



Low-Fidelity Prototype Report

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Mission Statement

UseSense is a simple, intuitive, and safe solution to give users and their family members peace of mind despite the barrier of distance.

Problem and Solution

People want to care for their loved ones, but don't know how to when they're separated by distances. UseSense solves the problem by allowing users to track the health of their loved ones and insure their safety during times of emergencies.

Included in this Report:

- **User Interface Design Options**
- **Selected User Interface Design**

- **Tasks Chart**
- **Task Storyboards**

- **Testing Method**
- **Testing Methods**
- **Discussion**

User Interface Design Options

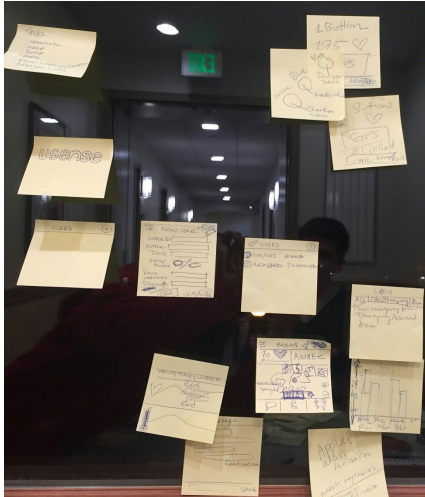


Figure 1

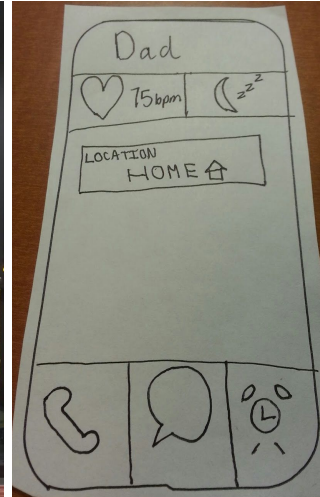


Figure 2

User Interface Design #1, “Simple and Clean”

Like its namesake, this design presents the app functionalities in a familiar format. The landing page displays all relevant health figures, and users can sense their loved one’s health in one glance.

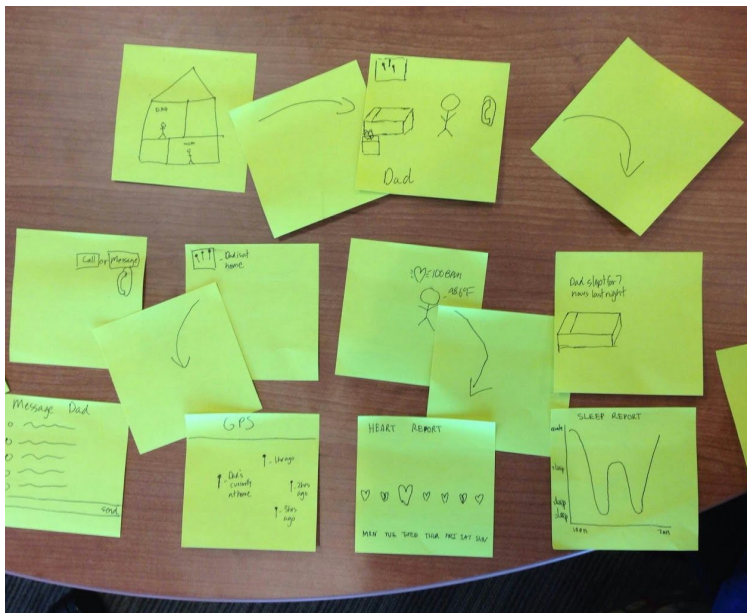


Figure 3

User Interface Design #2, “Tamagotchi”

Named after the game, the design displays a loved one’s avatar in a bedroom as the landing page. Functionality comes from tapping familiar objects, e.g. tapping on the bed will display number of hours slept last night, while tapping on the phone presents the option to call a loved one. Detailed information including sleep charts or heart rate graphs are also accessible via taps.

Selected User Interface Design: Simple and Clean

We decided upon using User Interface Design #1 “Simple and Clean” for two reasons. First, we felt the setup of roles is critical in an app whose goal is to create care and trust between two persons. The “Tamagotchi” design creates a strange dynamic of “owner and pet” which does not match our goal. Second, the “Simple and Clean” design functioned and flowed more logically in comparison test runs. We could almost visualize the sticky notes we were working with as if we were using an actual app.

Tasks Chart

This chart highlights the main functionalities afforded in the Usense app. More functions are covered by individual screen breakdowns in a later section. For the purposes of describing the tasks, we will assume the user is caring for his or her Dad.

User Tasks	Detailed Interface Instructions for Completing the Task
Checking Heart Rate	The main screen (Fig. 2) has a heart icon which will display a recent count of Dad's BPM next to it, i.e. ♥ 75 bpm.
Finding Hours Slept	In the same way it displays the heart rate, the home screen has a symbol of a moon and cascading z's to represent sleep. Although not shown in Fig. 2, a future interface design might display hours slept last night to continue with the theme of instant information at a glance. Tapping the sleep icon will bring up a sleep chart to track patterns in sleep duration.
Sending a Message Making a Call Setting an Alarm	The home screen displays 3 icons at the bottom tray with recognizable functionalities. Tapping on an icon will take the user to a different screen to carry out the desired task. For a clearer look, observe Task #1 (Fig. 4) in the storyboards below.
Checking Location	On the locator screen, the centermost space will be dedicated to GPS and location. The most recent location will be displayed in text, e.g. Location: Cantor Art Museum. The user can tap the location to get a more map-like interface and even have the option to see recent places where Dad has been.

Task Storyboards

Task #1 We began with a task in which the user connects with the person they are caring for. The alarm process is interactive; Dad gets the choice to accept or reject an alarm, creating a novel situation which we can observe.

Task #2 UseSense's greatest goal is to keep our users' loved one's safe from afar, and therefore putting the user in an emergency situation is a necessary task. We tested the user by having a screen pop up notifying the user that their loved one activated a distress alert through the UseSense watch. The app then allows the user to contact their loved one if they wish to do so.

Task #3 In one bold move, we decided to narrate a background story in which Dad attempts a healthier lifestyle and implements a new exercise routine. From there, we asked the user to interact with the app to check how Dad was doing with his health goals. Being a more open-ended task, we wanted to see how users would go about the task and expose design flaws in the process.

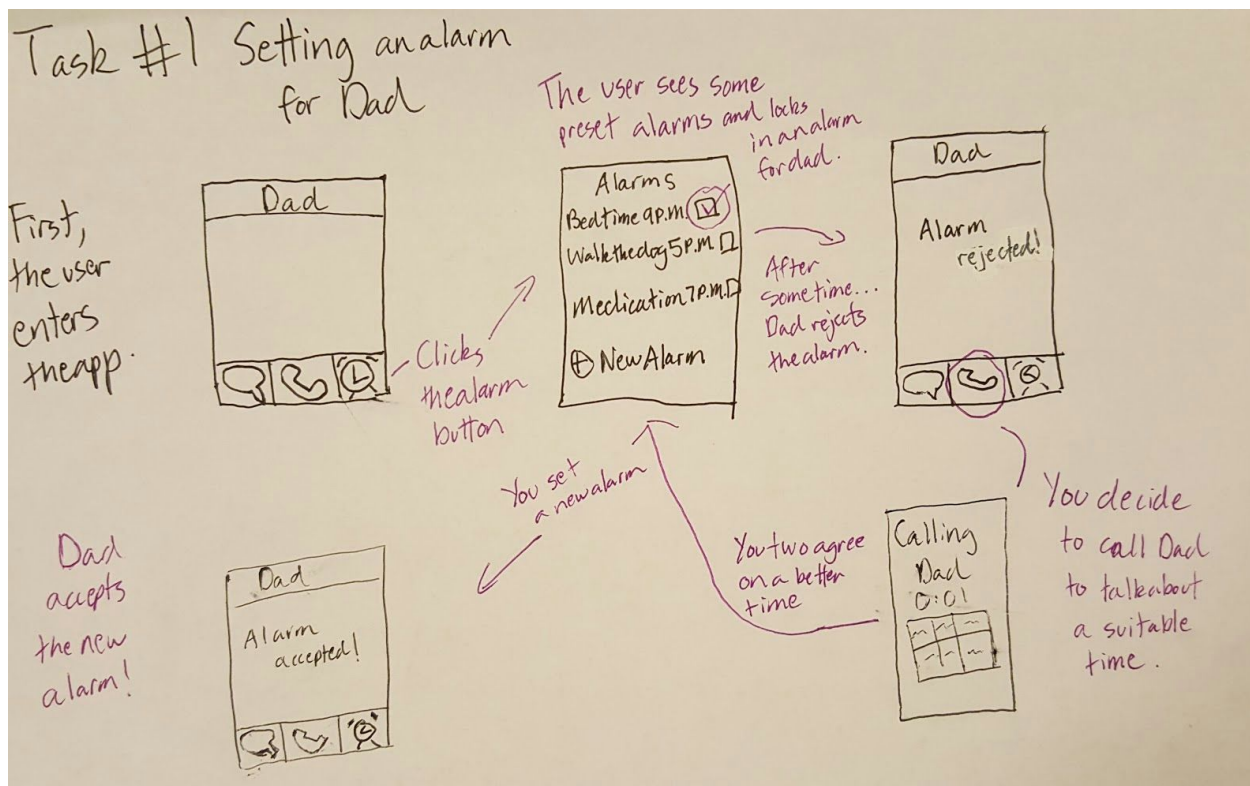


Figure 4

Task #2 Mom is in an Emergency!

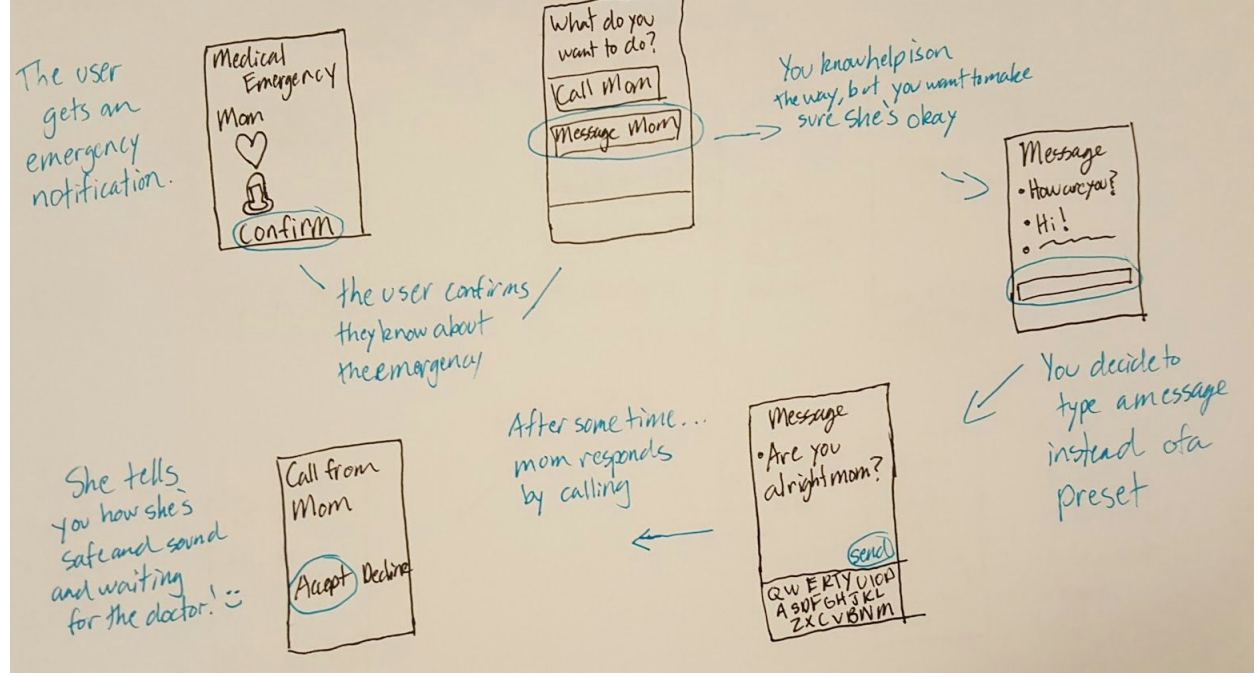


Figure 5

Task #3 Checking Dad's Heart Rate

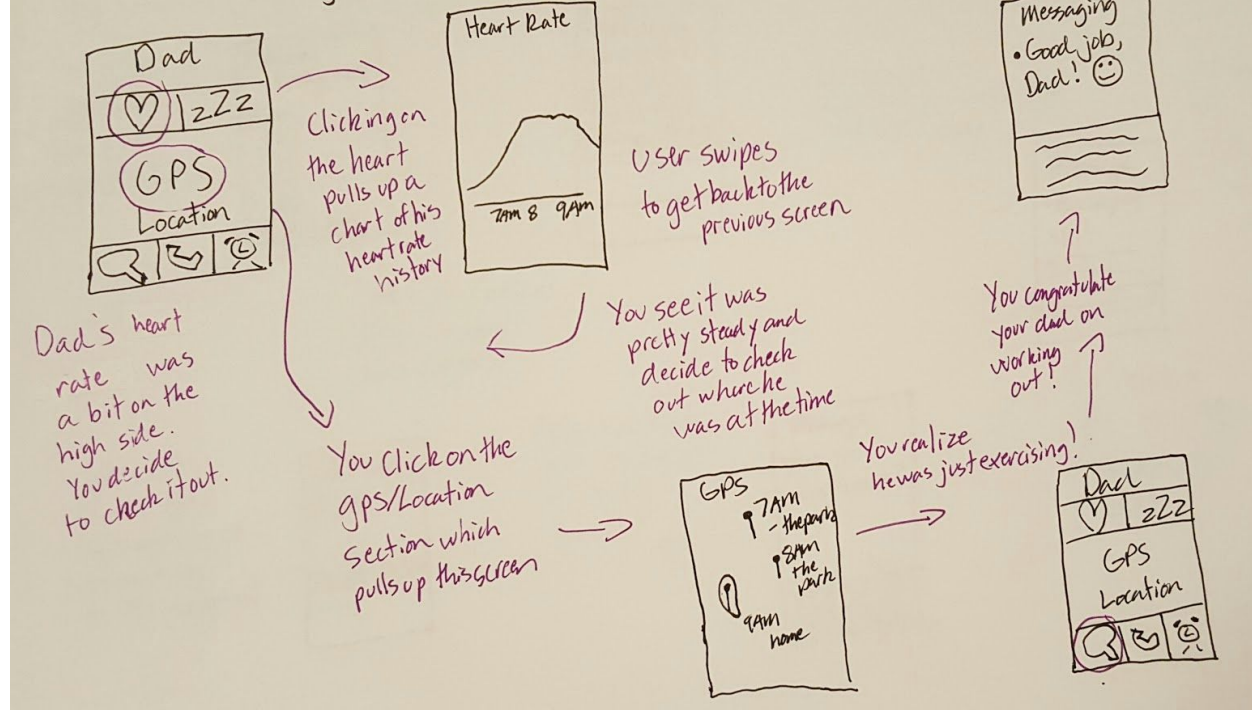


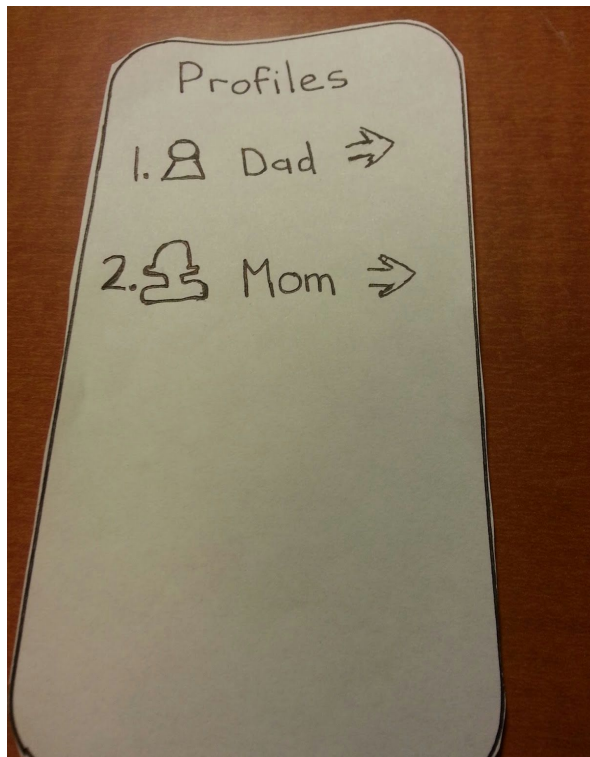
Figure 6

Prototype Description

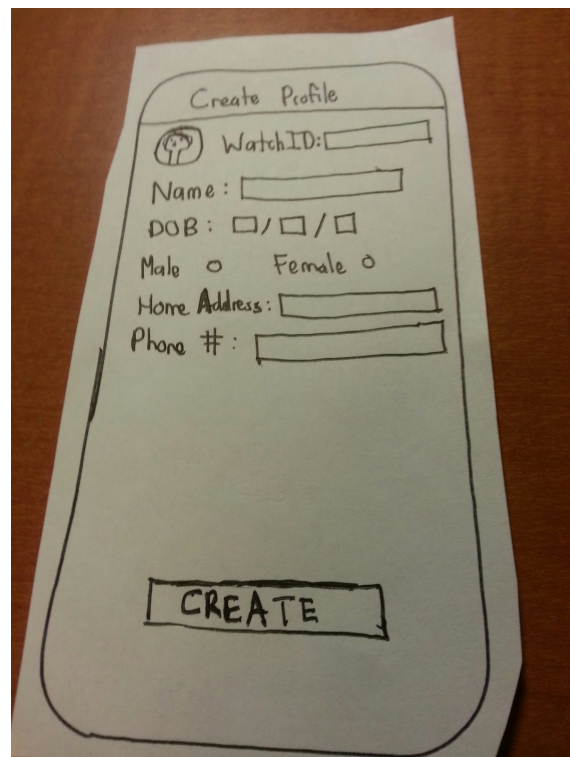
Our low-fidelity prototype and the triple-tasks test both serve to test UseSense's main functionalities: monitoring heart rate, sleep and location. Our prototypes also focus on facilitating communication with loved ones in a familiar way. Thus, the call function directs to the iPhone's native telephone app, while the message and alarm functions mirror the iPhone's native apps.

The prototype is controlled with touch input. Taps pull up more detailed and informative screens while swipes return to other screens in the app. Our prototype has 14 screens in total.

Individual Screens



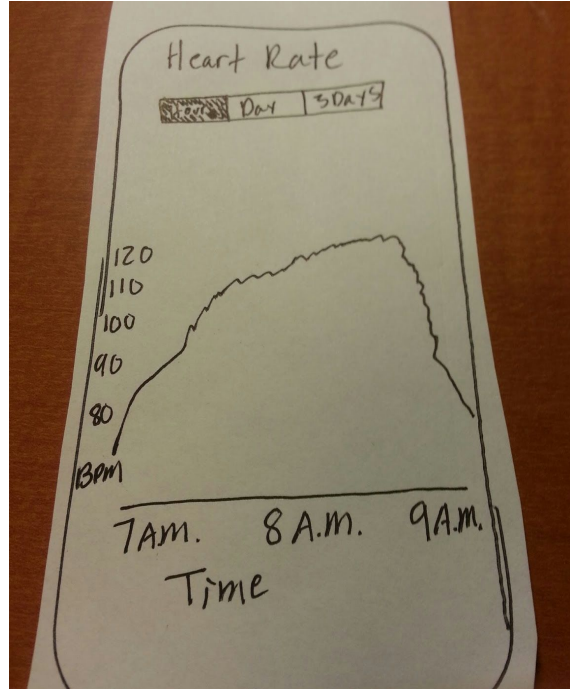
The first screen displays the loved ones who have been entered into the app.



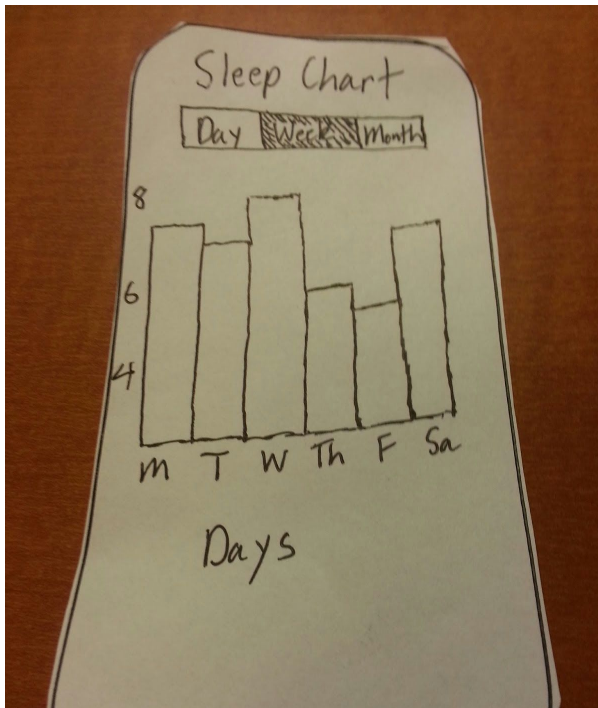
This screen allows the user to enter a new person to care for.



Here is the main screen for a loved one. It shows their location, their heart rate, and options to contact them and access charts.



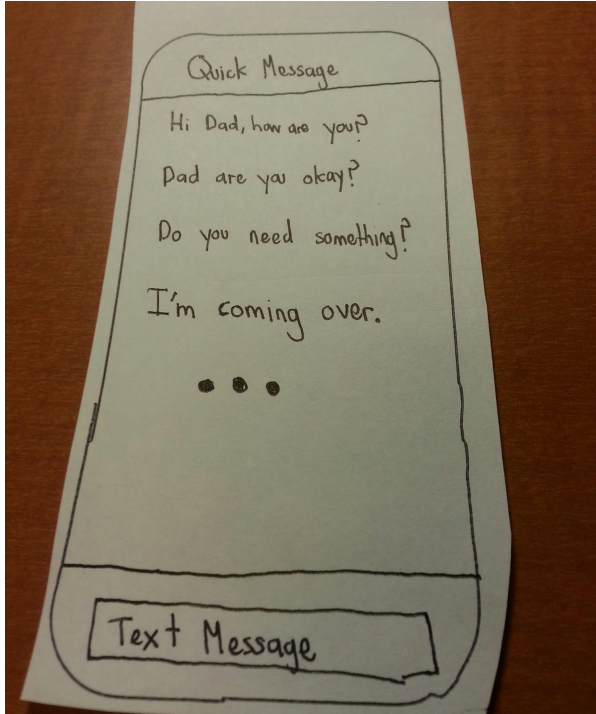
Tapping the heart will take the user to the loved one's heart rate over the last hour, day, or three days.



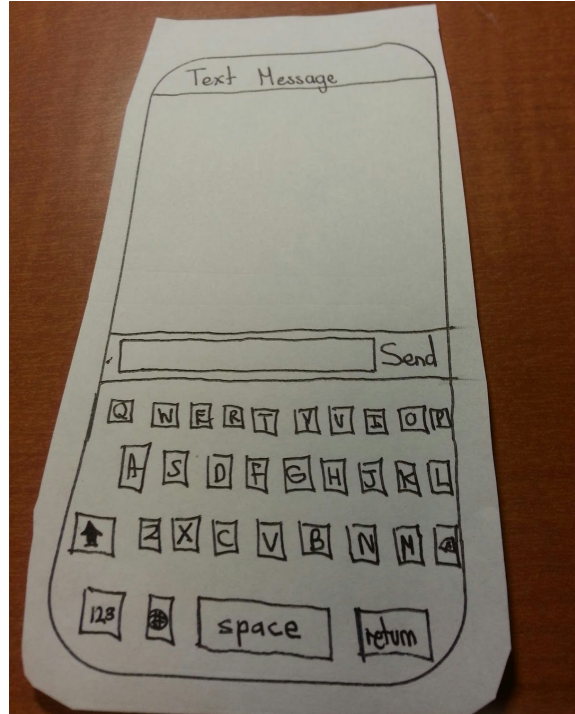
Tapping the moon will take the user to the loved one's sleeping patterns during the last night, week, or month.



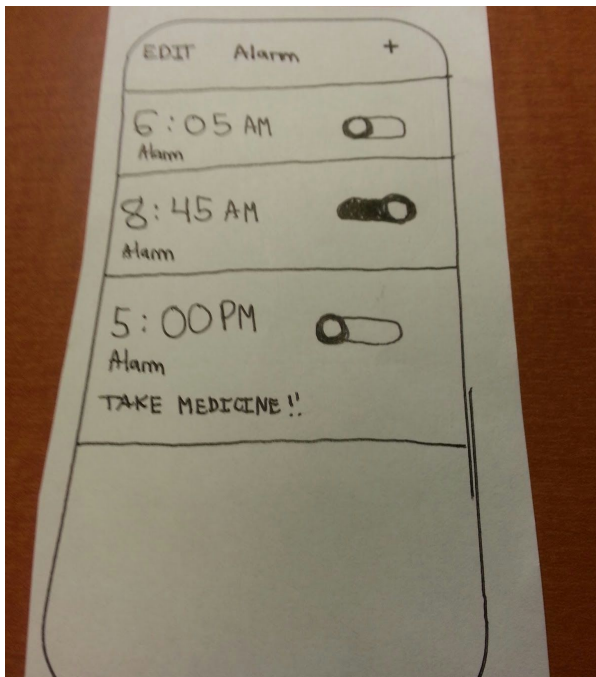
Tapping the phone will take the user directly to the iPhone's native telephone application.



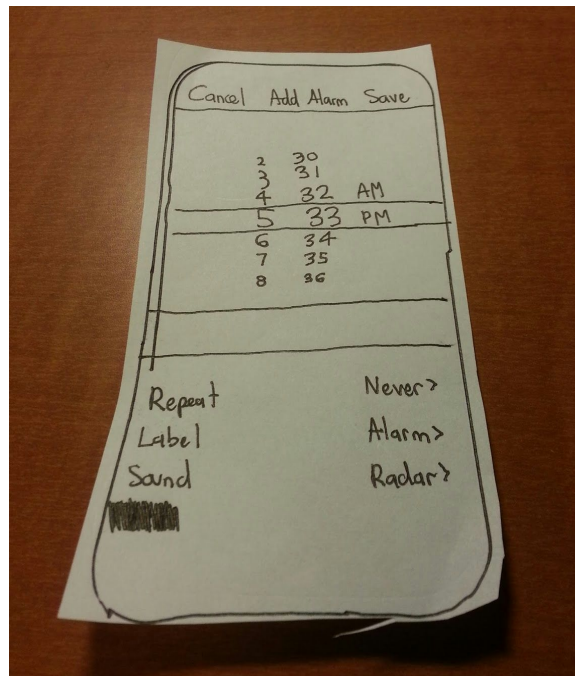
Tapping the text bubble will cause this screen to pop up and gives the user quick options to text their loved one.



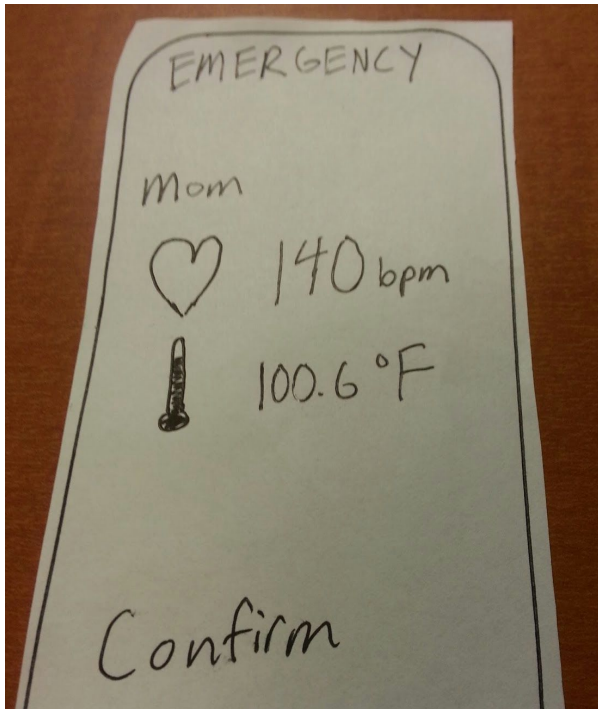
Users can tap "Text Message" and use the full keyboard to type their own messages.



Tapping the clock will take the user to a screen where alarms are displayed. The user can turn on/off any alarm or edit/create new alarms.



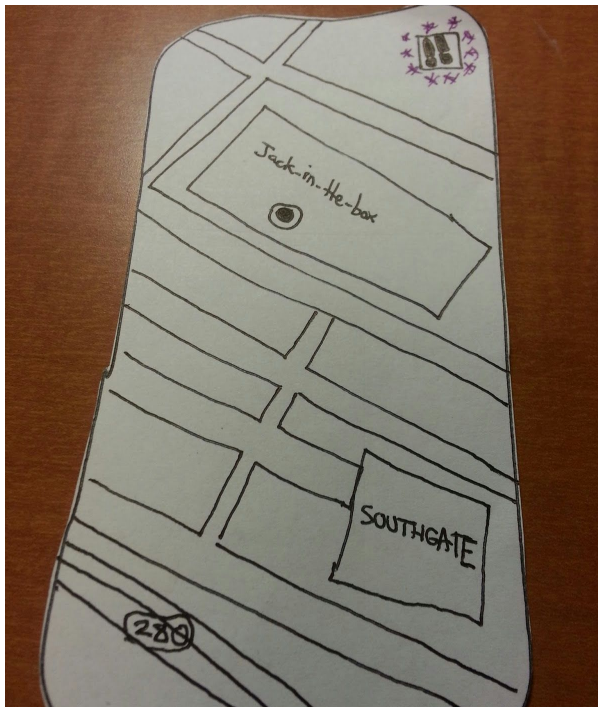
When the user taps to create a new alarm, this screen gives them the options to create the new alarm.



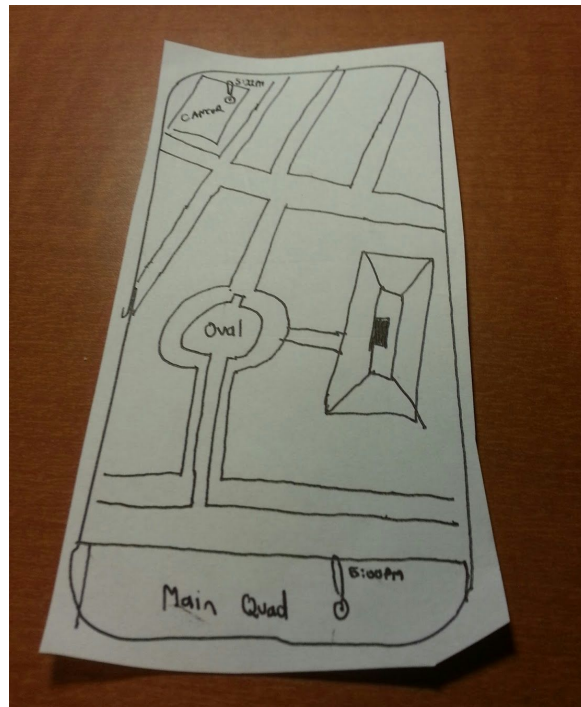
When an emergency alert comes from the loved one's wearable, the user is immediately notified with this popup window.



After an emergency notification, this screen appears and allows the user to quickly contact their family member through a text or call.



Once the user taps the locator on the main screen, this page is displayed. It shows a loved one's current location.



Tapping the shoes icon will show previous locations a loved one went and what times they were there for easy tracking.



This is an overview of all 14 screens. We used sticky notes to model transitions between screens.

Testing Method

Tests took place in an Old Union meeting room. The environment had ample space and a closed door allowed for less distractions for our testers. We recruited participants of different backgrounds with the compensation of a food or drink item from the Axe and Palm. We aimed for students whose parents lived in a different country or where there was a clear sense of distance. We also had a participant who was actually using a smartwatch which provided an opportunity to test usage with an accessory.

We first introduced our participants with a short spiel about Usense and asked them to notice how our teammate, Manuel, would interact with the app. Manuel would then go demonstrate with the screens and vocally narrate his actions. This addition of a vocal stimulus may be a factor to reconsider in future tests, but we felt it would make sense in the context of a demonstration.

We set up the paper prototype by hiding the screens behind a barrier to prevent the participants from seeing screens they hadn't interacted with yet. Larry vocally walked the participants through the three tasks. Manuel demonstrated how to check the sleep log, a function that was not being tested in the three tasks we chose. Isaiah worked as the machine and controlled the screens. Jacqueline took notes of critical events during the tests.

Test measures we were looking for were signs of confusion, times when users got stuck, and potential changes that users might voice when using the app.

Finally, we also had a special case where we performed a test through Skype. The testing process was somewhat different. For setup, we made sure that our outgoing webcam resolution was sharp enough for our participant. Next, since touch commands just can't take place through Skype, our participant was asked to voice his touch commands i.e. "I tap the heart icon." We still had Manuel run a demonstration through the Skype webcam.

Testing Results



Participant 1 Our first participant is an international student from Brazil. The main takeaways from this test includes the participant’s wish for more clarification on the numerical side of things i.e. he wondered what 140 bpm was compared to regular heart rate.

Participant 2 The second test was run through Skype as we felt Participant 2 was a good candidate. Both of his parents live in different parts of the world (China and Europe) and as a college student in the States, keeping track of his parents might interest him. Similar to the results of the first test, our second participant wanted more clarification on parts of the interface. For example, the chat interface had a default screen for preset messages i.e. “How are you?”. However, at the bottom of the screen there was a bar with the caption “Text Message” which would pull up a QWERTY keyboard. Given that he’s used a phone before, he knew that it would do that, but he voiced that it should be “Type a message” instead of simply “Text Message”.

Participant 3 Our third participant is a smartwatch user. During this test, events went off track from the planned script multiple times. The participant went about tasks in a different manner i.e. calling instead of messaging, but still eventually completed all the tasks. One function that he was not expecting was an alarm being rejected. On this platform, a user can “suggest” an alarm for their loved one. During the test, Dad rejects the alarm (scripted) and we prompt the participant to set an alarm at a time that works better for Dad. Once again, this participant also asked for more clarity on certain interfaces, noticeably better visualization of the health charts.

Discussion

We received a lot of criticism asking for clarity on understanding labels and help on reading charts. While indexing charts properly is a simple fix, we may need to add legends or guides to help explain the meaning behind the numbers, e.g. including color scale or pictures to differentiate between poor and healthy heart rates. Our next redesigned prototype will address these issues.

We were quite glad that despite these little mishaps, the tests all ran very smoothly. In particular, the test performed on Skype actually translated quite well. This indicates the interface is intuitive and easy to understand, although it can be improved. The Skype experience may prompt future development of a voice-based interface akin to Siri and Cortana. Given that these test runs did not test the Usense watch wearable itself, we may want to consider making a quick paper prototype for that interface. It is important to keep both user parties in mind as Usense deals with multiple users at once.