LifeMove

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Problem and Solution Overview

With recent advances in fitness-related computing, it is now easier than ever to use technology as a companion to influence our behavior and encourage a healthy lifestyle. Wearable devices like *Fitbit* and *FuelBand* track your exercise behaviors. Smartphone apps like *Moves* utilize onboard GPS to plot your movement. Websites like *EveryMove* and *Fitocracy* log your workouts. *FourSquare*, *Facebook*, and *Yelp* allow you to "check in" at locations to track your contextual movement. A multitude of other programs and apps exist for task tracking—from *Outlook* tasks to *Omnifocus* reminders to OS-supported to-do lists. All of these programs and devices demand some degree of persistent user attention and participation: manually input data, create tasks, indicate task completion, etc. Such persistent user participation is an impediment to true integration with the technology. *LifeMove* is the solution. By combining *Moves*-like consistent GPS data with *FourSquare*-like check-in data, users create goals, and the app tracks them automatically. It is the true fire-and-forget system for location-based goal tracking.

Contextual Inquiry Participants

The primary criteria for choosing a contextual inquiry participant was an existing habit of goal or location tracking. All three participants already own smartphones and work in the technology industry, the target audience for *LifeMove*. Technologists tend to not only already own the proper equipment for location tracking (e.g. a smartphone) but also adopt new tracking techniques faster and are generally more willing to keep up with the manual aspects of the tracking. All three were observed at their computers performing their daily tracking chores: checking-in on their tasks, reviewing progress toward their workout goals, and logging new data.

Participant 1

Our first participant tracks the most data across the largest number of apps. He is 23 years old and works as a software developer. He wears a *Fitbit* daily but rarely visits the official *Fitbit* website for tracking data, relying instead on weekly summary emails. He also occasionally examines the readout on the actual *Fitbit* device throughout the day. He is very athletic, regularly commutes 30 miles each day on bicycle, and plays ultimate frisbee or runs after work and on the weekends. He tracks all of these workouts in both *EveryMove* and *Fitocracy*. He also records his daily commute form (i.e. whether he bikes, takes a bus, drives, or takes a shuttle) through *RTrip*, a website sponsored by Redmond which provides incentives for using alternative transportation. In addition to tracking all of his bike rides through the above-mentioned websites, he also tracks them manually in an Excel spreadsheet. In this spreadsheet, he also tracks books and movies he has read or watched. Finally, he uses a special shopping app to track his shopping behavior at various stores.

Participant 2

Our second participant is a 36-year-old father of two, a software developer, and is moderately athletic. He wears a *Fitbit* daily and has a scale in his bathroom that automatically uploads his weight data to the *Fitbit* website. However, like our first participant, he rarely uses the *Fitbit* website except for when he wishes to reset the *Fitbit*'s alarm clock. In the months of October through March, he is heavily involved in the local curling club and spends many nights and weekends curling. He previously used *EveryMove* to record his workouts—his employer had offered incentives for doing so—but after a few months, he grew tired of manually reporting the data and now rarely logs in. He also uses *Outlook* to track many tasks such as taking out the trash, checking his car oil, or transferring money between accounts.

Participant 3

Our final participant is a 27-year-old software engineer. He is very athletic but rarely uses technology to track his life. In fact, he is annoyed when his running friends spend time pushing buttons on their fancy watches or must wait for a signal on their phones before they begin their run together. He sets very explicit goals for himself, however. He wakes up at the same time every day goes to the gym. While there, he runs five kilometers and then lifts weights (same amount and number of reps every day). He arrives at his office at the same time each day and leaves for home at the same time. He occasionally "checks in" to locations on Facebook but only to new places. Of all three participants, he may benefit the most from a "fire-and-forget" goal-tracking app.

Contextual Inquiry Results

Each contextual inquiry participant was selected because of their tech savvy-ness and disposition to set fitness and life goals. Each of them vary somewhat in their dedication and motivation for these goals, but they all have some themes in common.

Goal-Setting

Each of the participants are goal-oriented people. *Participant 1* maintains daily, weekly, and long-term goals. Some of them include:

- Get in to work by 10:30am on days he teaches a CS class and 10:00am on all other days
- Exercise 3-4 times each week
- Work 40-45 hours per week
- Drive to work as infrequently as possible.
- Visit family in Colorado at least twice each year
- Visit each college friend at least once per year
- Maintain a consistent weight
- Maintain a vegan diet

Likewise, *Participant 2* has set his own explicit short- and long-term goals:

- Walk 10,000 steps per day
- Arrive at work by 7:00am and leave by 4:00pm to beat traffic
- Curl three times per week

- Curl at most one weekend per month to avoid spending too much time away from family
- Take out the trash every day
- Change oil in car every six months
- Lose weight

Although *Participant 3* doesn't track his goals with technology, he instead maintains a strict schedule and relies on consistent habits to achieve his goals.

One of the key features of *LifeMove* is that it always passively tracks your location and understands the relationship between locations and your goals: Because it uses *FourSquare* location data, it knows what type of establishment each location is—whether it's your home, the office, a gym, or a restaurant. Although some of the above-mentioned goals cannot be easily be tracked (e.g. taking out the trash or maintaining a vegan diet), others can be tracked very effectively through location-aware analysis. For example, to track *Participant 1's* first stated goal of arriving to work by a certain time depending on whether he taught a class or not, *LifeMove* will already know whether he has taught that morning based on his location data!

Fitness and Life-Tracking

Many young technologists have an interest in personal fitness and life-tracking, and our three participants are no exception. Each of them are fairly active and two of them already use technology to track their fitness, health, and entertainment behaviors in one way or another. *Participant 1* and *Participant 2* leverage multiple existing services to track how they exercise, how they commute to work, and how they spend their leisure time. *Participant 1* goes so far as to track which books he's read and what movies he wants to watch. *Participant 3*, on the other hand, dislikes spending time to *explicitly* track his behavior, so he instead relies on a strict, unchanging schedule to accurately recall and achieve his goals.

LifeMove cannot detect finer-grained behavior, like which exercises were done while at the gym, what dish was ordered at a restaurant, or which film was watched at the theater. However, it is well-suited for broad life-tracking: It can automatically log how frequently a user goes to a gym, the distance and route of a jog or bike ride, which restaurants a user visits, and how long a user spends in traffic between their home and the office.

Automation

One of the biggest impediments to using traditional technology-assisted goal-tracking is the fact that most tracking systems require consistent user input. *Participant 2* used *EveryMove* to track his daily workouts but soon abandoned it because he got tired of manually updating his information. *Participant 3* is extremely averse to manually tracking his behavior and relies on a strict schedule to mentally track his habits and stay on top of everything. He has tried before to log his exercise habits in *EveryMove,* but the burden of logging in to upload data quickly discouraged him. Only *Participant 1* was openly willing to consistently track his behavior. Interestingly, he not only used multiple tracking systems, but he also manually tracked everything *again* on his own spreadsheet.

As mentioned previously, *LifeMove*'s key feature is that it *passively* tracks progress towards goals. A user initially sets their goals (e.g. "I want to go to the gym at least twice a week") and is not ever required to manually input data ever again. The app tracks the user's location and automatically logs progress towards

those goals. The user can easily view progress towards their goals (e.g. "You still need to go to the gym one more time this week"), but doing so is strictly optional.

Answers to Task Analysis Questions

Who is going to use the system?

LifeMove is targeted at active, goal-driven individuals who already have a habit of recording their behavior and progress toward their goals. Most are between the ages of 18 and 40 and already have a very busy schedule: They balance their time between working, commuting, exercising, hanging out with friends and family, eating out, sleeping, and many other activities. They love technology and have their smartphone with them everywhere they go.

What tasks do they now perform?

LifeMove users already have a habit of setting life goals and tracking their progress. Many of them have used other forms of tracking to help monitor their behavior: to-do lists, task schedules, *FourSquare*, *Facebook*, *EveryMove*, *Excel* spreadsheets, journals, and blogs. They use these tools to achieve primarily three things:

Track Behavior

Whether it's to show off to their friends how many cool restaurants they've been to or to document which books they've read or to report how many state capitals they've visited, people have an innate desire to record their life, as if to say, "I've been there; I've done that." People spend inordinate amounts of time chronicling their lives in tweets that nobody sees, blogs that nobody reads, and Amazon reviews that nobody notices. Why? Because for many people, you haven't *really* done something until you've documented it somewhere.

Set Goals

LifeMove targets those people who already tend to work regularly toward achieving specific goals. It may be as simple as "I want to go to the gym more often" to something more complex like "I want to go to bed early enough on weeknights and non-holidays so that I can get to work before my boss does so that I get a raise next September and can buy a new helicopter." What's important is that these goals are specific and have an objective success criteria.

Monitor Progress Toward Goals

Not all goals necessarily require progress charts. For some goals, it may be easy enough to think back on the last few days to determine whether or not you are on-track to achieve them. But whether it's counting on your fingers or using a formal spreadsheet to track progress toward goals, people exercise some amount of reflection and analysis to determine if they are accomplishing what they set out to do.

What tasks are desired?

LifeMove does not necessarily help users do something they have never done before, rather it takes their existing tasks—life-tracking and goal-setting—and makes them easier. Users desire to set goals, but often under the stipulation that they not be required to manually record their own progress. Being compelled to log in to a 3rd-party service to *report* menial goal progress is a surefire way to alienate individuals who are barely motivated enough to *make* any progress toward their goals in the first place.

LifeMove enables users to perform three desired tasks:

1. Easily define new goals
2. *Automatically* record progress toward goals
3. Easily view goal progress

How are the tasks learned?

The *LifeMove* smartphone app is simple and easy to navigate and learn. While performing the potentially-difficult task of defining a new goal, a user is presented with text-based prompts that act as a step-by-step guide.

Where are the tasks performed?

All *LifeMove* tasks are performed within the context of a smartphone app. The user-facing tasks of defining and viewing goals can be done anywhere and anytime. Once set, progress recording happens automatically in the background as the app uses GPS and *FourSquare* data to determine where the user is and roughly what he or she is doing at all times.

What's the relationship between customer and data?

LifeMove is primarily a data collection and analysis tool. The customer expects the app to collect raw location data and to automatically analyze it in the context of user-defined location-based goals. In this sense, the customer volunteers his location data with the expectation that the app will provide useful goal progress data.

What other tools does the customer have?

- **Fitbit, FuelBand**: Activity trackers/pedometers which collects fitness and movement data
- **FourSquare, Facebook, and Yelp**: Web services which track where you have been
- **EveryMove, Fitocracy**: Web services to track fitness and exercise
- **Outlook, Omnifocus**: Task management software to maintain schedules and to-do lists
- **Pen and paper**: Manually tracks goals and life events
- **Personal memory**: Simply *remembers* stuff

How do customers communicate with each other?

A typical *LifeMove* customer is tech-savvy and communicates with others primarily through *Facebook*, *Twitter*, SMS, and email. Although not currently planned, the *LifeMove* app could potentially include a social aspect, automatically uploading data to *Facebook* and allowing friends to participate in shared goals.

How often are the tasks performed?

Goals are defined rarely—generally once or twice a month. Users check their progress toward each goal more frequently—roughly once or twice a week. The app automatically records progress by constantly monitoring location information in the background.

What are the time constraints on the tasks?

Defining a goal requires less than a minute. Viewing goal progress takes only seconds. Collecting location information and recording progress toward goals happens constantly, but it does not require any user intervention.

What happens when things go wrong?
Because of the simplicity of *LifeMove*, there are only a limited number of possible failure points:

- Unable to obtain GPS data
- Unable to translate GPS data into context-aware location data through *FourSquare* service
    - No cellular signal
    - *FourSquare* service disruption

For each of these failures, the user is notified of recent service disruptions when the app is launched. Throughout the disrupted time periods, data collection and goal-progress is suspended.

Three tasks your application will support

Task 1 (Easy): See how many hours you've spent at work today.
Both *Participant 1* and *Participant 2* track, in many forms, various activities they do. Inherent with tracking is reviewing how you spend your time. One of the main benefits of *LifeMove* is that the user no longer has to input their every whereabouts in order to see how their time is spent. Once you downloads the app, it begins tracking the places you've been. Additionally, it takes advantage of the accelerometer in modern smartphones so it can also track how time is spent on the go (walking, biking, etc.). Because of this, the task of tracking how you spend your time is transformed from a tedious activity to simply logging in at your convenience to monitor what the phone has already tracked for you.

This sort of task is beneficial to both *Participants 1* and *2* who already track but complain about the tedium and regular login of traditional tracking. It could additionally be useful for someone like *Participant 3* who has a very regimented schedule but doesn't currently track—in part due to his annoyance of it keeping him from getting started on what he wants to do.

Task 2 (Medium): Create a goal to leave work by 4:30 every day this week.
The main meat of the application is goal-tracking. While reviewing the activities of you day is a great way to start thinking about how you want to spend your time every day, setting an explicit goal is key to sticking to what you want to do. The user should be able to enter a time-based goal that they will either achieve or not. Additionally, since location and time data is tracked automatically without user input, they should be able to startup the app at any time and see the progress they've made on this goal.

Similar to *Task 1, Task 2* is beneficial to both *Participant 1* and *Participant 2* who already track goals but complain about the tedium of entering in tracking data. If *Participant 3* found *Task 1* to be beneficial to sticking to his strict schedule, he most likely would want to create a goal to go along with it.

Task 3 (Hard): Set up a text notification when you've reached your goal to work out for 7 hours this week.
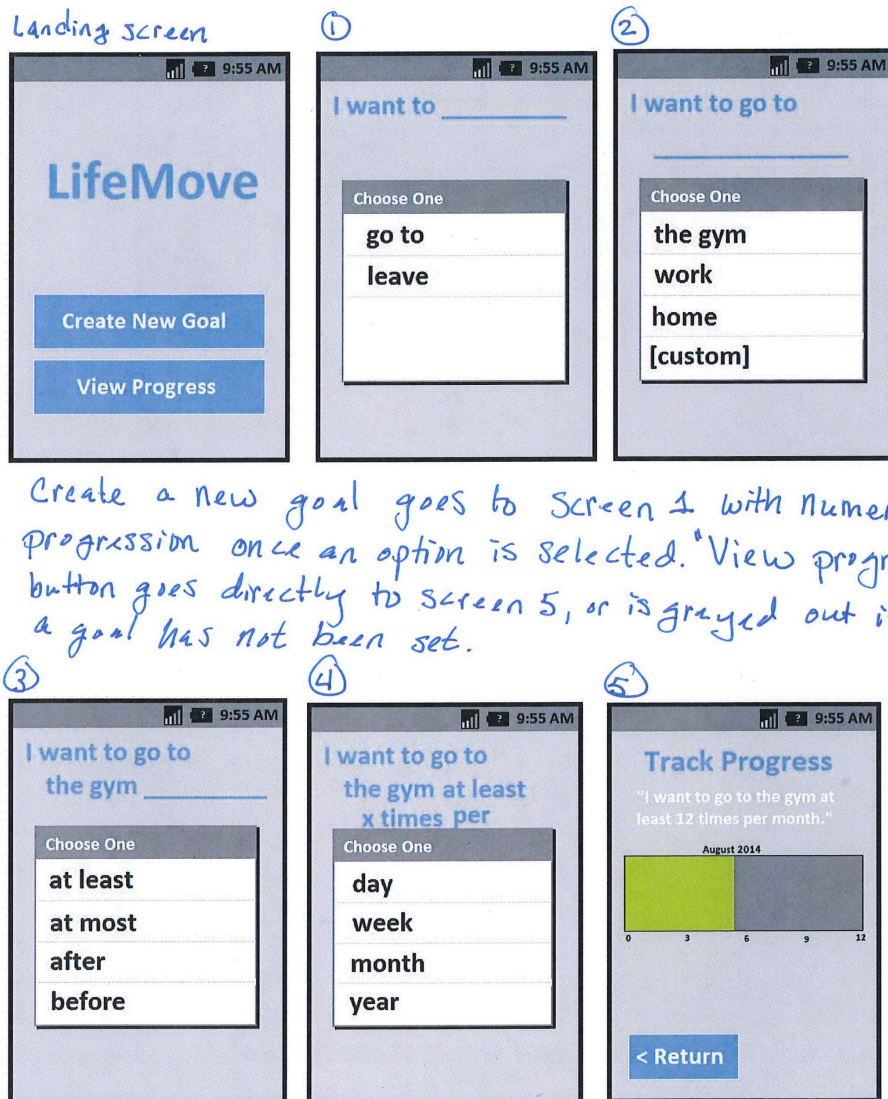On top of setting goals, *LifeMove* will also allow the user to set up notifications when they've reached their goals. None of the contextual inquiry participants currently use any type of a notification system for their goals, but current complaints and behaviors indicate that it would probably be a useful feature. All three participants complained about either having to either interact with software frequently or having other people dealing with software when they'd rather they not. With a notification system, it cuts down on

software interaction by allowing the user to be alerted in certain conditions so they don't have to keep opening the app to check the status.

Storyboards illustrating initial 3 interface designs

Design 1

The main navigation for *Design 1* is on the intro screen where the user can easily create a goal or review the goal.

Landing screen   ①

LifeMove

Create New Goal

View Progress

① I want to _____

Choose One

go to

leave

② I want to go to

_____

Choose One

the gym

work

home

[custom]

Create a new goal goes to Screen 1 with numeric progression once an option is selected. "View progress" button goes directly to screen 5, or is grayed out if a goal has not been set.

③ I want to go to
the gym _____

Choose One

at least

at most

after

before

④ I want to go to
the gym at least
x times per

Choose One

day

week

month

year

⑤ Track Progress

"I want to go to the gym at least 12 times per month."

August 2014

0   3   6   9   12

< Return

Return goes back to the landing screen

Design 2

Design 2 starts off on an intro screen. From there, the user can log in. Once they've logged in, they can reach all the main screens through a sliding navigation menu. The following page shows both the *Settings* screen where the user can read the terms of service, update the phone number where they'd like to receive text notifications, or log out. On the *Activities* screen, the user can see a summary of all the activities they've done.

The next sketch shows the *Goals* screen and how to interact with it. Like the *Settings* and *Activities* screens, it can be reached from the sliding navigation menu. Once on the *Goals* screen, the user can edit their goals by clicking on them. The dialog for editing a goal is similar to the one for adding a new goal. Further options are designated on the sketch.
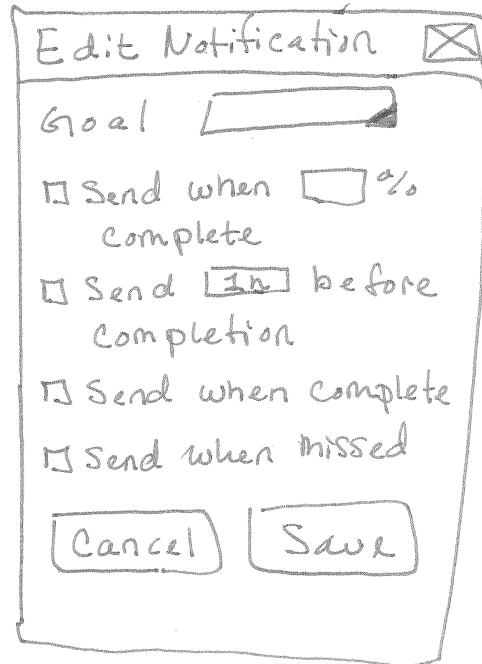
The final sketch shows how to interact with the Notifications screen. Similar to the Goals screen, the user can edit or add a new one through a dialog.
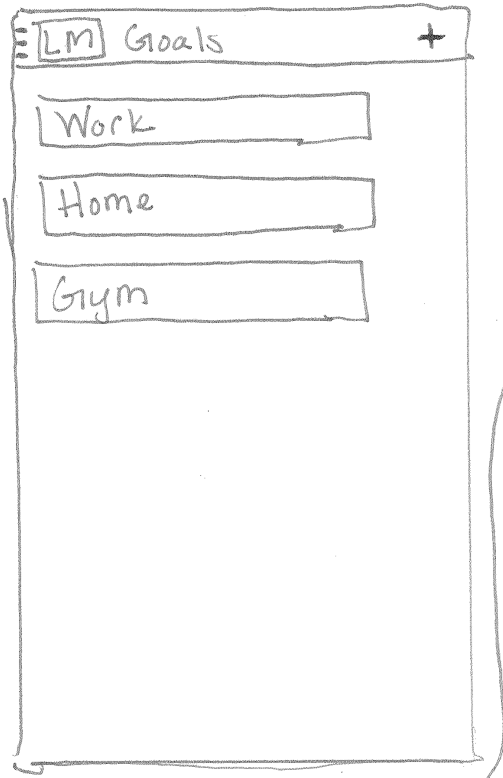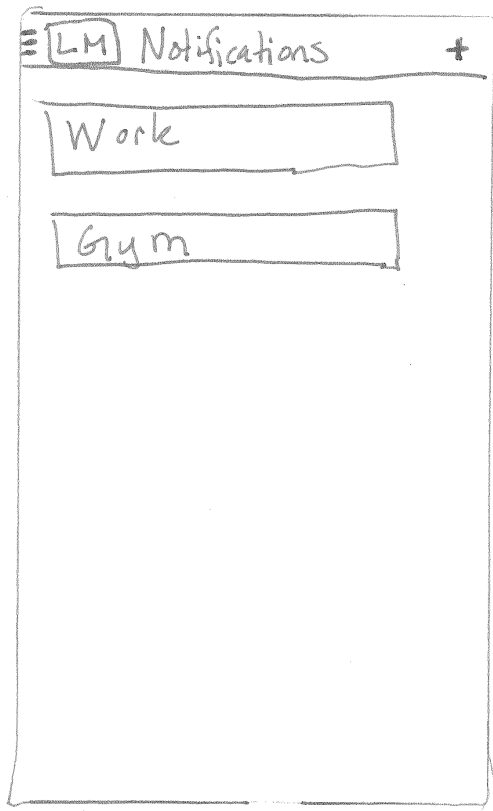

Dialog appears when clicking on ⊞ button or to edit notifications for a goal

Notifications screen:
- ☰ [LM] Notifications +
- Work
- Gym

Edit Notification dialog:
- Edit Notification ⊠
- Goal [▾]
- ☐ Send when [   ]% complete
- ☐ Send [1h] before completion
- ☑ Send when complete
- ☑ Send when missed
- [Cancel] [Save]

Design 3

Unlike *Designs 1* and *2*, *Design 3* skips the extra step of an intro screen and goes straight to the *Activities* screen. The navigation is built into two different tabs: one that shows your current activities on a timeline and another that shows the goals. From the *Goals* view, you can click the "Enter a New Goal" button to open a dialog where you can select options and set the goal.
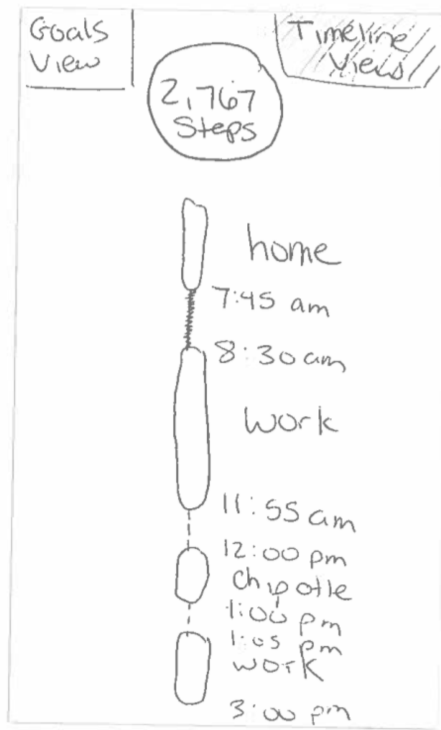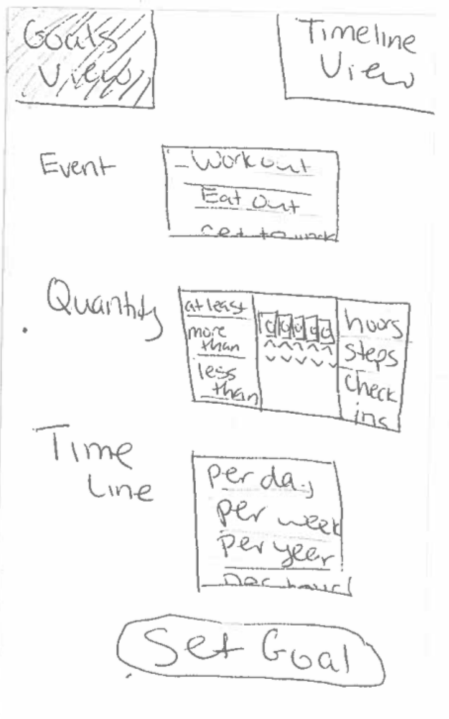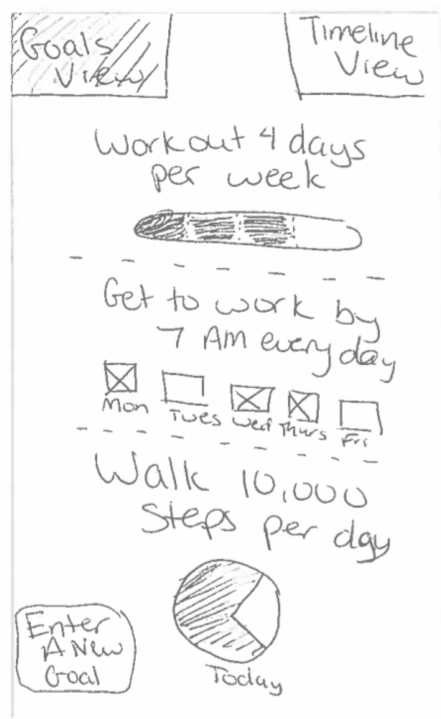
Selected Interface Design

A little of all three designs were incorporated into the final design. For navigation, an action bar with sliding drawer navigation was chosen. Using an action bar is standard in almost all major apps, so it was an easy choice for consistency. The sliding navigation drawer offers an easy navigation route since the app is fairly flat and the user can jump from almost any activity to another. While tabs, like in Design 3, are also is a good choice for flat navigation, it does not offer much room for future expansion (particularly on smaller devices), and can also sometimes be missed by users. While a navigation drawer is also easy to miss, on the first run of the app, it will start out expanded. This gives the user not only a "tour" of the various activities, but also shows them how to access the navigation menu.

One of the key features of the app is for a user to review key activities they have performed. The *Activities* screen design is a merging of *Design 2* and *Design 3*. It takes the list-type view of *Design 2* and combines it with the way *Design 3* correlates the length of time an activity took with the amount of space it takes up on the screen. This gives a good visual cue to the user, without them having to read a bunch of numbers. Additionally, by putting the text inside the box, it gives more screen real estate to the text (since it doesn't have to split it with the diagram). Horizontal screen space is particularly challenging on smaller devices.

The user can easily access a list of goals from the sliding navigation drawer. While *Design 1* had creating and reviewing a particular goal front-and-center in the design, it seems more important for the user to see a list that they can choose from and add too. With the notifications feature of the app, the user won't need to open the app and review goals as often as they do for other apps, thus adding another click seemed like a good tradeoff for being able to have a whole list of goals. From the goals list, the user can click in to see the progress of each goal. From the individual goal page, the user can also easily edit the goal. This provides a way of error correction in case the user made a mistake when creating the goal, or if their needs change over time (e.g. their gym workout changes from MWF to TTh). Because of this feature, the user won't have to delete a goal and re-create a new one, but can simply update the existing one.

A user can create a new goal from the goal list. When a goal is to be added, a dialog pops up with options to select. There are two main types of goals: *timing* goals and *amount* goals. *Timing* goals cover scenarios like "I want to leave work by 4:30 every day this work week". *Amount* goals cover scenarios like "I want to go biking for 7 hours this week". Since *LifeMove* aims to be the main app used for goal track, it was important to offer a wide variety of ways to set goals. While some of the controls for these two scenarios are the same, most of what shows up on the dialog is set by this choice. As the user switches from *timing* to *amount* goal, some controls will disappear while other will appear.

Notifications are listed on their own screen. While these could be accessed from each individual goal, it seemed important to have a summary of these in one place. Notifications can easily become an annoyance to a user, and thus should be easy to turn off.   Clicking through to each goal to see whether it had a notification on it could take quite a bit of time, further annoying the user. Additionally, a user can edit a notification from the notifications list by clicking on a specific notification. Similar to goals, this gives the user an avenue for error correction and allows for adjustments as need arises.

There are several types of notifications the user can set: when the goal is complete, when the goal is missed, when the goal is a certain percentage done, or a set amount of time before a goal is reached. This covers a wide variety of notification needs. If a user wants to know when they're half way to their goal, they can get a

notification. They can also get alerts 15 minutes before they need to go something at a specific time (such as leaving work at 4:30). The user also has the option the set multiple notification, such as if they want to be alerted when 50% done and completed. While the selection is restrictive in that the user cannot set a goal on one screen for 25% and 50% done, the user could add both alerts by going through the dialog twice. While this is slightly inconvenient, the user can ultimately achieve their goal and is not common enough of an edge case to warrant over complicating the design to handle it.
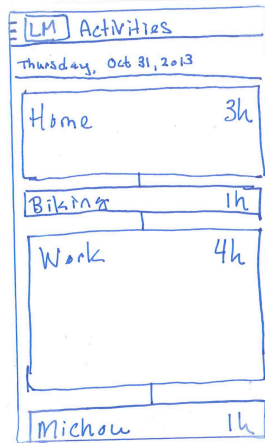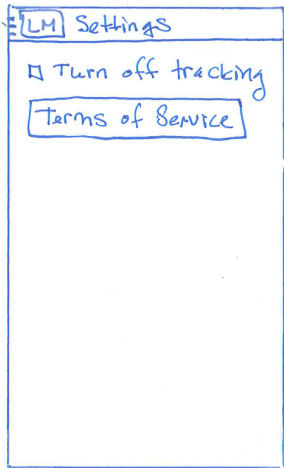
The *Settings* screen is a catch-all bucket for miscellaneous options. It's important that the user be able to turn off tracking, as it's often a huge battery drain on a device. Additionally, the user will need to have access to the terms of service agreement. While these are not covered under any of the three tasks, terms of service are an important part of any piece of software, and the ability to turn off tracking is an important feature to most users. Battery life is a huge concern and most users like to easy control over power consuming features.

Sliding menu open:

LM
- ✠ Activities
- 📊 Goals
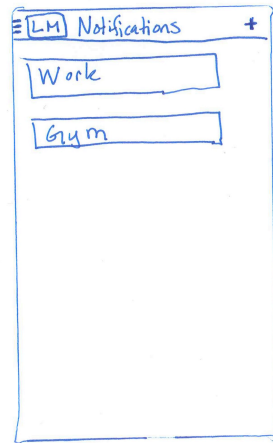- ⓘ Notifications
- ⚏ Settings
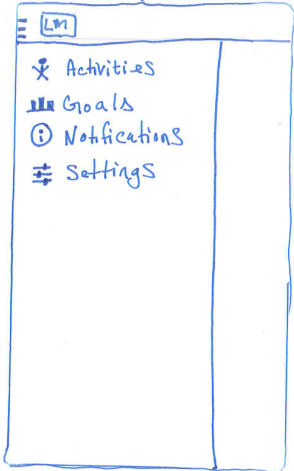
The first time the app is run, it will start with the navigation drawer slid open. The user can select an option, or close the menu to go to the Activities screen. The navigation drawer is opened + closed by swiping or pressing the menu button (3 lines) in the top left corner.
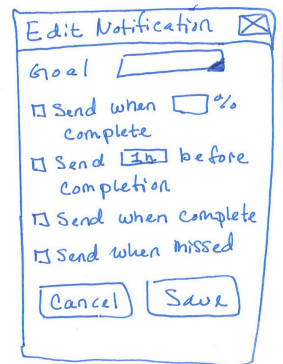
LM Activities
Thursday, Oct 31, 2013

Home	3h
Biking	1h
Work	4h
Michou	1h

The Activities and Notifications screens can be reached from the navigation drawer.

LM Settings
- ☐ Turn off tracking
- [Terms of Service]

The settings screen can be reached from the navigation drawer.

LM Notifications   +
- [Work]
- [Gym]

The edit notification dialog is accessed by clicking on a notification in the list or the '+' symbol. If the '+' symbol is pressed, the dialog says "Add Notification"

Edit Notification ☒
Goal [   ]
- ☐ Send when [ ] % complete
- ☐ Send [1h] before completion
- ☐ Send when complete
- ☐ Send when missed
[Cancel] [Save]

Goal List: The goal list is accessed from the navigation drawer

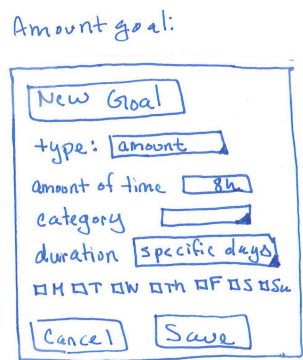**LM** Goals   +
- [Work]
- [Home]
- [Gym]
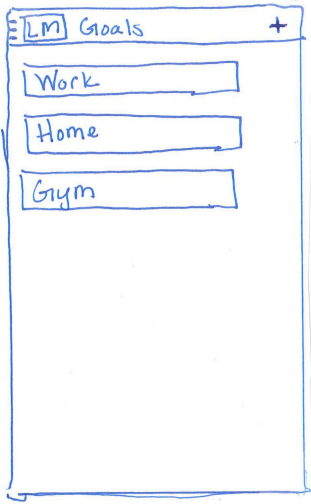
← Adds a new goal
(see dialogs on next page)

Clicking on a goal takes you to the goal tracker page below

Edits a goal
(see dialogs on next page)

back button goes to goal list

< Goal   ✏
Spend 8 hours at work every day

8h
7h
6h
5h
4h
3h
2h
1h
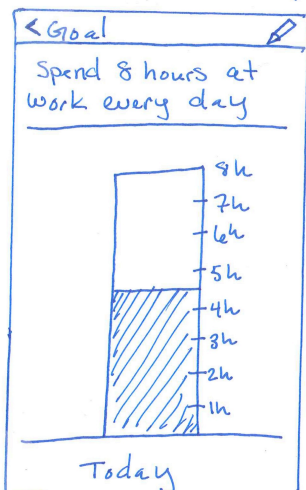
Today

Goal dialog — this appears if you add a goal or edit a goal. there are two main types: amount and timing

Amount goal:

New Goal
type: [amount]
amount of time [8h]
category [   ]
duration [specific days]
☐ M ☐ T ☐ W ☐ Th ☐ F ☐ S ☐ Su
[Cancel] [Save]

Duration options: today, this week, this month, every day specific days. The day of week check boxes only appear for "specific days"

Timing goal:

New Goal
type [timing]
goal [arrive]
category [   ]
time [4:00PM]
☐ M ☐ T ☐ W ☐ Th ☐ F ☐ S ☐ Su
[Cancel] [Save]

Two options for goal: arrive and leave.

Three scenarios corresponding to your tasks

Scenario 1

Bobby just started a new internship at Zillow as a software engineer. Because he's an intern, he is paid by the hour. At the end of the week, he must log all his hours. Most weeks, he keeps a running tally, but occasionally he'll have to go back and look at a whole week. It's the end of the day on Wednesday and he wants to see how many hours he has spent at work today so he can put it on his running weekly tally. In order to see his work hours, he opens the app, opens the sliding navigation drawer, and goes to the *Activities* screen. Once he's on this screen, he scrolls until he sees the block of time for today labeled "work." It has an accompanying time on it that he can put in his weekly tally.

Scenario 2

Joe has two kids that he drops off a daycare every day. He also has a job that's 30 minutes away from the children's day care. He tries to leave work every day by 4:30 because the daycare charges extra if he picks up his children up after 5:00pm. Because of this, he has a very strong financial incentive to leave by 4:30, but doesn't always manage to do so. He'd like to keep track of how many days he achieves his goal of leaving work by 4:30. In order to do this, he opens the app, opens the sliding navigation drawer, and goes to the *Goals* screen. From there, he clicks the "+" button in the top right corner to add a new Goal. Once the "New Goal" dialog pops up, he enters the goal name, selects type of "timing," sets goal to "leave," and selects the category of "work," which should already be in the dropdown if he's used the app before. After that, he chooses a time of 4:30 pm and checks the boxes for Monday through Friday. He can click "save" at this point to go onto the goal tracking page.   At a later point in time, when he wishes to review his progress toward this goal, he goes back to the goal screen from the navigation menu and selects this goal from the list. He will then be taken to the goal-tracking page where he can see how many times this week he has achieved his goal.

Scenario 3

Kristin is a very by-the-books kind of person, so when her doctor told her she should be getting at least an hour of exercise per day, she took it to heart. Unfortunately, Kristin has a very demanding schedule, so she cannot make it to the gym every day. She also hates working out, so she does not want to spend a minute more than is necessary at the gym. While she has a pretty good sense of how much time she spends at the gym, she would like to be notified when she's fulfilled her 7 hour weekly commitment. Her first step in creating this notification is to set up a goal. To do this, she opens the app, goes to the *Goals* screen, and clicks the "+" button to add a new goal. Once the dialog pops up, she enters a name, selects "amount" for the type, and selects a category of "gym," which should already be in the dropdown if she's been to the gym before while the app is tracking. After that, she picks a duration of weekly and press "Save." Once her goal has been set up, she opens the navigation drawer and goes to the *Notifications* screen. Once there, she presses the "+" button in the top right corner to add a new notification. Once the dialog pops up, she selects the goal she just created, clicks the checkbox to indicate that she wants to be notified when her goal is complete and presses "Save." Next week, when she's at the gym and she's hit her 7-hour mark, she will get a notification on her phone alerting her that she has spent 7 hours at the gym.

Word Count: 4856