

Vesta

Low-fi prototype testing

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Roles

Team manager: Allen Z

Design: Yinglan M

Usability testing: Allen Z, Mohana M

Software engineering: Mohana M, Yinglan M

Introduction

Value Proposition: Start every day on a high note

In our needfinding interviews, we found that many people had dull and lethargic home lives. Our proposed solution to help alleviate this is Vesta - a voice-controlled intelligent audio assistant that motivates you using music. It wakes you up, encourages you to do your household chores, reminds and prepares you for events (such as meetings, dates, etc.), and plays music based on your mood. Our target audience includes everyone that frequently lives in an area for an extended amount of time (so homeowners and apartment-dwellers) and has to maintain that space. We hope to help all of these people improve their lives at home, no matter the background.

Sketches

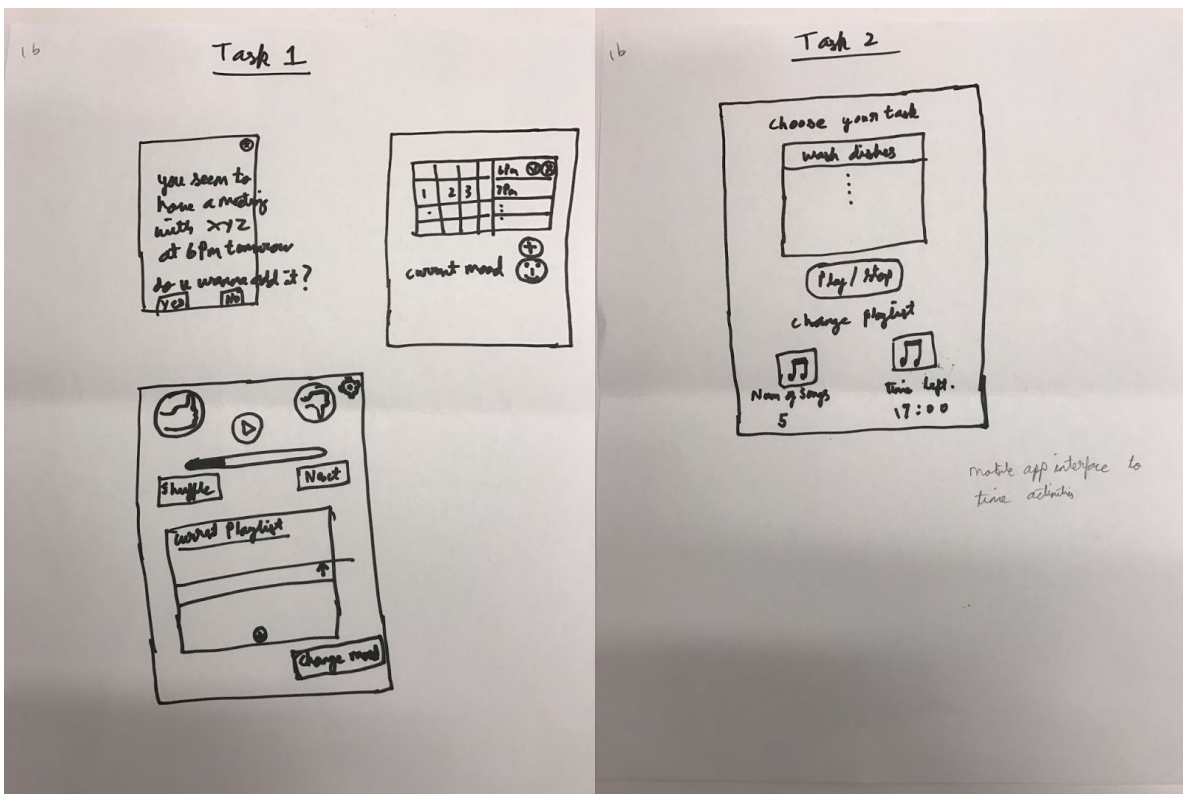
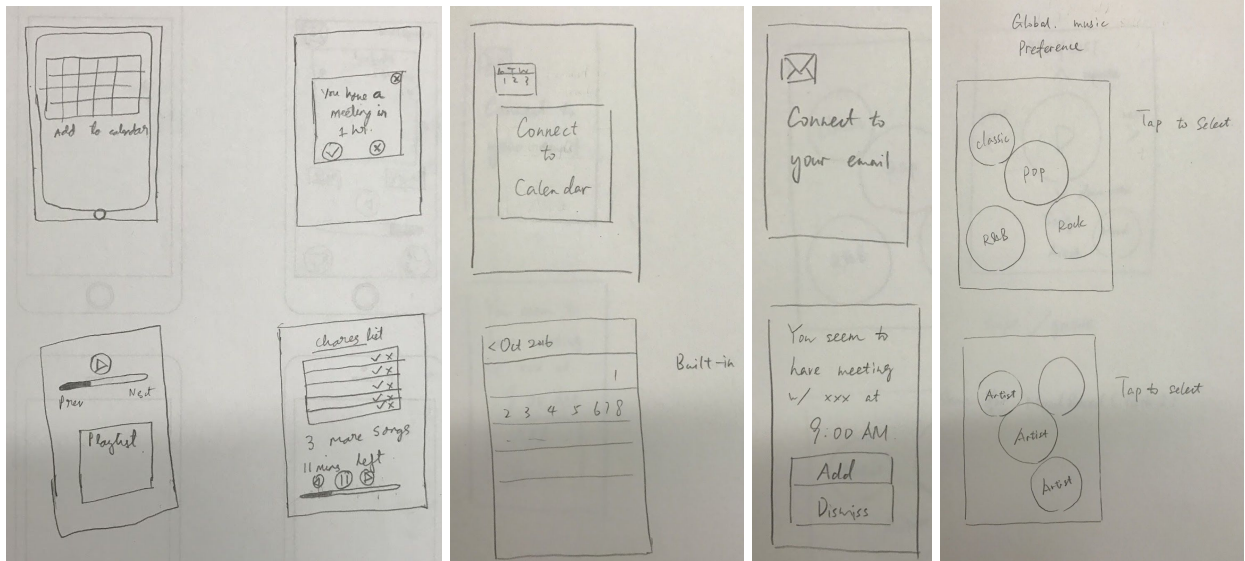


Fig. 1: Concept Sketch for Smartphone App

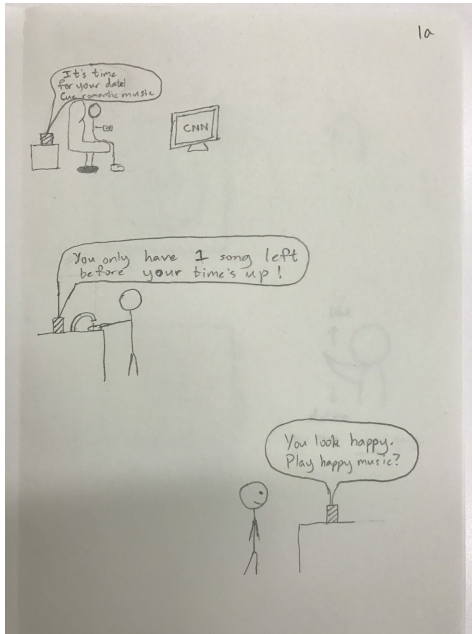
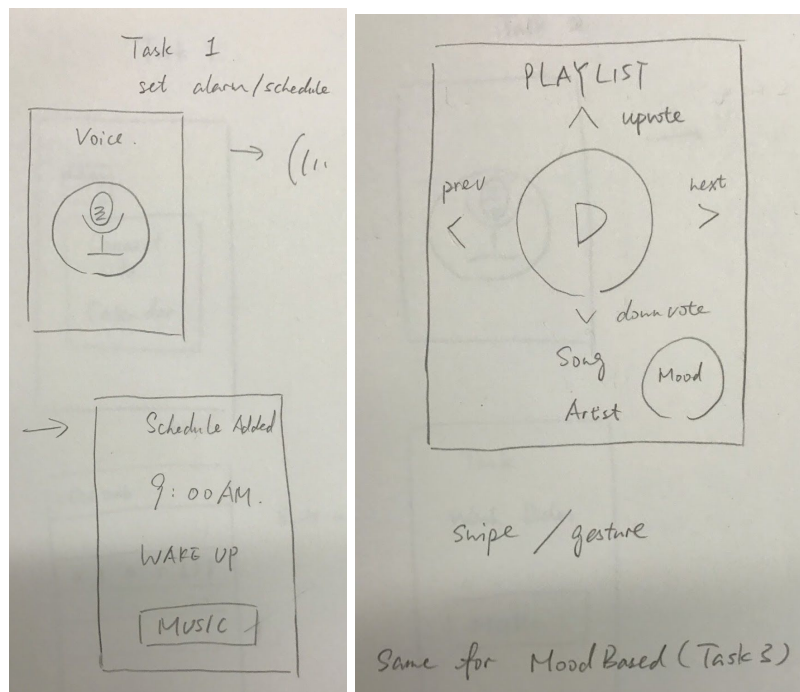


Fig. 2: Concept Sketches for Echo-style App



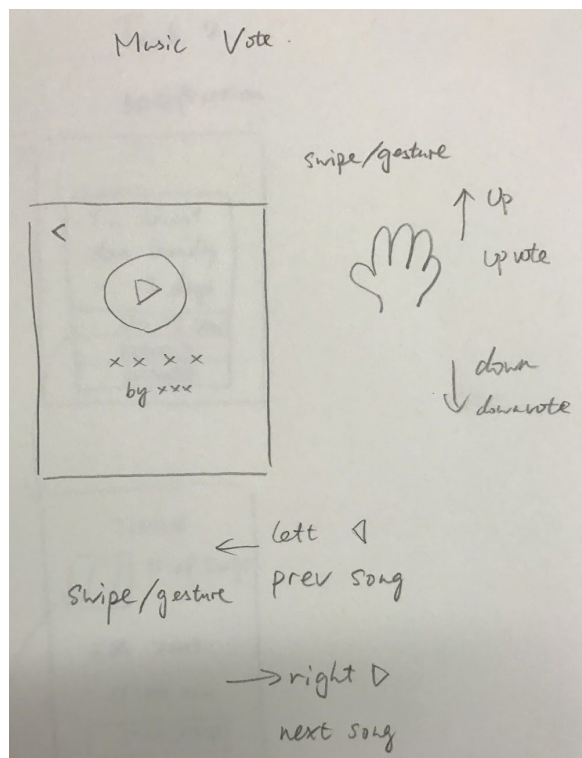
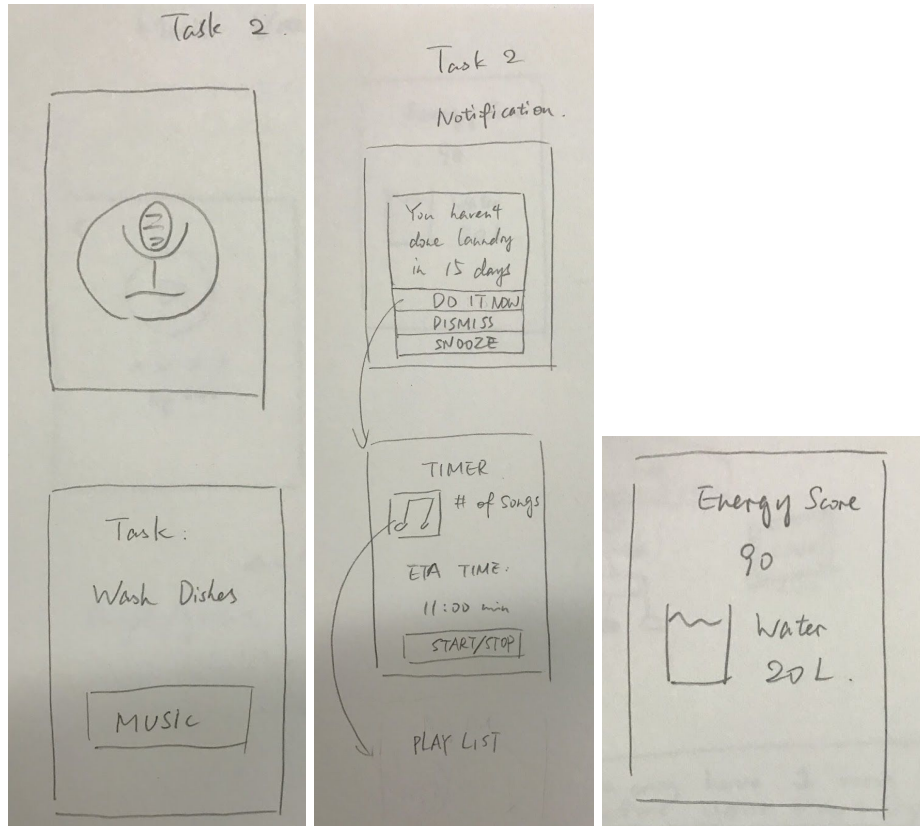
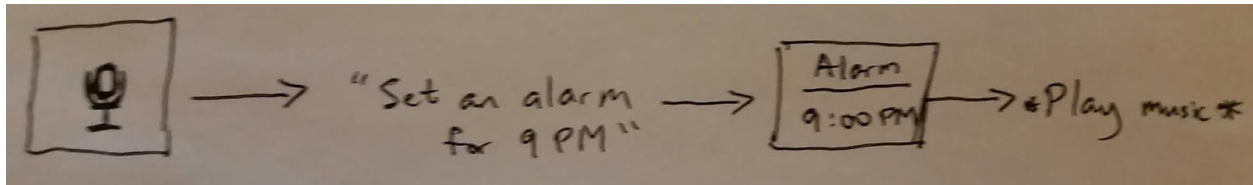


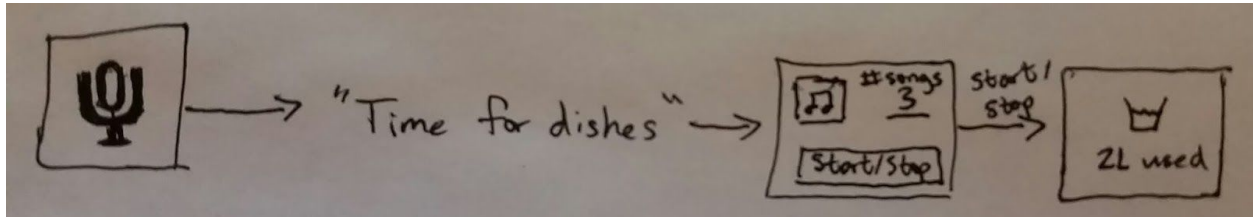
Fig. 3: Concept Sketches for Smartwatch App

Selected Interface Design

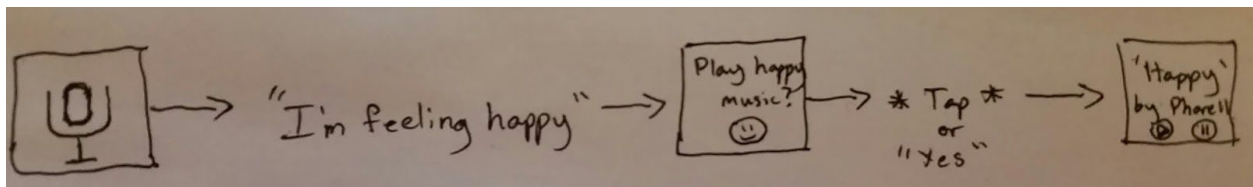
Task 1:



Task 2:



Task 3:



Vesta is the music screen. Left and right arrows are used for switching to previous/next song, while up and down arrows mark if the user like this song or not.

To add an event alarm to the system, the user states the time, event, and (optionally) mood of music that they want to play; this leads to a confirmation screen. At the time of the event, an alarm screen will pop up and Vesta will start to play music.

Users will also get notifications for their unfinished household chores. When doing chores, Vesta will act as a music timer and give feedback on resource usage.

Based on the user's mood, Vesta will provide music suggestions and play songs according to your preferences. First, however, the user must tell Vesta what music they associate with that particular mood.

Task 1: Simple Task

Set an alarm for an event with a joint voice-screen interface. Listen to the music to get ready for the event.

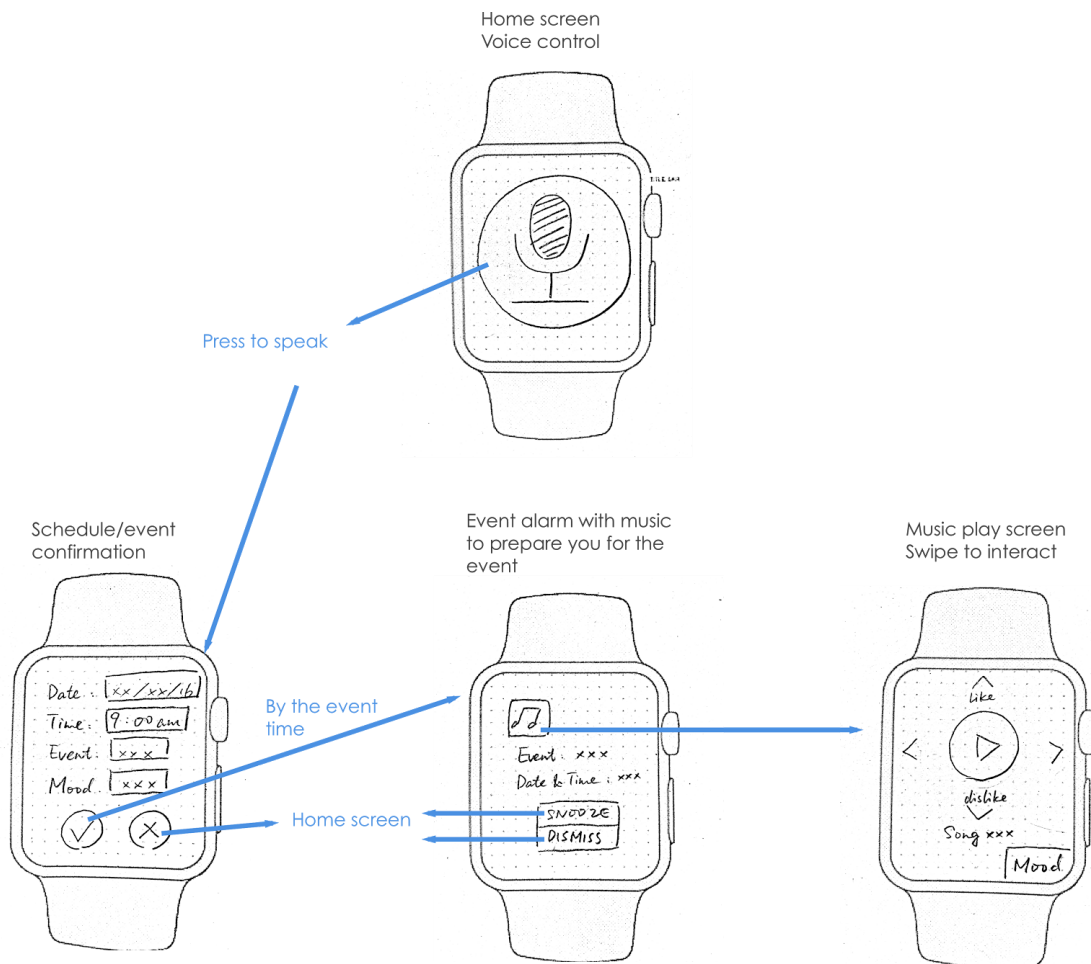


Fig. 5: Prototype Task 1

Task 2: Moderate Task

Get reminded to do household chores, time your household chores (like dish washing) using music, and track your energy footprint.

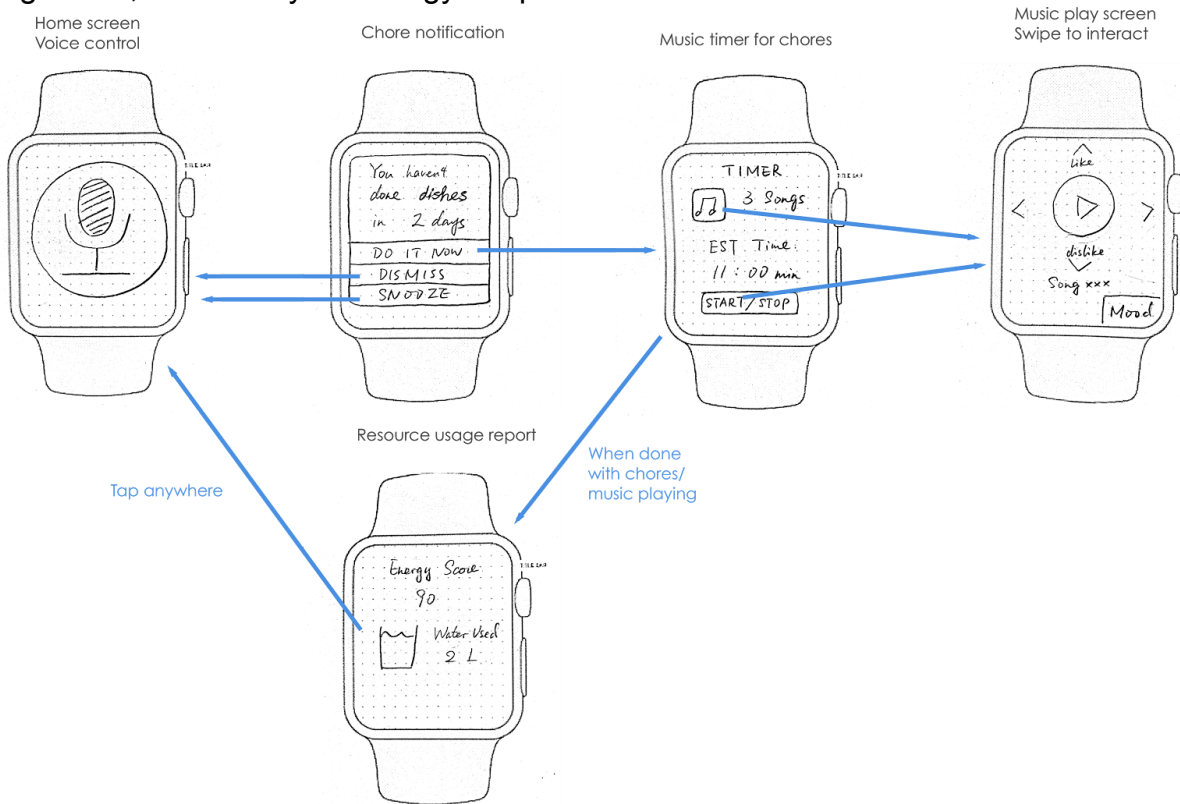


Fig. 6: Prototype Task 2

Task 3: Complex Task

Customize type of music wanted during a particular mood. Automatically suggests and plays music based on mood.

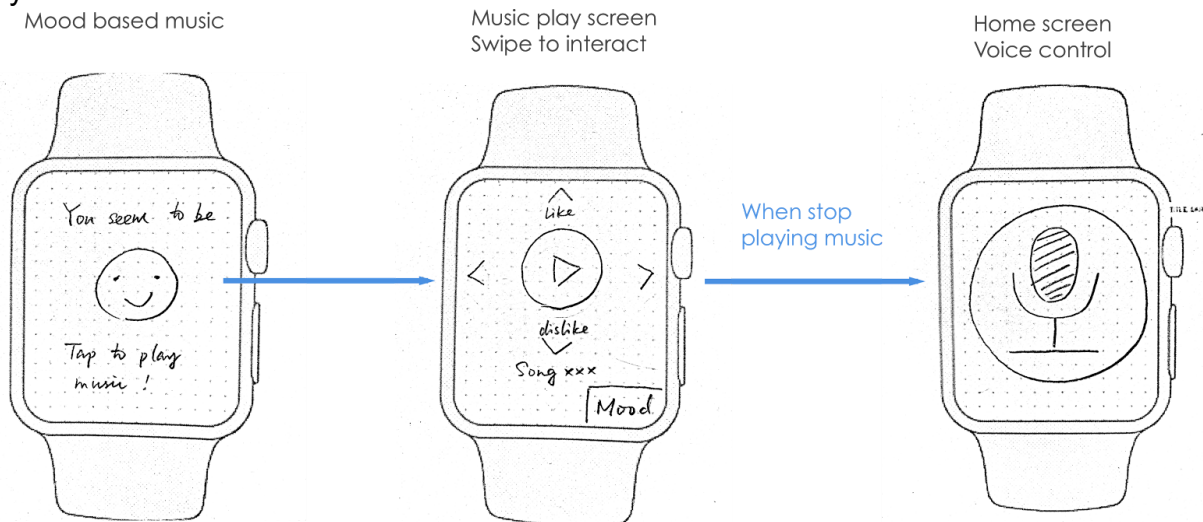


Fig. 7: Prototype Task 3

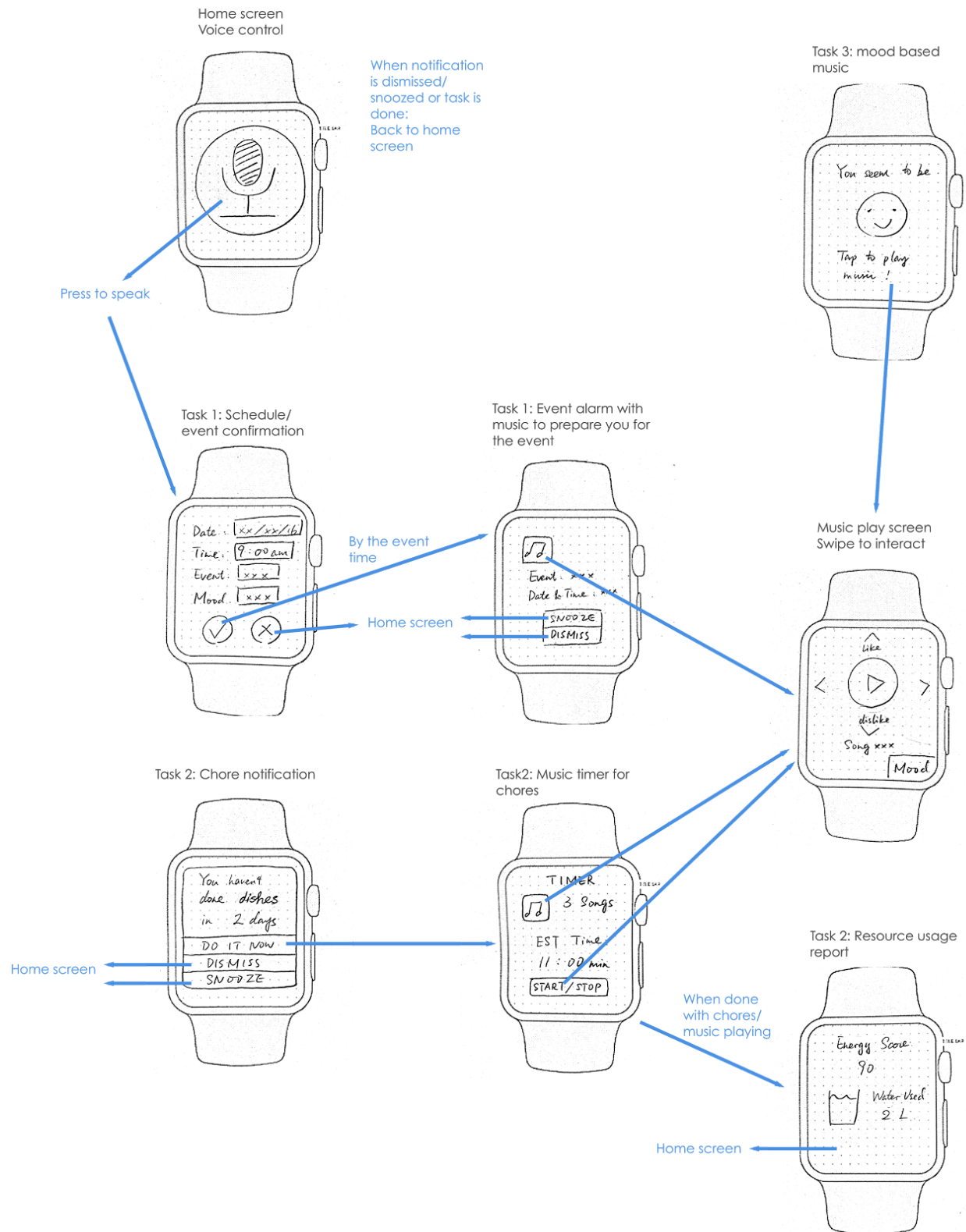


Fig. 8: Prototype Overview

Method

Environment

We found and interviewed all 3 of our participants at Tresidder Union on the afternoon of October 27th, 2016. We conducted our candidate interviews at a table that was relatively sheltered from external noise, as our prototype included audio elements that we wanted the candidates to hear clearly.



Participants

Since our demographic includes anyone who usually lives in one place (essentially barring extreme high-frequency travelers), we chose candidates based only on that criteria. We managed to get a good level of diversity in our choices while ensuring that we did not interview any Stanford students (this was done to minimize

prior knowledge of CS 147). Additionally, we did not compensate any interviewees. Our first interviewee was a young Panda Express manager who lives in a San Jose apartment. She hated chores and often had no energy when getting home, which made her the perfect candidate for our application. The second interviewee was a retired professor who lived in a house in Palo Alto; he also had little motivation to do housework on a daily basis - even without a fulltime job. Finally, we talked to a father that hated dealing with chores after work.

Tasks

We had 3 tasks that we wanted to test:

- 1) Set an alarm for an event with a joint voice-screen interface.
 - This task was simple in that a user can do this with just 1 or 2 sentences, plus a tap.
 - We also wanted to ensure that users would be comfortable interacting with an app via speech.
- 2) Get notifications on doing chores, play customized music during the chore (in this case, doing the dishes), and monitor resource usage for that task.
 - We considered this task moderate in that it required some user input beyond a simple statement - namely, figuring out the number/type of songs that would be played.
- 3) Customize the music you would like to hear based on your mood, then call on the application to listen to that music.
 - This is our complex task due to the training that's required for the program to recognize 'good' songs to play for the user.

Procedure

Our procedure was fairly simple. Allen explained the purpose of our app to each subject and the commands that they could utilize to initialize each of our 3 tasks. We allowed the users to choose which task they wanted to do next so we could analyze the flow of their actions. Allen acted as the Vesta application, responding to user requests the same way the assistant would. He also updated screens after button clicks or vocal prompts. Mohana observed and recorded notes during the trials.

Test Measures

Going into the tests, we wanted to identify any pain points or areas of confusion for our subjects. We would like for our product to require minimal explanation during actual usage, so we paid particular attention to:

- Confused expressions
- Screens where subject floundered without any instructions
- Design elements that the subject really liked

Results

Participant 1: Our 1st participant was a young female from San Jose. She first tried out Task 2 (in which the user is notified about dirty dishes and pretends to clean them with music in the background). She was shocked by the notification and immediately pressed the “continue to do dishes” button. However, she was confused at the next screen and took a while to set the type/number of songs she wanted to play - though she approved of the energy conservation screen. Next, she tried out Task 1 and breezed through it, enjoying that she could simply tell the app what to play as the alarm. For Task 3, she was initially a bit confused on how specific she should be when the application asked what she considered ‘happy music’. Once she stated ‘radio pop’, she quickly finished.

Participant 2: The 2nd candidate was a retired professor living in Palo Alto. For his first task, he chose Task 1 and used it to set an alarm for a nap. He had absolutely no issues with this task and even noted that he enjoyed the way it extracted information from his voice command so that he did not have to fill out anything. Once he finished this task, he started Task 2 - which he promptly dismissed as he didn’t want to do the dishes. After we pretended a day had passed by, he grudgingly accepted the ‘dirty dishes’ notification when it came up and went through the task with no difficulties. Finally, for Task 3, he finished easily by immediately training the app on Bob Dylan music.

Participant 3: Our final candidate was a father who was visiting the campus on his way to see his daughter. He chose Task 1 first and quickly finished it, noting its convenience in extracting vocal data. For Task 2, he clicked ‘snooze’ the first time it appeared. When it appeared again, he sadly pressed the ‘do it now’ command. While he was initially confused about the screen asking for him to set number/type of songs, he figured it out quickly. He also liked the conservation screen, but was not sure he would ultimately use it often. Finally, for Task 3, he was a bit hesitant on the training aspect, but eventually told the app to play ‘classic rock’. Once done, he told us that it was a great feature.

Discussion

In the end, we gained some key insights into the UI elements that we need to improve on. In particular, we found a few common problems:

1. The screen asking the user to set number/type of songs to play while they cleaned the dishes caused consistent confusion.

2. Users experienced negative emotions at the appearance of Task 2's notification screen because they didn't like doing dirty dishes.
3. Candidates were confused when we asked for their music preferences without any visual change in the screen that they were on.

Given these issues, we have decided on a few improvements to make. First, we need to make sure that the 'music during chores' setup screen is entirely intuitive. As of right now, it isn't clear what the number of songs is supposed to mean to the user. While we want to reduce clutter on the screen, we need to either add explanations to that page or add some vocal cue that tips the user off. Second, we need to ensure that users don't feel just disgust when a chore notification pops up. This app is meant to encourage users to be more proactive when it comes to menial tasks, but we need to incorporate some kind of motivational audio (such as an inspiring movie clip) to make that happen. Finally, we need to create a screen that asks users to input their music preferences - a purely audio cue does not work when the screen remains static.

Moving forward, we also need to modify our project scope. After his 3 tasks were done, Participant 2 wanted to keep going by asking us to read him headlines from the New York Times. While this was not included in our tests, we need to keep extra features in mind due to the general nature of our application. As an audio assistant and motivator, Vesta *should* have basic features like news aggregation. However, we have to be cautious that our project scope does not inflate exponentially. In the end, we intend to make the changes mentioned above and keep all the elements that users enjoyed, crafting a highly functional, intuitive, and clean application.

Appendix

Word Count: 1866

Consent Form

Consent Form

The Vesta application is being produced as part of the coursework for Computer Science course CS 147 at Stanford University. Participants in experimental evaluation of the application provide data that is used to evaluate and modify the interface of Vesta. Data will be collected by interview, observation and questionnaire.

Participation in this experiment is voluntary. Participants may withdraw themselves and their data at any time without fear of consequences. Concerns about the experiment may be discussed with the researchers (Allen Zhao, Mohana Moorthy, and Yinglan Ma) or with Professor James Landay, the instructor of CS 147:

James A. Landay
CS Department
Stanford University
650-498-8215
landay at cs.stanford.edu

Participant anonymity will be provided by the separate storage of names from data. Data will only be identified by participant number. No identifying information about the participants will be available to anyone except the student researchers and their supervisors/teaching staff.

I hereby acknowledge that I have been given an opportunity to ask questions about the nature of the experiment and my participation in it. I give my consent to have data collected on my behavior and opinions in relation to the Vesta experiment. I also give permission for images/video of me using the application to be used in presentations or publications as long as I am not personally identifiable in the images/video. I understand I may withdraw my permission at any time

Name _____

Participant Number _____

Date _____

Signature _____

Witness name _____

Witness signature _____

click "mood" & say more quiet

place to top for home.

can you connect to me to New York Times?

click estimate time - 25 mins.

exclaimed about water used.

③

options:

mood based music.

click mood - what happens.

dishes - snoop.

- alarm dismiss through home.

-

gahomeda class.
dharma setting screen

{ dal hi.
No mood.

garely - Panda express
from San Jose.

Shocked. to see dist notification.

Set screen of timer - got confused.

didn't understand.

Does song randomly play or
choose the song?

How UI to ask to play music

↳ happy music part confused.

drop down menu for event, mood.

back button to go to home screen

How to enter the options

dialog added: hold for help, tap to

Talking to watch - mode

set alarm for 1/2 hour (Automatically do it).

no clicked mood -

how to go to home screen.

↳ confused.

smiles at notification - dismiss.

Suggest something different to do.