Team

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Problem and Solution Overview

Puppies requires a lot of time and effort! For most puppy owners, raising a new pup can become overwhelming at times. Adolescent dogs require a lot of oversight, and it is easy to lose track of things, especially when an owner relies on their memory. Although owners can record information manually, tools such as written schedules are difficult to change dynamically and are inconvenient. Our design, Bork, helps ease this process by minimizing the analysis and tracking an owner has to do. Bork automatically detects health and wellness information through a specialized dog collar and relays that data to an owner's phone application. The Bork app is able to inform and notify owners based on the analysis it does on the data it receives, ultimately streamlining the puppy management process.

Design Research Goals, Stakeholders, and Participants

We were able to find two sets of participants for contextual inquiries, both of whom we visited at their homes. Elle, who lives with her boyfriend Mike, owns an Australian shepard named Waffle who is 15 weeks old. **John** and **Kara** are a couple with three kids, who own a King Charles Spaniel named Cooper, who is 6 months old.

We found 4 other participants at Magnuson Park in the off-leash area Monday afternoon, and interviewed each of them. **Charles** owns a terrier named Luna, who is 17 months old, with his wife and kids. **Ben** owns a lab springer spaniel, Kora, who is 2 years old; both live on a farm. **Carrie** owns

an 11-month old male golden retriever, and **Mary** owns a male black golden doodle. Both are students in law school, and go to the dog park together.

Originally, we wanted to perform contextual inquiry on two students and two members of families with dogs, but we were unable to find enough students. We did find two couples that own puppies, and along with the contextual inquiry, we interviewed them in their homes. This allowed us to watch the owners interact with their puppies and see what sort of documentation (or lack of) they kept for their dog. Additionally, we turned to interviewing puppy owners at the dog park. Although not every owner had a young dog (we performed retrospective interviews for these participants), this gave us a broad spectrum of types of owners and gave us a good idea of the main themes and issues of owning a puppy.

Design Research Results and Themes

Almost every participant keeps track of some form of information about their dog. Most participants rely on their memory to keep track of information. Participants with puppies that are vulnerable to illness or have had illnesses all keep track of their puppies medical symptoms and medication information when needed. Most participants keep track of their puppy's diet, generally having been or being more particular when the puppy is or was younger. Similarly, younger puppies demand more focus on bathroom maintenance and cause owners to put more attention towards potty scheduling and accidents. Overall, participants track more when their puppies are younger, and generally only track information related to health and wellness. Owners universally regard the information they track as important, so creating a way to supplement health and bathroom tracking is definitely worth putting attention towards.

There are no participants who have issues with setting up vet appointments. Additionally, almost every participant's vet clinic has a different system for appointments, ranging from owners coming in on their own time during drop-in hours to contacting owners directly when appointments are due. There appears to be no common standard among vet practices, but this did not seem to negatively affect owner's experiences in any ways. Since participants are already pleased with how they deal with vet appointment, we will be less concerned about finding ways to schedule appointments, something that we were initially considering.

Participants who are raising their first puppy - and even some repeat owners - often find themselves searching online when they need to know something. Less frequently, but still often, they will also check in with friends and vets to ask questions. These participants desire a way to easily

obtain information and don't like having to sift through opinions and conflicting answers. Designing a way for owners to quickly and directly get information would be very useful for most puppy owners and would streamline a task that ends up being performed constantly over the course of a dog's adolescence.

Finally, most participants only socialize with other owners at places like dog parks and dog centers. Besides that, the only other owners they interact with are friends who happen to own dogs. Participants who did socialize with other puppy owners were able to find advantages in having additional relationships, such as having friends who could watch or take care of their dog if needed. This suggests that while participants were not particularly interested in generally socializing with others, they did find benefits from connecting with other owners when exchanging favors.

These themes suggest that our design should help puppy owners track the illness and medication information of their puppies besides some daily routines (like bathroom times and food) and accidents. Since most of the puppy owners do not find any difficulties in contacting their vets, our tracking application might not need the feature of helping puppy owners set up appointments with their vets. Our application can also provide some puppy raising tips or personalized advice for puppy owners who lack experience in raising puppies. The lack of communications between puppy owners also suggests that we can have a social feature in our application to connect puppy owners together.

Answers to Task Analysis Questions

Who is going to use the design?

This design will be used by puppy owners, those with time to take care of a puppy (family members or single unemployed/part-time workers) and have the financial and space means to provide for a puppy. They may or may not have a background with puppies, but are physically active enough to exercise the puppy.

What tasks do they now perform?

Puppy owners feed their puppy, walk, take out, and exercise their puppy, and schedule vet appointments. They also use various means to track the health of their puppy; some rely on the vet, some rely on memory, others keep track themselves.

What tasks are desired?

The Adams requested something to track the daily routine of the puppy, as well as basic information about diet and what to do in emergencies. Multiple participants asked for something to track medications and provide reminders to administer treatment. Multiple participants also asked about a puppy Fitbit or a similar fitness tracker. There were also requests for information regarding when to vaccinate and fix the puppy.

How are the tasks learned?

Most owners spoke of researching using the Internet, and using a trial and error approach to find the best solution for their puppy. They also rely on their vets and friends for relevant information. Tasks that work are remembered and repeated.

Where are the tasks performed?

Most tasks are performed at home or at dog-friendly places (i.e. parks, vets). The home and vet are designed to be minimally stimulating (no loud noises, nothing to scare the puppy, routine-centric), whereas parks are meant to stimulate the puppy so they're more open and busy. This is also a chance for owners and puppies to socialize.

What is the relationship between the person and data?

Personal data is kept at home, written down or in memory. Only the owners have direct access to it, referring to it for their own benefit or sharing it with the right professionals.
Other data is kept remotely at the vet, and is only available if you're allowed to have it (i.e. if you're the owner) and upon request.

What other tools does the person have?

Several participants used their smartphone heavily, to text to let relevant people know that they've fed the dog or walked the dog, or inform them when the next appointment is. This is also how calls to the vet are placed. The Internet is also an essential tool the participants used to research information about their puppy, accessed on a smartphone, tablet, or desktop computer. The Adams family mentioned using books as sources of information, as well. There are various tools that the different owners have become comfortable with, namely food brand, leash type, playpens, and toys.

How do people communicate with each other?

For the families, communication was verbal, on paper, or over the phone. They communicated about aspects of routine and relevant care items (haircut, nails, the dog puked, vet visit).

How often are the tasks performed?

Tasks like feeding, watering, and walking occur daily, while tasks like dog park visits happen a couple times a week. Vet visits happen once or twice a year. Haircuts and baths happen as needed, on a monthly basis.

What are the time constraints on the tasks?

Emergencies are immediate. Non-emergencies like feeding and walking are routine and have some wiggle room, but need to fairly regular in terms of time. Likewise, checkups can be scheduled in a way that works best for the owner, and can be delayed for a time. Haircut, baths, nails are as-needed and can be delayed for weeks.

What happens when things go wrong?

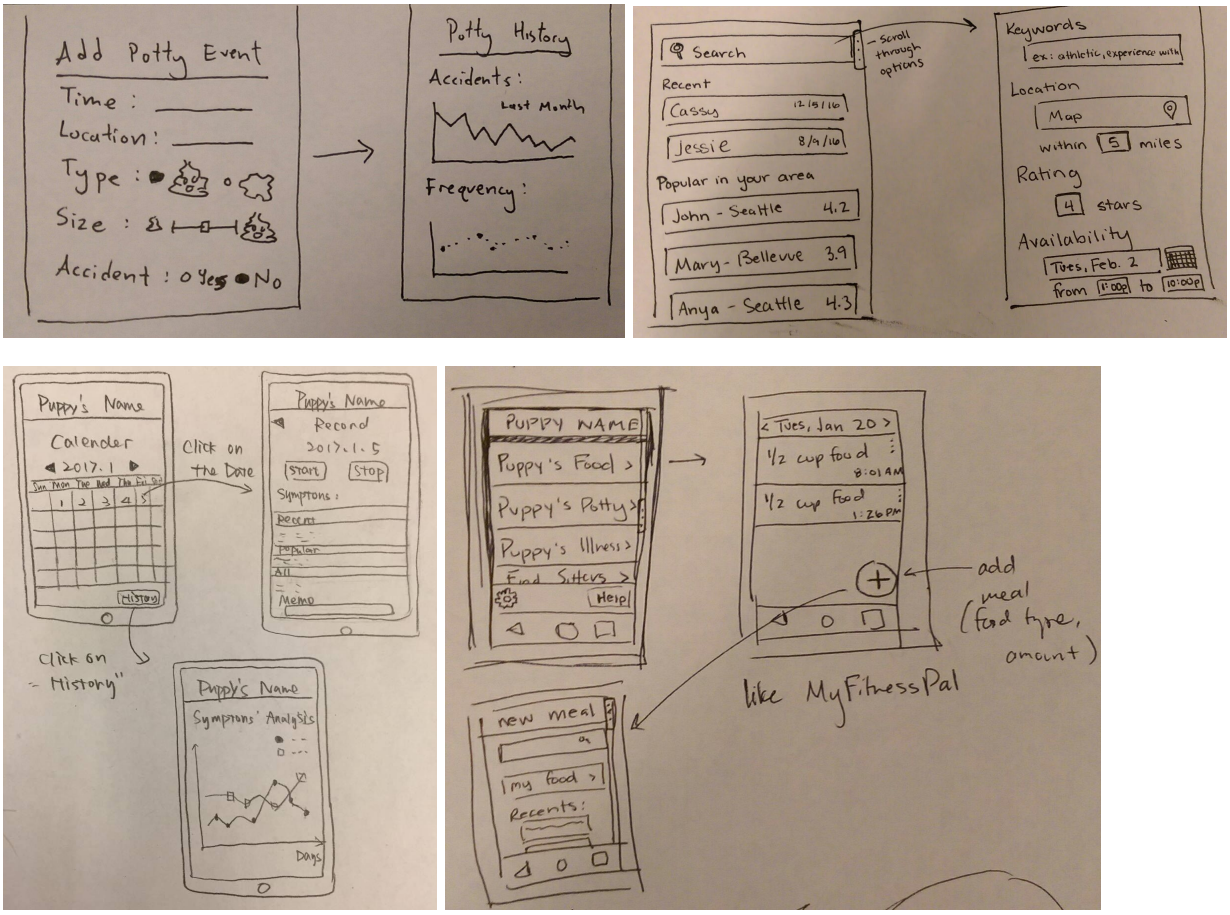
There are minor things like over- or underfeeding the dog, and over- or under-exercising them. When this happens, the owners let it slide, as long as it isn't a regular occurrence. For more serious things, if it's not a serious emergency owners turn to the Internet, otherwise they schedule an immediate trip to the vet.

Proposed Design Sketches - 3x4

Design 1: Phone App

Our first design is a mobile app that allows puppy owners to track different events, and provides statistics and analysis for this input. This will aid the tracking of potty accidents and successful potty events, food tracking at each meal, and tracking symptoms of illness. The app will rely on an external database of sitters and walkers to provide the user with a directory within the app.

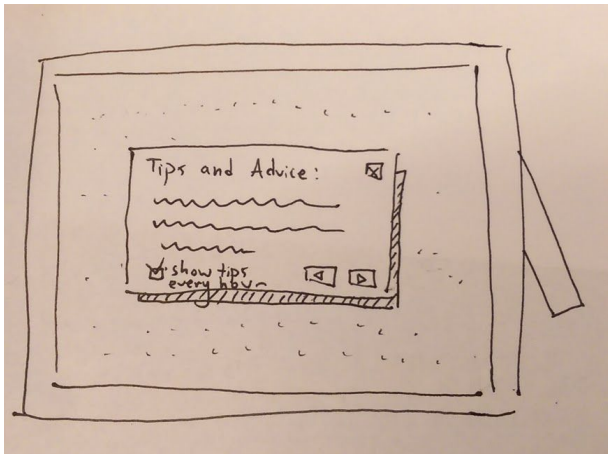
Tasks: tracking potty schedule/accidents, directory of dog sitters and walkers, tracking symptoms of illness, tracking food given to the puppy

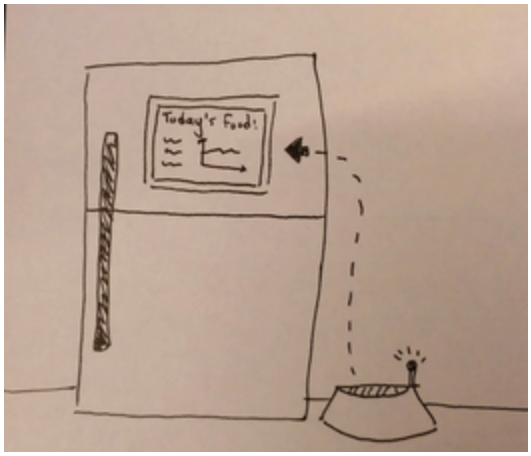


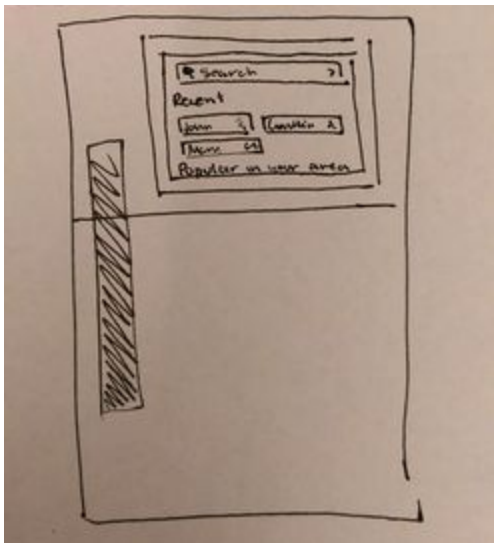
Design 2: Dedicated mobile display with hardware trackers

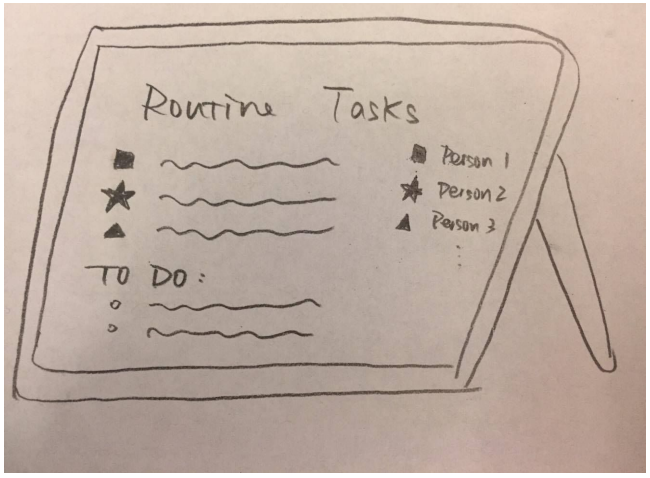
Our second design is a flat interactive display that can be placed in various places around the home (hung on a refrigerator, placed on a kitchen counter) where all members of the household can view it. The display with act as a central hub of information related to the puppy, collecting data from included hardware, namely a bowl that tracks food and water information. This design benefits from a large display area and a shared user space.

Tasks: providing tips/advice/FAQ, tracking food given to the puppy, directory of dog sitters and walkers, tracking shared routines





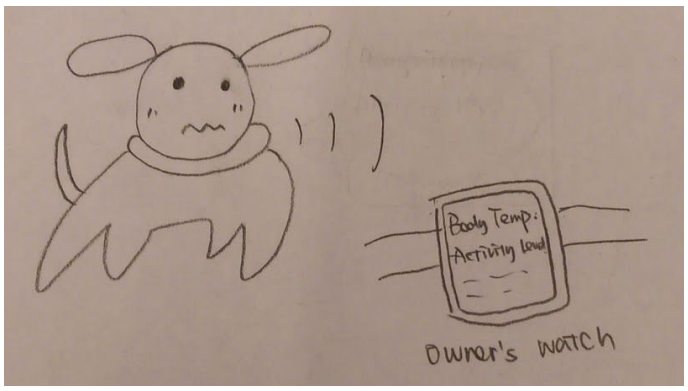


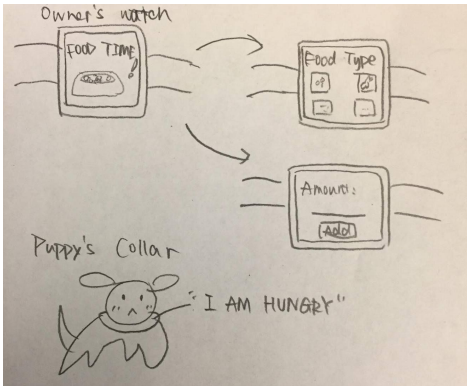


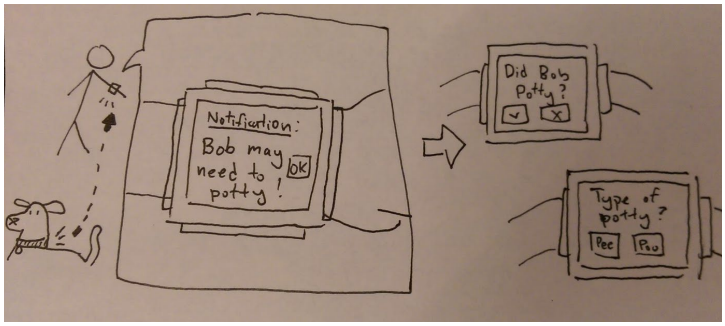
Design 3: A pair of devices for both puppy and owner

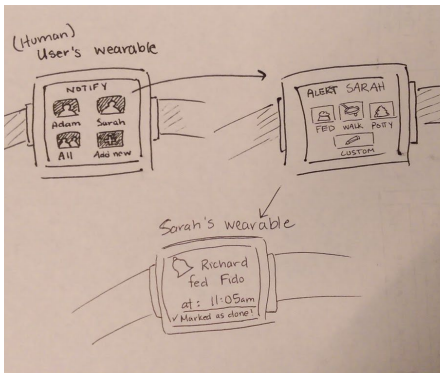
Our third design is a set of wearable devices for both the puppy and the owner(s). The puppy's device will track information about the puppy, which the owner will be able to view on their device. The owner can receive alerts on their device based on information detected by the puppy device, as well as scheduled alerts that have been set up. When there are multiple caretakers, owners will each be able to have their own device, which will sync up with other devices.

Tasks: tracking symptoms of illness, tracking food given to the puppy, tracking potty schedule/accidents, tracking shared routines









As a result of our design research and subsequent critiques, we modified our design choice from the wearables to a phone app integrated with hardware for the puppy. A phone is something that nearly all dog owners have, and it's highly accessible. The puppy's collar will be able to detect and relay information to the owner automatically, allowing them to view and confirm data as it is received. The first task we are designing for is bathroom scheduling. Most puppy owners we talked to had to potty train their puppy at some point, and every dog needs to go out several times a day. A convenient way to keep track of a bathroom schedule and receive reminders and notifications will be used frequently and relieve a common burden that comes with raising a puppy. The second task we are designing for is illness and wellness tracking. Another thing that most puppy owners noted was having to keep track of their puppy's health and medication during times of illness. Puppies are more vulnerable to sickness and must go through vaccinations and spays/neuters, so most owners will inevitably find themselves closely following their puppy's health. Overall, a hardware collar integrated with a phone application will help owners achieve key tasks while being unintrusive and convenient.

Written Scenarios - 1x2

Scenario 1, illness and wellness tracking:

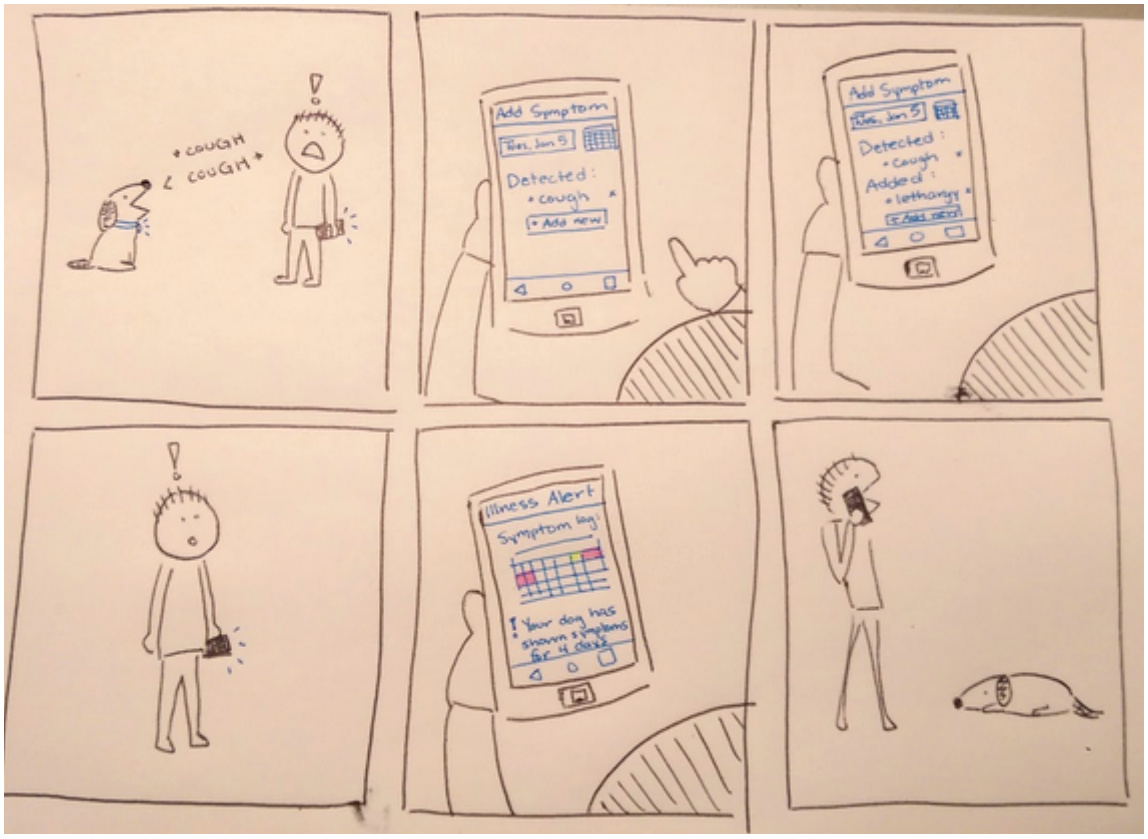
Ben has noticed that his puppy Kenji has been coughing lately; Kenji's tracking collar confirms this as it notifies Ben's phone of Kenji's cough. Ben confirms the cough as a symptom, and also manually inputs that Kenji was very lethargic that morning. A few days later, Ben gets a notification on his phone (and also his smartwatch, which he had the option of pairing with the app) that Kenji has been showing moderate symptoms of illness for four days, and the app suggests that he calls the vet. It also provides a symptom log for him, so he can tell the vet the exact symptom timeline and get the best diagnosis for Kenji.

Scenario 2, potty tracking:

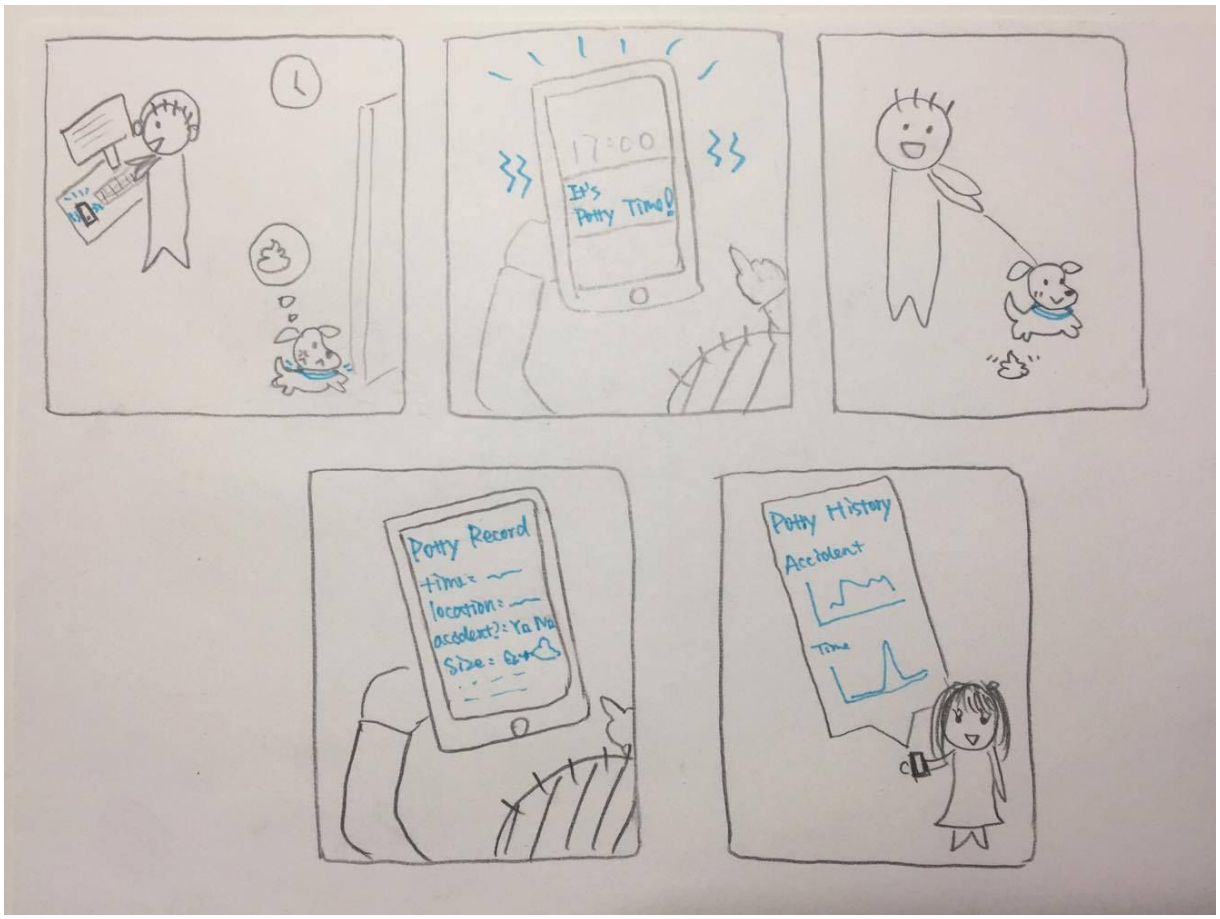
Sometimes Joseph and Anne forget to take out their puppy, Toby. Although Toby will sometimes go to the door when he needs to potty, his owners are not able to watch him constantly throughout the day. Joseph and Anne let their Bork app notify them when Toby's collar determines that he may need to go out. Joseph notices a notification and dismisses it to go take Toby out for a short walk so that he can relieve himself. After Toby finishes, Joseph uses his Bork app to quickly confirm that Toby pottied, and records some information about the results. Later, Anne looks at Toby's potty profile in her app to see statistics about how his potty training is going.

Storyboards

Scenario 1:



Scenario 2:


17:00
It's Potty Time!
Potty Record
time:
location:
accident?:
size:
Potty History
Accident
Time