to "I found my owner" 	
Variation in Success Flow	
7.Can't find owner <ul style="list-style-type: none"> a. After 14 days of idle account, the user will be notified of other options b. Option A to help find pet a new home c. Option B help user find a nearby shelter to drop off pet (shelter will have more potential and resources to help the pet find their owner) 	
Alternate Path	
No Alternate Path	
Related Use Case Names	Help user find the owner to found pet

Use Case Name	Reporting Suspicious Activity
Last Revised	March 7, 2021
Description	Users can report suspicious or inappropriate activities
Actors	App Users (App Users)
Pre - Condition	User stumbles upon suspicious looking profile or activity
Post - Condition	User reports the situation to the Administrator
Basic Success Flow	
<ol style="list-style-type: none"> 1. On the home page user can click on "Report" 	

2. Users will be asked a series of questions to identify the type of activity	
3. User submit report for review	
Variation in Success Flow	
No Variation in Success Flow	
Alternate Path	
No Alternate Path	
Related Use Case Names	User reporting suspicious activity
























Use Case Name	Administrator Review Suspicious Activity
Last Revised	March 7, 2021
Description	Administrator will review reported suspicious activity
Actors	Administrator
Pre - Condition	Administrator receives a report
Post - Condition	Administrator review report approves deny report
Basic Success Flow	
<ol style="list-style-type: none"> 1. Admin will review the report to see if it is against Furrever Family's Mission Statement and Constitution 2. Report doesn't violate mission statement or constitution 3. Account will stay open 	
Variation in Success Flow	
No Variation in Success Flow	
Alternate Path	
<ol style="list-style-type: none"> 1. Admin will review the report to see if it is against Furrever Family's Mission Statement and Constitution 2. Report violates mission statement or constitution 3. Freeze User account 4. Send out notification to user 	
Related Use Case Names	Administrator reviewing suspicious reporting




















Use Case Name	User Sharing Profile
Last Revised	March 7, 2021
Description	Users sharing profile of interest to other users
Actors	App Users (Adopter, Pet Owner)
Pre - Condition	Users comes across a profile of interest
Post - Condition	User shares it with another user with a profile
Basic Success Flow	
<ol style="list-style-type: none"> 1. User will click on "..." 2. User then click on "Share profile" 3. Select the user you want to send the profile to 4. "Success" notification 	
Variation in Success Flow	
No Variation in Success Flow	
Alternate Path	

No Alternate Path	
Related Use Case Names	Users sharing profiles with other users

Project Plan

Pre-Implementation Timeline:

ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors
1		Group Meeting	1 day	Sun 1/31/21	Sun 1/31/21	
2		Group Project Remote Collaboration Plan	5 days	Wed 1/27/21	Tue 2/2/21	
3		Group Meeting	1 day	Fri 2/5/21	Fri 2/5/21	
4		Group Project Feedback #1 (Extra Credit)	8 days	Sun 1/31/21	Tue 2/9/21	
5		Part 1: Team Organization	8 days	Sun 1/31/21	Tue 2/9/21	
6		Part 2: Project Selection & Requirements Analysis (Item 1-3)	8 days	Sun 1/31/21	Tue 2/9/21	
7		Part 3: Project Plan (Item 1)	8 days	Sun 1/31/21	Tue 2/9/21	
8		Group Meeting	1 day	Sun 2/14/21	Sun 2/14/21	
9		Group Meeting	1 day	Sun 2/21/21	Sun 2/21/21	
10		Group Project Feedback #2 (Extra Credit)	10 days	Wed 2/10/21	Tue 2/23/21	
11		Part 2: Project Selection & Requirements Analysis (Item 4-7)	10 days	Wed 2/10/21	Tue 2/23/21	7
12		Group Project Feedback #3 (Extra Credit)	10 days	Wed 2/24/21	Tue 3/9/21	
13		Part 4: Analysis Documents (Item 1-3)	10 days	Wed 2/24/21	Tue 3/9/21	11
14		Group Meeting	1 day	Sun 2/28/21	Sun 2/28/21	
15		Group Meeting	1 day	Sun 3/7/21	Sun 3/7/21	
16		Group Project Feedback #4 (Extra Credit)	10 days	Wed 3/10/21	Tue 3/23/21	
17		Part 5: Design Documents (Items 1-5)	10 days	Wed 3/10/21	Tue 3/23/21	
18		Part 3: Project Plan (Item 2)	10 days	Wed 3/10/21	Tue 3/23/21	13
19		Group Meeting	1 day	Sun 3/14/21	Sun 3/14/21	
20		Group Meeting	1 day	Sun 3/21/21	Sun 3/21/21	
21		Group Meeting	1 day	Sun 3/28/21	Sun 3/28/21	
22		Group Project Final Deliverable	5 days	Wed 3/24/21	Tue 3/30/21	
23		Group Project Peer Evaluation Report	5 days	Wed 3/24/21	Tue 3/30/21	

Project: Pre-Implementation Ch Date: Fri 2/5/21	Task		Inactive Summary		External Tasks	
	Split		Manual Task		External Milestone	
	Milestone		Duration-only		Deadline	
	Summary		Manual Summary Rollup		Progress	
	Project Summary		Manual Summary		Manual Progress	
	Inactive Task		Start-only			
	Inactive Milestone		Finish-only			

Page 1

Post-Design Timeline:

Our project schedule is broken down into multiple tasks. Each task category is defined by the type of interaction it will have with the user. We use the Gantt Chart to ensure development is hitting the milestones projected.

ID	Task Mode	Task Type	Task Name	Duration	Start	Finish	Predecessors	Resource Names	17	20	23
1			User	30 days	Mon 3/22/21	Fri 4/30/21					
2		Application	Registration Page	10 days	Mon 3/22/21	Fri 4/2/21					
3		Application	Authentication	8 days	Mon 4/5/21	Wed 4/14/21	2				
4		Application	User Profile	7 days	Thu 4/15/21	Fri 4/23/21	3				
5		Application	Match Interface	5 days	Mon 4/26/21	Fri 4/30/21	4				
6		Application	Message Interface	5 days	Mon 4/26/21	Fri 4/30/21	4				
7		Application	Lost and Found Interface	3 days	Mon 4/26/21	Wed 4/28/21	4				
8		Application	Suspicious Reporting Interface	3 days	Mon 4/26/21	Wed 4/28/21	4				
9		Application	Shelter Event Interface	3 days	Mon 4/26/21	Wed 4/28/21	4				
10			Administrator	14 days	Thu 4/29/21	Tue 5/18/21					
11		Application	Authentication	8 days	Thu 4/29/21	Mon 5/10/21	9				
12		Application	Review Lost and Found Interface	4 days	Thu 5/13/21	Tue 5/18/21	11				
13		Application	Review Suspicious Report Interface	4 days	Thu 5/13/21	Tue 5/18/21	11				
14		Application	Review Shelter Event Promotion Request Interface	4 days	Thu 5/13/21	Tue 5/18/21	11				
15			Database	12 days	Wed 5/19/21	Thu 6/3/21					
16		Database	Security Settings	5 days	Wed 5/19/21	Tue 5/25/21	14				
17		Database	Data Structures	4 days	Wed 5/26/21	Mon 5/31/21	16				
18		Database	Data Table and Key Identifiers	3 days	Tue 6/1/21	Thu 6/3/21	17				
19			Hardware Environment	5 days	Fri 6/4/21	Thu 6/10/21					
20		Hardware Environment	Data Storage Server	2 days	Fri 6/4/21	Mon 6/7/21	18				
21		Hardware Environment	Application Server	2 days	Tue 6/8/21	Wed 6/9/21	20				
22		Hardware Environment	Network and Security	3 days	Tue 6/8/21	Thu 6/10/21	20				
23			Execution	31 days	Fri 6/11/21	Fri 7/23/21					
24		Implementation	Test Release	10 days	Fri 6/11/21	Thu 6/24/21	22				
25		Implementation	User Feedback	10 days	Fri 6/25/21	Thu 7/8/21	24				

Project: Furrever Family - Gantt Date: Mon 3/22/21

Task

Split

Milestone

Summary

Project Summary

Inactive Task

Inactive Milestone

Inactive Summary

Manual Task

Duration-only

Manual Summary Rollup

Manual Summary

Start-only

Finish-only

External Tasks

External Milestone

Deadline

Progress

Manual Progress

Page 1

ID	Task Mode	Task Type	Task Name	Duration	Start	Finish	Predecessors	Resource Names	17	20	23
26		Implementation	Bug Patches	10 days	Fri 6/25/21	Thu 7/8/21	24				
27		Implementation	Final Testing	10 days	Fri 7/9/21	Thu 7/22/21	26				
28		Implementation	Release Final Product	1 day	Fri 7/23/21	Fri 7/23/21	27				

Project: Furrever Family - Gantt Date: Mon 3/22/21

Task

Split

Milestone

Summary

Project Summary

Inactive Task

Inactive Milestone

Inactive Summary

Manual Task

Duration-only

Manual Summary Rollup

Manual Summary

Start-only

Finish-only

External Tasks

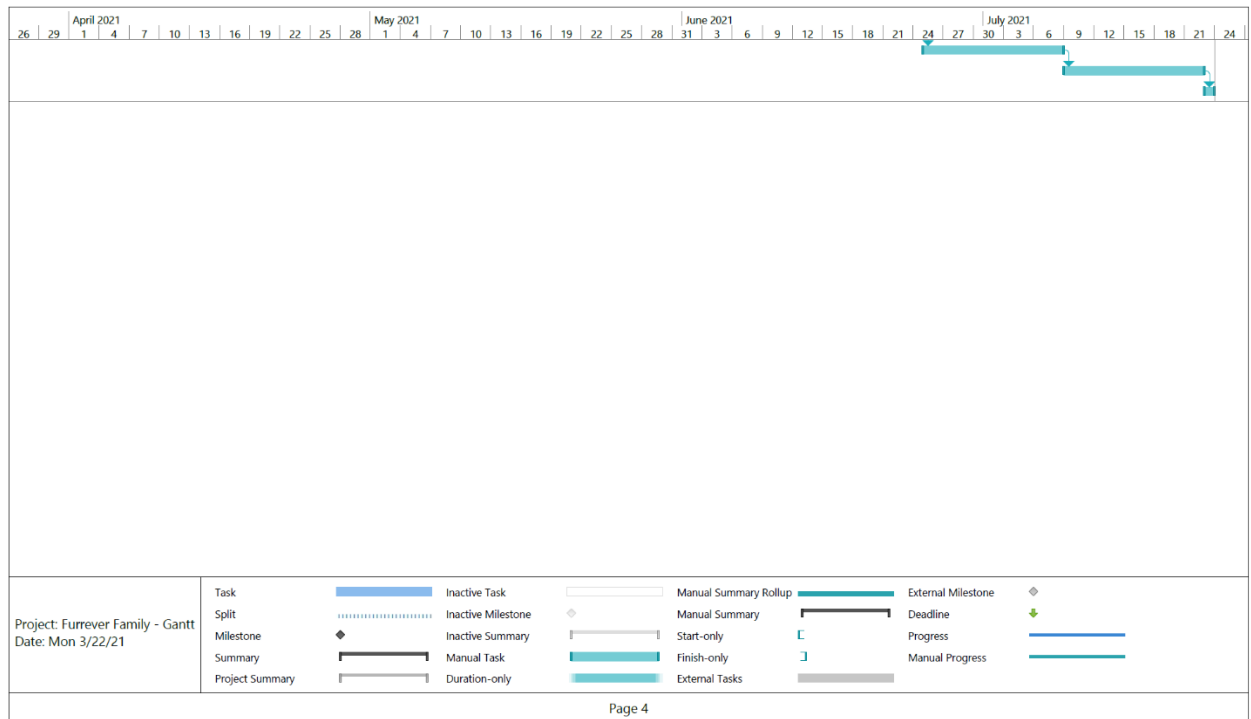
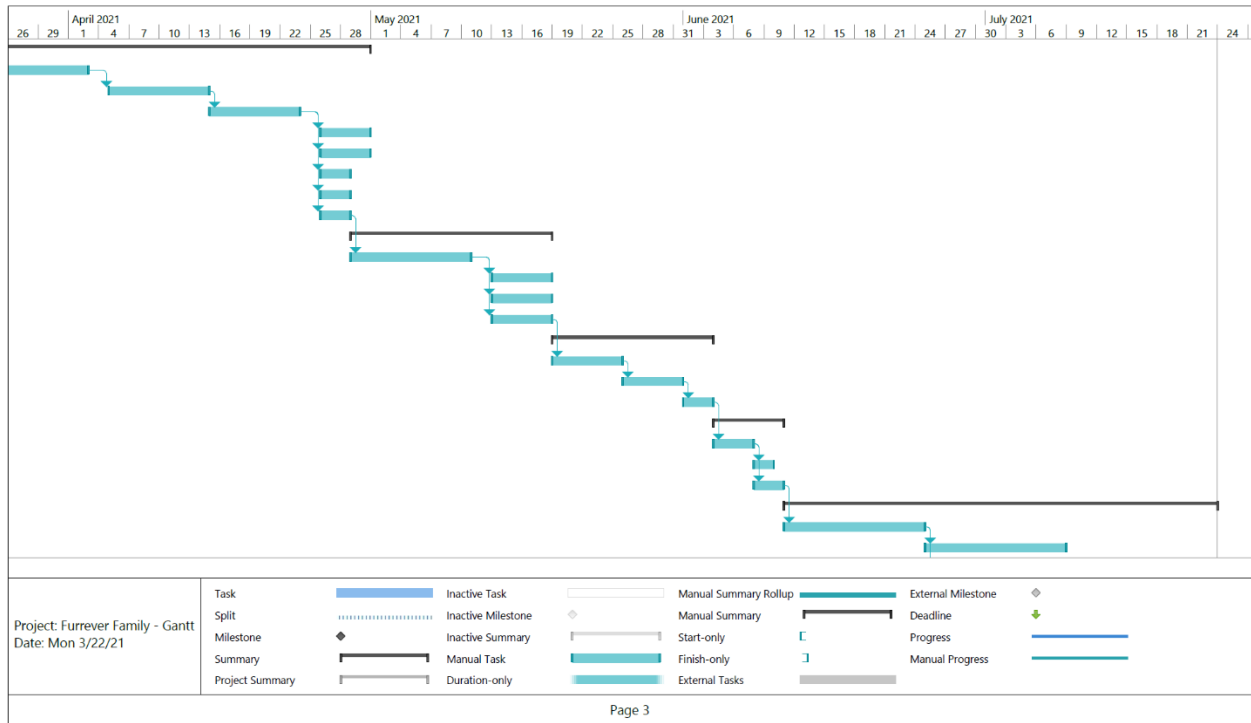
External Milestone

Deadline

Progress

Manual Progress

Page 2



Work Breakdown Structure:

Furrever Family is broken down into 2 subcomponents (application and AWS amplified). These components were defined by their interaction with the application itself. Application refers to the in-app interaction with the users. While the AWS amplified refers to the background support and data the application needs to run. AWS supplies a large variety of built-in software for Furrever Family to choose and use from.



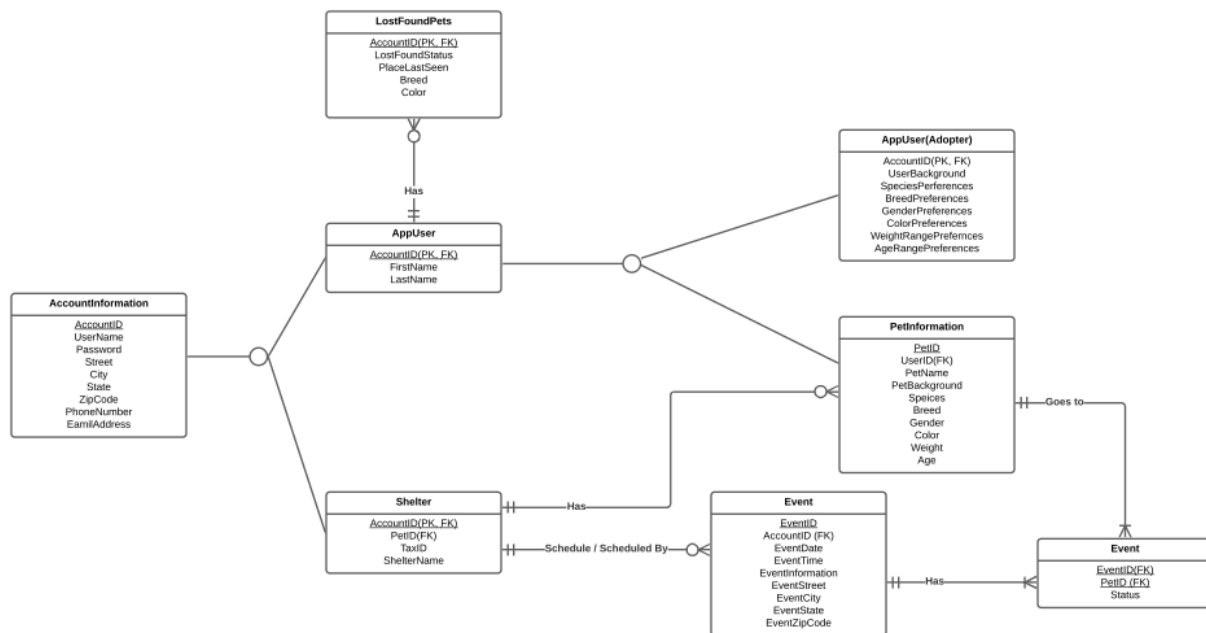
Cost Labor Estimation:

We concluded that the estimated cost to produce Furrever Family's Application will be approximately \$65,000. We took the workdays for each task and multiplied it by 8 to represent how many hours an average person works per day. We estimated each task's cost per hour by including aspects such as the employee's wage, cost for certain licensing programs, and utilities for the workspace the developer / employee will be using during the hour of development.

Task Type	Task Name	Duration (Days)	Hours	Cost	Total Cost
	User				
Application	Registration Page	10	80	\$ 75.00	\$ 6,000.00
Application	Authentication	8	64	\$ 80.00	\$ 5,120.00
Application	User Profile	7	56	\$ 60.00	\$ 3,360.00
Application	Match Interface	5	40	\$ 55.00	\$ 2,200.00
Application	Message Interface	5	40	\$ 50.00	\$ 2,000.00
Application	Lost and Found Interface	3	24	\$ 50.00	\$ 1,200.00
Application	Suspicious Reporting Interface	3	24	\$ 50.00	\$ 1,200.00
Application	Shelter Event Interface	3	24	\$ 50.00	\$ 1,200.00
	Administrator				
Application	Authenication	8	64	\$ 80.00	\$ 5,120.00
Application	Review Lost and Found Interface	4	32	\$ 50.00	\$ 1,600.00
Application	Review Suspicious Report Interface	4	32	\$ 50.00	\$ 1,600.00
Application	Review Shelter Event Promotion Request Interface	4	32	\$ 50.00	\$ 1,600.00
	Database				
Database	Security Settings	5	40	\$ 100.00	\$ 4,000.00
Database	Data Structures	4	32	\$ 85.00	\$ 2,720.00
Database	Data Table and Key Identifiers	3	24	\$ 85.00	\$ 2,040.00
	Hardware Environment				
Hardware Environment	Data Storage Server	2	16	\$ 100.00	\$ 1,600.00
Hardware Environment	Application Server	2	16	\$ 85.00	\$ 1,360.00
Hardware Environment	Network and Security	3	24	\$ 100.00	\$ 2,400.00
	Execution				
Implementation	Test Release	10	80	\$ 75.00	\$ 6,000.00
Implementation	User Feedback	10	80	\$ 50.00	\$ 4,000.00
Implementation	Bug Patches	10	80	\$ 50.00	\$ 4,000.00
Implementation	Final Testing	10	80	\$ 50.00	\$ 4,000.00
Implementation	Release Final Product	1	8	\$ 75.00	\$ 600.00
				Total:	\$ 64,920.00

Analysis Documents (Data and Process Logical Models)

Logical ERD:



Entities

AppUser: Stores personal information about the users. Each App user will be given a unique UserID. User information such as: login information, user's first and last name, street address, etc. Contract information will be saved in the AppUser Database.

AppUser(Adopter): AppUser (Adopter) database will store information about the adopter's preferences. These preferences include: their personal backgrounds, type of animal they are looking for, potential breed, gender, color, age and weight preferences.

PetInformation: The PetInformation database stores all the information regarding the pet that is being rehomed. Information about the pet includes: Pet's name, background/reason for rehoming, species, breed, gender, color, weight, and age.

Shelter: Shelter storage will slightly vary from the AppUsers. Shelter will be given their own primary key known as the BusinessID. Information such as: login information, shelter's name, address, tax information, and contract information will be stored here.

Event: Stores information about the event. Each event is given an EventID which can pull information such as: Event address, date, information, and host (Foreign Key: BusinessID)

Relationships and Cardinalities

AppUser has Adopter or PetInformation types. AppUser that have a relationship with Adopter means they are seeking for a pet. On the other hand, AppUser with PetInformation relationship means they are seeking for a new home for their pet.

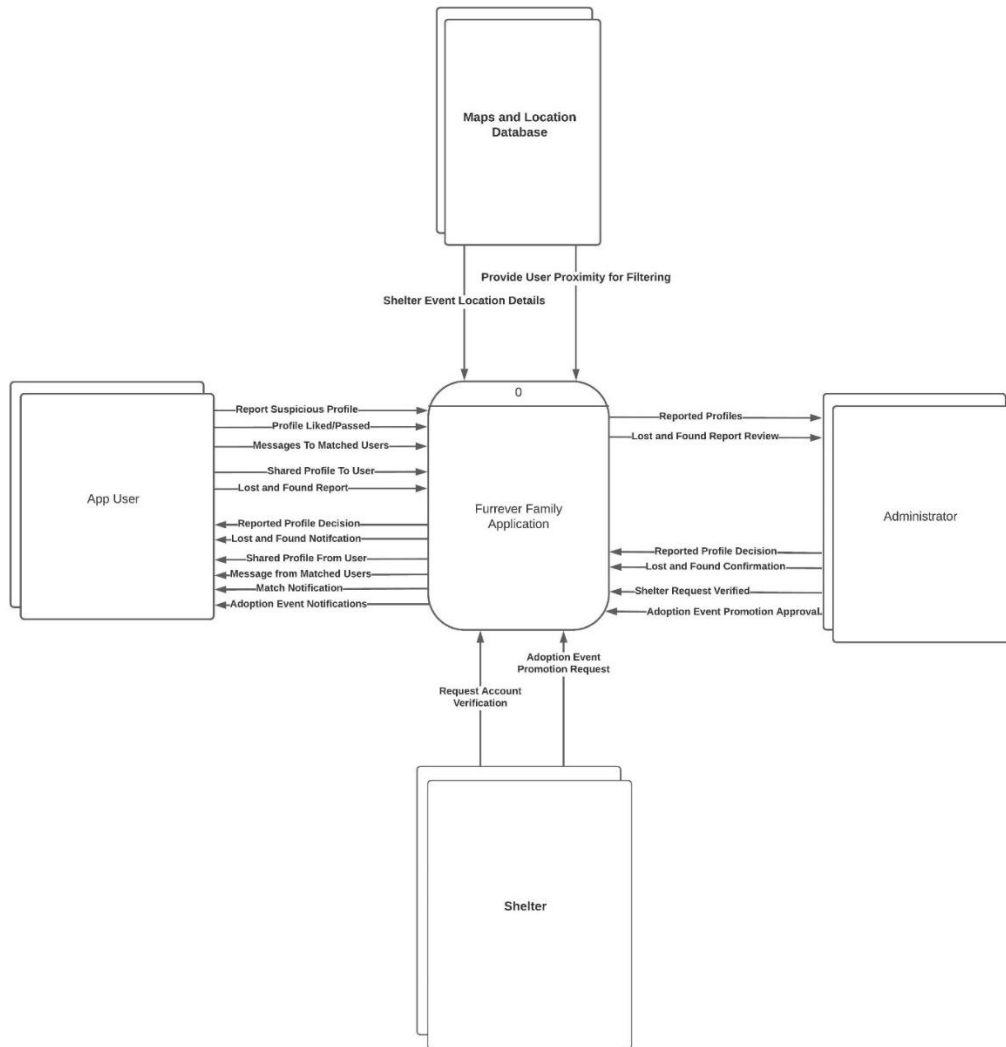
Shelter can have two different types of relationship. If they have a relationship with PetInformation it means that they are seeking for a new owner for pet. Relationship with event means that the shelter is hosting an event.

Event must have at least one to many pets. PetInformation can be found at multiple events if the pet is not adopted.

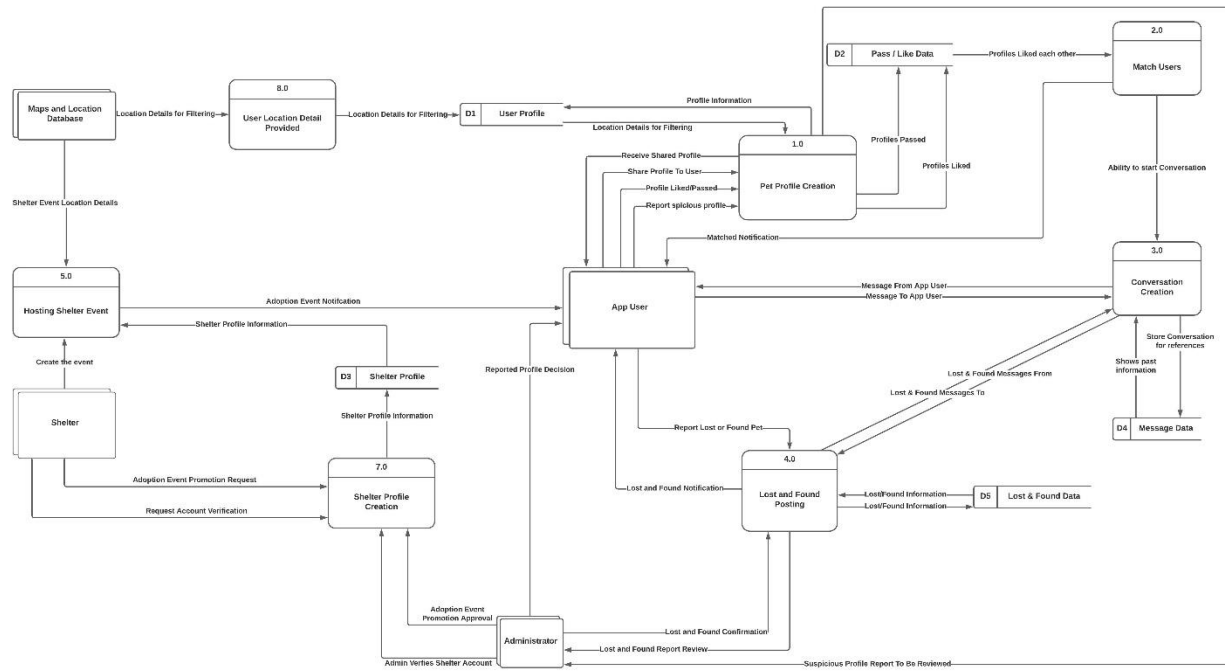
AppUser can find/lost many pets (LostFoundPet) but LostFoundPet can only be founded or in the guardianship of one AppUser

Logical DFD

Context Level



Level 0



CRUD Matrix

	Passes/Likes	Shelter	User	Message	Lost & Found
Pet Profile	C, R, U	C, R, U, D	C, R, U, D	C	
Matched Users	R, U, D	R, U, D	R, U, D	C, R, D	
Conversations		C, R, D	C, R, D	C, R, D	C, R, D
Lost and Found			C, R, D	C, R, D	C, R, U, D
Event		C, R, U, D	R	R	

Buy Vs. Build Analysis

In House Custom Built

The in-house custom built is a strategic way for the users to customize their own software package to their liking. The advantage of this method is that the employees can integrate their vision into the application as well as the ability to have full control over changes and what goes into the creation of the Furrever Family application. This method allows more flexibility but will be more expensive.

Evaluation Criteria	Amount needed	In House Build Descriptions	Benefits
Technical Expenses			
Complexity	\$6,000	Employees will code and integrate different platform and software could either lead to success/failure of the application	The staff will have a say in the entire coding and integration process. They will be able to create their app to their liking with the ability to change whatever they want, whenever they want
Amount of Work	\$5,500	High amount of work. Administrative staff and employees will have to put in large amount of time	Employees will have the greater satisfaction knowing all their hard work spent on building this application paid off
Risks	\$5,800	Possibility of technical failure/security breach	The company can manage their own security software and be in complete control of their security system
Total:	\$17,300		
Organizational Expenses			
Scalability	\$4,000	Implementation of scalability will produce a wide range of user capabilities	Staff can increase or adjust their own level of performance for their app
Flexibility	\$2,000	High ability to change/update as needed	Can change/update their system, layouts, and performance of their application when needed

Compatibility with mobile phone/web apps	\$5,500	application will be made available with MacOS and Android devices as well different web servers	The company can quickly change and manage compatibility performances of devices for users. This will allow more users to download and use the application
Total:	\$11,500		
Economical Expenses			
Development	\$10,000	Use a wide variety of hardware/software to develop latest programs to keep the application up to date and for users	Keep own hardware/software for future usage for other applications
Operational	\$4,000	Uptime and maintenance costs	Company manages their own expenses, at a rate that is suited for their company
Efficiency	\$7,000	development of a blueprint to keep track of procedures and ensure significant use of time and money	The ability to change what you want when you want, and not having to rely on other outside parties
Total:	\$21,000		

Final Total Cost: \$49,800

Software Package

The software package method gives employees the opportunity of purchasing premade software/hardware packages for their systems, while also allowing employees to custom certain aspects of their program to their liking. The advantages of using software packages are that it will reduce setup and installation time, lower the overall cost of production, and will require moderate work from employees. The downside of this method is that flexibility and scalability is limited to the software providers.

Evaluation Criteria	Amount needed	Software Package Descriptions	Benefits
Technical Expenses			
Complexity	\$13,000	Software package will reduce setup time, and time it takes coders to develop their own programs.	Reduced setup time allowing staff member to focus on other aspects of their application

Amount of Work	\$7,500	Moderate work will be required with additional instructions from purchased package	Moderate to light time spent on creating and assembling. More time to focus on other things
Risks	\$5,000	marketplace packages have minimal risk	The company that provides the software package will be responsible for maintaining the security risks for their customers
Total:	\$25,500		
Organizational Expenses			
Scalability	\$10,500	Software package may or may not have the scalable ability applications needs. Adding more nodes and license can be expensive	Adding more nodes and licenses can easily be purchase through the providing company, therefore it allows employees to quickly hop on other projects if needed
Flexibility	\$1,000	has some ability to allow changes of interface but very minimal.	Templates can be reused or sold to other companies for profit
Compatibility with mobile phone/web apps	\$0	Software may not be compatible with some devices, may take longer to work with company to fix issues.	Since Software company is providing the mobile/web compatibility the company does not have to pay extra money for it
Total:	\$11,500		
Economical Expenses			
Development	\$15,000	application will only require the package software to get the program up and running	The software package will supply everything one needs to build their application. The application administrators will not have to worry about development errors
Operational	\$4,000	Will have proper license and annual updates	Package providers will automatically update

			systems, so they are constantly up to date
Efficiency	\$7,800	Higher chance of application to run without many issues, and final product will be released to the public sooner	Application will be kept up to date, allowing it to run smoothly and more efficiently for users
Total:	\$26,800		

Final Total Cost: \$63,800

Outsourcing

The outsourcing method allows the users to work with a consulting company to build and develop a program specifically tailored to the company need. While it might sound expensive to have an external expert working on the software, it will be cheaper in the long run due to their experience and overall reduction time in development. If users are willing to spend a little bit extra time withing with a firm oversea, they can potentially cut development cost. This method also allows employees to give their inputs during the whole development process.

Evaluation Criteria	Amount needed	Outsourcing Descriptions	Benefits
Technical Expenses			
Complexity	\$4,000	Will not require a lot of staff members to be involved in the set up/maintenance process	Can have input from outside of your company, while still being in complete control of how you want your app to be
Amount of Work	\$2,500	Minimal amount of work	Minimal amount of work with the help of third parties
Risks	\$10,000	Risk is unpredictable, but safer than in house	Risk here could be a hit or miss. Third party could have a great security system, or they could have a bad one with more possibility of breaches
Total:	\$16,500		
Organizational Expenses			
Scalability	\$4,500	Scalability will be available upon request from the outside firm	Will be able to work with people outside of your company and have their

			input about scalability from other users' views
Flexibility	\$2,000	Changes and updates can be easily made however, it will not be done immediately	Change and update on your own time with input of outside help
Compatibility with mobile phone/web apps	\$3,000	Compatibility with different devices and web application is not guarantee but can be requested to adjust compatibility status	Aspects of this application has not been fully developed, the company and third party can work hand in hand to create the optimal compatibility product
Total:	\$9,500		
Economical Expenses			
Development	\$8,000	Development of codes will not have to be done in house. Codes can be created with outside source at a cheaper price	Development of the application can be done at a price of your choosing with hands on interaction
Operational	\$500	Must pay outsourcing firm a monthly fee	No benefits for paying monthly fee but could aid in the company and third party on good terms.
Efficiency	\$4,000	Company will work closely with outsource firm to create the best possible outside for application	Working closely with third party and getting other point of perspective on all parts of the application and its services
Total:	\$12,500		

Final Total Cost: \$38,500

Design Documents (Data and Process Physical Models)

System Architecture:

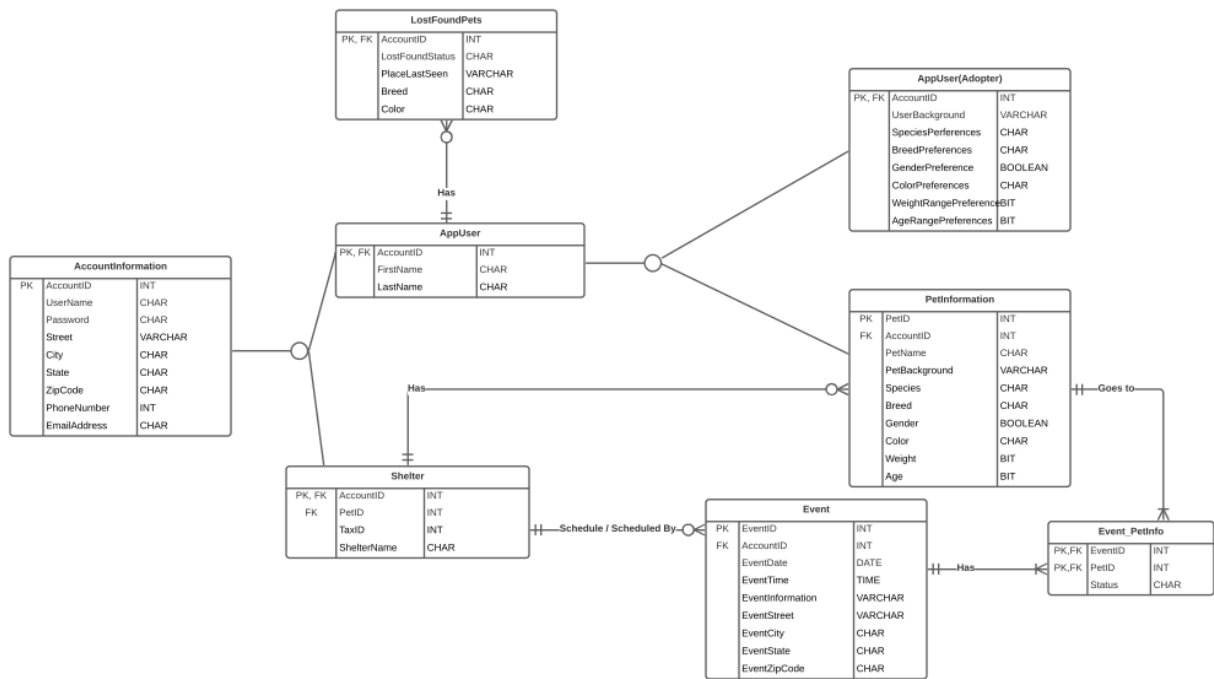
As a team we have decided to utilize the “platform as a service” architecture, where we will employ AWS Amplify as our platform service provider. While we will have a website for Furrever Family that provides potential users with information about us, however, it will be there primarily to direct users to our mobile application. We explored a few different potential platforms as a service (ex: Azure, Oracle, etc.) and concluded that AWS Amplify provided all essential business needs in one platform, especially to fulfill our non-functional requirements. To address scalability, we will utilize the Amplify UI (user interface) and CLI’s (command line interface) to configure the backend of our application. After configuration we will connect our app through Amplify libraries. Because we are not limited to our own on prem infrastructure, we can scale up or down our needs with AWS accordingly. To address server response time, AWS was a clear choice due to their worldwide presence and the sheer number of servers they have available to use, should a server ever go down. Lastly, to address data security, Amplify has a built-in Authentication service. The UI provides a “an intuitive use-case centric interface to add auth to your app.”⁴ It also has pre-built UI components for signing in and signing up that will integrate with React, React Native, Angular, Vue, Ionic and Next.js. Finally, we can fine tune our security using “Fine-grained Authorization”⁴ and “User management”⁴ features that allows us to configure what users can and cannot do in our application.

System Data Storage:

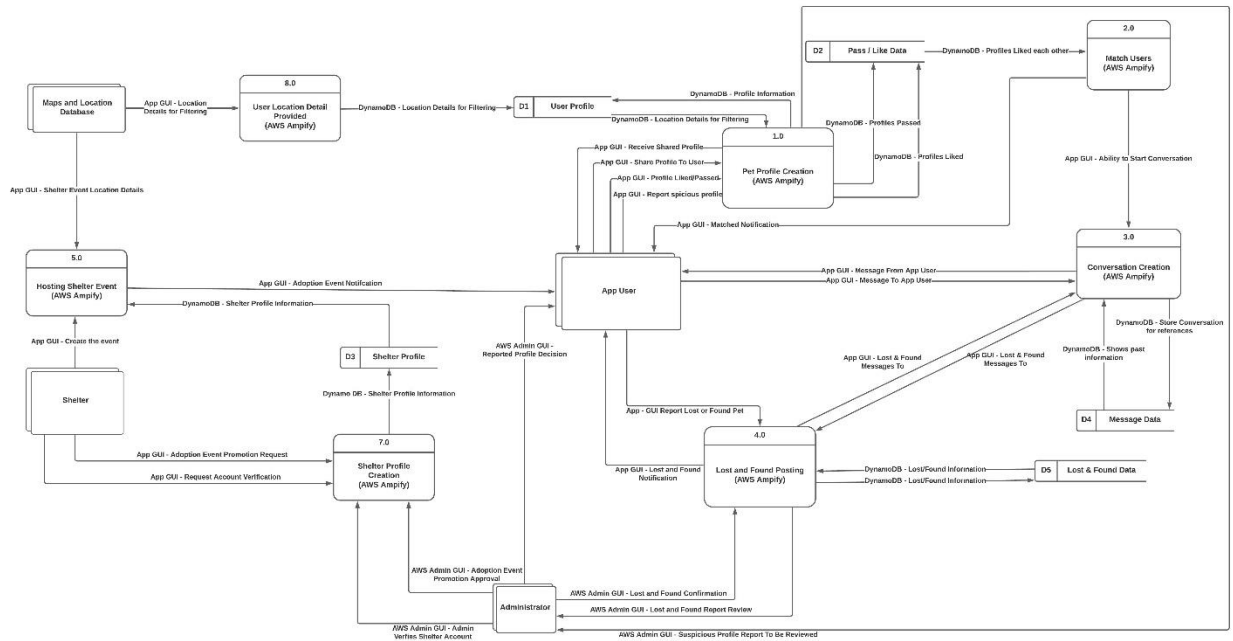
Furrever Family application will contain a substantial amount of data input from users through our mobile application. User inputs will be used uniquely to identify each adoption profile within our database. Each profile will have their own “AccountID” with additional attributes such as name, pictures, descriptions, etc.

Once again, we will be utilizing AWS Amplify and its built-in features to accomplish data storage. Amplify has a feature called “DataStore”⁴ that provides seamless data storage integration by using AWS AppSync and Amazon DynamoDB. These features allow for easy visual data modeling, access to offline data, data base specific authorization/security and content management.

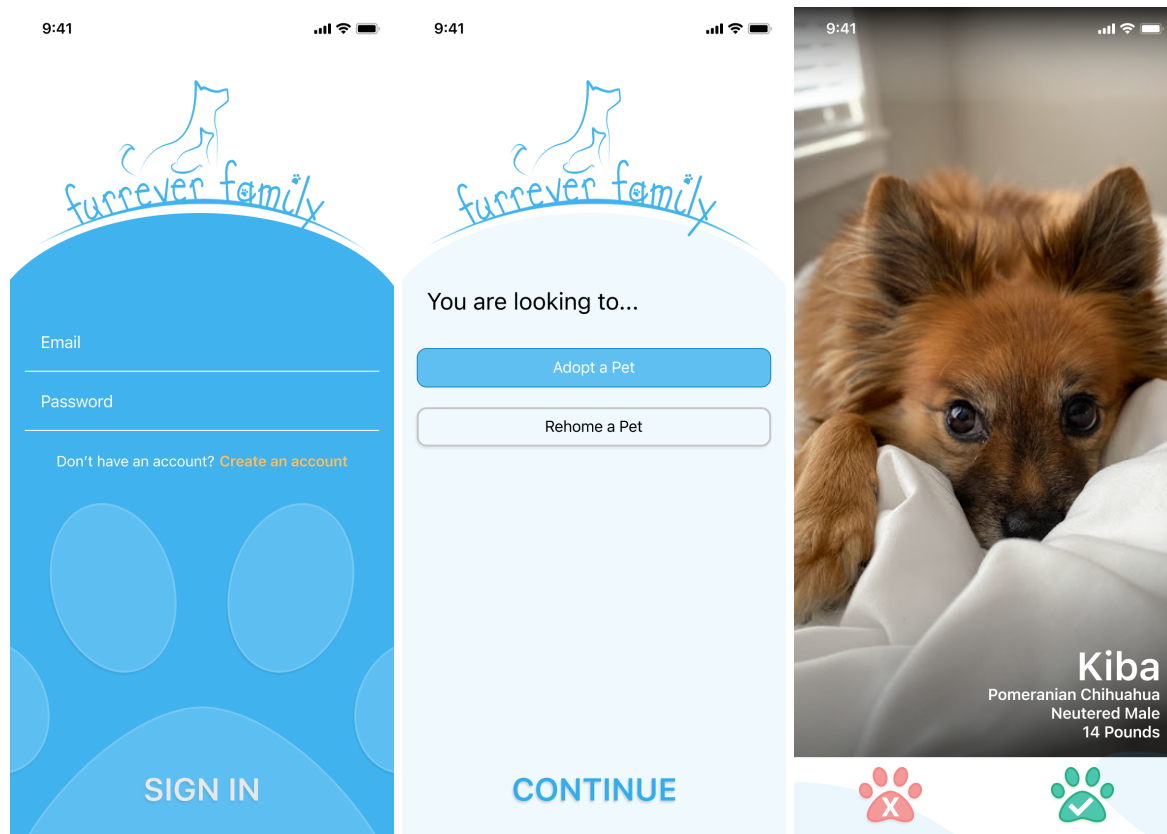
Physical ERD:



Physical DFD:



Design Mock Interface:



References

1. <https://humanepro.org/page/pets-by-the-numbers/>
2. <https://spots.com/pet-adoption-statistics/>
3. <https://earthbath.com/dog/four-reasons-why-puppies-make-bad-presents/>
4. <https://aws.amazon.com/amplify/>