

# Final Report: WalkMate

## The Team

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Adelaide Chung – Mascot, Editor, First Prototype Designer (25%)

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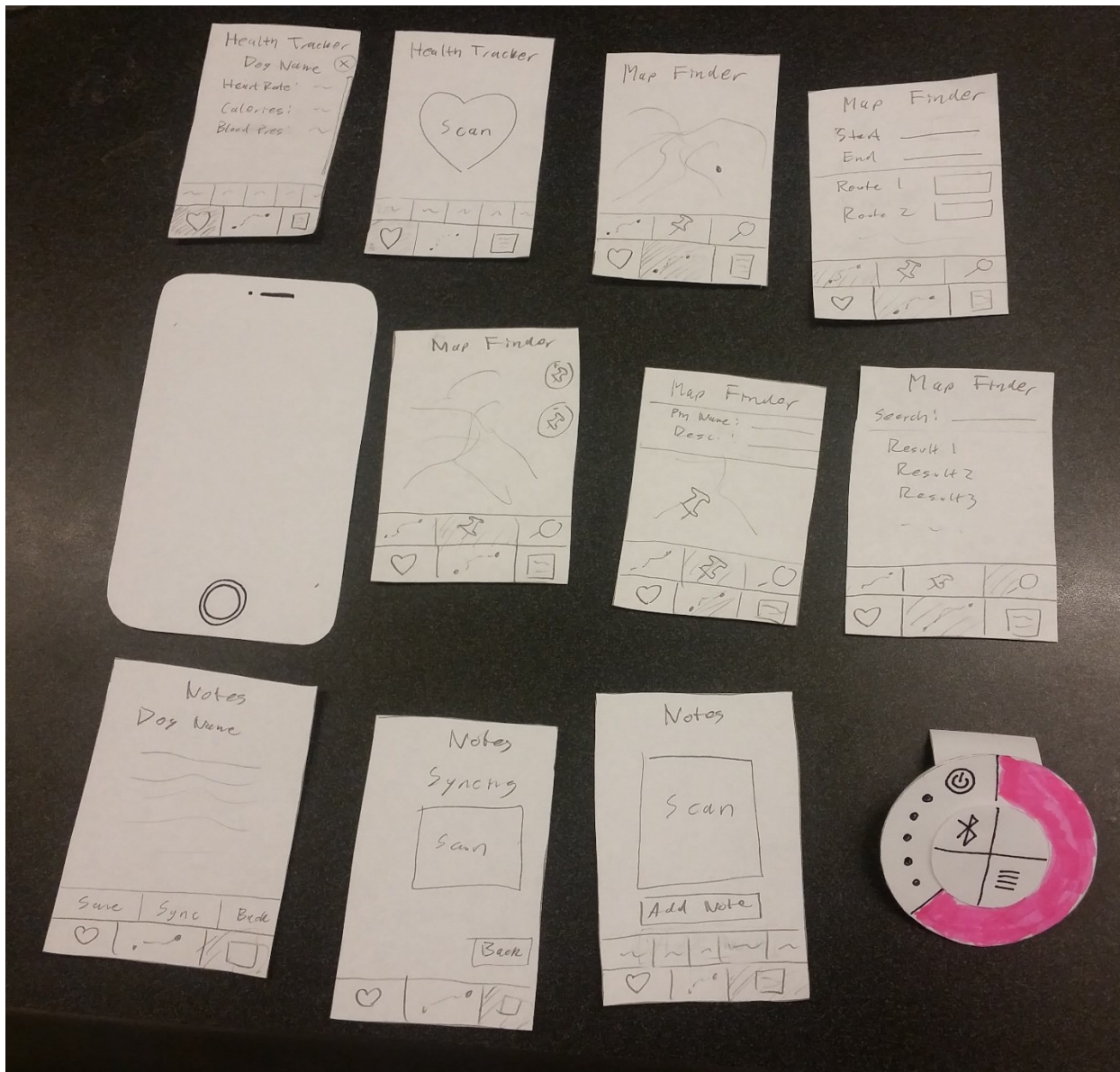
## Problem and Solution Overview

The community we are targeting to help with our project is professional dog walkers. Their work is important because walking a dog is essential for its health and wellbeing, and not all dog owners have time to walk their dogs. Sometimes, problems arise in unpleasant situations during the walk. We want to minimize these unpleasant situations and enable dog walkers to easily keep track of the dog (or dogs) under their supervision and optimize the walking experience. The more control we give to dog walkers, the more effectively they can tailor a walk to a specific dog's needs, and the more the dog will benefit. To solve this problem, we are proposing the WalkMate, a device that clips on to the dog's collar that will provide useful functionality necessary to optimize the walking experience. You will be able to keep track of the dog's health, find and mark points of interest on a walking route, and receive path suggestions for the walk. WalkMate will enable dog walkers to attend to multiple dogs at a time. They can avoid places that are deemed undesirable by taking into account the dogs' behavior and track the dogs' health in order to give them the right amount of exercise. With a compatible scanner, all the necessary information will be at the fingertips of the dog walker.

## Initial Paper Prototype

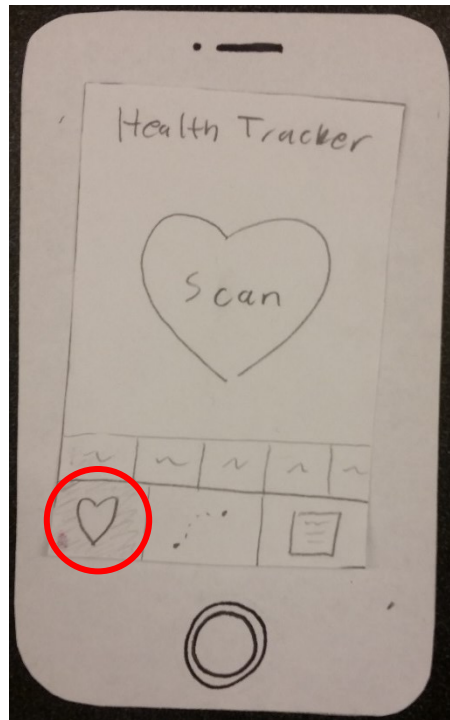
### Overview

Our prototype features two main components. The first is the physical device that is attached to the dog's collar, represented here as the circular object with pink highlighter. The second is the scanner and the screens that the scanner can take.

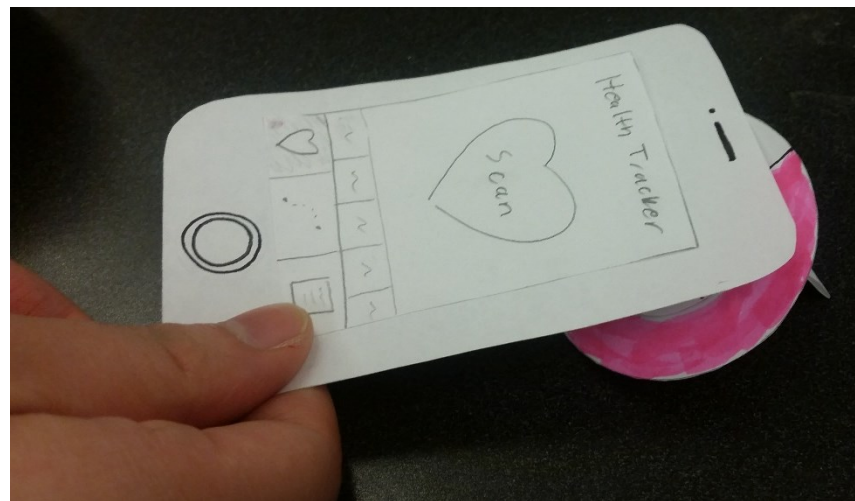


## Task 1: Health Tracking

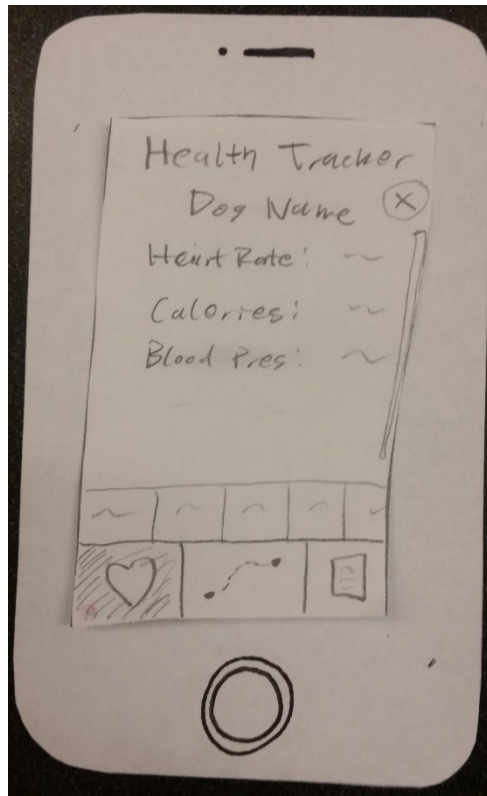
1. Press on the heart icon on the bottom left of the screen.



2. On the screen Health tracker with the SCAN box
  - a. Scan the attachment on the dog's collar
  - b. Press on any box in the first row (showing previous dogs) from the bottom of the screen



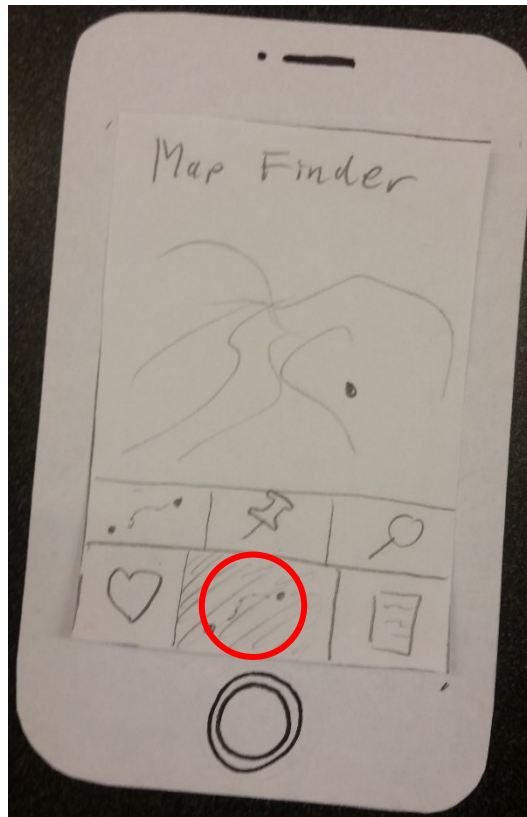
3. Any of the choices you can make in step 2 will take you to a current/previous health tracker of the dog
  - a. If you did step 2a, you will be able to get the current health tracker of the dog.
  - b. If you did step 2b, you will be able see previous health tracker of the dog.In either case, the next screen will show up. It contains some information of the dog such as dog name, heart rate, calories, and blood pressure.



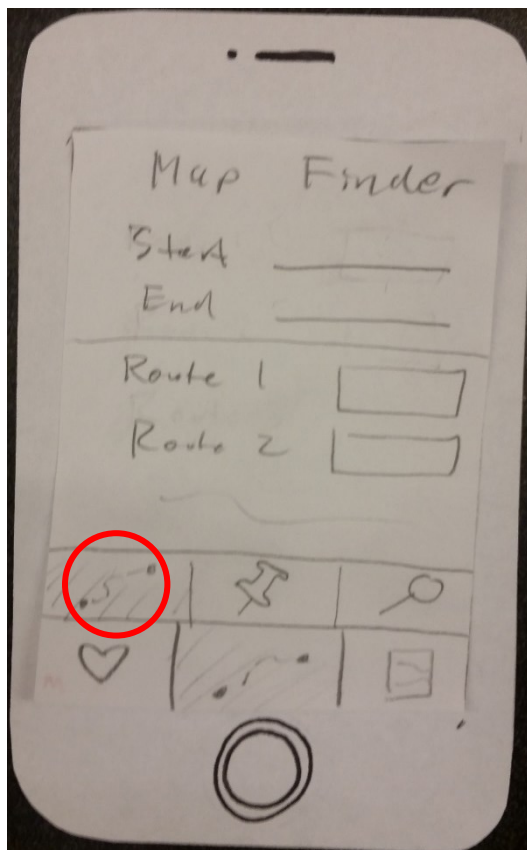
4. If you want to get new health tracker, press x button on the top right of the screen and do step 2a.  
If you want see previous health tracker of the dog, do step 2b.

## Task 2: Map Finding

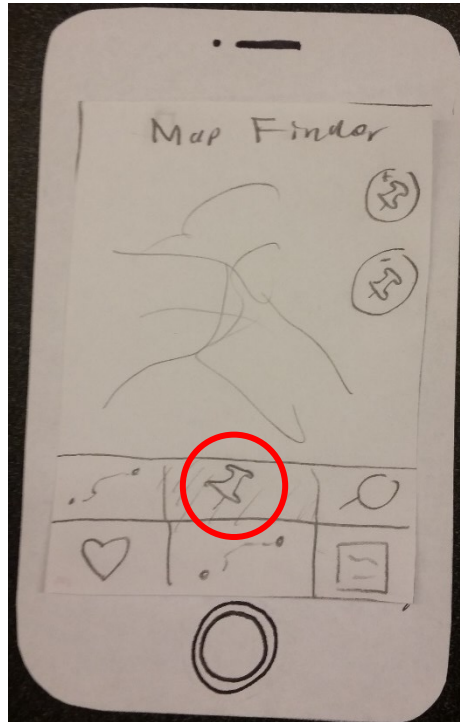
1. Click the icon in the middle



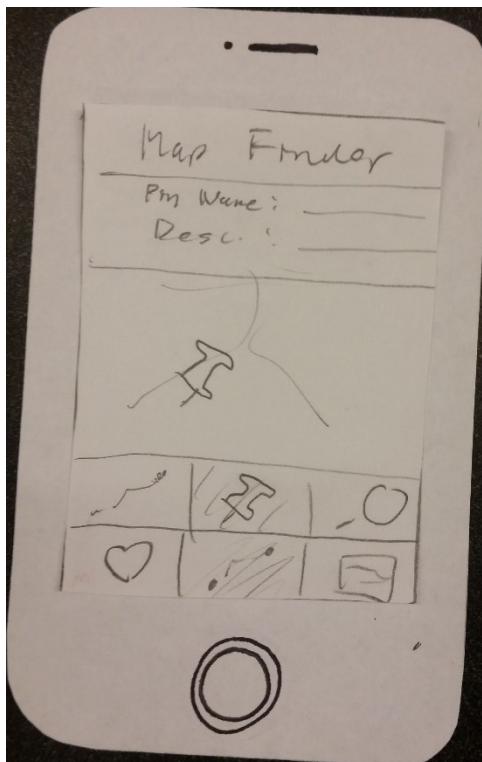
2. From here, you can perform one of three subtasks.
3. Subtask 1: Creating a path
  - a. Click on the icon to the left.



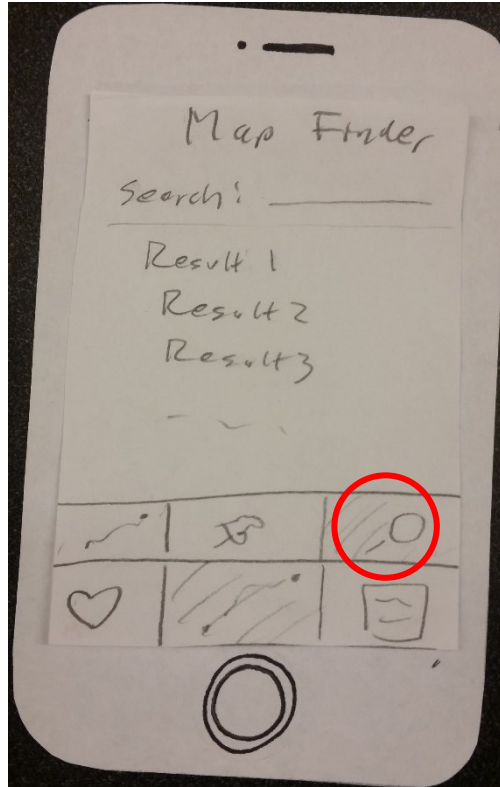
- b. Type in the Start and End and choose a path from the list.
  - c. This will take you back to the main screen with a path overlay.
4. Subtask 2: Marking points of interest
- a. Click on the icon to the middle.



- b. Drag a pin on the map to mark a point of interest (either a positive or negative pin).
- c. Fill in the information about the pin.



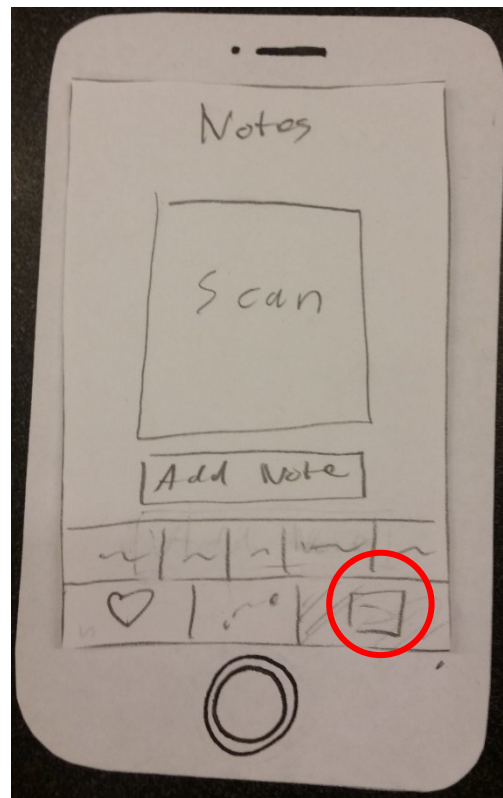
- d. This will take you back to the main screen with the pin.
5. 5 Subtask 3: Searching for places.
- a. Click on the icon to the right.



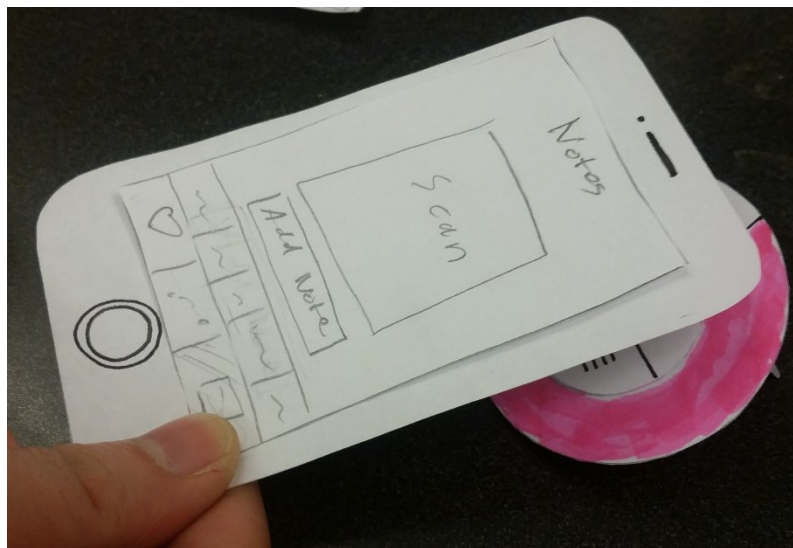
- b. Enter the query in the search box and choose from the list.
- c. This will take you to the Creating a path screen with the End being the chosen item and Start being your location.

### Task 3: Notes

1. Click on the icon on the right

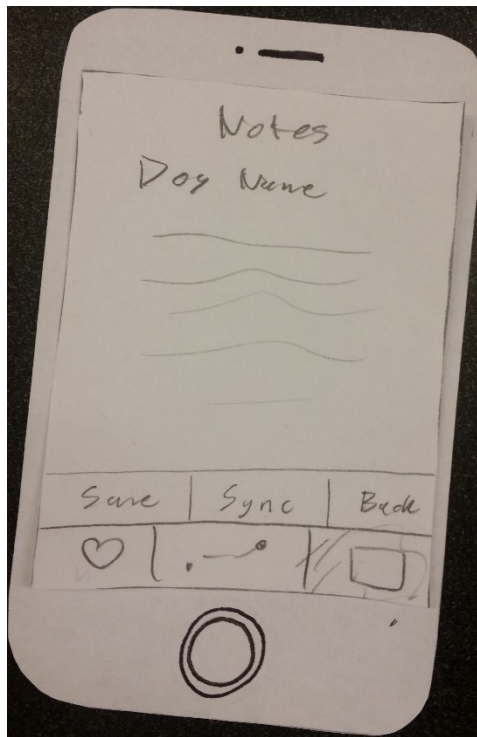


2. On the screen with the SCAN box, scan the attachment on the dog's collar or click on one of the names on the bottom of the screen, right above the icons or click on the "Add Note" button

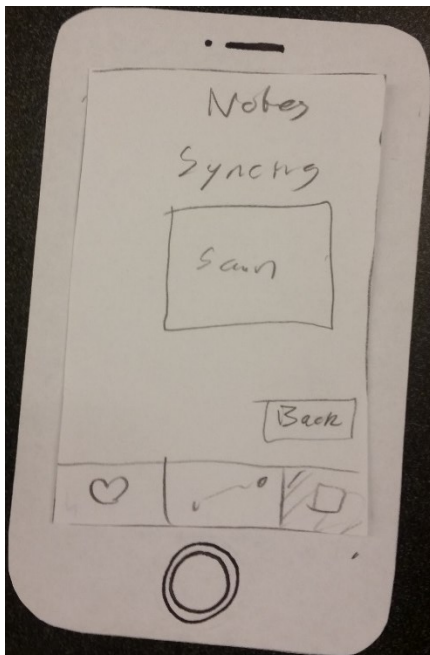


3. Any of the choices you can make in step 2 will take you to a new/existing note. If you scanned an attachment or clicked on one of the names, you will be able to edit/save the note for that dog. If you clicked on the "Add Note" button, you will be able to create a new note that does not belong to any dog.





4. If the note you edited does not belong to any dog and you clicked “save”, or if you clicked on the “sync” button, the device will take you to a third screen with another SCAN box, this will allow you to scan an attachment on a dog and sync the note with that dog.



5. Clicking the “back” button will take you back to the first screen (step 2).

## Testing Process

### Usability Test 1

Our first test was conducted with a female student who walks dogs part time. We performed the usability test inside a quiet room. We compiled a list of tasks, which we asked the participant to perform from our application. We had one individual read the script and tasks to the participant, while another was responsible for performing the necessary tasks. The additional two team members took notes. The participant was asked to think aloud while walking through the tasks, which included retrieving the dog's health information and finding a route back home. The quiet room was to have an environment with no distractions so that the participant can focus on completing the task. We choose our participant because the participant belonged in our target demographic: professional dog walkers. We learned from this process that our participants can be really confused, so it is necessary to ease them into the process and assure them that they can do nothing wrong.

### Usability Test 2

Our second test was conducted with a male college student who walks dogs under an app called Wag! We performed the usability test inside a classroom in Mary Gates Hall, which provided an environment that allowed our participant to focus while still not being completely free of distractions. We compiled a list of tasks, which we asked the participant to perform from our application. We had one individual read the script and tasks to the participant, while another was responsible for performing the necessary tasks. The additional two team members took notes. The participant was asked to think aloud while walking through the tasks, which included retrieving the dog's health information, finding a route back home, and taking notes of the dog. This extra third task was made to get more data from our usability test that we found was missing from the first. We chose our participant because the participant belonged in our target demographic: professional dog walkers.

### Usability Test 3

Our third test was conducted with a female professional dog walker. We performed the usability test inside a classroom in Mary Gates Hall, which provided an environment that allowed our participant to focus while still not being completely free of distractions. We compiled a list of tasks, which we asked the participant to perform with our paper prototype. We had one individual read the script and tasks to the participant, while another was responsible for performing the necessary tasks. The additional two team members took notes. The participant was asked to think aloud while walking through the tasks, which included retrieving the dog's health information, finding a route back home, and taking notes of the dog. We choose our participant because the participant belonged in our target demographic: professional dog walkers.

## Testing Results

### From Initial Prototype to Intermediate Prototype

#### Revision 1: Making Scan Functionality Instructions Clearer in Health Section

In our preliminary heuristic review, our potential users were confused by the scanning functionality in our Health task flow. We initially just had a heart shape with the word "Scan" in it. The user didn't know whether this was a button or just an icon, and, if it was a button, if it was active or passive. They had to ask several questions of the tester, so we knew we had to make it clearer how this scanning functionality works. So, we changed the inner text from just "Scan" to "Hold scanner next to clip". This way, we eliminated the ambiguity presented by just "Scan". There are only so many ways to scan things, so the user would probably figure it out eventually without help, but it's worth adding the extra text in order to provide help and prevent errors.

#### Revision 2: Giving Three Main Task Buttons Titles to Describe Their Purpose

When we asked our preliminary heuristic users to do our three tasks, which were respectively represented by three large individual buttons at the bottom of the screen, we learned that the pictures on the buttons weren't quite explanatory enough. The user paused when asked to switch from one task to another, and they had to think a second about what those buttons might mean. We realized that, though the pictures we used are familiar icons that are consistent with the standard for what they represented, they weren't enough. It wasn't fair to expect the user to recall what the pictures mean *and* connect them to the relevant task. So, we added "Health", "Map", and "Notes" under each respective button. With the descriptive title in addition to the icon, the buttons are much clearer.

#### Revision 3: Emphasizing the Difference Between Main Task Buttons and Sub-Buttons

The way we organized the subtask buttons in our Map functionality originally confused users. We had three buttons that originally sat right on top of the main task buttons (Health, Map, and Notes) on our map. They are, respectively, made for planning a route, pinning a point of interest, and searching for a location. Thus, they are specific to the Map functionality and they disappear when the user selects Health or Notes. But, because those three subtask buttons sat right on top of the Health, Map, and Notes buttons, the user mistook them for main buttons and got confused. Luckily, this presents a cosmetic problem that can be easily fixed. We emphasized the difference between the three main buttons and the three sub-buttons by separating them into two distinct rows, making the three sub-buttons different sizes, and not adding words to the sub-buttons like we did to the main buttons. All of these serve to distinguish the two groups of buttons from each other so that it is evident that the three smaller buttons belong only in the Map.

### From Intermediate Prototype to Final Prototype

#### Revision 1: Making Dog Profiles and a Main Home Page for Navigation

One problem that arose in usability tests was that users found it difficult to navigate back to the starting point from certain pages, which they found confusing. They got stuck sometimes, hindering their attempts to complete tasks. We fixed this by adding a home page, which shows each dog on the current walk and whether or not their WalkMate devices are connected. We made it easy to navigate back to this page from anywhere by

including a home icon button in the top left. Any time a user presses this new home button, they'll be returned to this page. In addition, the Health, Map, and Notes buttons stay at the bottom and navigate to those respective pages from anywhere. This makes navigating easier and more organized.

### Revision 2: Fixing Notes Function to Make It More Intuitive and Cohesive

Another problem that arose in our usability tests was that the Notes functionality had a non-intuitive design. This is not good, as it is an integral part of the WalkMate's functionality. We decided to fix this by making it work very similarly to the Health functionality, which people understood. The pages that indicate scanning a specific dog's WalkMate device are now of the same design, and the dog's profile is shown the same way for both Health and Notes results. This makes an individual dog's profile information more organized and easy to view. It is easy to add notes and then return to the home page, just as one views a dog's health stats then returns to the home page.

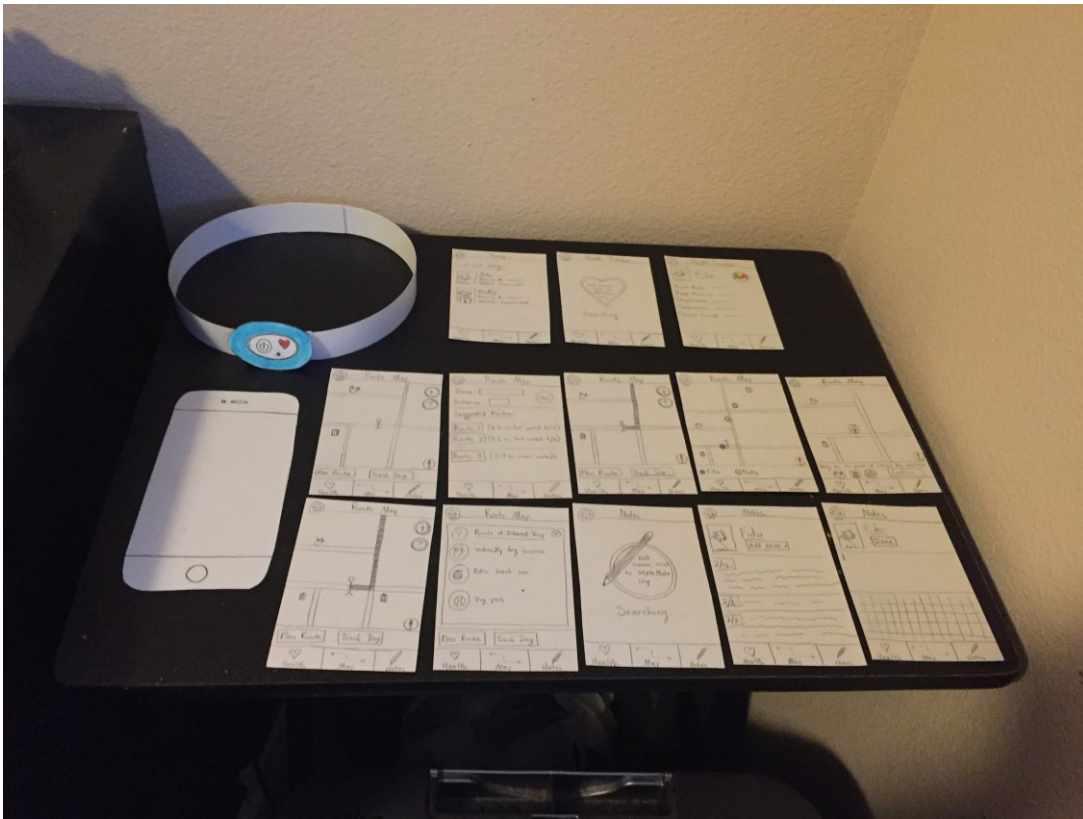
### Revision 3: Redesigning Map Function to Make Pinning and Viewing Landmarks Easier

Another problem revealed by our usability tests was that users were stumped when they tried pin a new point of interest on the map. This is integral to our map functionality, so we needed to make that clearer. We got some feedback that we should make our map as similar as we could to existing map UIs to make it easy to use, so we decided to use easily recognizable icons. The map now has a "+" button for pinning a new point of interest, with clear icons to represent different kinds of points of interest (an unfriendly dog, a trash can, or a dog park). To make this clear to the user, we added a "?" button that, when pressed, shows the key indicating what each icon indicates. Both the "+" and "?" buttons are easy to come back from, thanks to the "Map" button. There are now also clearly defined buttons on the main map page that allow for planning a route and tracking a dog. With all this, the map functionality is now easier to use, understand, and navigate.

## Final Paper Prototype

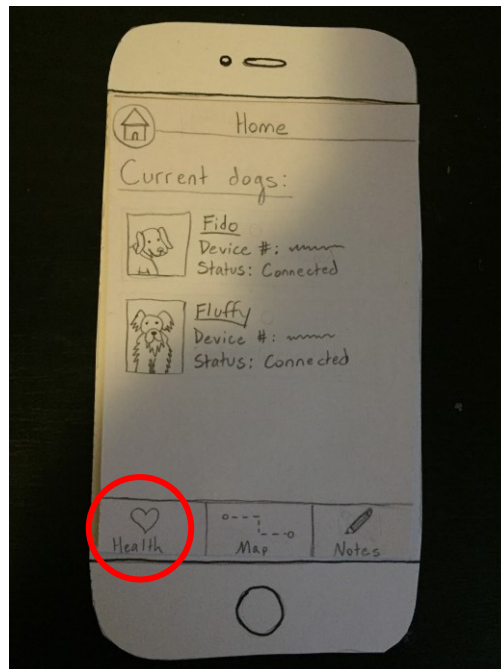
### Overview

Our prototype features two main components. The first is the physical device that is attached to the dog's collar, represented here as the light blue oval object. The second is the scanner and the screens that the scanner can take.

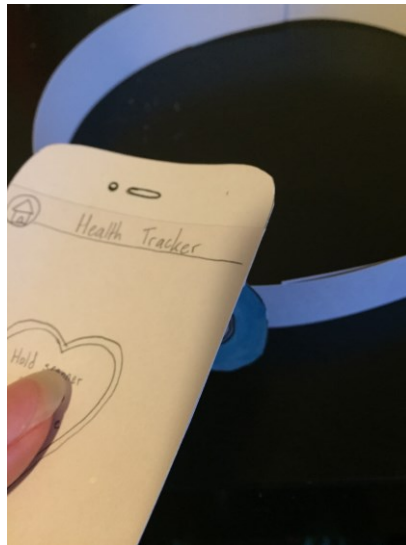


### Task 1: Health Tracking

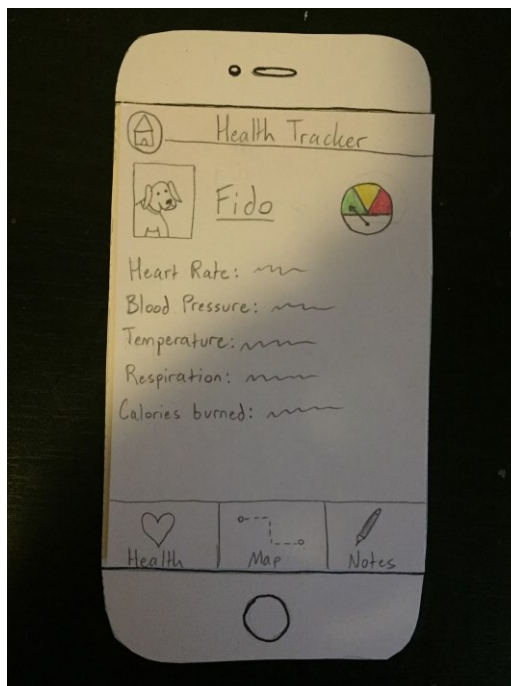
- From the home page, press on the heart icon on the bottom left of the screen.



- On the screen Health tracker with the SCAN box
  - Scan the attachment on the dog's collar

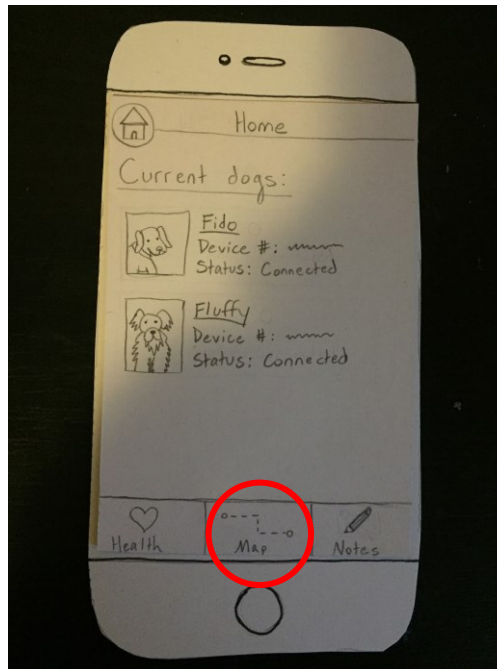


7. This will take you to a current health tracker of the dog. The next screen will show up. It contains some information of the dog such as dog name, heart rate, calories, and blood pressure.

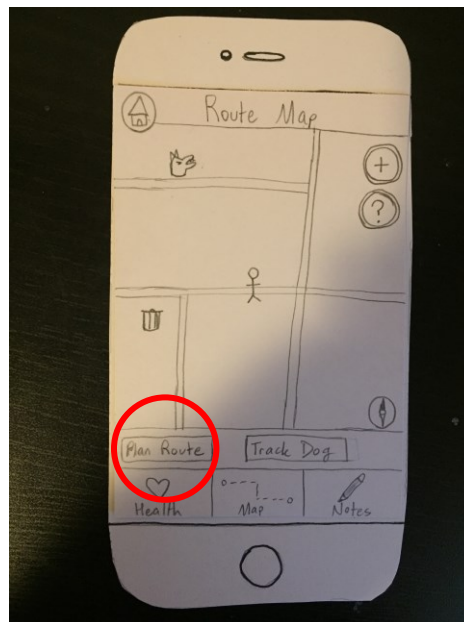


## Task 2: Map Finding

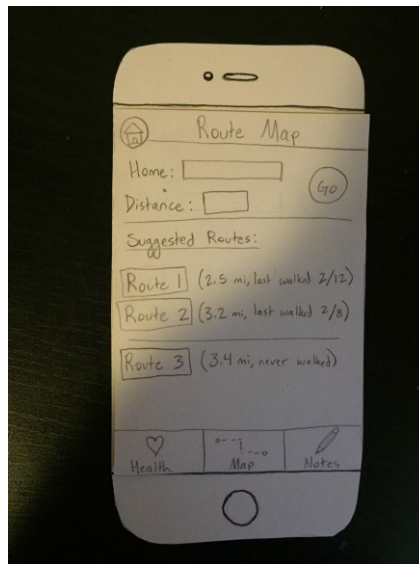
6. Click the icon in the middle



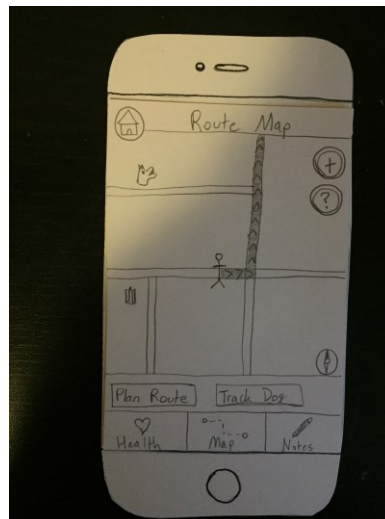
7. From here, you can perform one of three subtasks.
8. Subtask 1: Creating a path
  - a. Click on the Plan Route button.



- b. Type in the parameters that you want.

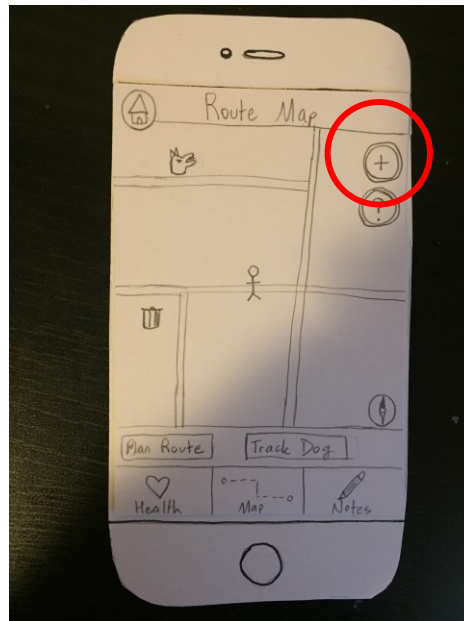


c. This will take you back to the main screen with a path overlay.

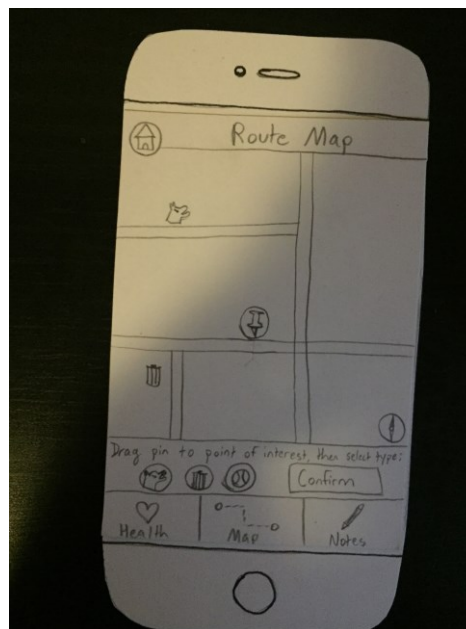


9. Subtask 2: Marking points of interest
  - a. Click on the "+" button.





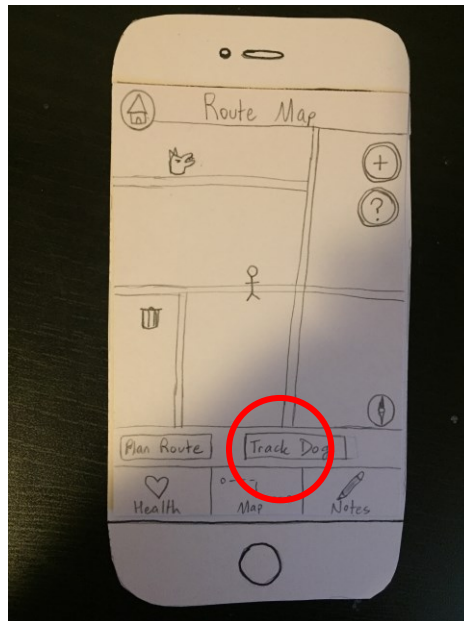
- b. This will create a pin at your current location. Fill in the information about the pin.



- c. This will take you back to the main screen with the pin.

### 10.5 Subtask 3: Tracking your dog.

- a. Click on the Track Dog button.

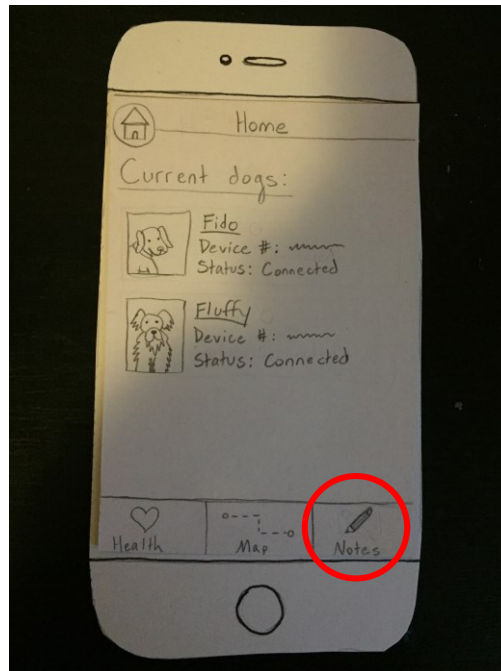


b. This will show you where your dogs are at on the screen.



### Task 3: Notes

6. Click on the icon on the right



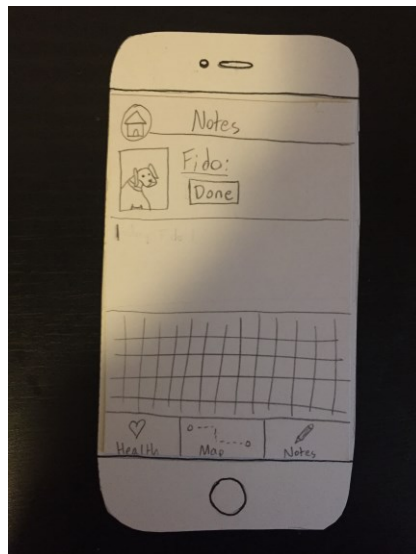
7. Hold the device next to the dog you want to view/edit/add a note to.



8. You would be taken to the note page for that dog. From here, you can either add a new note by clicking the Add Note button or edit an existing note by clicking an existing note



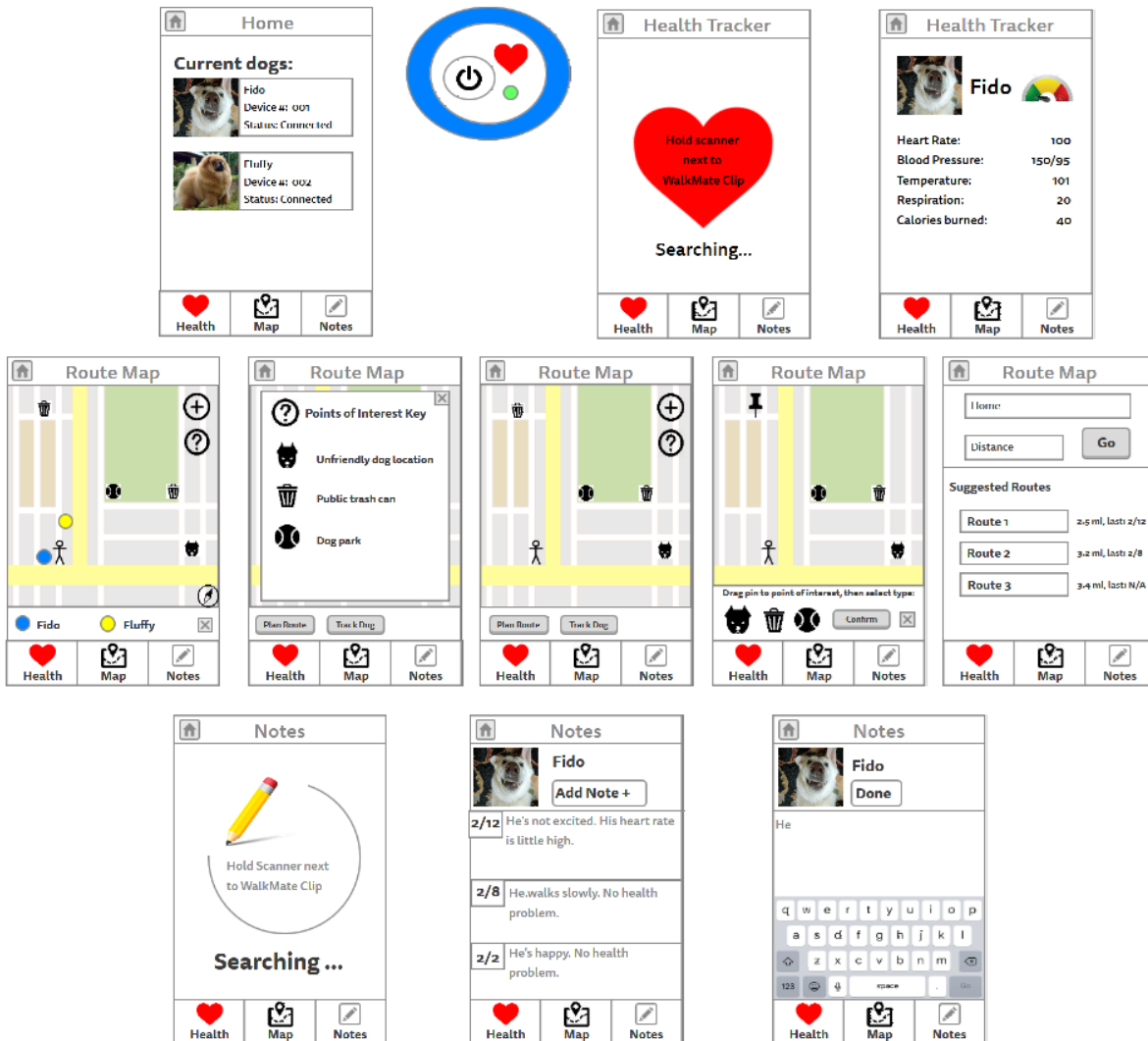
9. You will then be transported to the edit note screen where you can edit or write your note.



## Digital Mockup

### Overview

Our prototype features two main components. The first is the physical device that is attached to the dog's collar, represented here as the light blue oval object. The second is the scanner and the screens that the scanner can take.

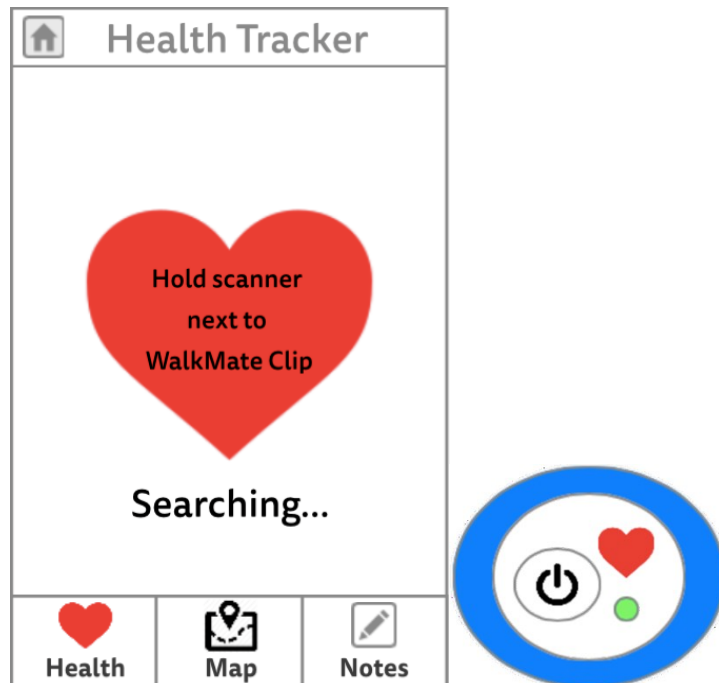


## Task 1: Health Tracking

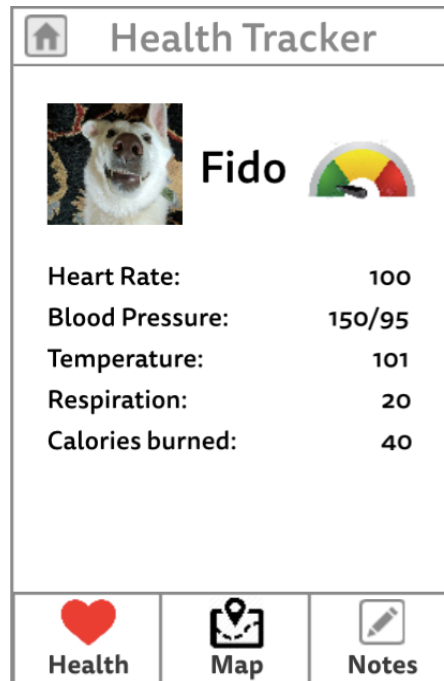
8. From the home page, press on the heart icon on the bottom left of the screen.



9. On the screen Health tracker with the SCAN box
  - a. Scan the attachment on the dog's collar

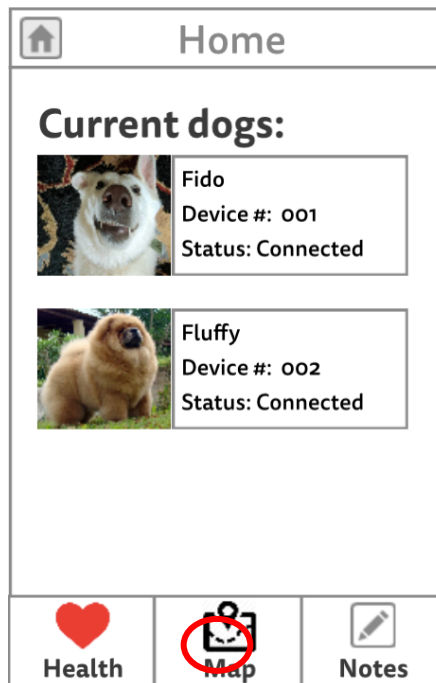


10. This will take you to a current health tracker of the dog. The next screen will show up. It contains some information of the dog such as dog name, heart rate, calories, and blood pressure.



## Task 2: Map Finding

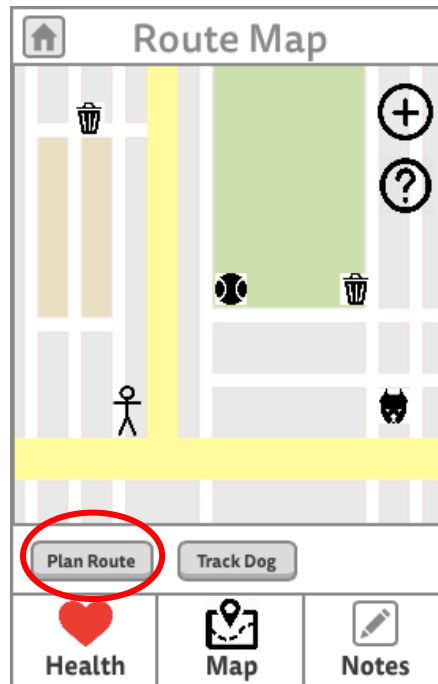
11. Click the icon in the middle



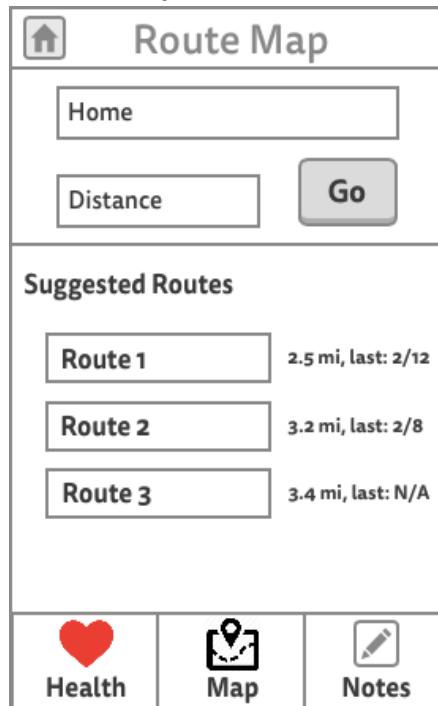
12. From here, you can perform one of three subtasks.

13. Subtask 1: Creating a path

a. Click on the Plan Route button.



b. Type in the parameters that you want.



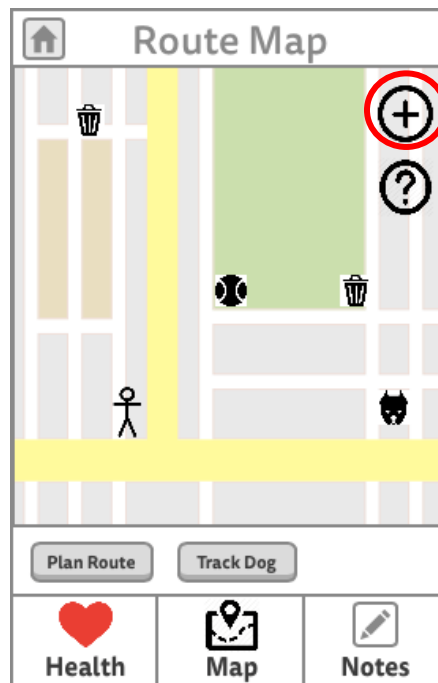
c. This will take you back to the main screen with a path overlay.





14. Subtask 2: Marking points of interest

a. Click on the "+" button.



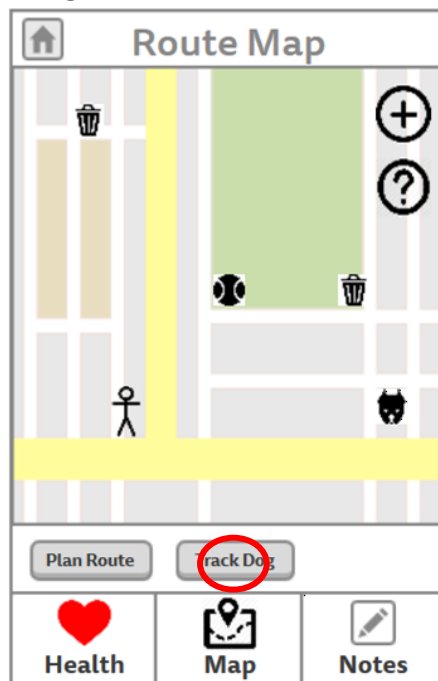
b. This will create a pin at your current location. Fill in the information about the pin.



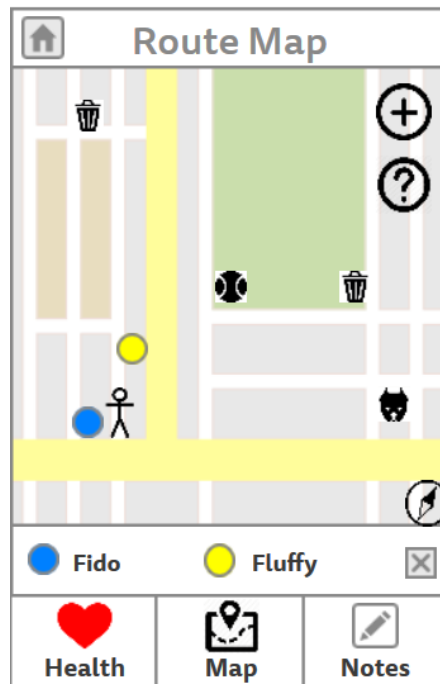
c. This will take you back to the main screen with the pin.

### 15.5 Subtask 3: Tracking your dog.

a. Click on the Track Dog button.



b. This will show you where your dogs are at on the screen.



### Task 3: Notes

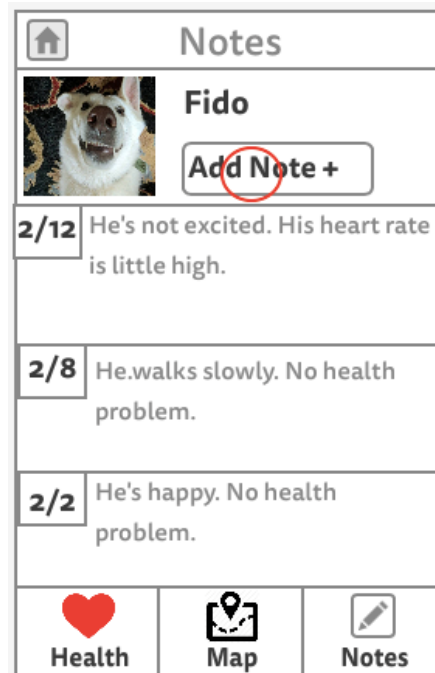
10. Click on the icon on the right



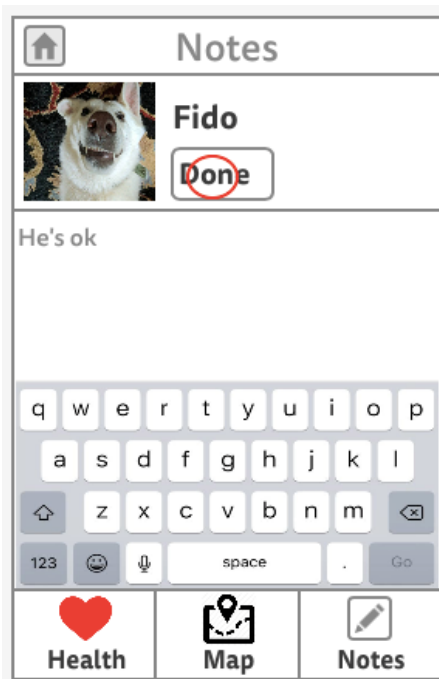
11. Hold the device next to the dog you want to view/edit/add a note to.



12. You would be taken to the note page for that dog. From here, you can either add a new note by clicking the Add Note button or edit an existing note by clicking an existing note



13. You will then be transported to the edit note screen where you can edit or write your note.



## Decisions and Changes

We mainly changed some of the cosmetics from the final paper mockup to the digital mockup. An example of this would be the home button, which was originally circular in appearance in the top left but was changed to but a square inside the row in the top left in the digital mockup. Besides these cosmetics changes, there were no other design changes from our paper mockup to our digital mockup. All the screens retained the same layout and format compared to our final paper mockup. There were no changes to the functionality or behavior to our digital mockup from our paper mockup. The only changes made were cosmetic changes.

## Discussion

The process of iterative design was very effective. Even though we were happy with our initial design, there were little problems everywhere. For example, it was hard to understand what some of the icons on the screen represented, and we weren't consistent in our designs for different functionalities, and new problems would come up when we tweaked our design. Getting feedback after every iteration was very useful because it helped us identify the new problems that came up in the newer designs, and it was great that we went through several iterations because that prevent us from going into the wrong direction. We learned that making different initial designs and getting feedback multiple times from different people during the design will result in a more successful final product, and that making low-fidelity prototypes is more effective because they are easy and don't cost a lot to remake.

Our final design is not drastically different from our initial design. A lot of the feedback we got from heuristic evaluations and usability tests were about small details such as icons and labels. As a result, we kept all the functionalities in our initial design, and made bigger changes to the interfaces. For example, adding labels to icons so it is easier for the user to identify them, and adding messages or documentations to certain functionalities to help the user understand that they should do to achieve their goals.

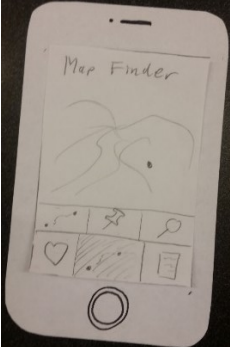

The three tasks were: Health Tracking, Map Finding, and Notes. The first two tasks did not change after the usability tests. However, we simplified our last task, Notes, because the interface was really confusing and complicated for the users. We ended up removing some buttons and making the interface more consistent with the other functionalities so the final design looked a lot more like our Health Tracking design.

The number of iterations we went through was sufficient. It was enough to find the bigger problems with our design, even though there weren't any, and in the last iteration, the user did not have much to say about our design. However, it wouldn't hurt to have one more iteration, just to find any subtle flaws that might have been glossed over in previous iterations.

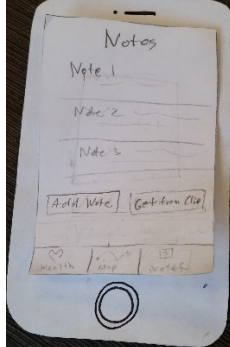

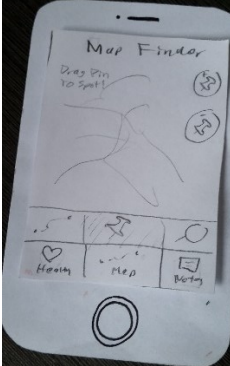


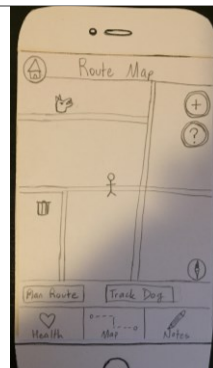
## Appendix

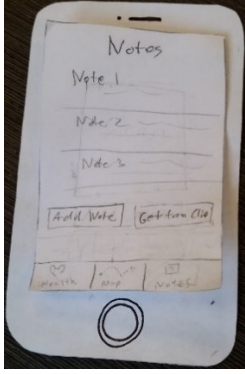

### Heuristic Review and Evaluation

Image	Issue	Severity	Revision	Revision Image
	<p>The scan page does not indicate you have to hold it up to the device. Should be more descriptive of the actual action</p> <p><b>Heuristics:</b> Help &amp; Documentation Error Prevention</p>	2	<p>Instead of just saying "Scan," on the page, have a more descriptive text like "Hold scanner next to device," or something.</p>	
	<p>The menu items on the device are ambiguous, in particular the magnifying glass wouldn't be expected to search for routes</p> <p><b>Heuristics:</b> Consistency &amp; Standards Recognition vs Recall</p>	3	<p>Have small text under the icons that label the screens and actions that the user might want.</p>	

	<p>The stacked tab bars at the bottom in the Map Finder page are unclear and “blend in” with each other. Icons are reused as well.</p> <p><b>Heuristics:</b> Flexibility &amp; Efficiency Aesthetic &amp; Minimalist</p>	<p>2</p>	<p>Have the stacked tab bars be in a clearly distinctive style, with the upper one clearly under the lower one.</p>	
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### Usability Test Review and Evaluation

Image	Incident	Severity	Revision	Revision Image
	<p>Notes functionality was very confusing and the participant was really stumped</p> <p><b>Heuristics:</b> Help &amp; Documentation Error Prevention</p>	<p>3</p>	<p>Make Notes work like the Health Scanner, unifying the flow and design to make things consistent and easy to remember.</p>	
	<p>The participant was confused as to how to pin locations of interest on the map and navigate in and out of the screen</p> <p><b>Heuristics:</b> Consistency &amp; Standards Recognition vs Recall</p>	<p>3</p>	<p>Make interface similar to other map applications, having clear icons and always having a “?” button for help and documentation.</p>	
	<p>The participant was confused on how to find a path to home and did not know what the icons on the map represent.</p> <p><b>Heuristics:</b> Consistency &amp; Standards Recognition vs Recall</p>	<p>2</p>	<p>Make the buttons clear and obvious on how to find a route, use easily recognizable icons, and make it similar to other map applications.</p>	

	<p>The participant was confused about the Get from Clip functionality and how it worked without prompting from the testers.</p> <p><b>Heuristics:</b> Help &amp; Documentation Error Prevention</p>	<p>2</p>	<p>Make Notes work like the Health Scanner, unifying the flow and design to make things consistent and easy to remember.</p>	
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