Kibble

Ensure your pet has a healthy diet and never goes missing

Team and Roles

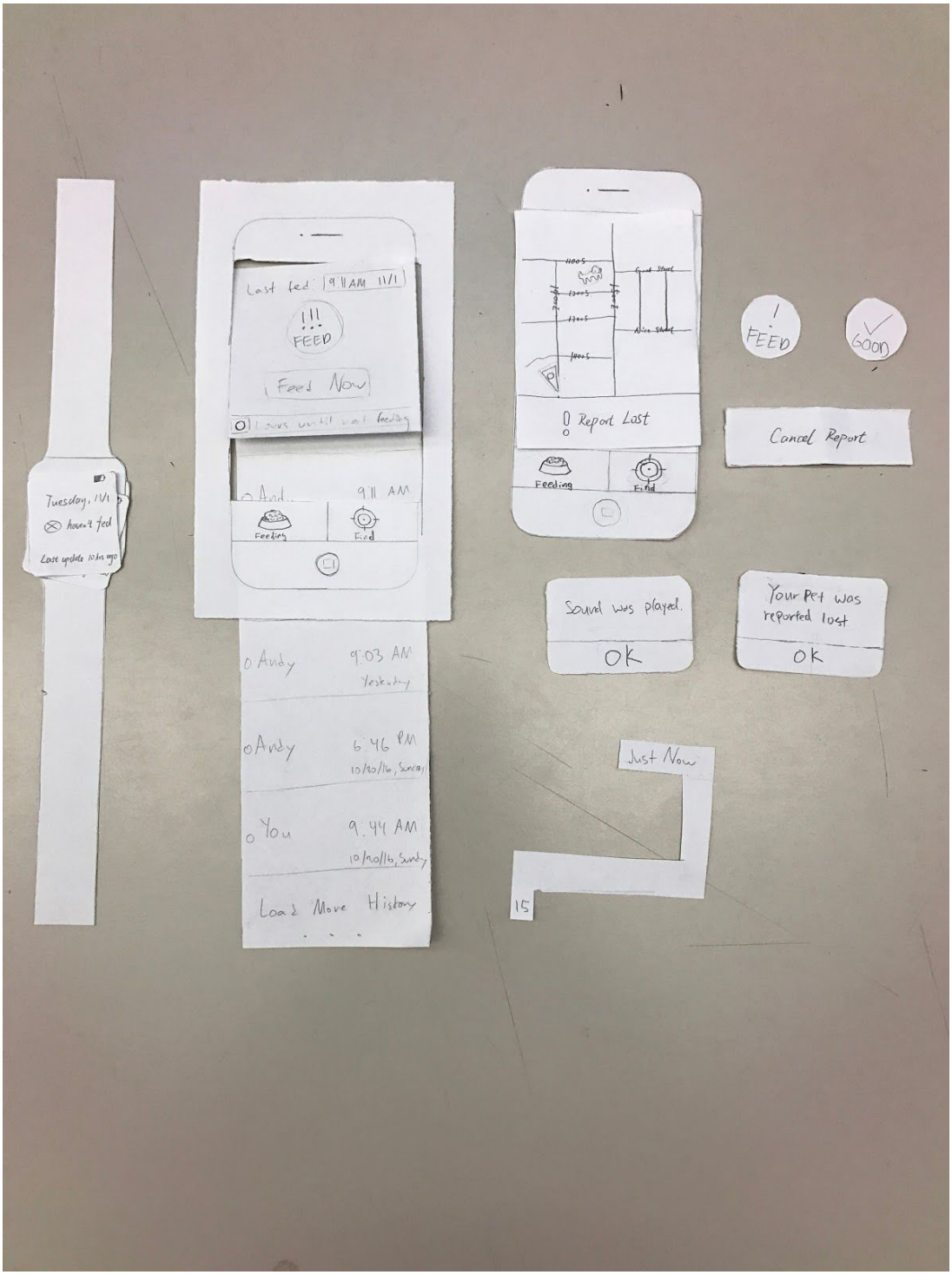
Jeff Souza: usability tests observer, writing
Hoon Ik Cho: UI design, writing, usability tests facilitator
Chaofeng Zhou: UI design, usability tests facilitator
Xuanyang Luo: usability tests “computer”, writing

Problems and Solutions Overview

Raising pets brings happiness to families and teach youth responsibility in an engaging meaningful way. However, keeping pets fed and healthy is not always an easy task. When multiple people share the responsibility of feeding the same pets, a problem emerges: family members cannot track when a pet needs food unless they schedule feeding, or effectively communicate. Second, finding a lost pet always causes a lot of trouble to pet owners. Creating and distributing lost pet posters to find a lost pet is not only cumbersome, it is not effective. We believe that a mobile app along with a location sensing tag can help people with these issues. The tag which is attached to the pet’s collar, would have a built-in GPS sensor and a button to record feeding activity. This app, Kibble, would track pet’s location to find their pet, and allow pet owners to make sure their pet is getting the correct diet.

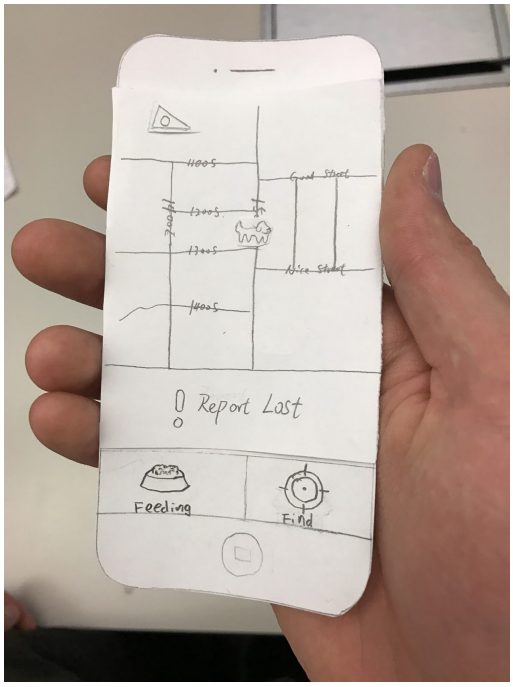
Initial Paper Prototype

We have two parts for paper prototype: one part is a smart tag for pet, the other part is a mobile app for smartphone.

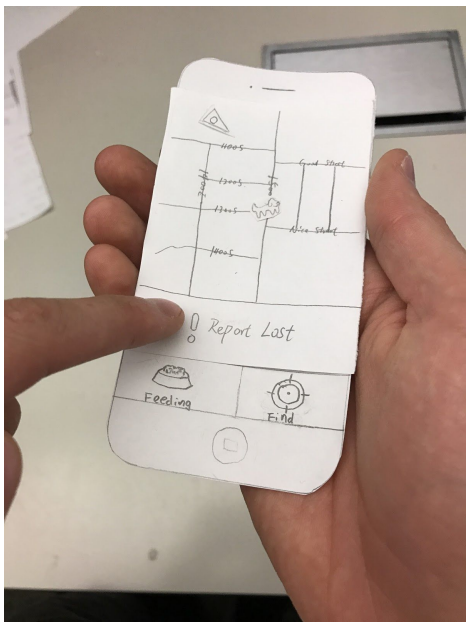


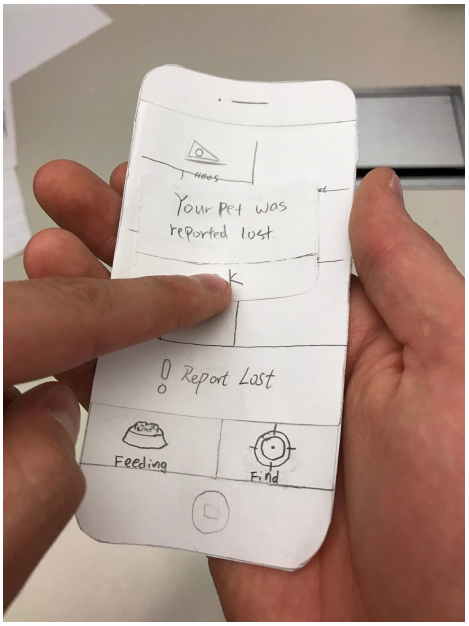
Task 1: Finding Pet

Once users find their pet is lost, they can open the app and click the “Find” tab on the bottom tab bar. (Figure 1.1)

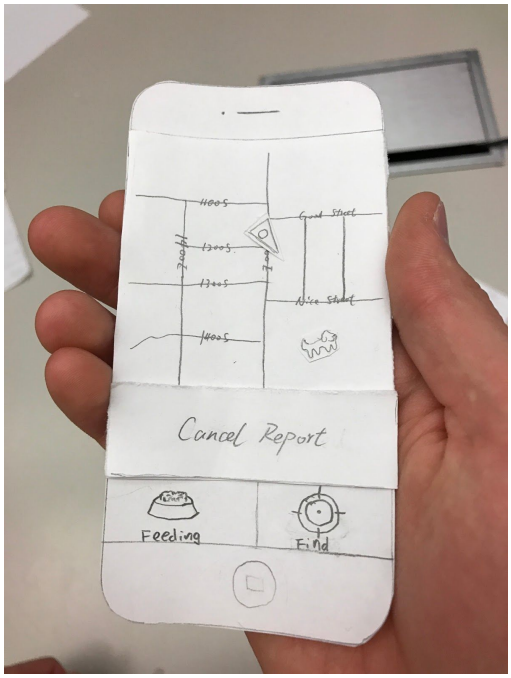


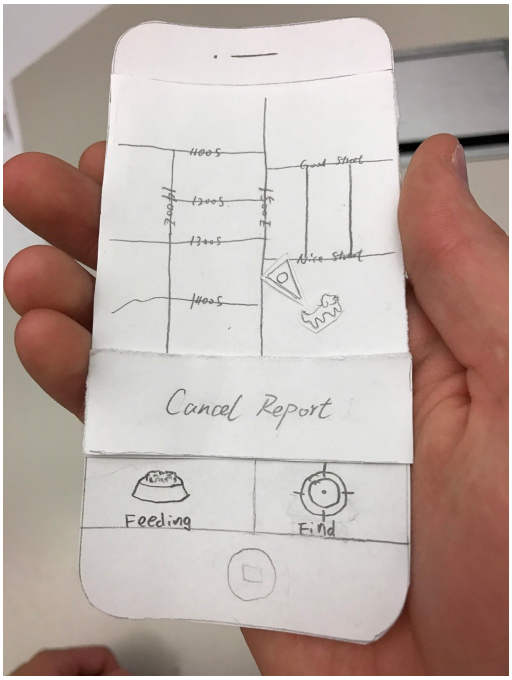
The screen shows where their pet is and the pet owner's location. Then, users press the "Report Lost" button to notify the family members that the pet is lost. (Figure 1.2, 1.3)



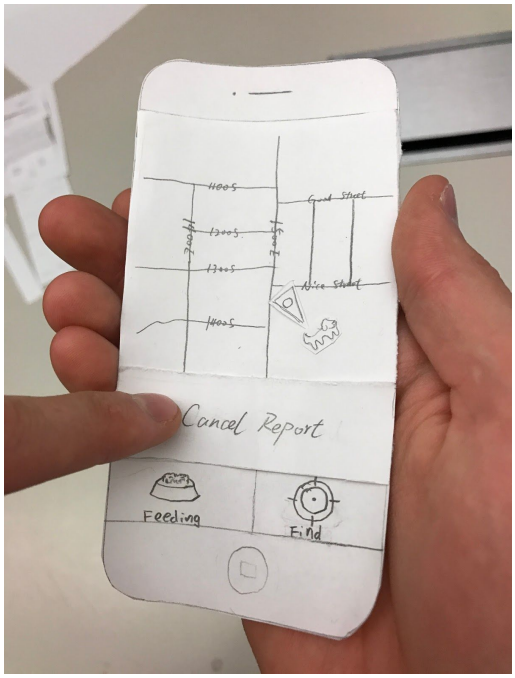


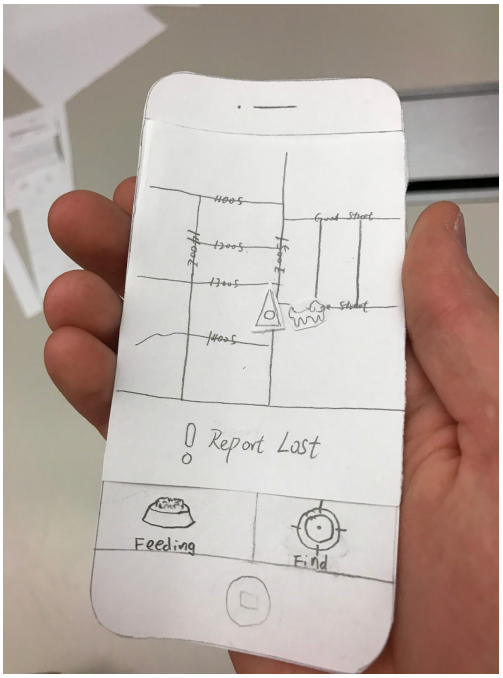
Users move towards pet's location and find the pet. (Figure 1.4, 1.5)





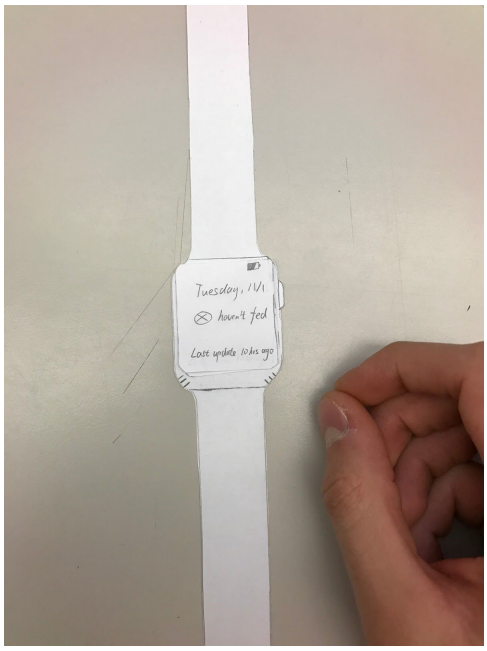
Upon finding the dog hey click the “Cancel Report” button to remove the lost status of the pet. (Figure 1.6, 1.7)

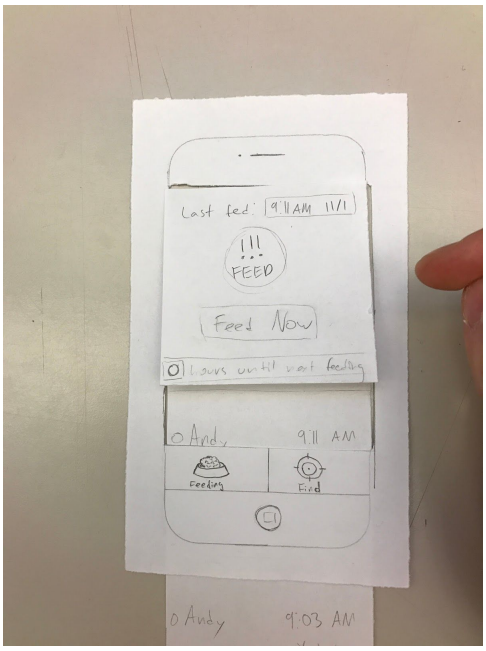




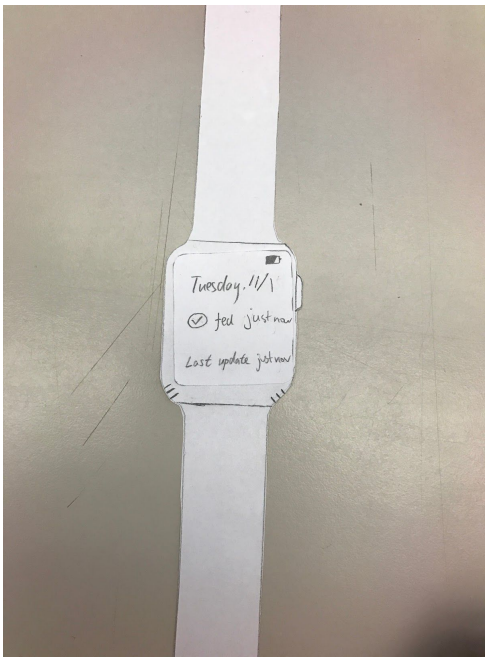
Task 2: Synchronizing Feeding

After users feed their pet, they can crouch and get access to the smart tag on the pet. (Figure 2.1, 2.2)

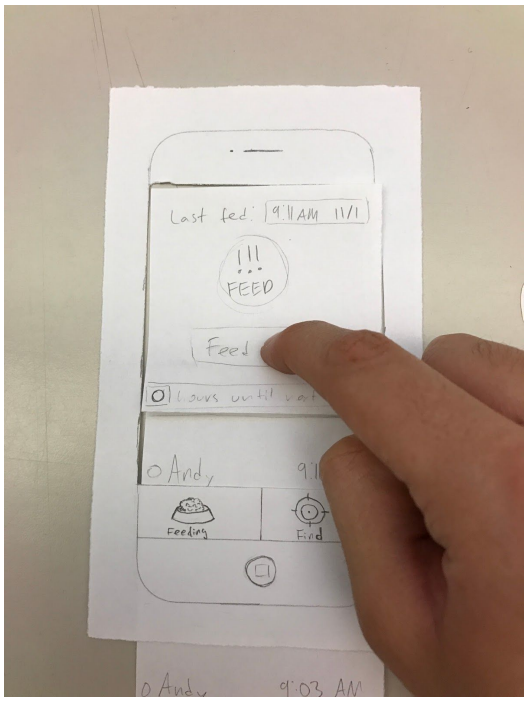


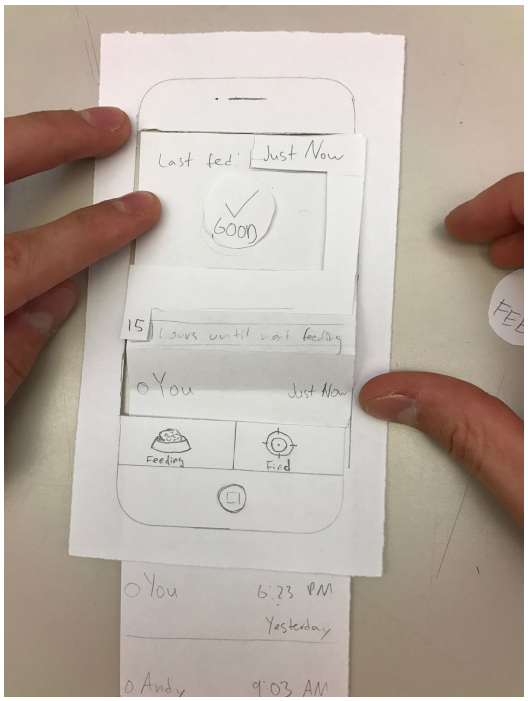


The above screen of the tag and the smartphone shows the pet hasn't been fed. Then, they click the green button on the tag to record the feeding activity. (Figure 2.3, 2.4)

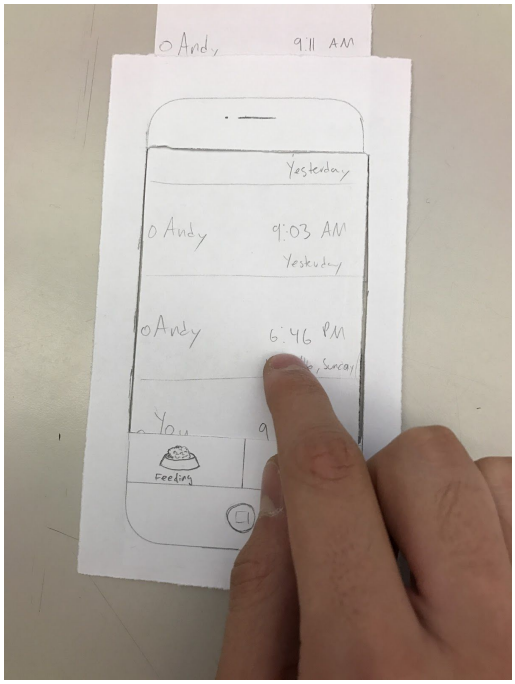


User can also record feeding activity in their phone app. (Figure 2.5, 2.6)





Users can view the feeding history on their smartphones. (Figure 2.7)



Testing Processes

The first goal of the tests is finding more flaws exposed by different areas of users in our design and improving our design. For each participant, we walked him/her through the gist of our design and explained to them the tasks we have designed. We made a clear list of instructions for our participants in case they got confused while performing the tests. We made sure to let our participants tell us what they were thinking when attempting the tasks.

They were told to operate the two tasks we design: 1) finding their pet when it has gone missing and 2) synchronizing feeding activity between family members. Andy and Chaofeng were the facilitator, Xuanyang was the prototype "computer" and Jeff was the observer.

Heuristic Evaluations

We did two Heuristic Evaluations with other two groups in class. We instructed our classmates from the other team to operate the two primary tasks and assisted them if there was anything confusing or erroneous.

First Usability Test

The participant for our first usability test was Chris. Chris is a senior Computer Science student who has owned a dog for 5 years. Chris is our target user whose family share dog feeding tasks and need synchronization on feeding time. The test was conducted in a study room on the second floor at WEB. Chris was very curious about our design so he participated in our test actively.

Second Usability Test

Our second usability test participant was Chuck. Chuck is a retired mechanical engineering who has owned a cat for 3 three years. Chuck and his wife take care of their cat together. The test with Chuck was operated at Chuck's house.

Third Usability Test

Our last usability test participant was David. David is a graduate student from business school. He live with his wife and his 4-year-old son in a small house. He own a 2-year Golden Retriever, and the usability was conducted in a study room of library. He shown great interest of our design, and provided some useful suggestions.

Summary and Retrospective

We did a good job of having participants speak their thoughts out loud and learned a lot from their thought processes. After the first usability test, we moved slower through the

process to give observers sufficient time to take notes. Through each usability test, we had the most difficulty with our second task and the format of the notification settings page. Other changes were mainly on system feedback, simplicity, and ease of use. Overall, our usability test processes went better as we gained more experience.

Testing Results

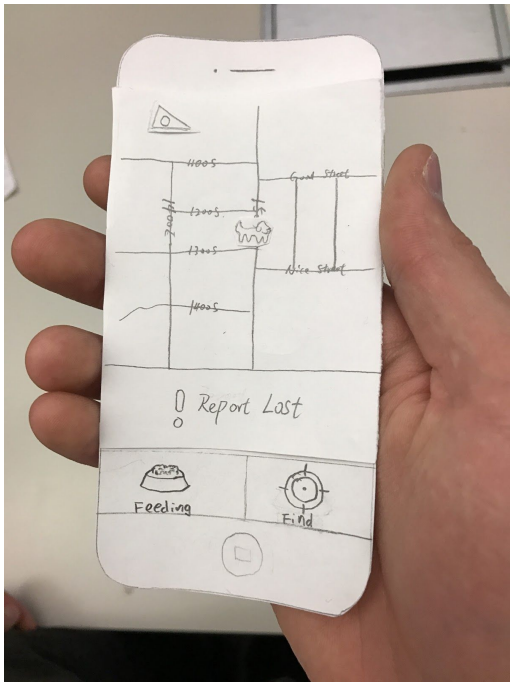
Heuristic Evaluations and Refinement

Our group did two heuristic evaluations. Below is a list of the issues we have identified and the revised version related to the issues.

1. **No navigation routes for pet owners to find pet**

We received feedback that when pet owners are looking for the pet, the map doesn't provide navigation functionalities to users. This would cause inconvenience to users who don't know what routes they should take to reach their pet.

Relevant Image:

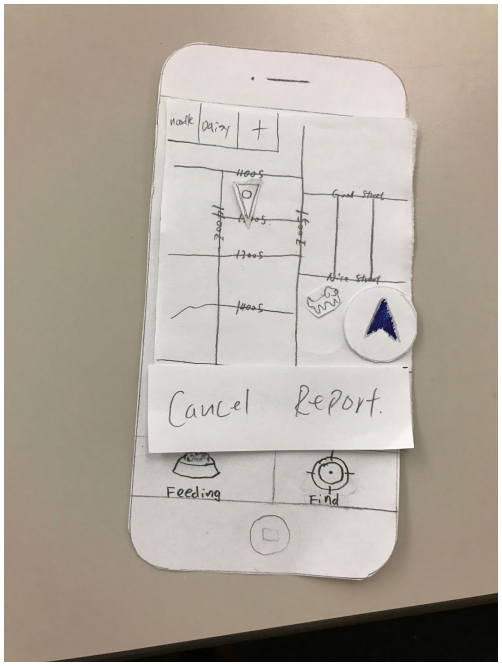


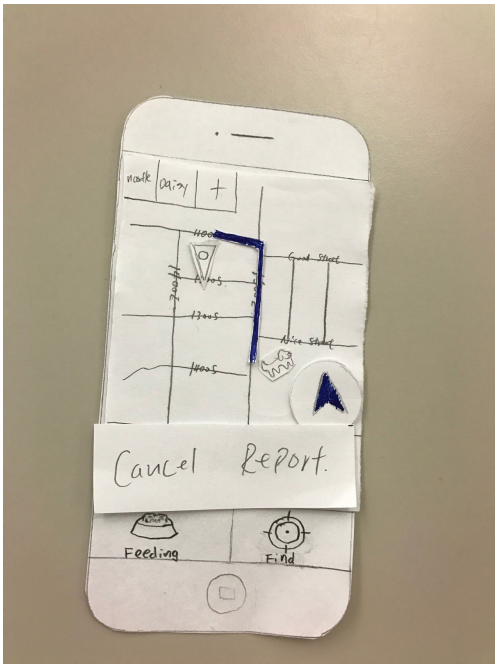
Heuristic Violated: Flexibility and efficiency of use

Severity Rating: 3/5

Revision

We now have a navigation button on the map screen, once the Report Lost button is pressed. When user press the navigation button, user will be provided with a direction to the dog.

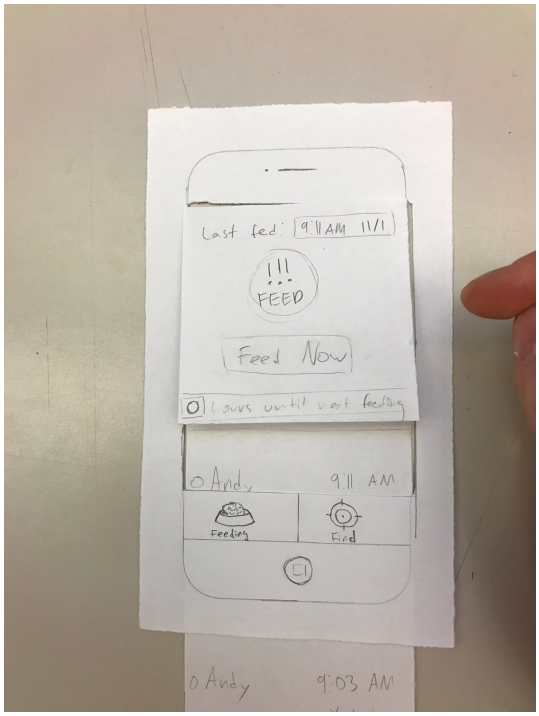




2. **No pet profile entry interface**

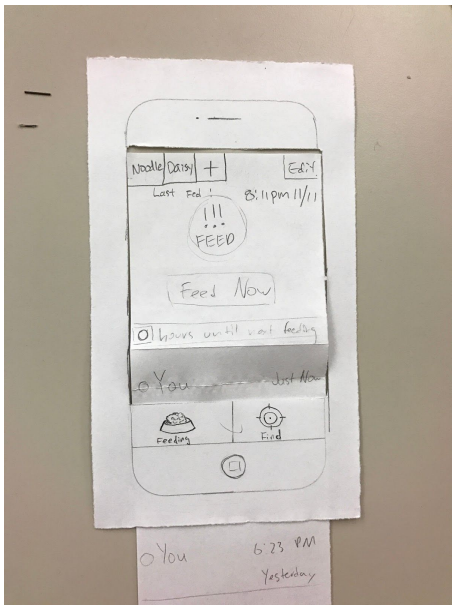
One of the feedback pointed out that our app didn't have pet profile entry interface for users to put pet information in the system. This is a very good point we have missed. Without the interface, users cannot set up pet profile or manage multiple pets.

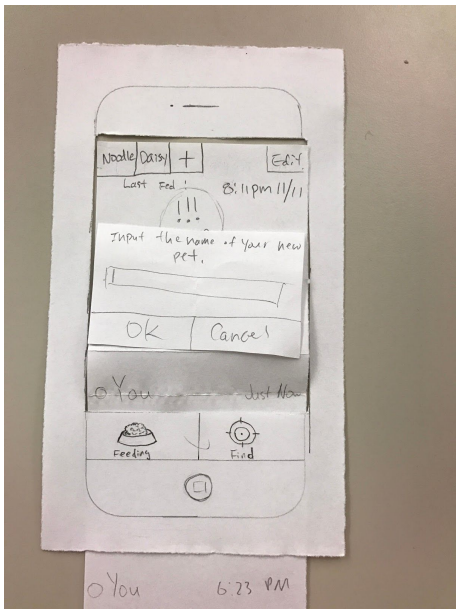
Relevant Image:



Heuristic Violated: Visibility of system status

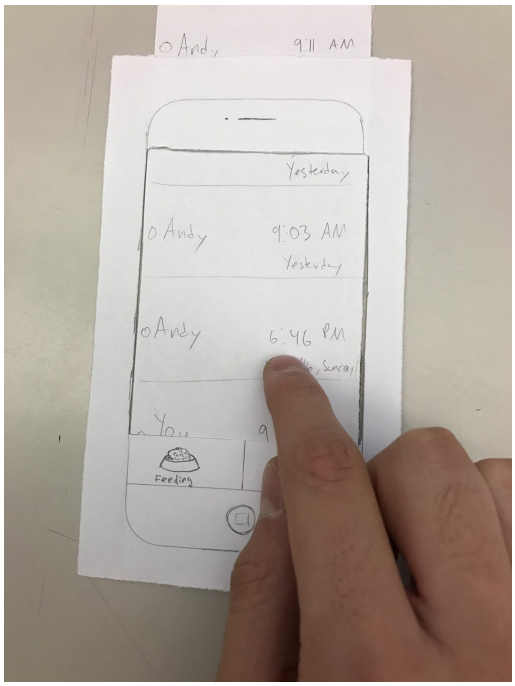
Severity Rating: 5/5
Revision
We added a tab view on the top of the Feeding screen, so that user can select different pets. Next to the tabs is an add new pet button with an interface allowing users to create new pets.





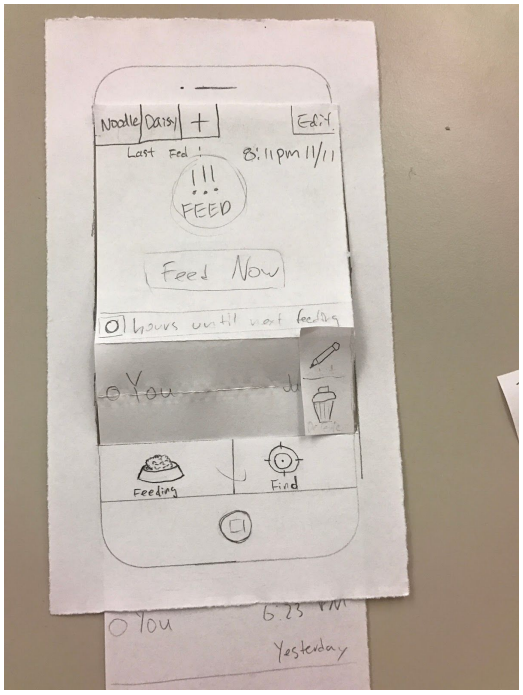
3. **Cannot delete feeding history entered by mistake**

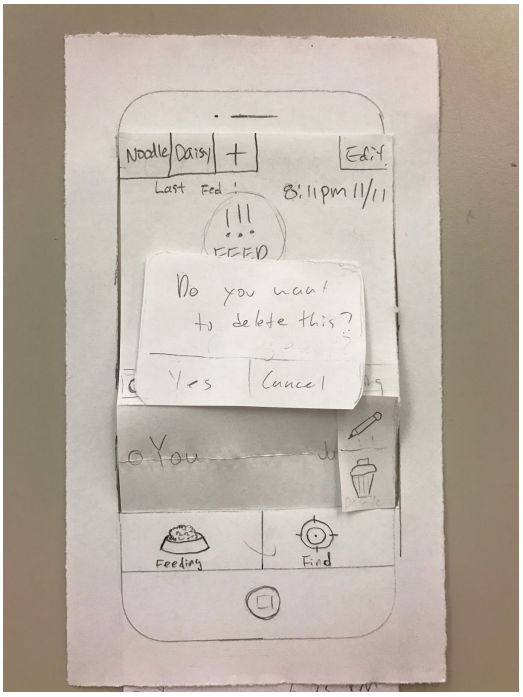
Another one of the feedback we've received was that we cannot delete or modify the feeding history, so if for any reason the entry was entered in accidentally or inaccurately, users couldn't do anything about it.
Relevant Image:

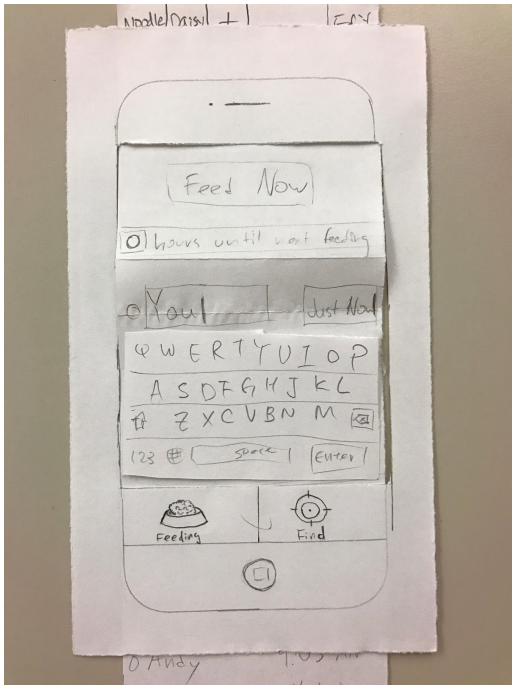


Heuristic Violated: Help users recognize, diagnose, and recover from errors
Severity Rating: 4/5

Revision
We've added an edit button on the top right side of the Feeding screen. When the edit button is pressed, it enables edit and delete button on each one of the feeding entry. Editing allows user to add notes to a specific feeding in case the user wants to comment on the feeding in some way, e.g. "Gave pet medicine for ear infection".







4. **Cannot select pet and show its location on the map**

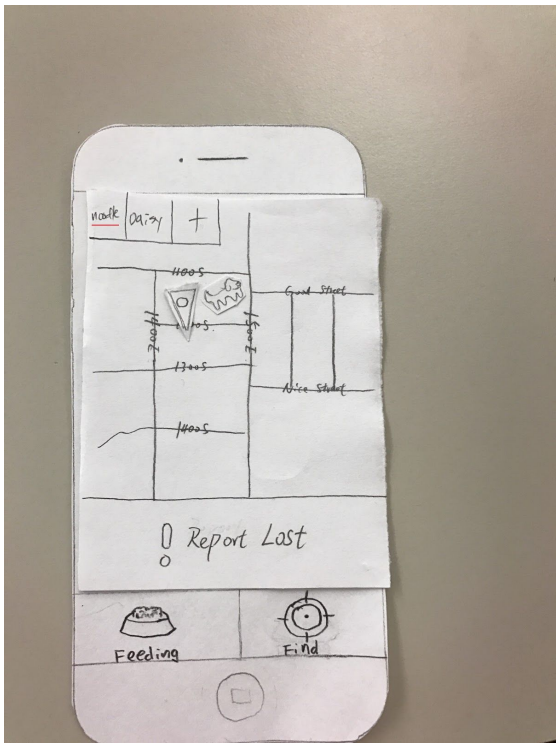
This is a problem for a multiple pet owners because in previous design, we did not allow the user to have multiple pets. This is a problem because when one of the pet is lost there's no way of knowing which one of the pet is lost on the map.

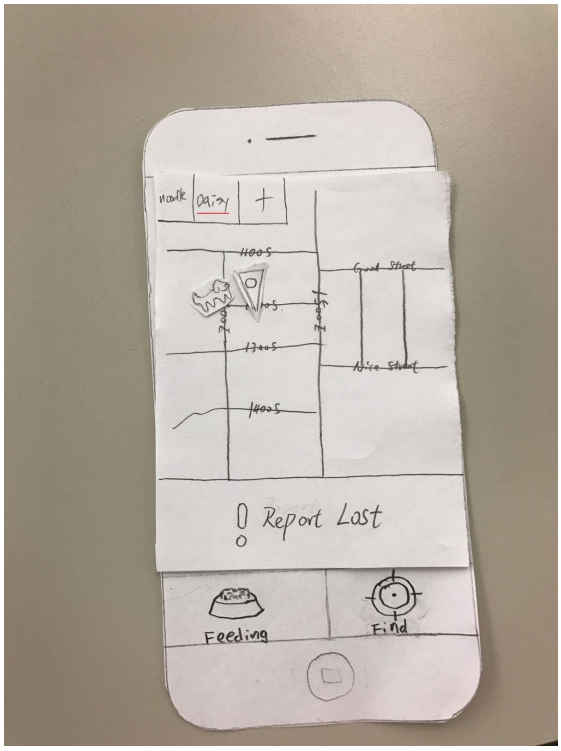
Heuristic Violated: User control and freedom

Severity Rating: 4/5

Revision

We added a tab view on the top of the Find screen, so that user can select different pets.





Critical Incidents and Refinement

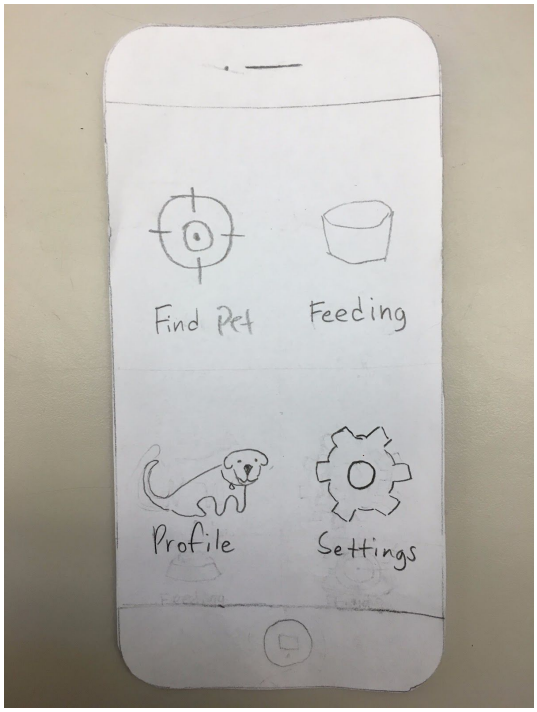
1. Better home screen

   Participants had problems accessing each portion of the app. They wanted to be able to find all four portions of the app quickly and easily. Creating a home screen will save space on the screen for each separate task's portion of the app. The home screen conveys to users exactly what the app can do by defining each portion of the app clearly with an icon to visually aid them in understanding.

   Severity Rating: 4/5

   Revision:

   We created a home screen that contains 4 icons including Find Pet, Feeding, Profile and Settings. Users can press the icons to get into different functionalities.

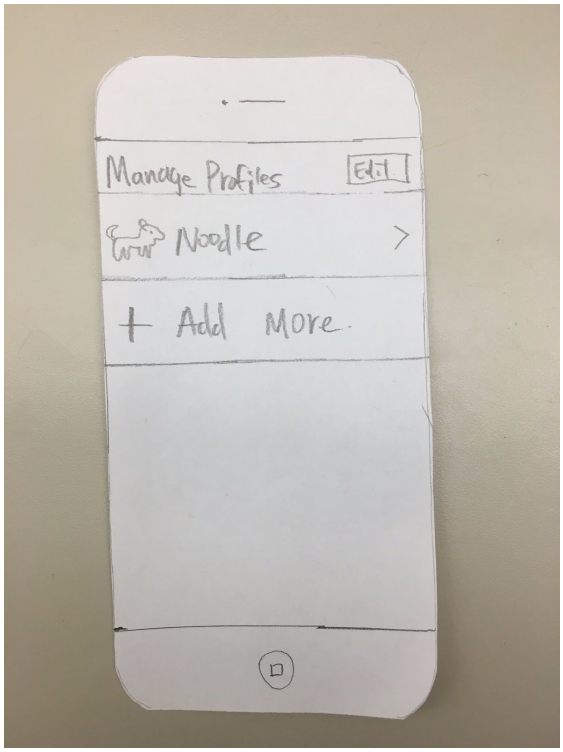


2. Separate profile screen

    One of our participants complained that our app didn't support multipet management, that is, users cannot set up different profiles for different pets. The participant wanted a few screens where they can create pet profiles and edit the profiles.

    Severity Rating: 4/5
    Revision:

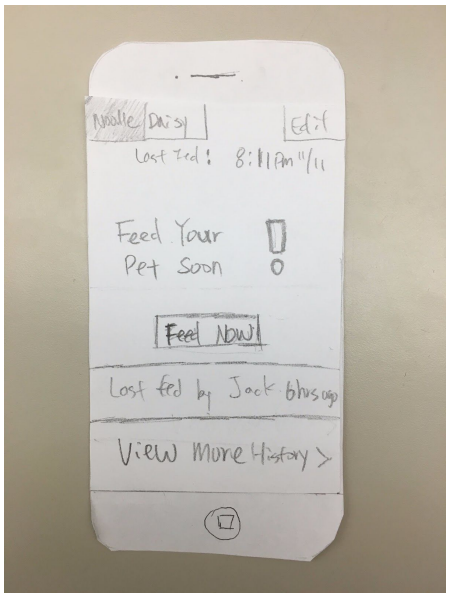
    We created a home screen that allow user to access the pet profile page. User can modify their pet profiles here. They can add new pets and define their age, type, and name as well as edit existing profiles.

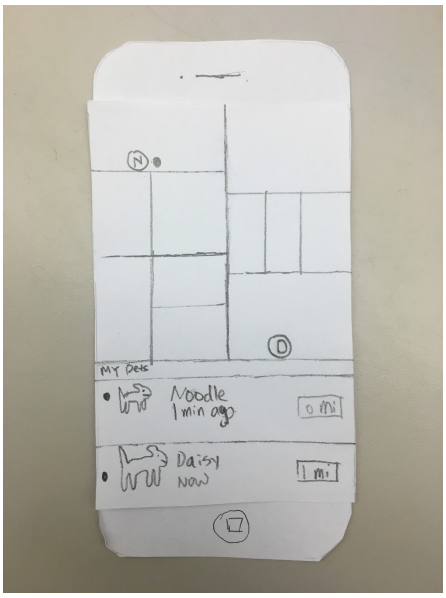


3. Multipet support

This issue is related to Issue 2 above. Since we don't have a way to manage multiple pets, we cannot provide app screens for users to select which pet they want to look for or record feeding activity for.

Severity Rating: 4/5
Revision:
We add screens for users to pick which pet they want to operate tasks on.



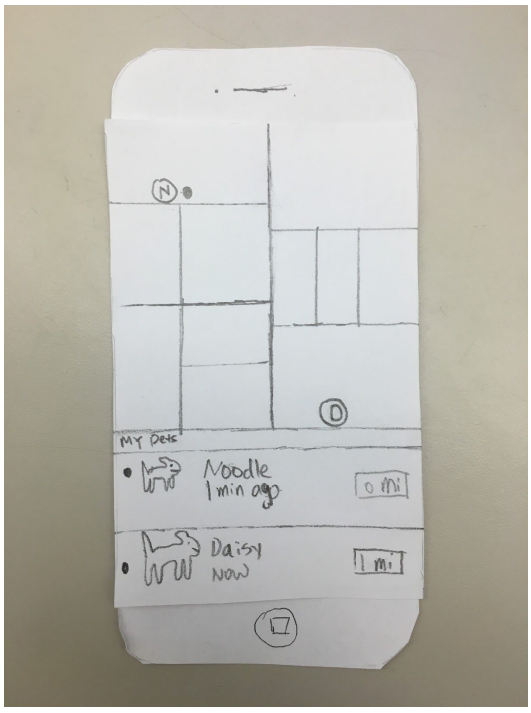


4. Easier to understand map screen

    Existing map screen functionality wasn't intuitive and user friendly. It often confused our test participants. Also, the old screen only supported one pet.

    Severity Rating: 3/5
    Revision:

    We now display all the pets in a one map screen. Also, the functionality buttons have been redesigned and are much easier to interact with. At the bottom of the screen you can select each individual pet for even more info and options preserving the old functionality but in a more usable way.

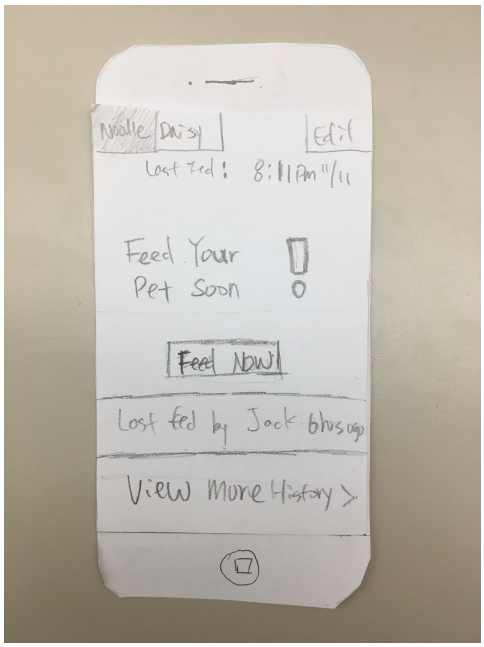


5. Better feeding screen

    Almost all of our participants tried to tap the fed/not fed indicator indicating to us that it seemed like a toggleable button. Users noted that history seems irrelevant except in some special cases so we will keep it but move the focus of the page to the current status of the pet and move the history to its own tab.

    Severity Rating: 3/5
    Revision:

Now the UI is much more user friendly. It should be more clear when the pet is fed or not fed, and users can easily see the Feed Now button is the correct way to tell the app you have fed your pet.

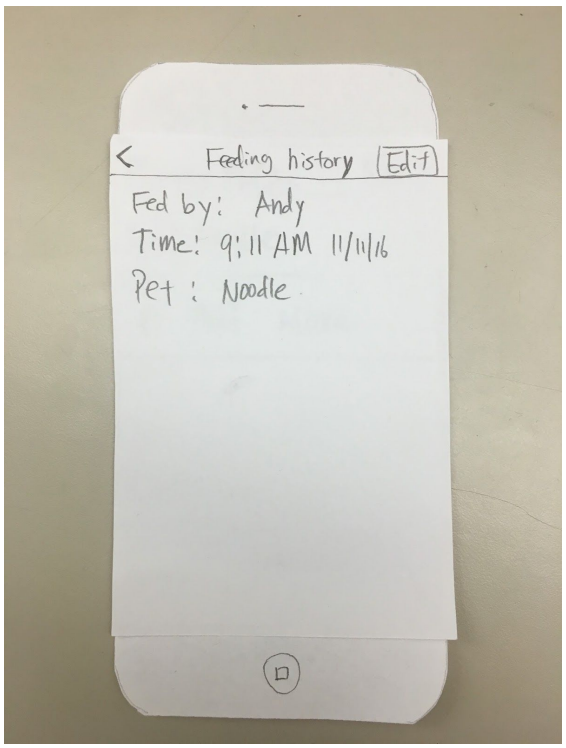


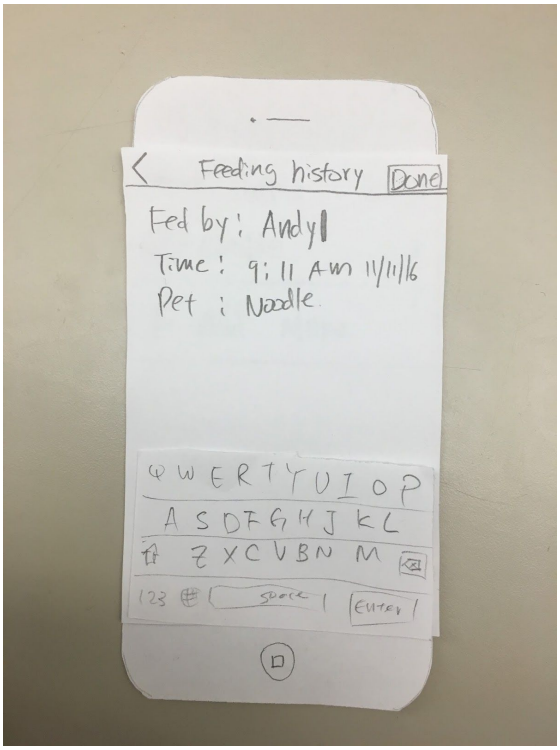
6. Ability to modify the feeding history

Previously, there was no way for users to edit or delete the existing feeding history. If user accidentally presses the feed button, user cannot delete that feeding history that was entered in accidentally.

Severity Rating: 5/5
Revision:

We placed the existing feeding history scrollview to the separate view that's accessible from the main feeding screen. Users now can edit or delete the feeding history by pressing the edit button on the top right side of the screen.



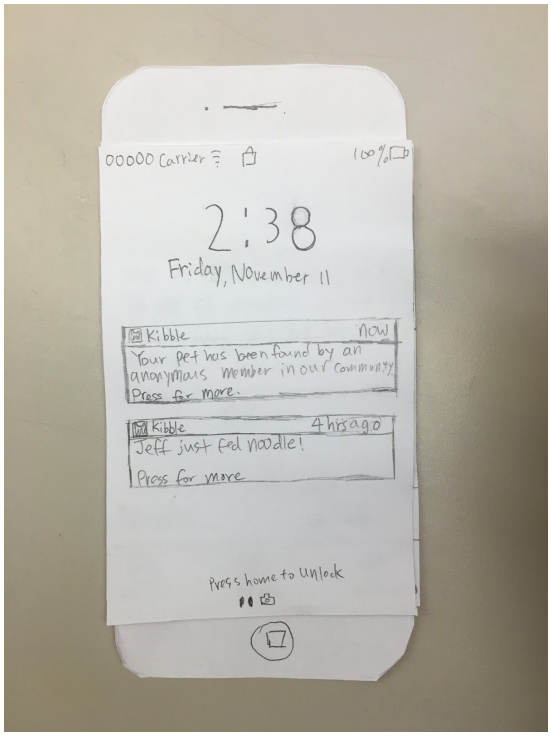


7. Notification (feeding, finding pet)

    Two participants suggested that our app could support notifications for lost pets and feeding activities. We agreed that adding notifications to our app can keep the users well informed when something (lost pet is found or pet gets fed) happens so they do not have to open the app as often.

    Severity Rating: 3/5
    Revision:

    We added notifications for our apps which will pop up on the lock screen when either a pet is lost or a pet has been feed.

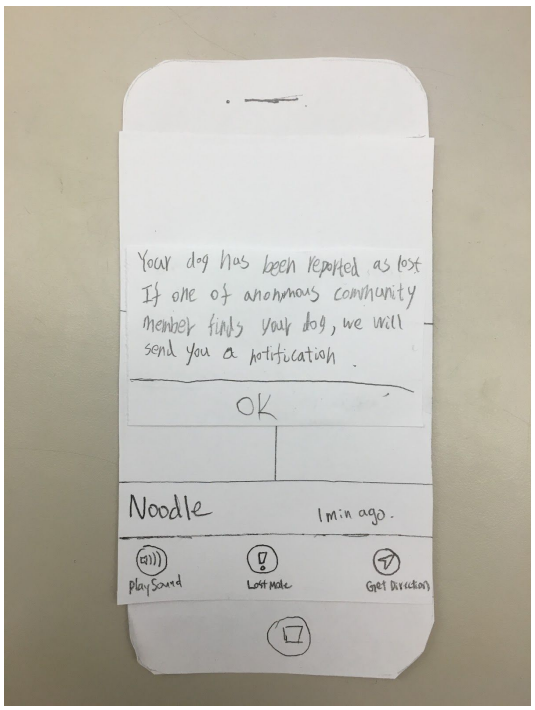


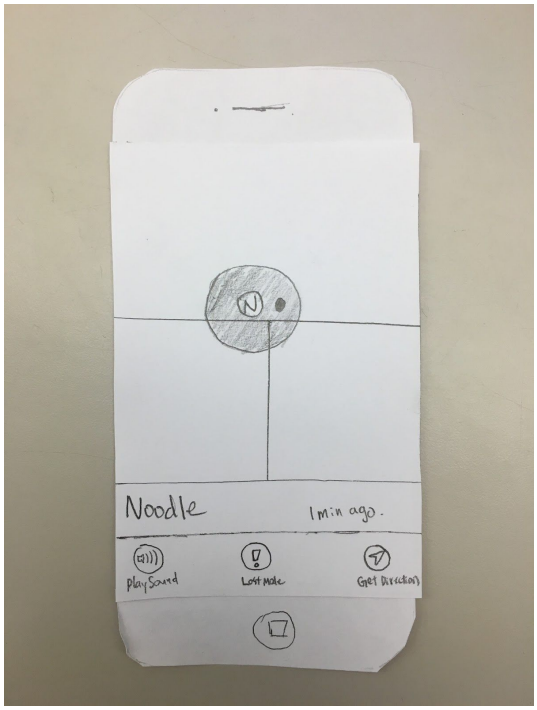
8. Better information available to user when pet reported lost.

    Previously, after user reports the pet as lost, there was no additional information displayed on the screen about what will happen next.

    Severity Rating: 3/5
    Revision:

    After reporting the pet as lost, we now display a popup screen saying, “Your pet has been reported as lost. If one of anonymous community member finds your pet, we will send you a notification.”





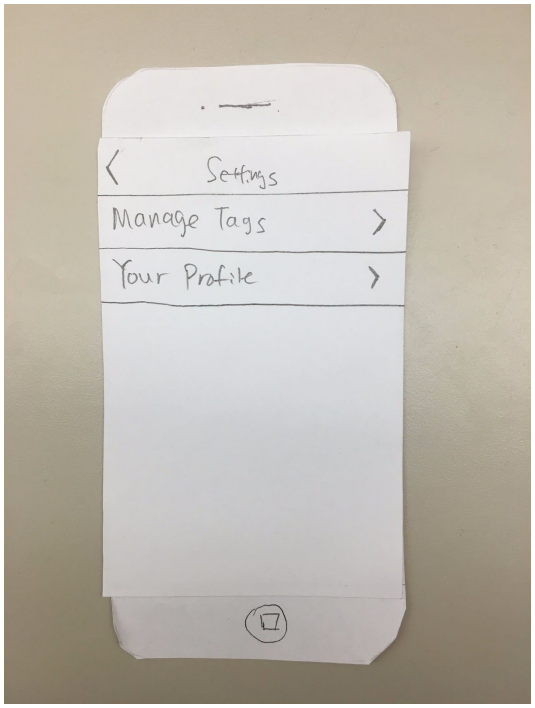
9. Settings screen

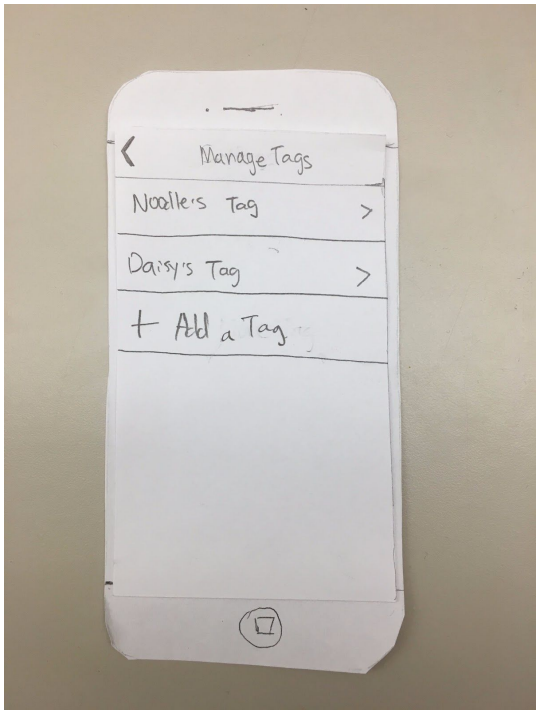
Most phone apps have a settings tab for the tasks users may need but not use that often. Because users rarely add new tags we have put the setup and sync settings for the tags here to avoid cluttering the rest of the app.

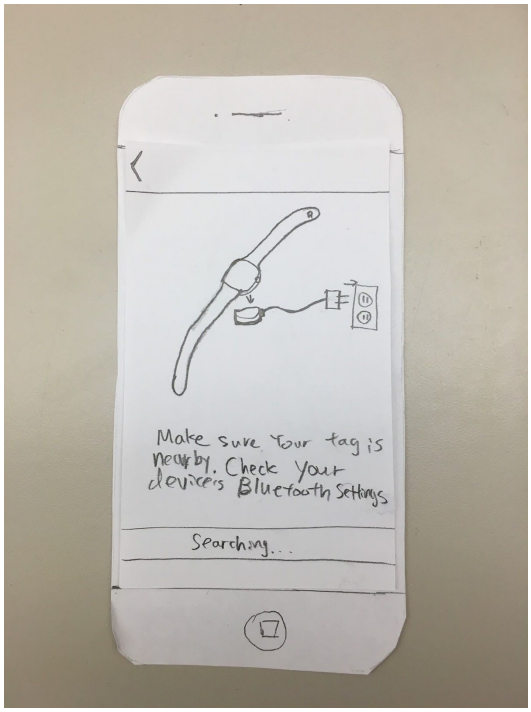
Severity Rating: 3/5

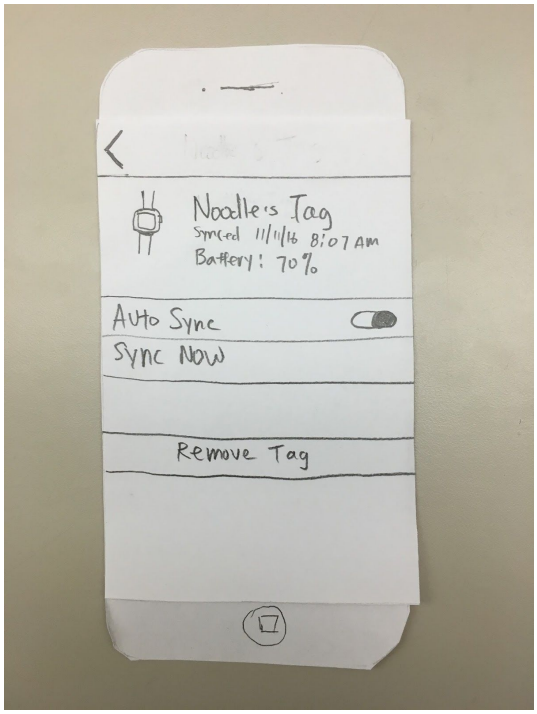
Revision:

User can access setting page from home page. In the setting page user can edit the tag and owner profile. In the “Manage Tags” page, there is current tag info and instruction for adding new tag.


Settings
Manage Tags
Your Profile


Manage Tags
Noodle's Tag
Daisy's Tag
+ Add a Tag


Make sure your tag is nearby. Check your device's Bluetooth Settings
Searching...


Noodle's Tag
Synced 11/1/16 8:07 AM
Battery: 70%
Auto Sync
Sync Now
Remove Tag

Main Revisions

1. Home Screen

Effectively communicates the capabilities of the app. It allows users to accomplish each task faster and more intuitively. Before the UI cluttered the screen and made for a confusing user experience. This revision is important because with the home screen which incorporates the four icons, users won't feel they are using two different apps.

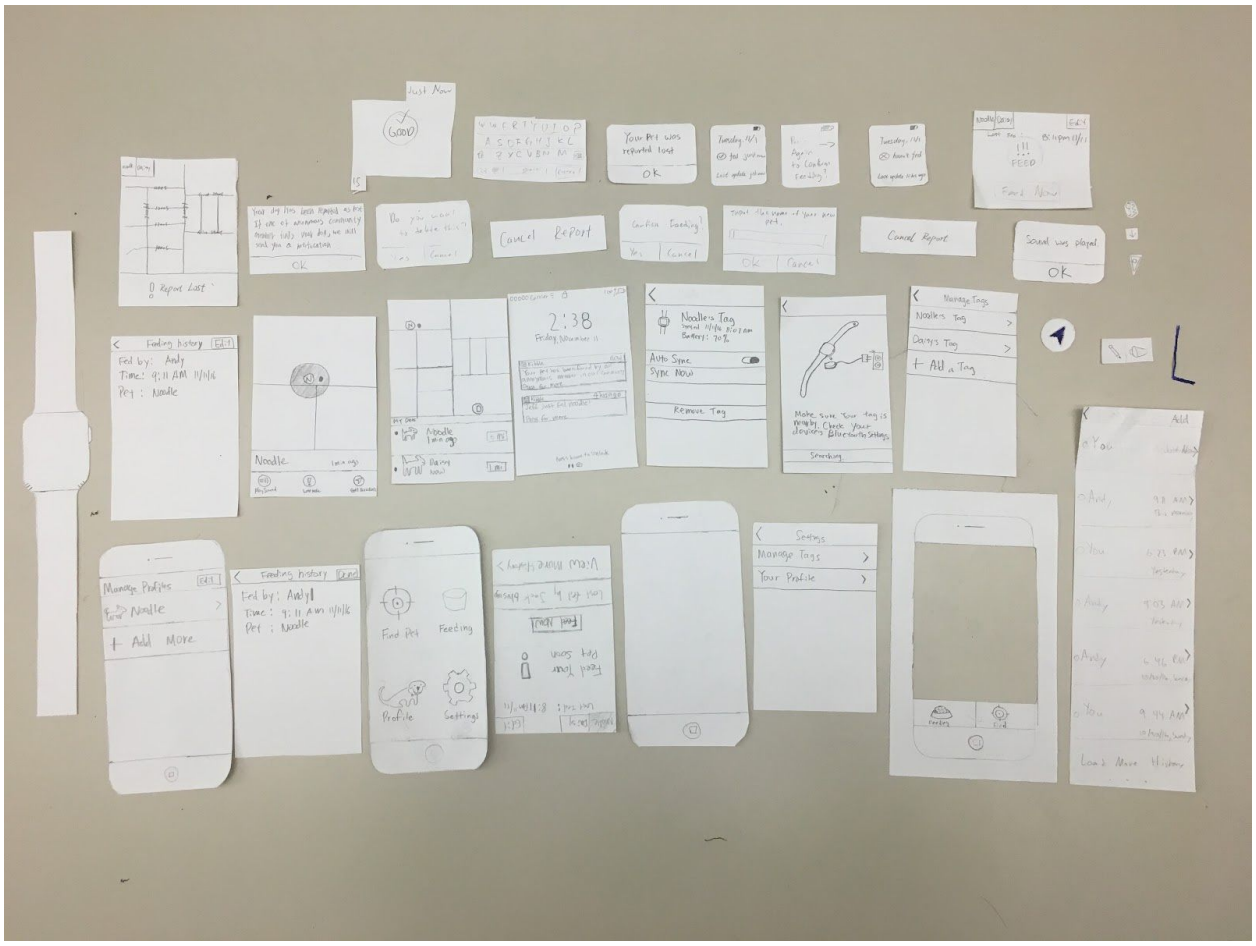
2. Pet Profile Screen

Resolves issues previous designs had with handling a single pet. Instead of cluttering the UI in other places to add functionality for handling multiple pets we handle it all in one convenient place. Users can add new pets and edit existing ones. This is important because we need to provide users with multiple pets the ability to use the feeding and finding functionalities effectively for each pet.

3. Settings Screen

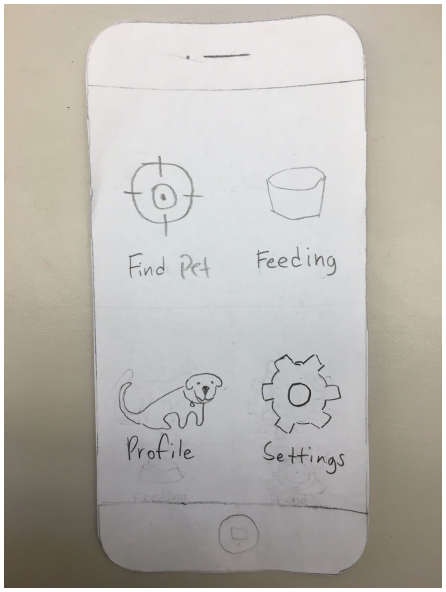
User can access setting page from home page. In the setting page user can edit the tag and owner profile. In the "Manage Tags" page, there is current tag info and instruction for adding new tag. This is important because there is no way for the user to manage the existing pet tags and their own profiles without settings screen.

Final Paper Prototype

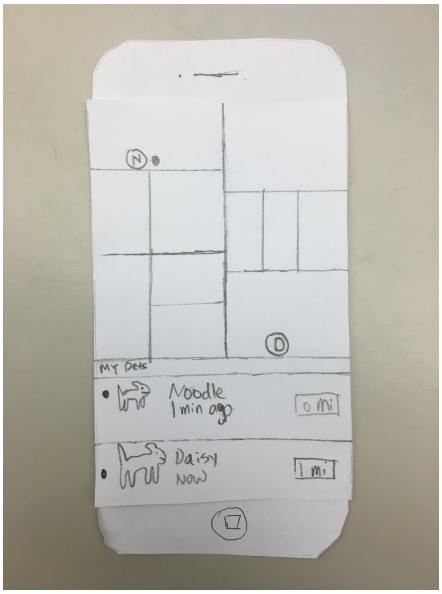


Overview Image

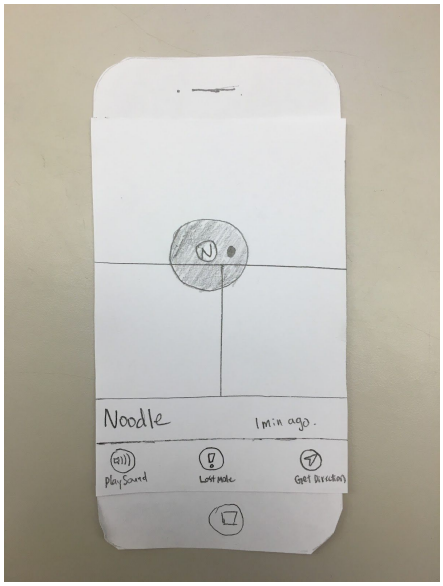
Task 1: Finding Pet



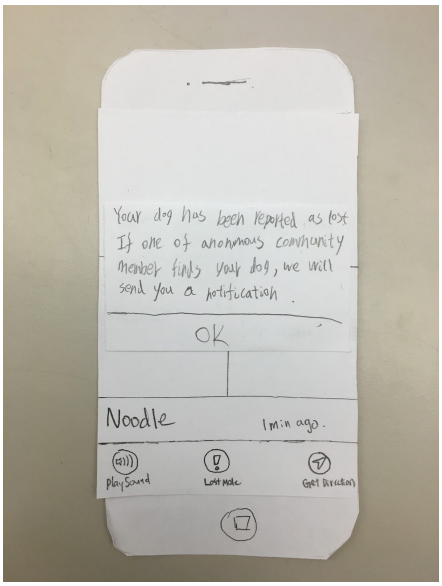
Screen 1.1



Screen 1.2



Screen 1.3



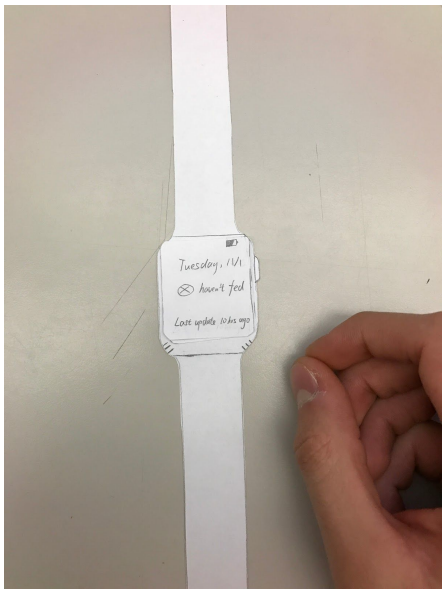
Screen 1.4

Screen 1.1: On the home screen of the app, users press Find Pet icon to be taken to the next screen (Screen 1.2).

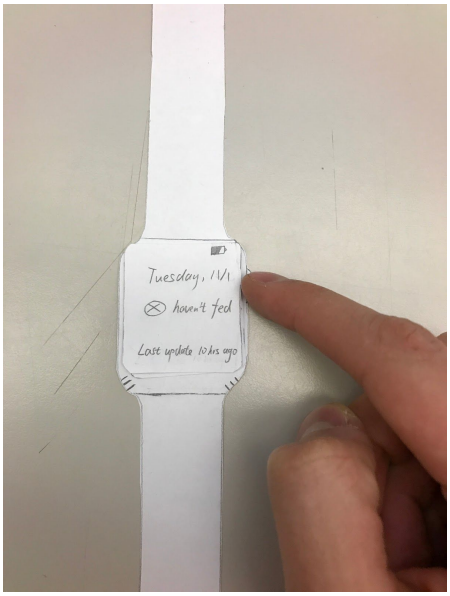
Screen 1.2: On this screen, the bottom area is scrollable and users can click the pet row to show the location of their pet.

Screen 1.3: Assume the user clicks Noodle's row, they will be taken to this screen. The user can click Lost Mode to notify the family and the app community that Noodle is lost.
Screen 1.4: App will display a confirmation pop up message saying that the pet has been successfully reported as lost.

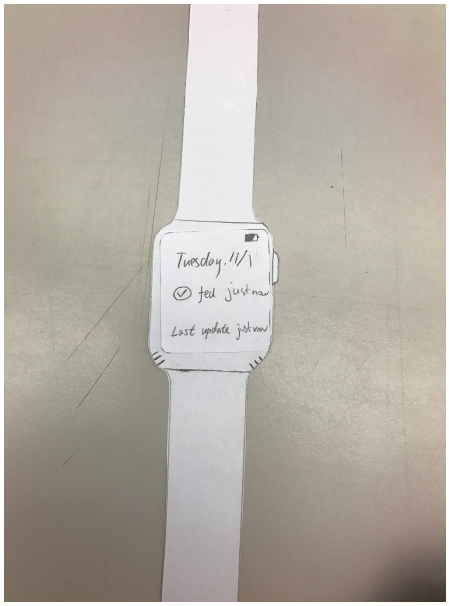
Task 2: Synchronizing feeding activity



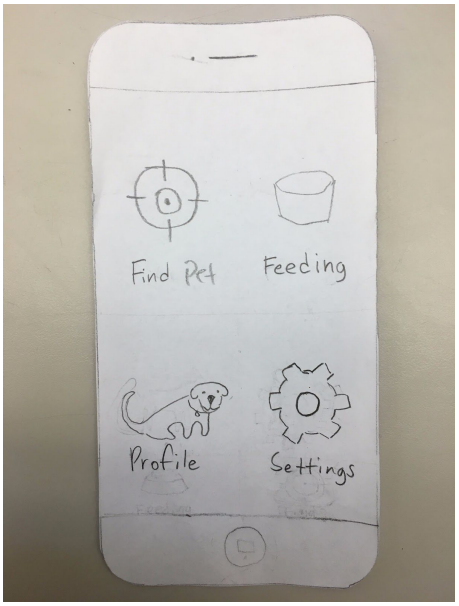
Screen 2.1



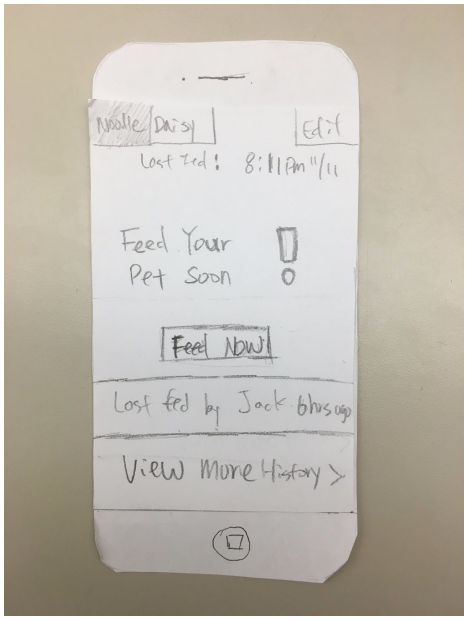
Screen 2.2



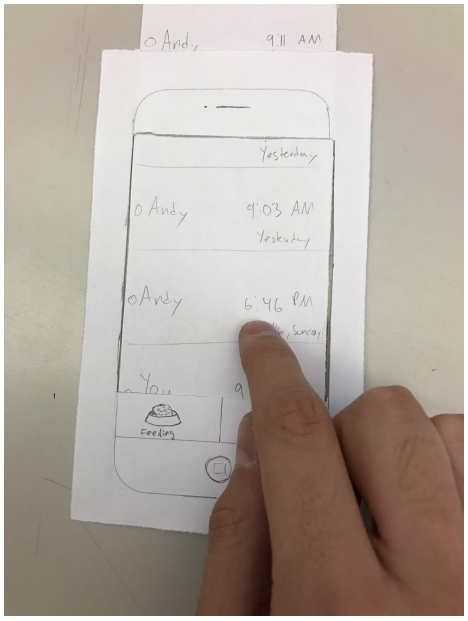
Screen 2.3



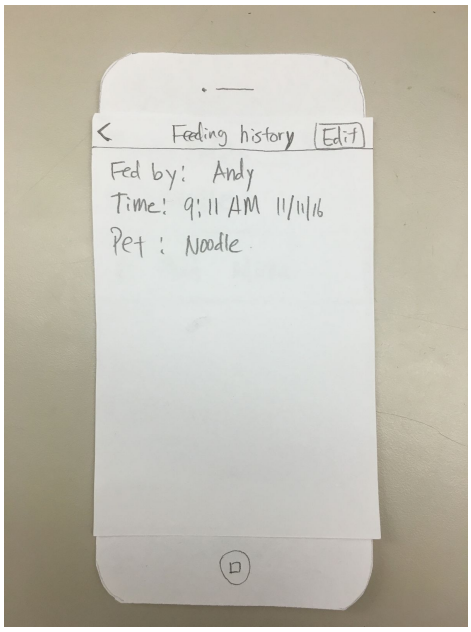
Screen 2.4



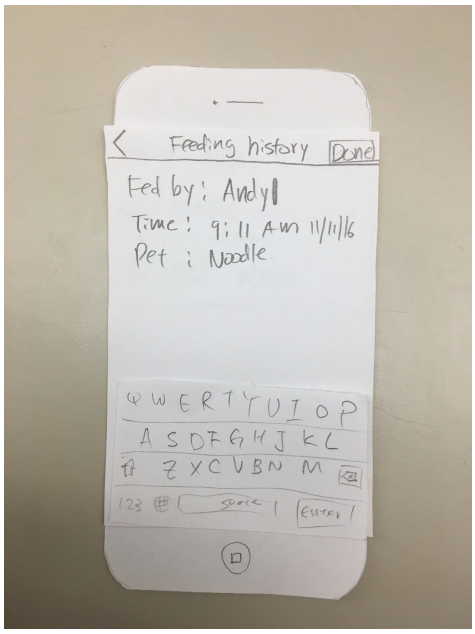
Screen 2.5



Screen 2.6



Screen 2.7



Screen 2.8

Screen 2.1: User can see that their pet has not been fed by looking at the tag.

Screen 2.2: User can press the button when they fed the pet

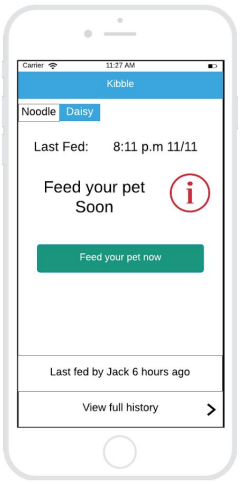
Screen 2.3: Now the tag shows that the pet has been fed and when viewed by other users will notify them not to feed the pet.

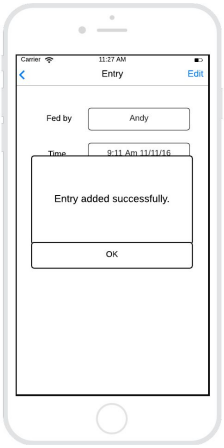
Screen 2.4: From the home screen, users can press the Feeding button to open the feeding synchronization portion of the app.

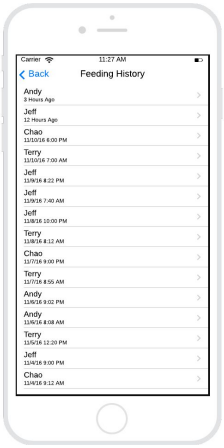
Screen 2.5: The new feeding screen shows the current status of the pet, whether the pet should be fed or not. It also displays when the pet was fed last and by who.

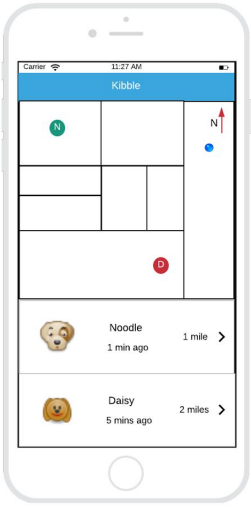
Screen 2.6: When user taps on View More History button from 2.5, it will display more feeding history in a scrollview.

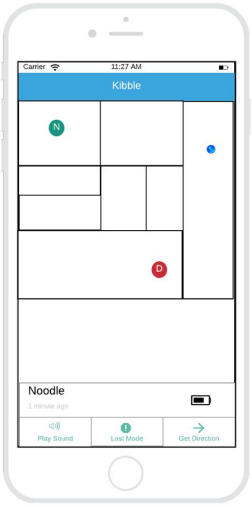
Digital Mockup

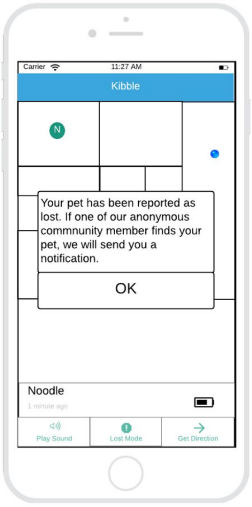


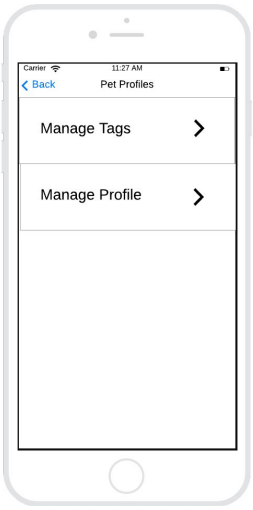


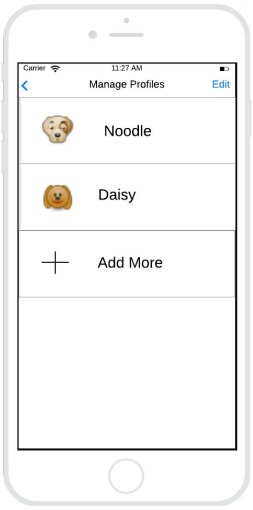


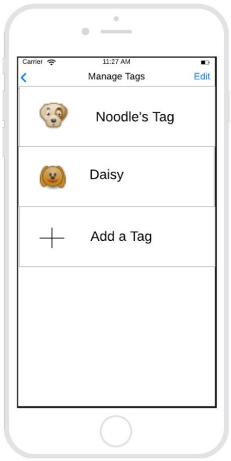


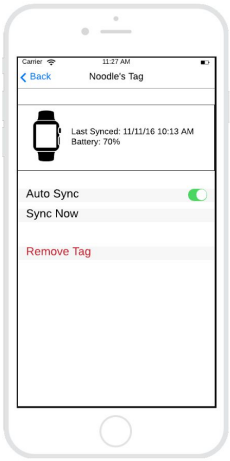




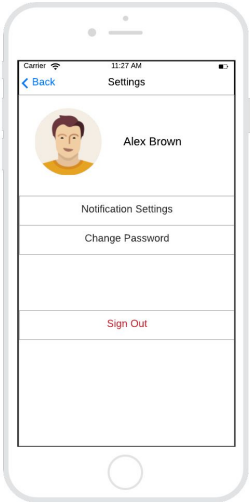

Carrier
11:27 AM
Back
Pet Profiles
Manage Tags
Manage Profile

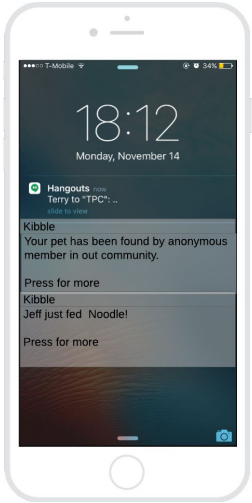

Carrier
11:27 AM
Manage Profiles
Edit
Noodle
Daisy
Add More

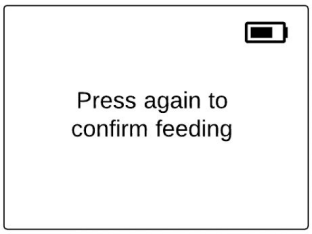

Carrier
11:27 AM
Manage Tags
Edit
Noodle's Tag
Daisy
Add a Tag


Carrier
11:27 AM
Back
Noodle's Tag
Last Synced: 11/11/16 10:13 AM
Battery: 70%
Auto Sync
Sync Now
Remove Tag

Carrier
11:27 AM
Back
Pairing
1. Make sure your tag is turned on and nearby.
2. Turn your device's Bluetooth on.
Searching...

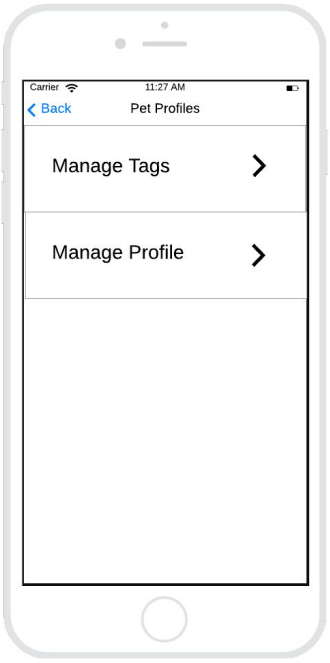

Carrier
11:27 AM
Back
Settings
Alex Brown
Notification Settings
Change Password
Sign Out


18:12
Monday, November 14
Hangouts
Kibble
Your pet has been found by anonymous member in out community.
Press for more
Kibble
Jeff just fed Noodle!
Press for more

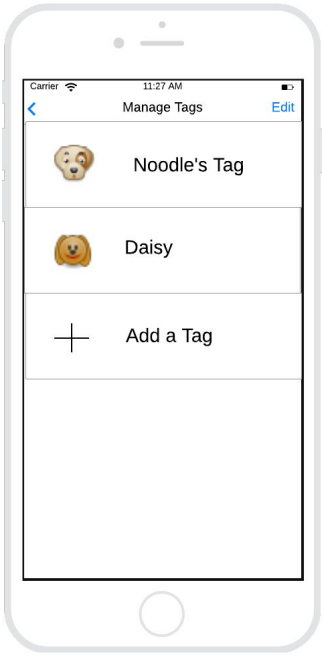


Task 0: Basic Settings

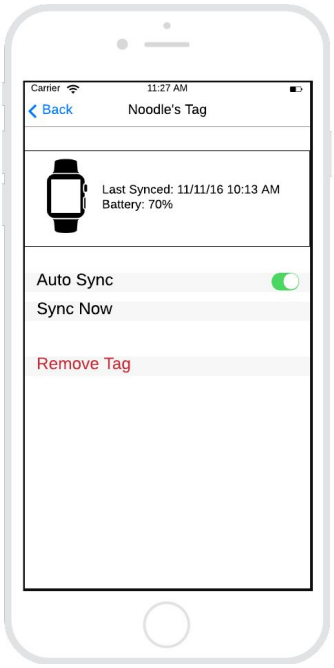
Screen 0.1



Screen 0.2

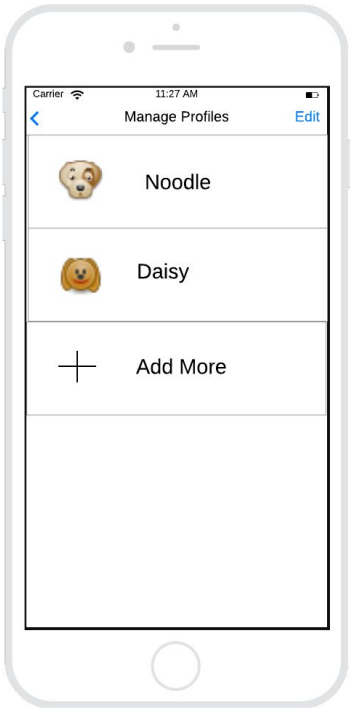


Screen 0.3

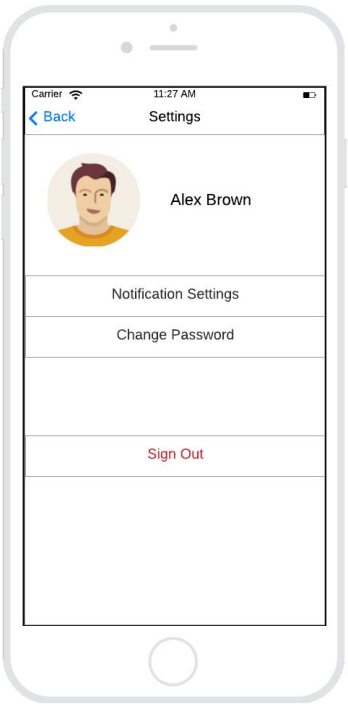


Screen 0.4

Screen 0.5



Screen 0.6



Screen 0.7

Screen 0.1: On the home screen of the app, users press Pet Profile icon to be taken to the next screen (Screen 0.2).

Screen 0.2: On this screen, Kibble allows user to manage pet's profile and tags. When user chooses Manage Tags, it will bring user to next stage (Screen 0.3)

Screen 0.3: Allow users to view current tag status and add new tags.

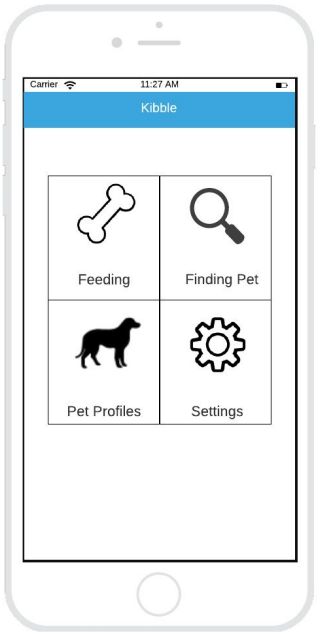
Screen 0.4: When users press on an existing tag (from Screen 0.3), it will bring them to this screen, user can choose to sync tag now or remove the tag.

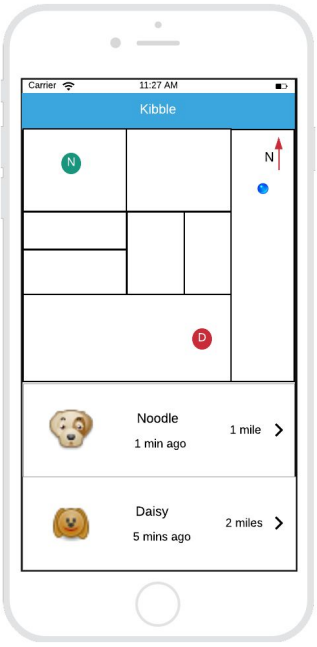
Screen 0.5: If users press Add a Tag from Screen 0.3, it will bring them to this screen; in this screen, it shows the instruction for users to pair new tag.

Screen 0.6: When user press Manage Profile (from Screen 0.2), this screen will appear, which allows user to add/edit pet profiles.

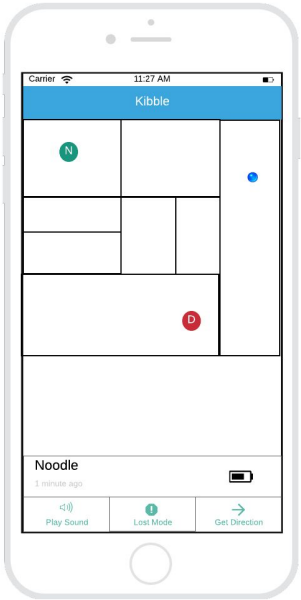
Screen 0.7: When users press Settings icon from home screen (Screen 0.1), it will take users to this page. Users can edit their notification preference, change the password, or sign out their accounts.

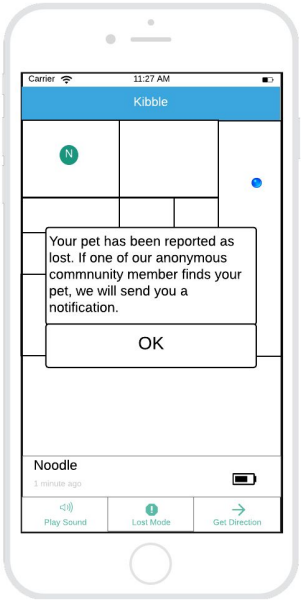
Task 1: Finding Pet





Screen 1.1 Screen 1.2 (Revised)





Screen 1.3 (Revised) Screen 1.4 (Revised)

Screen 1.1: On the home screen of the app, users press Find Pet icon to be taken to the next screen (Screen 1.2).

Screen 1.2: On this screen, the bottom area is scrollable and users can click the pet row to show the location of their pet.

Screen 1.3: Assume the user clicks Noodle's row, they will be taken to this screen. The user can click Lost Mode to notify the family and the app community that Noodle is lost.

Screen 1.4: App will display a confirmation pop up message saying that the pet has been successfully reported as lost.

Revisions

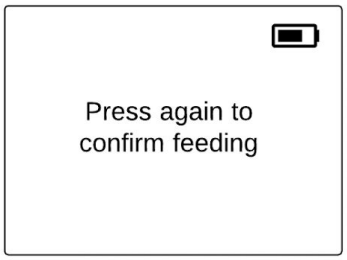
For 1.2, we've added a blue dot on the map screen, that displays the current location of the user. Additionally, we've added an arrow on the pet list so it clearly looks like a interactable button.
For 1.3, the bottom row was completely redesigned, as the previous layout could be confusing to some users and may not look like a button, instead just a plain text. We've added icon for each actions and a different color scheme than the label that's directly above the bottom three buttons. Lastly, a battery indicator for the pet tag has been added as well.

With our pet finding functionality, user can easily locate all their pets at once from one screen. For each pet, user have three options: play sound, lost mode, and get direction. Play sound simply generates a loud sound from the pet's tag so that user can locate the pet. Lost mode will report the pet as lost to our database, and if one of the anonymous community member of our app detects the reported pet tag near by (using Bluetooth), then it will automatically grab the current location of the dog and upload the location data to our server and alert the user that the pet has been found. Lastly, get direction will provide a direction to the pet's current location using other third party app (such as Google Map).

Task 2: Synchronizing feeding activity

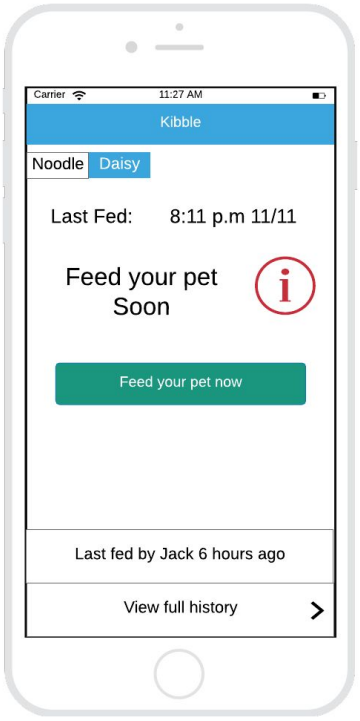
Screen 2.1

Screen 2.2

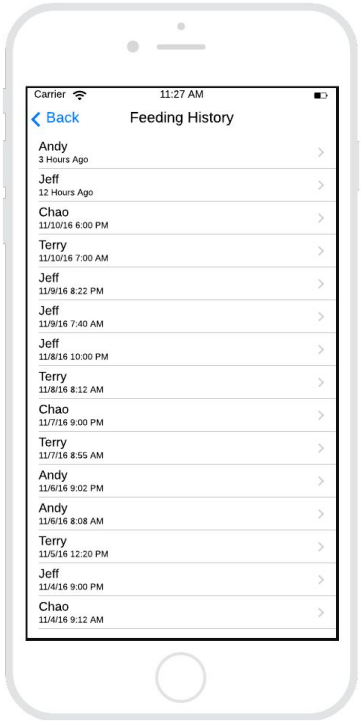


Screen 2.3

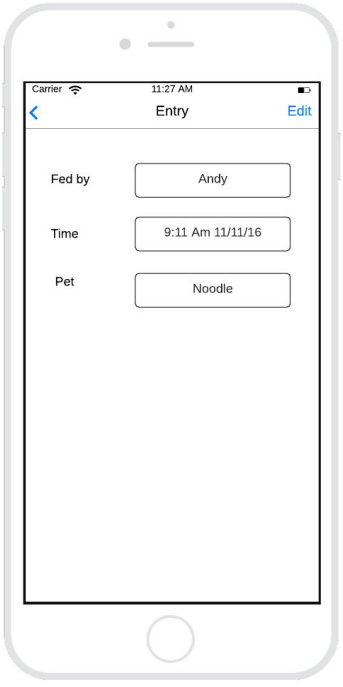
Screen 2.4



Screen 2.5



Screen 2.6



Screen 2.7

Screen 2.8

Screen 2.1: User can see that their pet has not been fed by looking at the tag.

Screen 2.2: User can press the button when they fed the pet

Screen 2.3: The tag requires users to press again to confirm feeding

Screen 2.4: From the home screen, users can press the Feeding button to open the feeding synchronization portion of the app.

Screen 2.5: The new feeding screen shows the current status of the pet, whether the pet should be fed or not. It also displays when the pet was fed last and by who.

Screen 2.6: When user taps on View More History button from 2.5, it will display more feeding history in a scrollview.

Screen 2.7: The user can choose one of feeding history and view the detail.
Screen 2.8: When user can clicks edit button from 2.7 and it will lead user to screen 2.8, and user can edit information there.

No revisions have been made for this task.

Decisions & Changes

We have created a separate screen for user's profile where users can change their password and manage their notification preference. (Image 1)

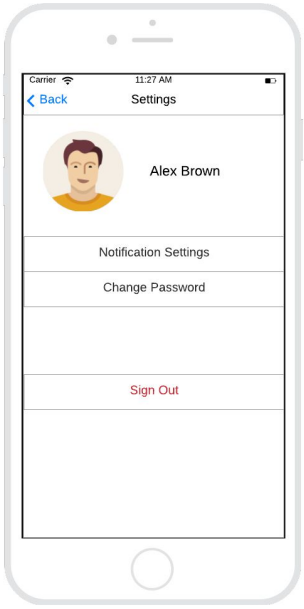


Image 1 Image 2

Also, we have added a screen which provides instructions to users for them to connect the smart tag and smartphones. (Image 2)

Discussion

While iterating over our design, we learned that interactive UI elements need to clearly convey exactly what they accomplish so that users can effectively use the app. Any ambiguously labeled buttons or confusing lack of explanation create an inefficient workflow for the user. Non interactable UI elements need to convey their information effectively. Unity in design, color, size and shape can be used to convey two things function in similar ways. Thus we can create lots of UI elements with similar functions that look similar so that the user learns about all of them when using one. For example from the main menu they learn each of the four icons will take them to a separate task after using just one of them.

The process of user testing changed our design by pointing out major flaws, shortcoming and oversights in our design. At first our app only supported users with one pet which alienates a large demographic of pet owners. Now the mockup is completely redesigned to accommodate for all the changes that supporting multiple pets required. Another big change was in informative pop ups telling user the effects of the action they took. This helps the user understand exactly what they are doing and helps them decide what to do next and in the future.

Our tasks have largely remained the same. We still focus entirely on maintaining a healthy diet by helping family members be informed when the pet needs to be fed and on finding a missing pet. New tasks are based on setting up, viewing data and editing data for the main two tasks. This takes place in the settings tab and edit menu of information screens. This makes for a clean minimal app with a very specific purpose that is not cluttered with unessential fluff like our original ideas were. Pet owners could seek out a plethora of apps to help them train their pet, diagnose medical issues and track their vaccines but adding these functionalities to our app would have made are main two tasks a lot harder to understand and use.

We think we have had a good amount of iterations for our design and found a good balance of efficiency and usability. If we had less we would still have major flaws in our design. If we had more we probably would slow down immensely in improvements made per iteration. Further iteration would be spent improving the looks and feel of the app rather than the workflow and design. Based on most recent feedback we think the design of the app accomplishes our goals and would help users solve the two addressed pet care problems we set out to fix.

Appendix

User Test Instructions

Find a missing pet

1. Your dog Noodle is missing!
2. Report Noodle as missing.
3. (User reports Noodle is missing with Report Missing button)
4. Now find Noodle.
5. (User clicks on map and we guide the google maps location indicator towards Noodle's location)
6. Now that you found Noodle report Noodle is no longer missing.
7. (User presses cancel report button)

Feed a hungry pet

1. Does Daisy need to be fed?
2. (User checks feeding screen and sees Daisy has not been fed)
3. Now that you know she has not been fed you would need to feed her in real life.
4. Now record the feeding event so everyone knows Daisy has been fed.

Attempt to feed a fed pet

1. Pretend you are another family member that just woke up.
2. Does Daisy need to be fed?
3. (User points out answer, no she does not)
4. Since the app shows she has already been fed you do not need to feed her.

Add a new pet

1. You got a new dog named Poptart and want to add it to the app
2. (User goes to pet profiles, and presses add new profile)
3. Here you would enter the pet's name: Poptart and its other info
4. Now add a new Kibble pet tag for the pet
5. (User goes to pet tags, and presses add new pet tag)
6. (Upon seeing bluetooth connection screen and instructions they understand what would happen next)

Critical Incidents

1. Better home screen

Participants had problems accessing each portion of the app. They wanted to be able to find all four portions of the app quickly and easily. Creating a home screen will save space on the screen for each separate task's portion of the app. The home screen conveys to users exactly what the app can do by defining each portion of the app clearly with an icon to visually aid them in understanding.

2. Separate profile screen

One of our participants complained that our app didn't support multipet management, that is, users cannot set up different profiles for different pets. The participant wanted a few screens where they can create pet profiles and edit the profiles.

3. Multipet support

This issue is related to Issue 2 above. Since we don't have a way to manage multiple pets, we cannot provide app screens for users to select which pet they want to look for or record feeding activity for.

4. Easier to understand map screen

Existing map screen functionality wasn't intuitive and user friendly. It often confused our test participants. Also, the old screen only supported one pet.

5. Better feeding screen

Almost all of our participants tried to tap the fed/not fed indicator indicating to us that it seemed like a toggleable button. Users noted that history seems irrelevant except in some special cases so we will keep it but move the focus of the page to the current status of the pet and move the history to its own tab.

6. Ability to modify the feeding history

Previously, there was no way for users to edit or delete the existing feeding history. If user accidentally presses the feed button, user cannot delete that feeding history that was entered in accidentally.

7. Notification (feeding, finding pet)

Two participants suggested that our app could support notifications for lost pets and feeding activities. We agreed that adding notifications to our app can keep the users well informed when something (lost pet is found or pet gets fed) happens so they do not have to open the app as often.

8. Better information available to user when pet reported lost.

Previously, after user reports the pet as lost, there was no additional information displayed on the screen about what will happen next.

9. Settings screen

Most phone apps have a settings tab for the tasks users may need but not use that often. Because users rarely add new tags we have put the setup and sync settings for the tags here to avoid cluttering the rest of the app.