

# Drop: Low-Fi User Test Writeup

Mathieu Rolfo - development

Megan Lu - design, user testing

Kelsey Josund - manager, documentation

*Drop aims to create a new way of envisioning and understanding resource usage and altering behavior through that understanding.*

## Overview

Much has been said about the benefits of living “greener,” but few people take significant action in that direction. This open problem is the inspiration behind our app, which is intended to help people increase their awareness about their resource usage and motivate change. Our team believes that one of the fundamental causes of wasteful and resource-inefficient behavior is users’ general lack of context for thinking about resource usage. People rarely see comparisons between their own usage and others’, which prevents them from making information-driven behavioral changes. Most people aren’t even told where their electricity, water, and gas come from: the tendency for resources to be commoditized rather than visualized prevents consumers from seeing the bigger picture of how wide a web personal actions can cast. Our app will offer layers of features that encourage behavior change, such as a hub for all of their personal energy information, and side-by-side comparisons to other app-users in the region to bring out competitive impulses. Additionally, this app is ideally situated to offer extra services, like information about ongoing ballot votes and environment issues disputed that affect the supply chain of their resources.

## First Generation Prototype

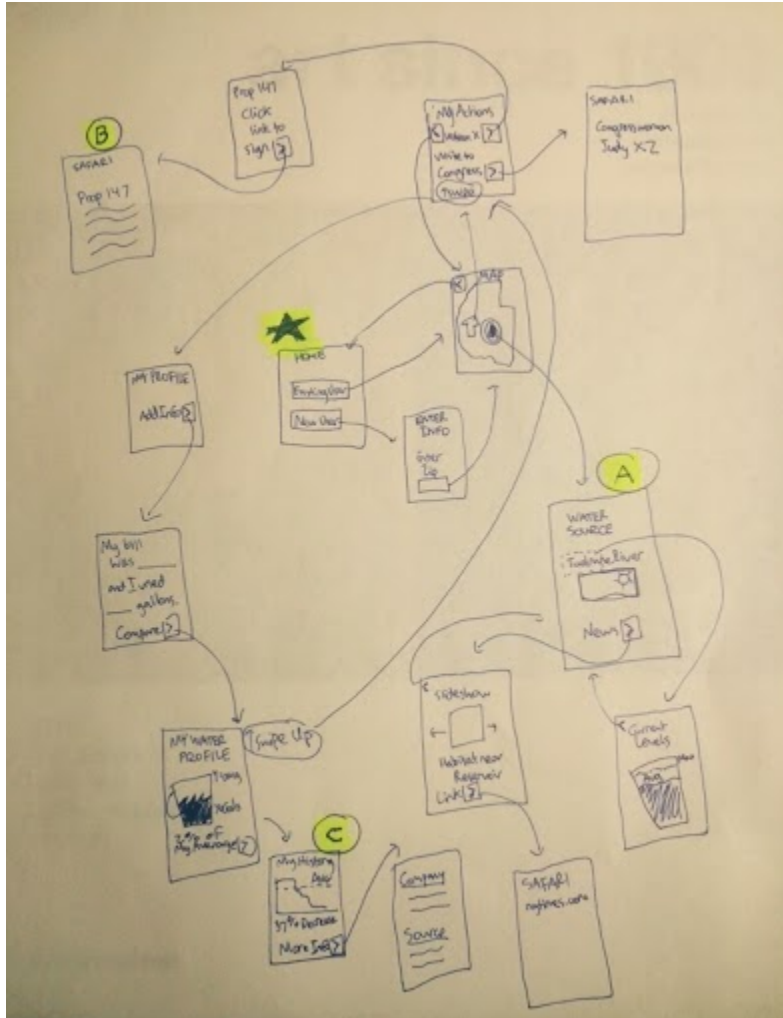


Fig. 1

In Figure 1 above, the full flow of the app in a single drawing can be seen. These screen representations are even lower-fidelity than the sketches we used in the actual user testing, but it is a useful abstraction to see how the tasks relate to each other and the central hub of the application.

The first task we tested is illustrate in Figure 2 below. It is fairly simple: a user enters their location, the application finds their resource sources, and then the results are displayed intuitively on a map. They can then click on each source for more information.

Figure 3 shows the second task, which allows users to learn more about how they can be active in political or other areas after having learned about and considered their resource usage and sources. The general actions checklist is pictured in the center, and more detailed information about a particular policy initiative acts as an example of how action items might appear.

Figure 4 below illustrates the flow for our final task, in which users can enter and compare their own resource usage to aggregate metrics, like regional or demographic averages. As we have it designed for the low-fi prototype, after looking up their location and considering general actions they could take, a user can move from the overall actions screen

to an individual profile for the given resource (in this case, water). There they will be prompted to enter more information, and then can view the results in various formats.

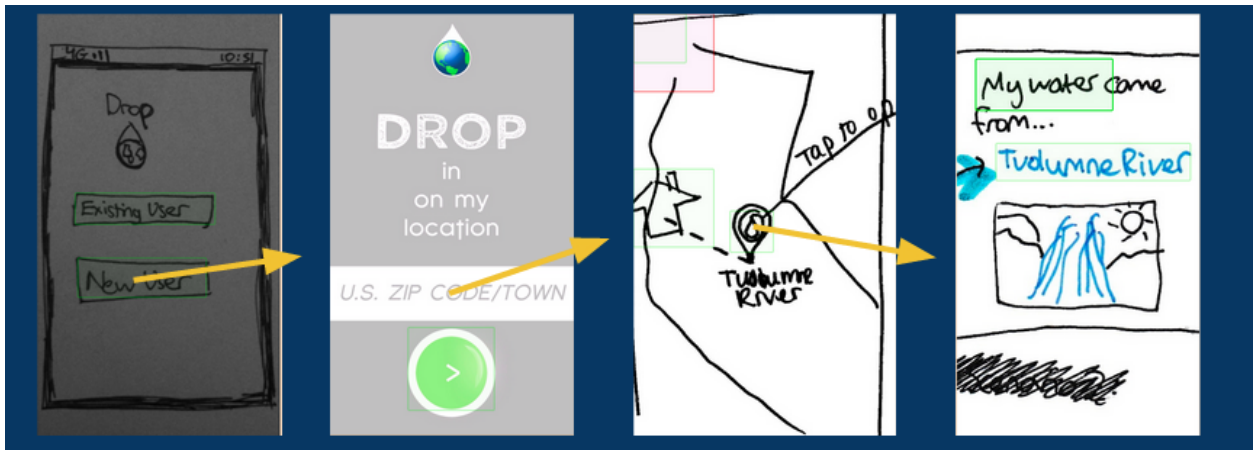


Fig. 2

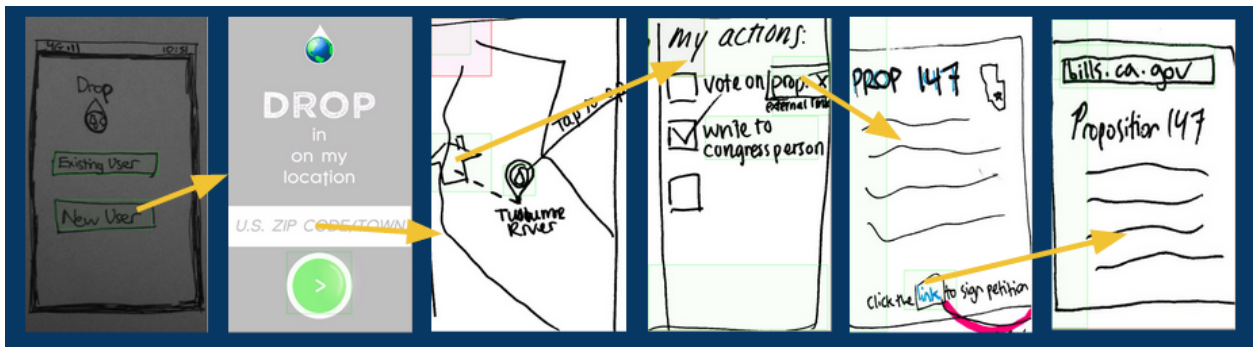


Fig. 3



Fig. 4

## Methods

*Subjects:* Our participants were a mix of people, some of which we knew had already taken CS 147 and therefore had a baseline understanding of what our team hoped to get out of the user testing process (e.g. a look at the app from a usability perspective, detailed user feedback, etc.). All of the testers are familiar with mobile apps and had a basic understanding of how such a tool would function.

*Environment:* Testing took place in the locations that were the most comfortable or convenient for the test subject, which simulated regular use patterns in their natural environs. This included their own dorm, the dining hall, and other public and private spaces.



*Two users test the prototype on their iPhones in their own shared room.*

*Tasks:* The users were asked to open the app and navigate through it. The current way the app is set up naturally takes the user through each task, starting with learning information and moving through political activism and personal data comparison.

*Procedure:* After the introductory portion of the script, we allowed the participants to work their way through the app without guidance. The only exception is when one of the participants got stuck in a loop due to a linking error in the preliminary prototype, where the experimenter explained what was supposed to have occurred and what options there should have been at that point in the app. Once a task had been completed, the simple instructions for the next task were given. At the end, we invited any uncategorized feedback on the part of the user.

*Test Measures:* General numerical ratings of events during interaction; time to complete each task

<i>Task</i>	<i>Specific Action</i>
See where your resources come from	Find out the source of your water.
Learn about political activity in your area	Vote on a California Proposition in your area.
Compare your usage to others	Add your water bill and compare to others in your area.

## Results

Several main findings emerged as a result of the interviews. The basic structure of the app was somewhat incomplete, as the connecting points we had established in the low-fi mockup made it possible for a user to get stuck in a loop where the only links off a screen led back to the same screen, or where it was prohibitively difficult to navigate to disparate sections of the app. This made use testing less informative than it might otherwise have been since it increased the chance a user would get confused or frustrated. The lesson here must be to ensure final versions make it easier and more obvious how to escape cycles among links in the app.

It also became apparent that even though navigation had been designed to be systematic and consistent (i.e. swiping in the same direction to navigate from one screen to the next), it was not obvious enough to the user how to begin without arrows or some other type of markers to delineate the actions available to them.

In this early prototype without working content, it became clear that the app depends heavily on visual stimulation in order to engage the user. In other words, the concept and/or function itself is not enough to maintain a steady interest level; it needs to look and feel *cool*. Because this version did not meet this stricture, it was rated more poorly than it might have been otherwise.

An additional opinion voiced by multiple users is that the personal analytics were more useful and relevant to them than the educational or political tasks. Their interest in the app was primarily consumer-centric. One of the users commented that the additional information presentation section was the easiest part of the app to navigate, but also the least unique or useful.

## Discussion

Based on the findings above, our team is reconsidering the flow of the app. Drop currently takes you through all three tasks back to back. However, since our testers were less

interested in two of the three tasks and more interested in personal comparison, it would probably make sense to split the tasks up and give options at the beginning to select one and start there.

It is also clear that our team needs to rethink navigation and how to explain to the user how to swipe and tap their way through the app. One of the users did find the swipe-down action on the news page very intuitive, but in general did not like the layout of the app as a whole. She found it easy to get lost in the app and didn't know how to navigate back to previous screens if she wanted to access them again.

## **Appendix**

### **Script**

“Hello. As part of CS147, Human-Computer Interaction, we are conducting usability tests for a new app we are developing. This is a very rough “low fidelity” mockup with low quality graphics and limited functionality. When we ask for your feedback we’re interested in what made intuitive sense to you, or not, how well or badly the process flow went, and how you liked the tools and abilities provided by the app.

As you go, please mention out loud your thoughts. What looks like a button? What kinds of motions make sense? Can you accomplish what you want to?

First, please discover where your resources come from.

How did that go?

Now, learn about political action and news.

How was that?

Finally, compare yourself to other users and other people in general.

How did that go?

Do you have any further feedback?

Thank you!

## Consent Form

The Drop 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 Drop. 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 (Megan Lu, Kelsey Josund, and Mathieu Rolfo) 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 [TEAM NAME HERE] 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 \_\_\_\_\_

## Raw Data

### Tester 1

Clicked the logo on top thinking it would find her location E0

Understands learning page

Scrolling up and down is intuitive but should be full screen not just bottom

There's no back option for water profile but there should be E1

In the action checklist, it is not obvious that each task will link you to other pages E1

Back function is unintuitive

Jump from end of personal analytics back to map is confusing E2

Could also go in reverse from your own usage to original source E0

Logic of app did not make it clear that the user progresses from source to self E2

Other resources like energy, etc. would make sense

Aggregates data that isn't easy to find

Makes sense for homeowners, bill payers

Could be useful for businesses with an eco conscience (thinks her employer Etsy would use)

## Tester 2

Called the enter button the "play" button

Not clear where to tap on on map screen E1

When icons on map were explained, wanted to start with the home

After clicking on the home button on map, going straight to actions checklist doesn't make sense E1

Need more info for My Actions decisions, such as a more comprehensive overview of issues

Where each photo is in the educational section, wants to see time progression—slideshow

Thinks it would make more sense to break the educational part down into specific page types: news, photos, etc.

Want both sides of Prop X presented (maybe we could set it up so user learns more about it as a previous action, where actions build on each other in an action chain)

Need to explain how to go back E3

Need to be able to skip profile stuff if not homeowner

Pointed out water usage is seasonal (so want to compare to that month in previous years)

Provider page did not make sense afterwards E2

Page for small business's usage?

Average customer doesn't work for rural household with well, like hers

Going back to beginning was confusing—felt like she entered information and didn't get enough in return E2

End was confusing, specifically screen about water provider E1

Unsure what would gain from usage, because water information is available on internet

Liked the graphs

Wants more analytics on self vs. average user

Why is distance from provider important? Doesn't work because her home pumps own water, due to rural setting

Might use if wanted to reduce cost of water bill \$\$ (tracking)

Wants more about water lawn, showers, etc. and tips in those vein (more consumer oriented)

"Not a political-y person" so doesn't really care about two of three tasks



### Tester 3

Event: user chooses to go first to “learn more” portal

2: lacks clear indication of how much more information is available or what the range is; user commented on this

Event: user stuck in loop trying to view other parts of the app

5: this should not happen

Event: user enters information

0: clear where to input information, how to submit, and content of result was not a surprise

Event: user compares self:

1: user commented it would be nice to be able to see numerical, object-defined, and graphical comparisons perhaps on different “tabs” on the same screen

Event: user comments on how different buttons look than the rest of the screen

0: this is good