MiPhone - Phone Usage Tracking

Team
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Problem & Solution

This project began as an effort to deter people from using their phones in class. However, over the course of our contextual inquiries and peer-feedback, we realized most people don't have any idea of how much time they spend on their phones. The original proposal offered a way for people to use our interface to set alerts at times they want to stay off their phones, so if they open their phone during that time they receive a reminder. After going through the iterative design process, we decided to focus on collecting phone use data and allowing people using the interface to view their data and make their own goals accordingly. This process is gentler and less nagging than our original proposal.

Initial Paper Prototype
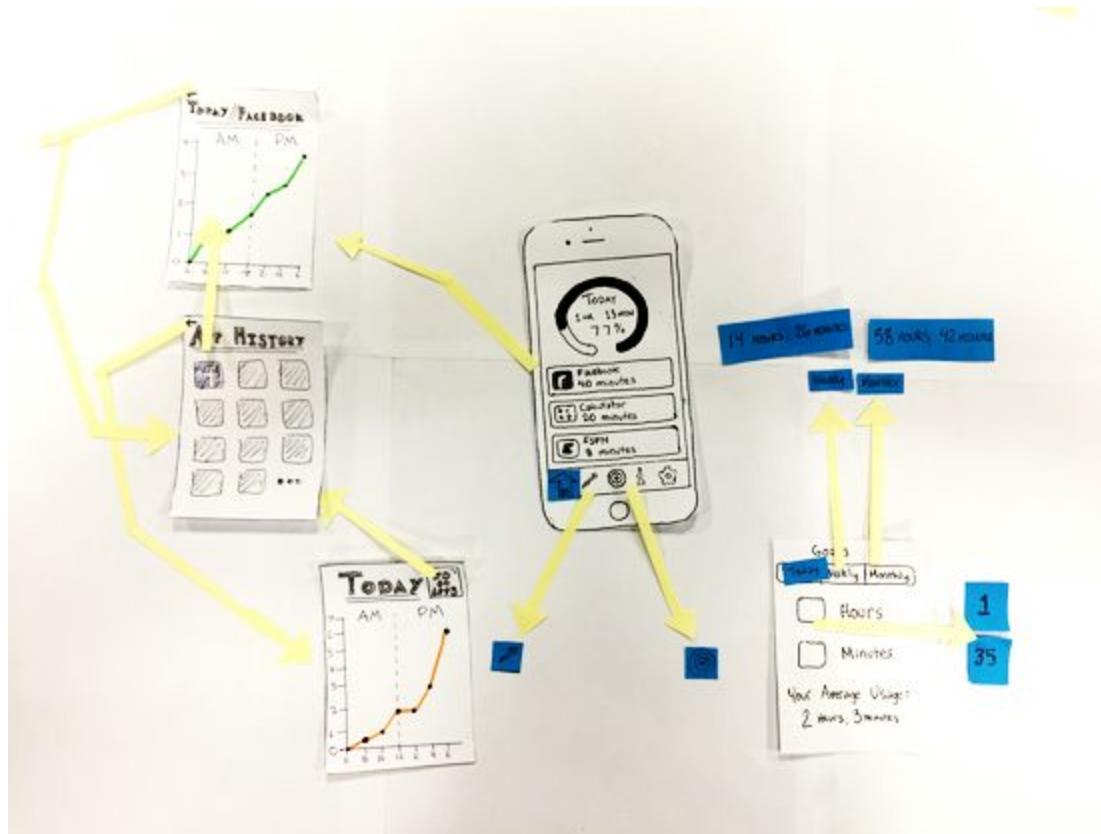
Our initial paper prototype

The original paper prototype focused on the two tasks: setting a goal and being informed of how much time you have spent on your phone. Each task had its own icon (found at the bottom icon bar of the main screen), which allowed quick access to both viewing usage and setting goals. On the home page, the horseshoe bar quickly shows how long you have been on your phone today and the bar slowly depletes throughout the day as you use your phone.

In order to set a goal, the user clicks on the target icon in the bottom navigation. Then they select from a top tab whether they want to update their daily, weekly, or monthly goals. Then their current goal appears and the user can change their goal via typing if they want. Changes to the goals are saved automatically.

To be informed of how much time you use your phone, the home page addresses an immediate overview of your usage. In retrospect, this prototype lacks a way to change between viewing your daily, weekly, and monthly information. To view a graph of your overall daily usage, the user could click on the horseshoe bar on the home page, or the graph line icon in the bottom navigation. To view a specific application's usage, the user clicks on a specific application on the home screen, or they view their overall daily usage then click on "Go to Apps" to select their desired application.

Testing Process

Method

For our usability tests, we worked in teams of two, with one person being the computer and facilitating and the other person observing and taking notes. Our first usability test had several issues. We felt that we over-explained the application's functionality. For example, we explained that the buttons on the homescreen were clickable which likely gave the users information they should determine on their own. We also used our own language in the tasks we asked the user to complete. In our first test we asked the participant to "view overall phone usage history" which we realized was not very realistic. It was the language of designers of the interface rather than the language of the users. As a result, however, our next two tests were much more refined. For our second test we revised our questions, and again before our final test.

Participants

John was our first usability test. We met him at a church. John was in his mid-40s with children. He mostly used his smartphone for work purposes, so he was not in our targeted user base. This actually worked to our benefit in a way, since he was not as familiar with smartphone applications it was a good test to see if our design easily communicated its functionality.

We asked John to "view overall phone history," to "view usage history for a specific application," to "set a goal for daily phone usage," and to "view the goal for weekly phone usage."

JP was our second test. We met at a coffee shop. JP was in his early-to-mid twenties. He was technologically savvy. This was beneficial in we expect most of the users of our interface to be well-versed in using smartphone apps. However, this also meant that in his feedback he got caught up in miniscule aesthetic details, such as the style of the navigation bar.

We prompted JP with two assignments: "You've been spending a lot of time on your phone lately and want to cut down. Set a goal for how much time you want to be on your phone today," and immediately after "Now you want to see how much time you've been spending on Facebook specifically." He was able to complete both tasks quickly and with ease. The only confusion occurred with the wording discrepancy between "today" in our prompt and "tomorrow" in the actual wording on the paper prototype. This alerted us to larger consistency issues as well.

Nick was our third and final test. We met in his home's living room. He is a young-twenties Amazon Software Engineer, so we assumed some technical competency. As such, the interface was fairly intuitive to him, and actually navigating our app wasn't an issue.

Nick's test was very similar to JP's: We prompted him with two tasks, albeit with a more generalized focus. His task prompts were "Let's assume you'd like to improve your phone usage. How do you think you could start that process?" -- This led us towards both usage and

goal tasks. From there, we prompted him with more specific questions, dealing with his views on the goals and overview panes.
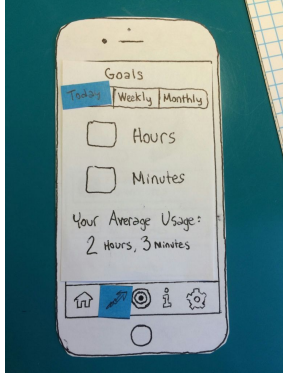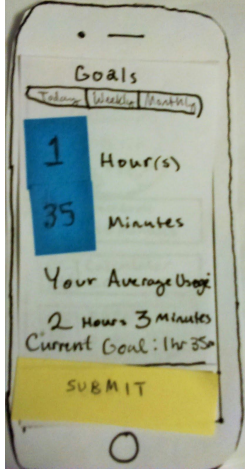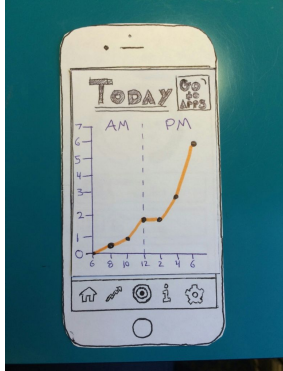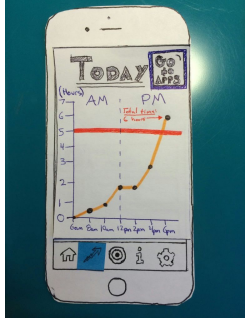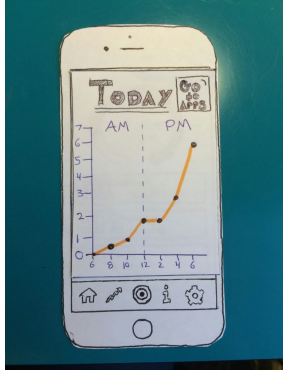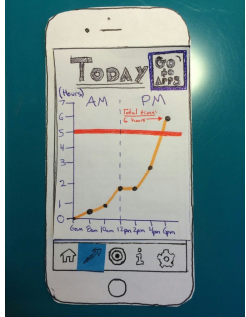
Testing Results

The results from Heuristic Evaluation, Usability Testing, and Critique all centered around our two tasks.

Summary of results for Goal-Setting: Users and evaluators generally liked the ability to set differing types of goals. One main problem with the goal screen, as addressed by Nick's usability test, is that many people had trouble identifying how the goal setting worked together. For example, if someone had already set a weekly goal, then tried setting a daily goal, did the weekly goal get wiped out? Or did the daily goal somehow work on top of the weekly goal? Our challenge was to make this decision obvious to the user. Another big point for goal setting was the use of a confirmation dialogue. Before, when setting a goal, we simply had the user push a "Submit" or "Save" button. This was problematic because it didn't allow any kind of undo functionality, in the case of an accidental button push. Also, a confirmation dialogue allowed the user to see their new goals, as adjusted by the new settings. Below are pictures of problems identified during testing and evaluation, and our solutions.

Summary of results for Usage Viewing: People really like our home dashboard screen. It quickly conveyed a lot of useful information, without sacrificing simplicity. The "usage bar", which drains as the user uses their phone throughout the day, was especially popular. On a different note, however, people found the graph screen of the usage viewing to be fairly confusing. Although this course is not a visualization class, we realized quickly that the graph displayed for usage is important, and cannot be skimmed over. This became apparent during both heuristic evaluation and usability testing, during which people found the graph confusing in a number of ways. First, people had trouble identifying what the lines actually meant. "Is the line my total, or my average?" was a question we got fairly frequently. "Where is my goal in relation to my usage?" was another. Questions like these drove a few major improvements to our usage graph.
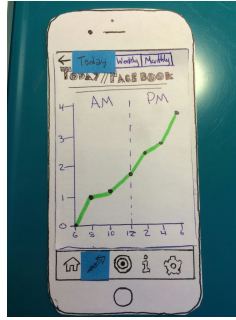
Summary of results for miscellaneous items: Aside from our two major tasks, we had some comments regarding non-task-specific aspects of our design. The first major comment was a positive one: people like the overall simplicity of the app. We don't have a lot of buttons or options, other than the goal-setting, so using the app is quick, as it should be (after all, we are trying to get people to reduce time on their phone). People liked this. On the other hand, people tended to have a hard time discovering that our home screen buttons led to usage graphs. We wanted to include this as an accelerator for people who care about time on a specific app, and users and evaluators both tended to miss this feature. Other than that, only small comments were made about button placement/size.

Below are some pictures of major comments and our solutions: (Included as part of the Appendix)

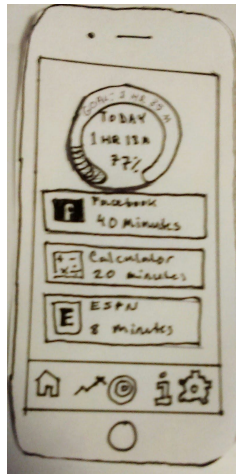| Image	Issue	Revision (Image)	Revision (Explanation)
	The previous usage is placed on the goals page. Users would rather see the current goal setting than history.		We added a bottom bar which displays, along with the average, the current goal setting.
	The "history" graph doesn't tell when the user met/exceeded their previous goals. People want to see their previous successes/ failures.		We added a "goal" line on the history graph, which shows what the user's goal was during that period.
	The meaning of the history graph is unclear. Axes are unlabeled, and the line doesn't seem to represent anything I care about.		After adding axis labels (total hours on y-axis, time of day on x-axis), we also added a line label, which details that this is the progression towards exceeding a daily/weekly/ goal.
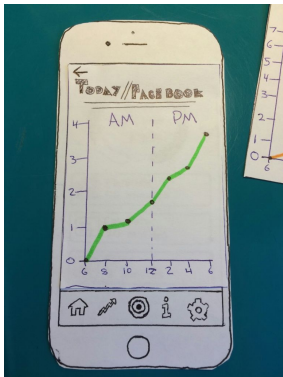
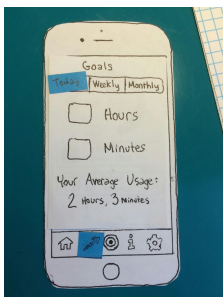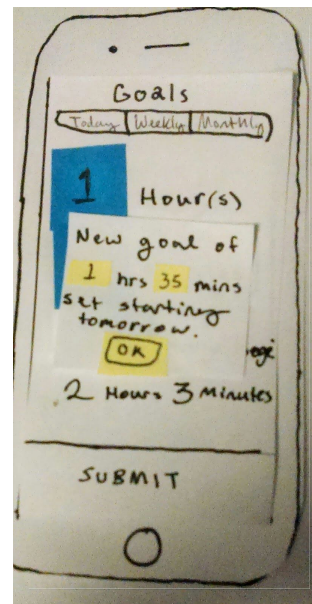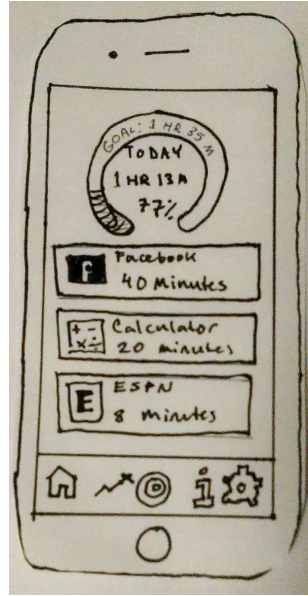|			
	I can't view my weekly/ monthly usage history of a specific app.		Similar to the goal setting pane, we added "Daily", "Weekly" and "Monthly" tabs at the top of the History pane.
	It isn't clear that we can click the "Today" button on the home screen.		Surround the entire "Today" section with a drop shadow, making it obvious that it is clickable.

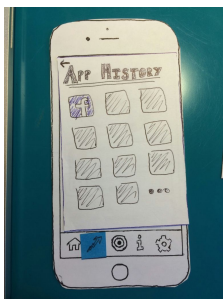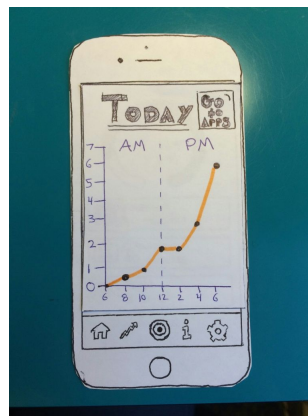|			
	User had no clue to "activate" their newly set goal, or when that goal would take effect.		We added a "submit" button at the bottom of the Goals pane, which, upon being pressed, sent a pop-up telling the user the start date/time of the next goal period.
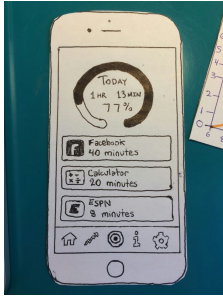
|			
	Home screen didn't display the user's current goal, which was confusing when looking at the progress meter.		Instead of having the progress meter contain the current usage, we surrounded it with both goal and current usage.
	User had slight trouble navigating to the "App History" screen, although going from Home->Facebook tracking was easy.		We simply made the "Go to App" button larger, on the Overall History screen.
	User didn't like the fact that the circular progress meter on the home screen was filling up; it seemed to them like it should be emptying as they used their goal phone time.		We kept the circular progress meter, but instead of filling up as the phone is used, we made it decrease over time. Note: time is hard to picture, so we simply showed the old version.

Final Paper Prototype
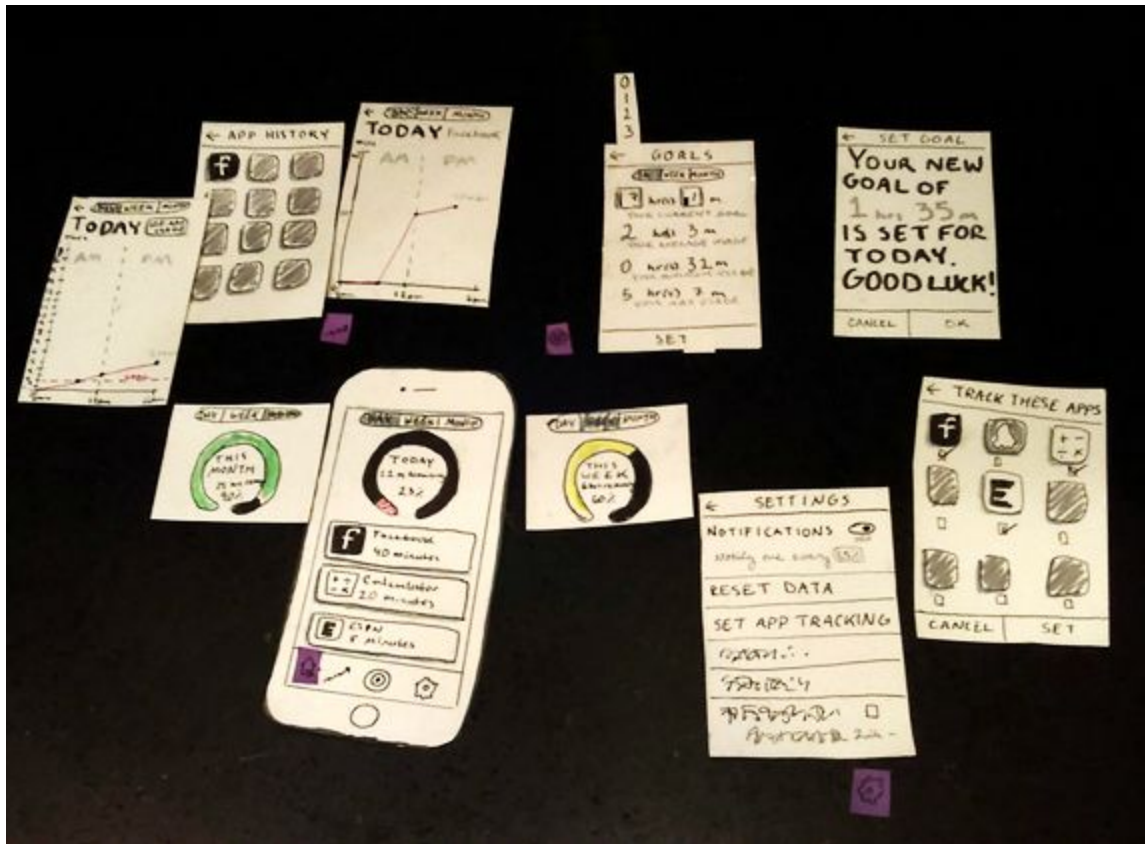
Our final paper prototype

Our final paper prototype keeps the major tasks of goal setting and being informed of time spent on your phone. A few critical parts of design remained throughout our iterations, including the home screen and the navigation bar that holds icons directing users to our two tasks. The horseshoe on the home screen evolved from a bar filling up to a bar slowly depleting using color to quickly communicate how much time has been spent on your phone during the current day or week. This version also allows you to view on the home screen weekly and monthly at-a-glance info as well.

Digital Mockup

After testing our paper prototype, a major critique was that the circle progress bar on the home screen was unclear. We changed the bar to start at 100% and decrease with usage to make this more clear. The time remaining was also added to the center. Labels were also added to the elements on the bottom bar to make their categories more clear.
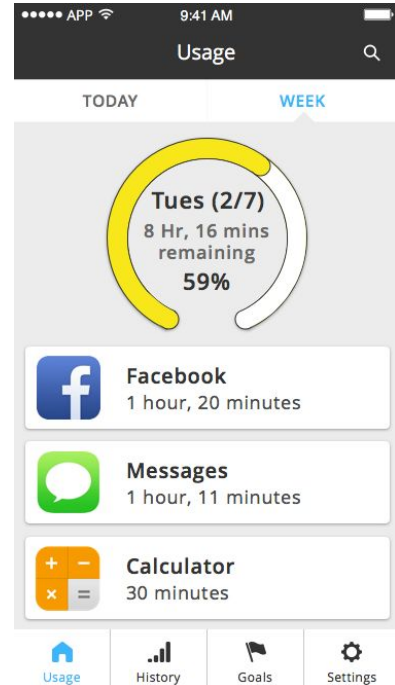
Task 0: Application Introduction
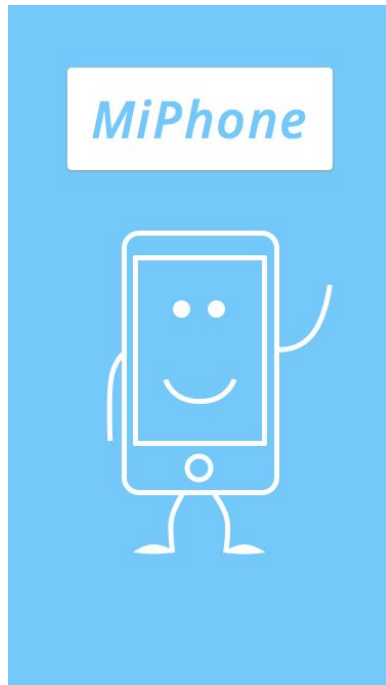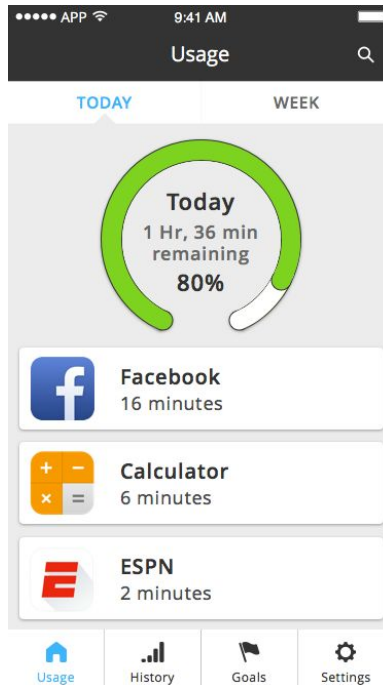
Screen 0.1   Screen 0.2   Screen 0.3

Screen 0.1: Application splash screen.

Screen 0.2: Application home screen for today's usage information (default landing page). Users can change overall categories by clicking on bottom bar sections or can switch to this week's usage on the top bar. The search icon can be used to search for specific applications.

Screen 0.3: Application home screen for this week's usage information. It follows the same action procedures as Screen 0.2 except it directs to weekly pages.
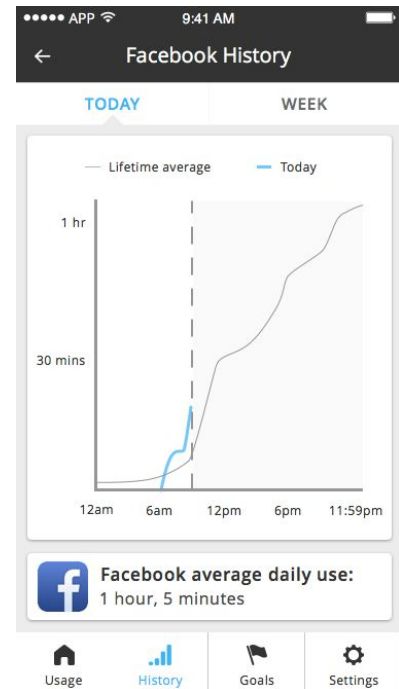
Task 1: View Usage History
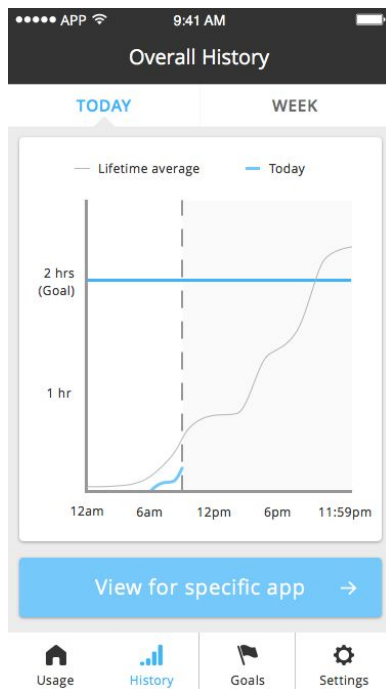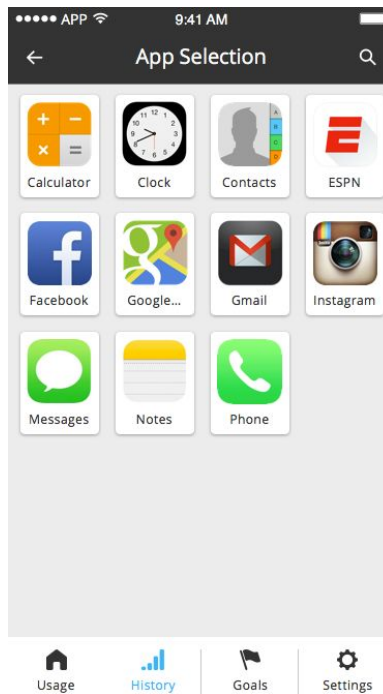
Screen 1.1   Screen 1.2   Screen 1.3


Screen 1.1: Screen for viewing today's usage, which can be accessed via the "History" section on the bottom bar. This shows your lifetime daily usage, today's usage, and your daily goal on a graph. When you click on "View for specific app", you are directed to Screen 1.2 to select an app.

Screen 1.2: Page for selecting a specific app to view its usage. Apps can also be searched for via the search icon in the top bar.

Screen 1.3: Displays a specific application's daily usage. The graph has the same structure as in Screen 1.1 except it does not feature a goal line. You can also view the application's usage for the week by clicking on "Week" in the top bar.
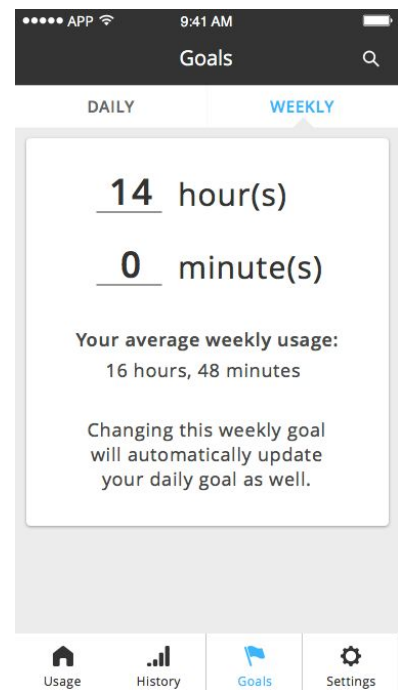
Task 2: Set Usage Goal
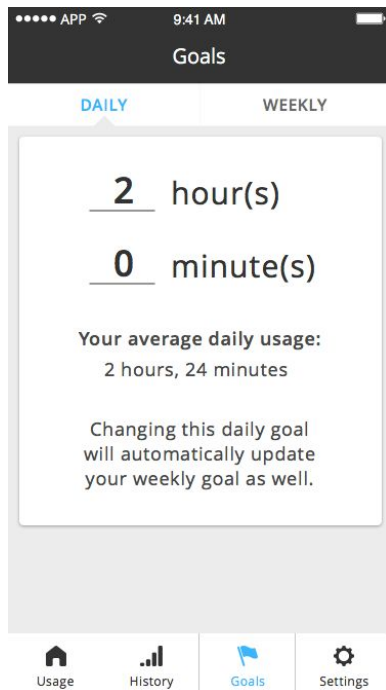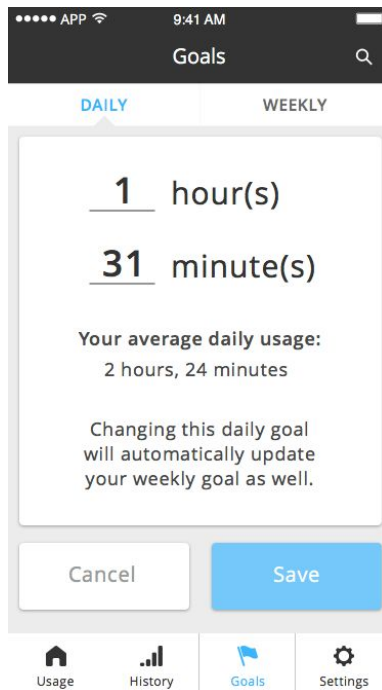
Screen 2.1   Screen 2.2   Screen 2.3

Screen 2.1: Page for viewing your daily goal, which can be accessed by the "Goals" category on the bottom bar. You can view the weekly aggregation of this daily goal by clicking on "Weekly".

Screen 2.2: Screen for changing a goal. After the user changes the hour and/or minute value, two buttons appear on the bottom of the page; cancel and save. When clicked, the inputted information is canceled or saved and then the buttons disappear. Updating the daily or weekly goal automatically updates the other as well with the proportionate time.

Screen 2.3: Displays weekly goal information. You can view the daily proportion of this weekly goal by clicking on "Daily."

Discussion

Through the process of iterative design, we learned many different things. Iterative design is a powerful tool. It seemed simple at a first, but after going through our iterations it became clear that it is a great process that can result in a sleek and usable interface. We also were able to be objective about our design thanks to the rapid iterations. At no point in our work did anyone fall in love with their design, we were able to compromise and reach decisions quickly, mostly because no design existed for very long before the next iteration was being created. It also emphasized to us how every potential user has different opinions or difficulties they encounter.

Our final design changed many times throughout its iterations. The major changes lead us to a more streamlined design; simpler was better. We clarified many aspects/wordings in the design that users were confused on. We needed a design that communicates its functionality as clearly as possible. Thanks to Shane's extensive HCI background, we were able to draw heavily from current smartphone idioms and strategies. Specifically, we changed the progress bar wording on the homepage and the direction that the bar empties. Also, we changed the button to view specific apps on the overall usage page, along with clarifying its wording. Viewing monthly usage and goals was also discarded, as it was thought that it was too long-term to be beneficial; users would rather just utilize daily and monthly goals.

Our tasks changed minimally throughout our usability tests. Our usability test subjects were able to quickly accomplish the tasks we assigned them. The goal setting task changed in that we discarded the idea of monthly goals and focused instead on weekly and daily. The usage reviewing task did not change, only the way the information was conveyed in the design changed. For example, we changed the direction of the homepage progress bar (originally it filled left to right instead of emptying right to left).

We could have used more iterations in our design. Although we are proud of our final design, more testing could always have been useful. It would be awesome to see our final design actually tested on a phone screen via a clickable prototype like InVision. This would give us a far more thorough idea on if our application works successfully and people can complete the main tasks on their own. Ensuring that the final tweaks we made genuinely did make the application far more self-explanatory and easy to use.

Appendix