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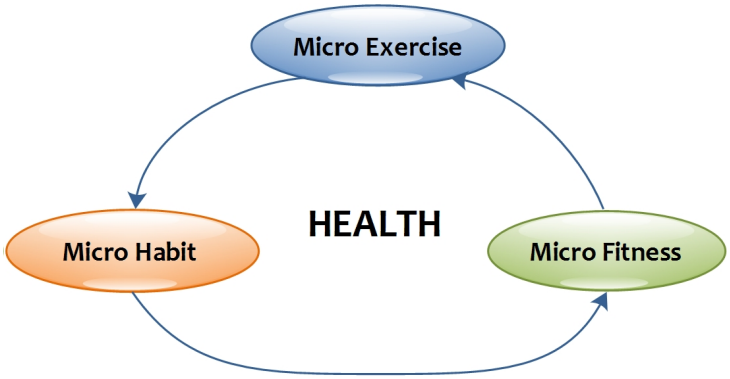
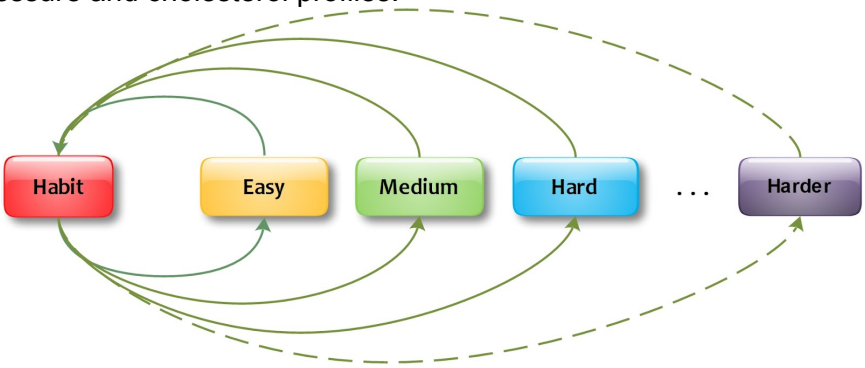
Mission Statement (1 Paragraph)

Encourage short bursts of exercise regularly throughout the day that will accumulate to a higher level of fitness and overall health.



Problem + Solution Overview (1 Paragraph)

America, Europe, and even China, are facing an obesity epidemic. Lack of exercise is one major component to this and other critical health problems (e.g., diabetes and cardiovascular disease). When asked why they don't exercise, the majority of people will say they don't have the time to invest into going to the gym. Is there a way to change how people think about daily exercise? An experiment conducted at Arizona State University showed that when subjects performed three ten-minute walking sessions, they had controlled their blood pressure just as well, if not better, than when subjects performed a single 30-minute walking session. More frequent exercise also leads to a raised metabolism which helps with burning calories and losing weight. Another study, performed at Queen's University, Canada, showed that children having repeated sessions as short as 5 minutes of running had a significant positive effect on the child's blood pressure and cholesterol profiles.



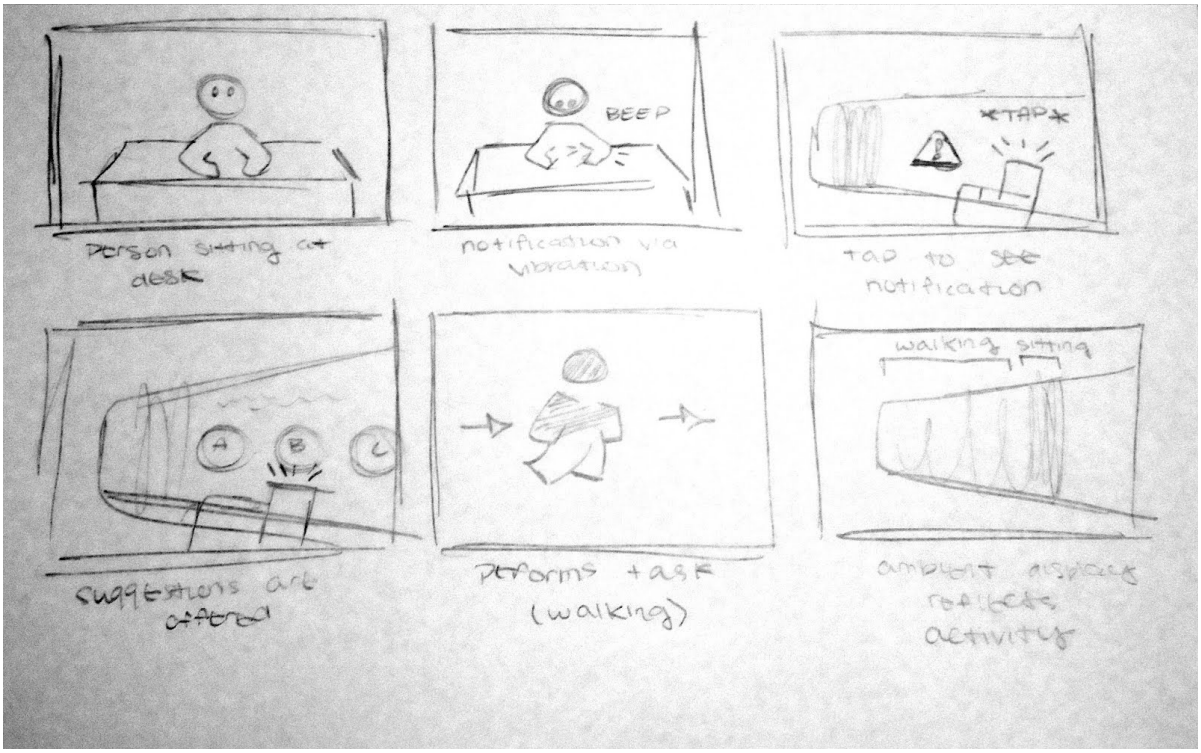
Our solution to the exercise challenge is to break up the amount of exercise one would normally do in a day into smaller fragments so as to make exercising during the day more manageable and less obtrusive. We will facilitate healthy decision making by making these choices routine and easy to perform. An ambient display worn on the customers wrist will communicate both

their exercise accomplishments as well as new behaviors. We believe through daily, routine micro-exercises one can produce results similar to daily, extensive exercise sessions.

Tasks/ Scenarios (½ Page)

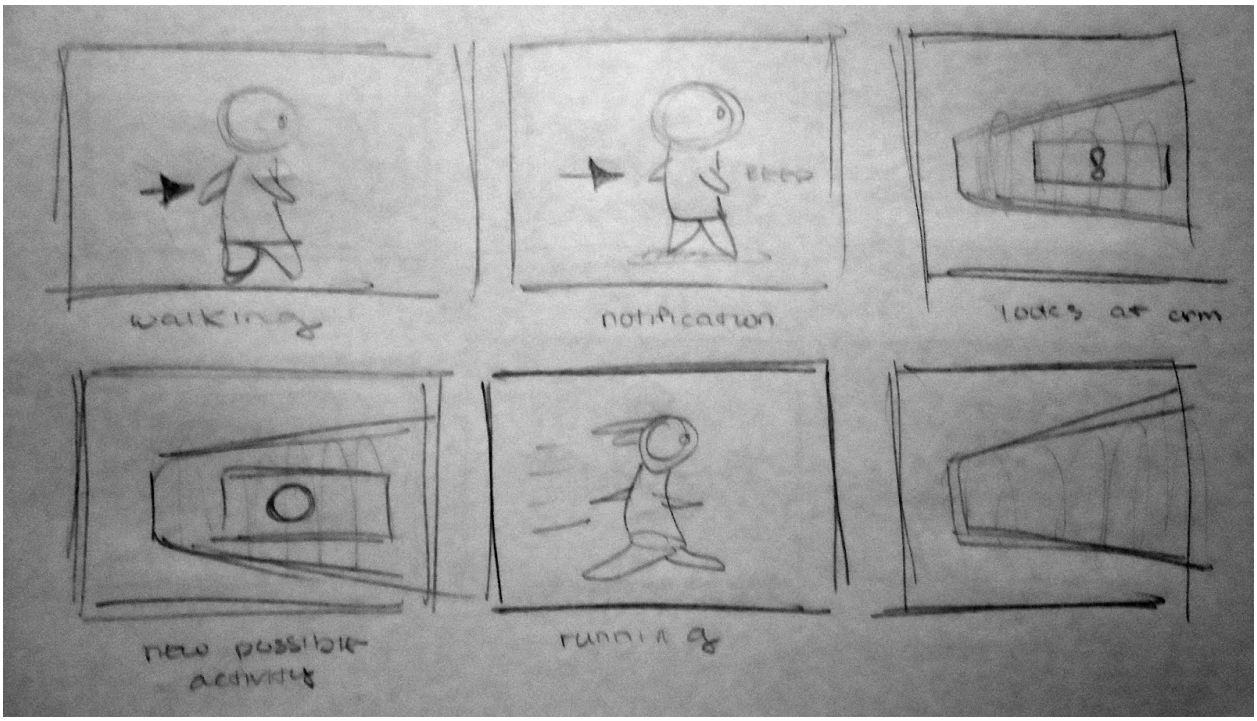
Simple: A user keeps sitting long hours throughout his day. He realizes the harmfulness of a sedentary lifestyle so he wants to be more active.

So he starts utilizing the system and wants to try it out by doing the first task which will be an introduction to a new activity: take a 10-min break. Then after sitting for 2 consecutive hours working, the user is prompted with possible activities in the break (take a walk, get some water or walk to answer calls) that the user can choose depending on their motivational status. By gradually increase the difficulty, the system will help the user take regular breaks during work. (for example, once an hour)



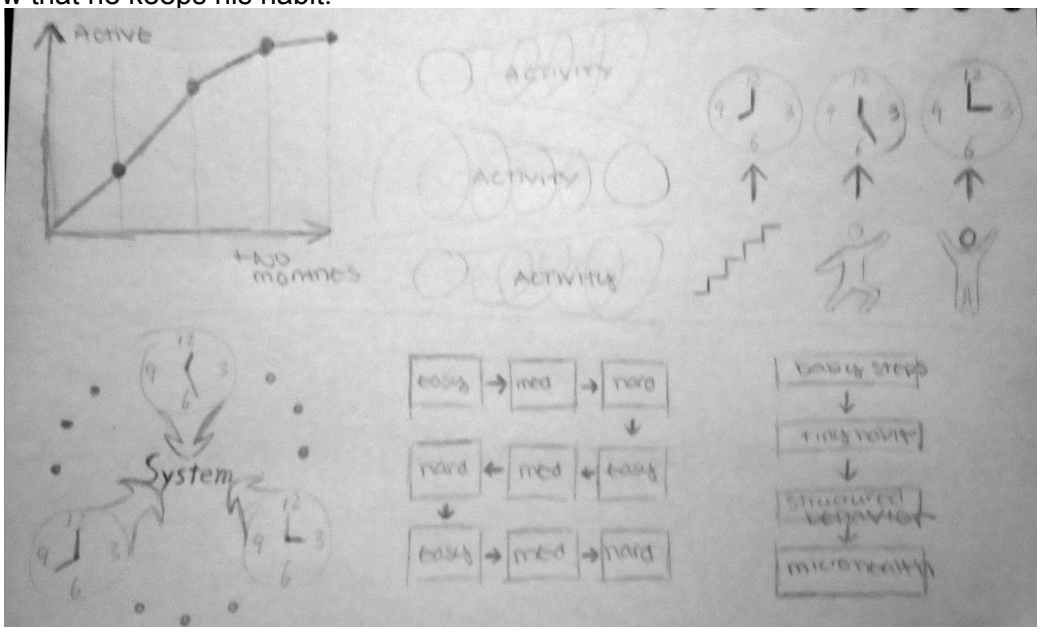
Medium: After using the system for several weeks, the user has formed the habit to take breaks regularly. He feels good about it and want to be more active and healthier.

He, as an experienced user, is acquainted with the system's basic functions including completing, skipping, and suggesting activities. He sees the progress he has been making the past weeks. To stimulus his metabolism, the system begins suggesting new activity that is more moderate/vigorous while keeps reminding him doing the ones he has already achieved.



Complex: He has used the system for two months. He already form his own certain pattern to do micro-exercise. (certain amount time of light and moderate/vigorous) He can clearly see his improvement in physical health. He decides to keep doing micro-exercise and form a structured lifestyle.

Based on machine learning, the system learns about the user's pattern of micro-exercise. The user keeps doing his habits of micro-exercise. The system reminds him more friendly for the activity that is in his habit while suggests less advanced activity. The system may count the days in a row that he keeps his habit.

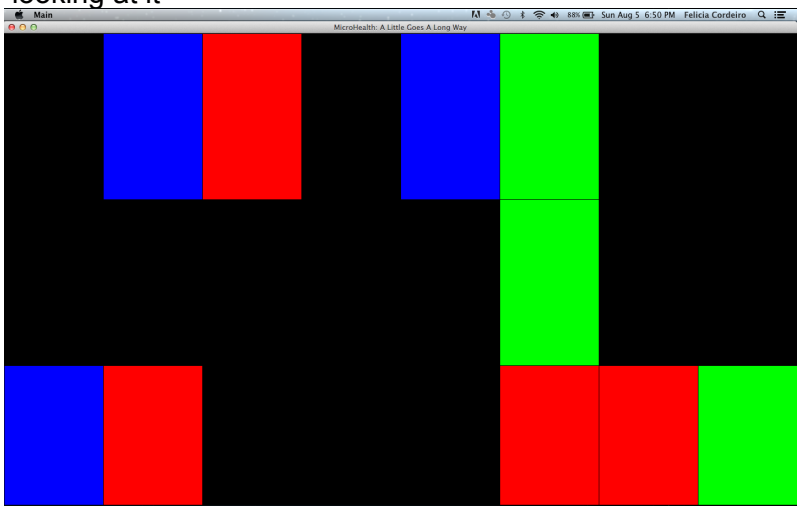


Revised Interface Design (1 Page)

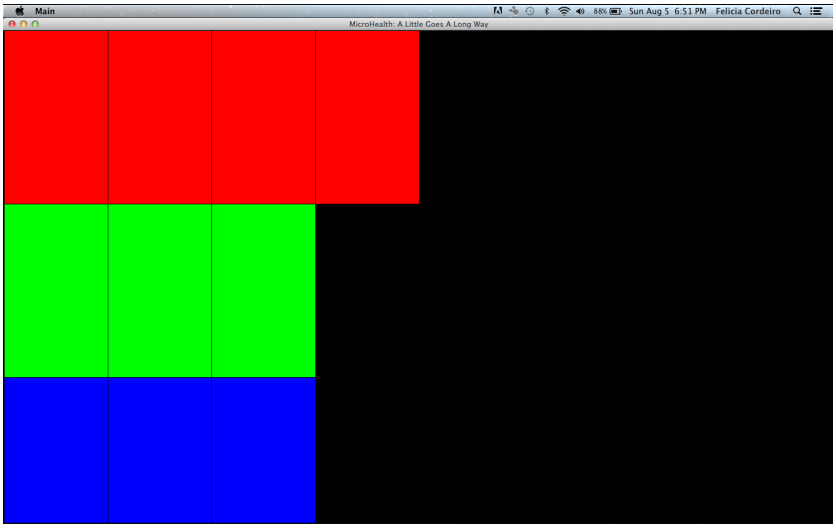
Based on the low-fi testing, we are making several changes to our interface.

- Show current status of the user (i.e sitting, standing, running, climbing stairs...)
    - **Old Display**
        - The old display didn't show the current status of the user
    - **Reasoning**
        - The users like to know that the system has detected that they are doing an activity
    - **New Display**

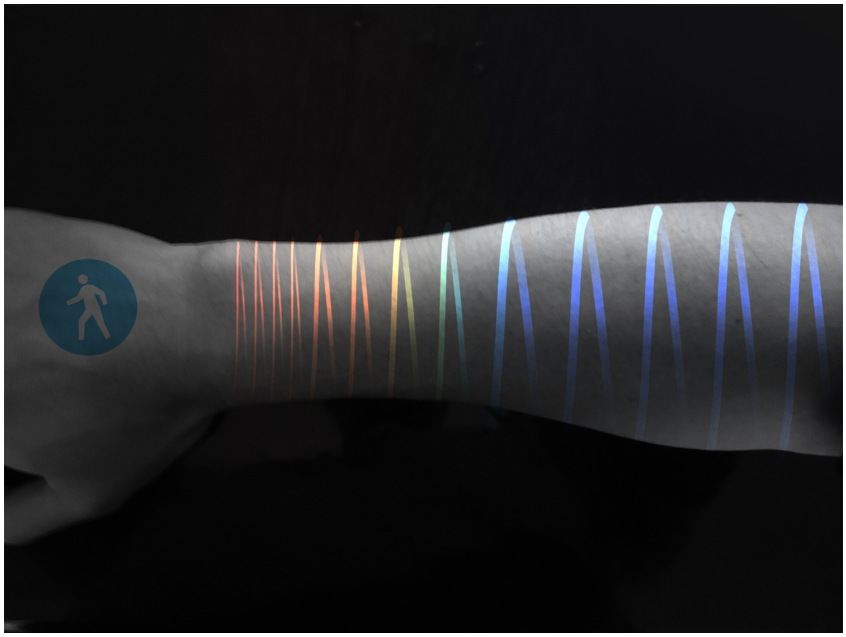
- Rather than having the ambient display be squares, we think that the display should take advantage of the shape of an arm.
    - **Old Display**
        - Ambient display would shuffle the tiles around when the user was not looking at it



        - Ambient Display would display the number of tiles of each category when the user twisted his wrist to look at his arm



    - **Reasoning**
        - The old display did not take advantage of the shape of an arm, however, a slinky that is wrapped around the arm does take advantage of the shape of the users arm. Colors will still be used for different intensities and the closeness of the slinky circles will represent activity vs inactivity.
    - **New Display**



The red close together slinky circles represent inactivity, and the spread out blue slinky circles represent activity of a low intensity, in this case, walking as displayed on the user's hand as the current activity.

- Less text will be displayed for the suggestions; small amounts of text and icons should be more than enough.
    - **Old Display**

- **Reasoning**
  - The display was too wordy, and hard to read quickly
- **New Display**

Prototype Overview (2 Pages)

Tools

1. Ambient display for daily awareness

The ambient display on user's arm is a metaphor of slinky which matches the shape of arm and our slogan "a little goes a long way". The tightness of the slinky represent the inactivity status and different colors represent different intensity. When the user is doing micro-exercise, the icon will be displayed on the user's hand.

2. Remind when inactivity for long hours

The device can detect when the user begin to stay inactive, and it counts the time. The slinky in the ambient display begins to show red close together circles with the accumulation of time. When the user do not move around for more than an hour, the device will vibrate to remind the user to take a break doing something. If user choose to follow it, the cold-color circles appears as he does some micro-exercise; if not, the user can shake his arm to snooze it.

3. Show possible opportunities

There are many micro-exercise opportunities that are the alternative choices in people's life. It will be easier and less obtrusive. The device will remind the user with vibration of the possible opportunities to do exercise. For example, the user can walk the stair rather than using elevator; he can park his car 500 meter away; he also can walk at a faster pace.

4. Increase difficulty gradually

The user will start from baby steps to start a new micro-exercise. The difficulty grows for each activity according to the user's accomplishment. If it is easy for the user, the next challenge may come sooner; if not, the user need to keep performing it until it becomes a habit.

5. Show progress and customize the process

The user can see his daily activity and long-term progress to have an overall understanding of his information. The user can view the daily progress on the glanceable ambient display on his arm. The user may also see the long-term progress on his mobile phone or computer.

6. Form a habit and maintain it

After using the system for a period of time, the user made great progress and he finds his own pattern of doing micro-exercise. (When the user don't make any progress on having new activity for 7 days, the system decrease the reminder to push forward) The system will count how many days the user keep doing his habit activity.

7. Level

We target user who are inactive and live a sedentary life. So the system start from the light micro-exercise to help them get rid of the inactivity status. Then the system gradually level up the amount and intensity of the activity. When the user hits the ideal goal-do moderate/vigorous exercise 30 minutes per day or the user refuse to add more activity, the user can maintain his habits. We utilize gamification techniques to help the user have short-term goals.

Level 1 (3 days)

Take a 10 minutes break once in the day.

Level 2 (~7 days)

Take a 10 minutes break three times through the day and try to add variety.

Level 3 (~7 days)

Start a new behavior(for example, choose from taking the stairs once, parking 500m away or walking fast for 5 min)
Rise the difficulty and keep doing that for 7 days.
Remain the previous activity.
Level 4 (~7 days)
Increase new category or keep doing the previous one to accumulate 15 moderate/vigorous minutes of micro-exercise every day.
Level 5 (~7days)
Increaser to accumulate moderate/vigorous 20 minutes of micro-exercise every day.
Level 6 (~7 days) (This is our ideal Goal *)
Increase to accumulate 30 minutes of moderate/vigorous micro-exercise every day.
*The ideal goal is not the goal for everyone though it is recommended to do 150 minutes of moderate/ vigorous activity per week. The user can do their best based on their own ability and motivation.

Overview of implemented interface

Ambient Display
The red close together slinky circles represent inactivity, and the spread out blue slinky circles represent activity of a low intensity. At the beginning, the user keeps inactive for a long time, so the display is filled with red tight slinky. After doing small amount of exercise, blue circles appears showing better status.

Reminder Menu
When the user need to make a healthy choice, there will be layer appear over the ambient display. The user can click on the activity they choose to do.

Daily Display
The daily display is shown by hour. If the user has done micro-exerciser for 5 minutes in an hour, it can offset that hour's inactivity time. The daily display shown in the next session is filled with green and blue color which represents an active day.

Weekly Display
The user can check his weekly activity on his arm. Exercise time on each day is shown on the chart. The user can have an overall idea of his weekly progress and make adjustment to his plan.

What was left out and why

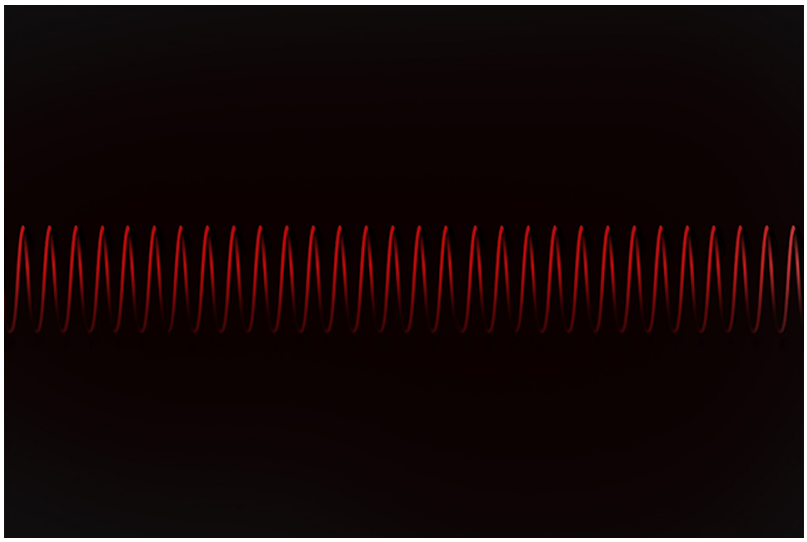
Long-term review
The monthly view on the mobile phone or computer is left out for the medium prototype. Because it is not the core function and it is more complex than the arm display which may consume more time. So we decide not to design it for this stage.

Wizard of Oz techniques required to make it work

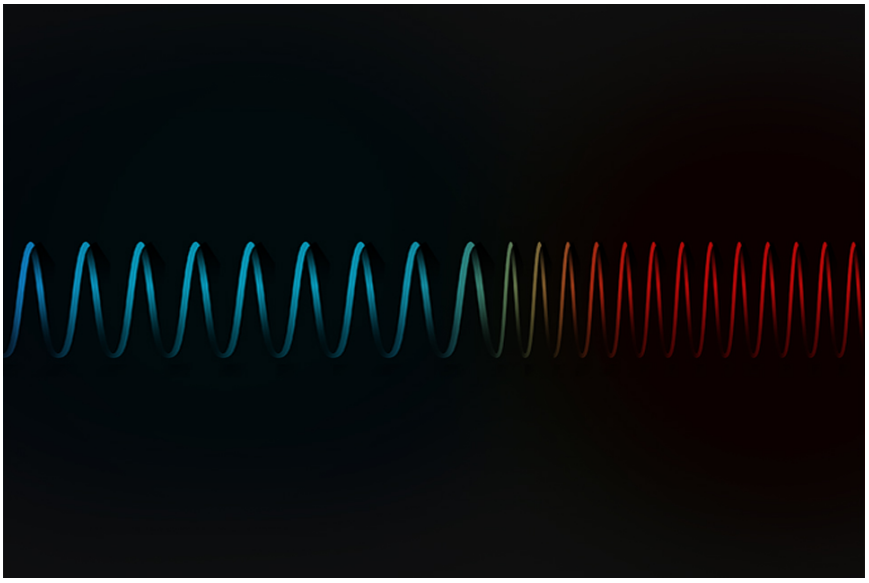
We are using skype calls to do the medium fidelity prototype. By sharing screen of an computer, the user can view the user interface on an iphone. When the user interact with the screen, another person need to control it on the computer to simulate the experience.
(We tried to upload it to google doc, but we lose the transaction.)

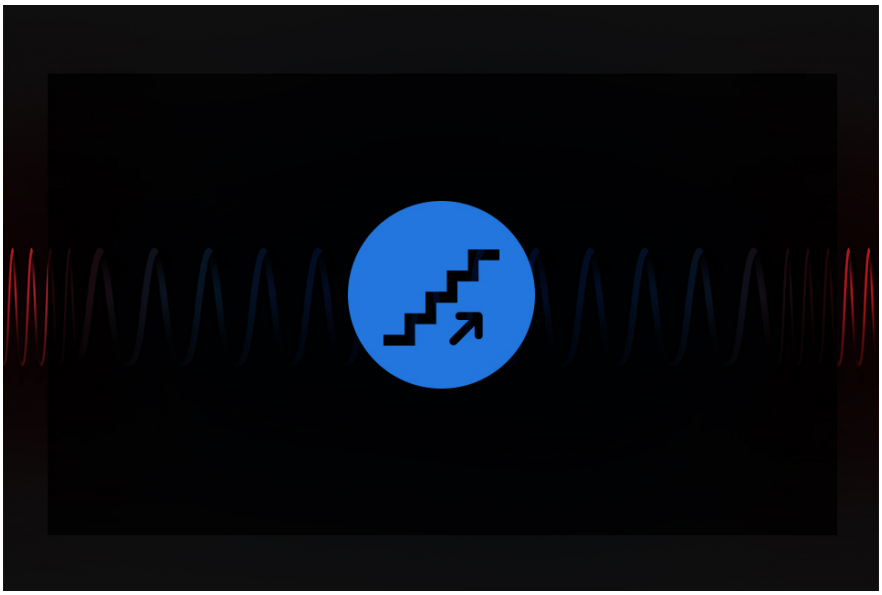
Prototype Images

Before Activity: (red slinky circles squeezed together shows inactivity):

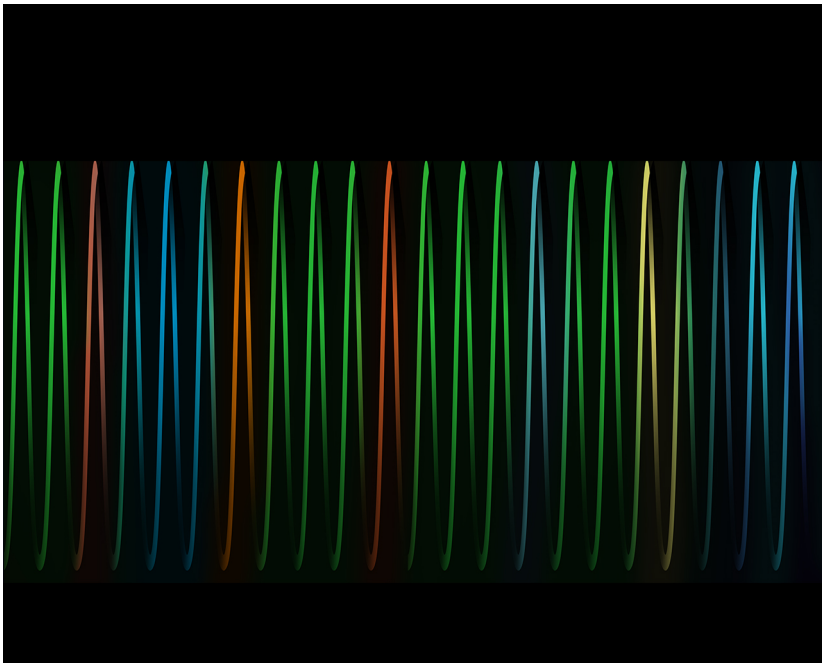


After Activity: (red slinky circles squeezed together shows inactivity, colored slinky circles spread out to show activity, color representing intensity of activity):

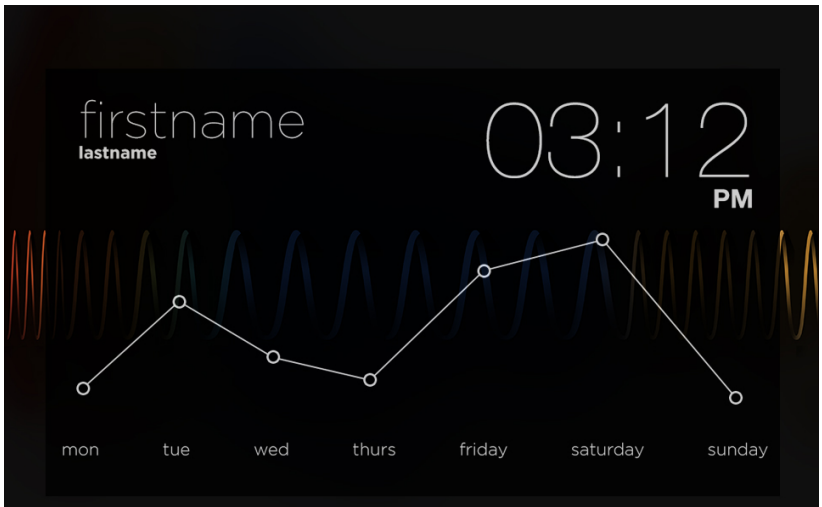
Reminder  Display



Active Day



Weekly Display



Different Intensities