

Reclaim

Low-Fi Prototype

Melissa W., Igor B., Disney V., Miles M.

CS147 Winter 2021 — Sustainability

Project Overview

Problem-Solution Overview

As a buyer, finding someone in your community who's selling what you need is hard—even if plenty of people would be willing to sell if asked. Reclaim is a **reverse marketplace** where buyers post what they need and anyone nearby can fulfill their request. Reclaim unlocks hidden supply for buyers and reduces the burden on sellers to manually list everything they're willing to part with.

Mission Statement

Our mission is to make buying used easier than buying new—eliminating shipping in the process.

Value Proposition

Everything is for sale.

Concept Sketches

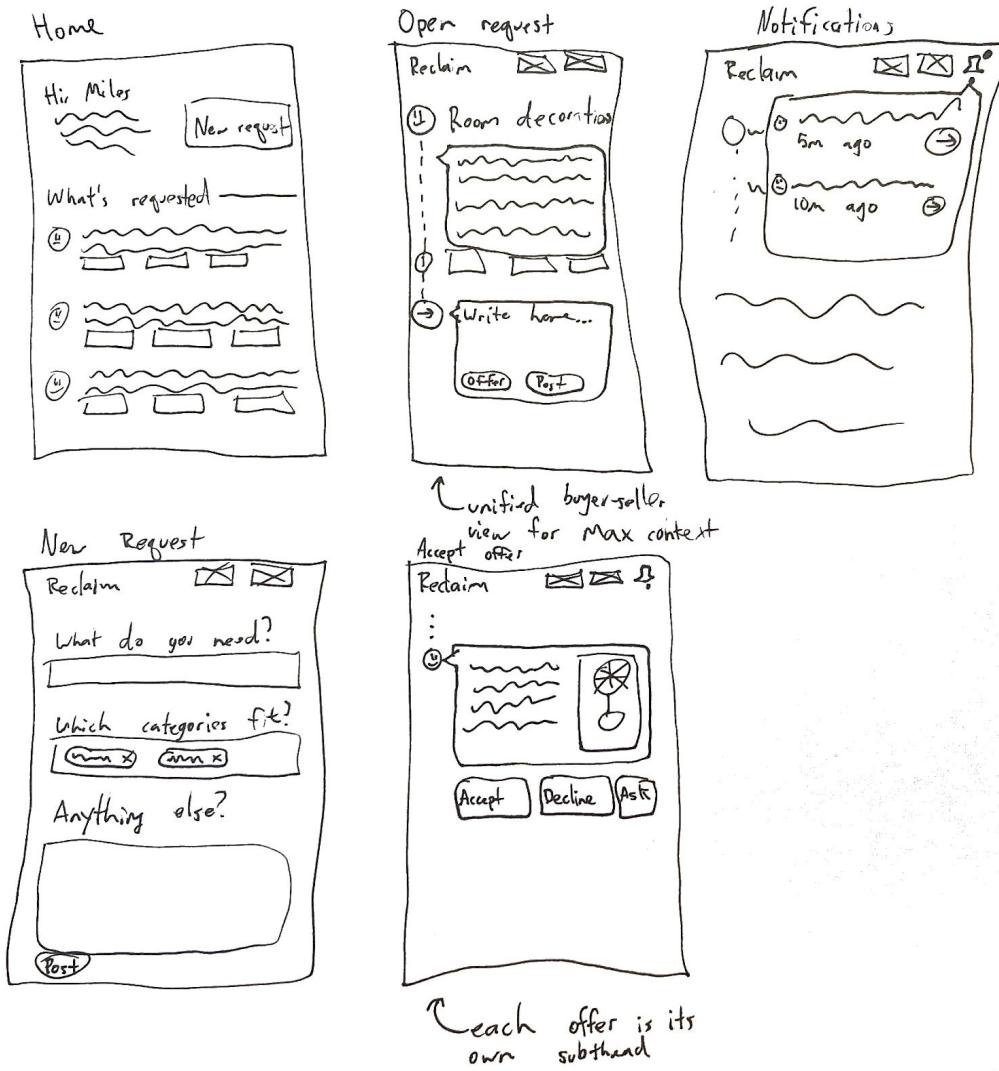


Figure 1: Mobile-oriented concept interface

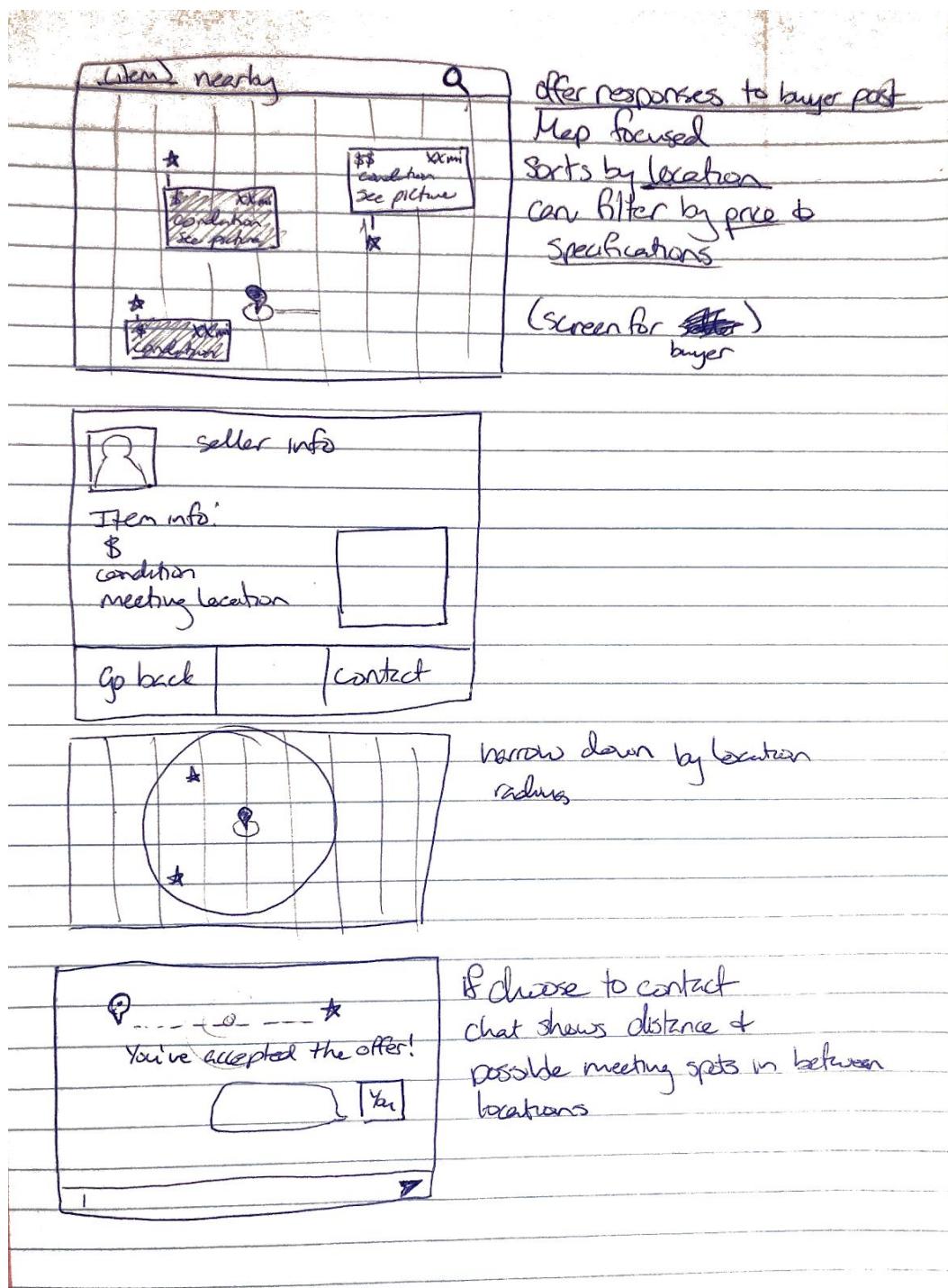


Figure 2: Map-oriented concept interface

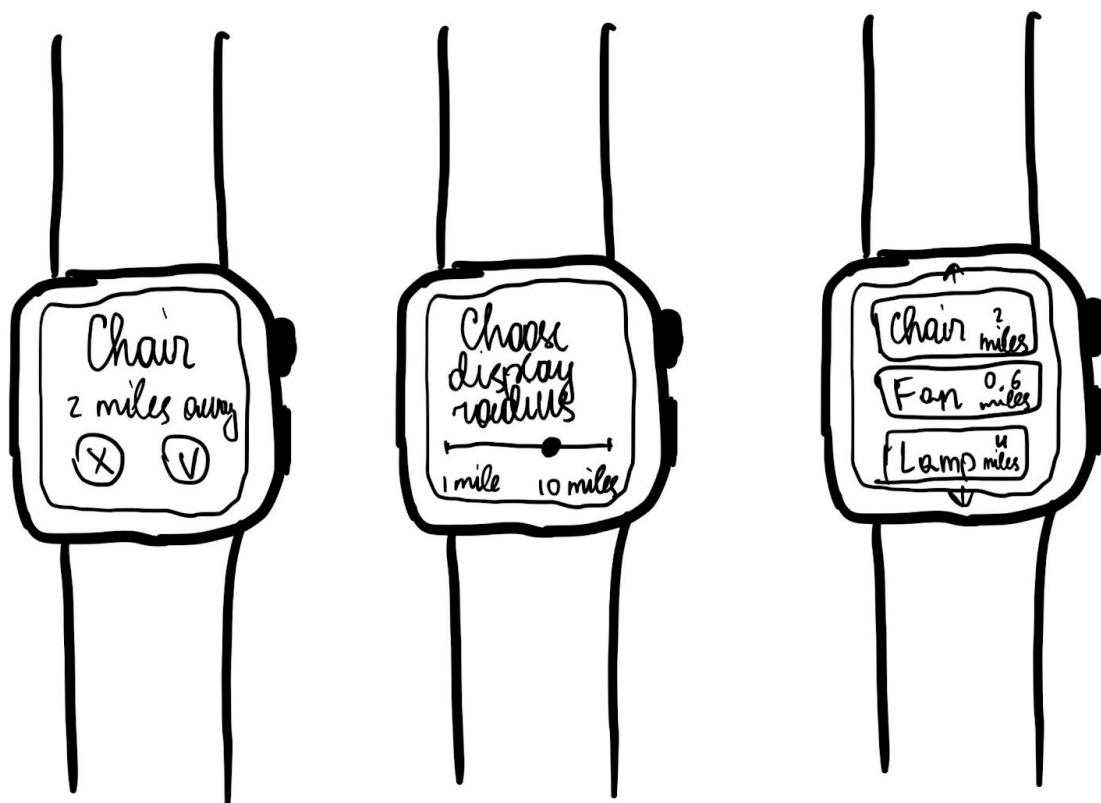


Figure 3: Wearable concept interface

Reclaim

Low-Fi Prototype

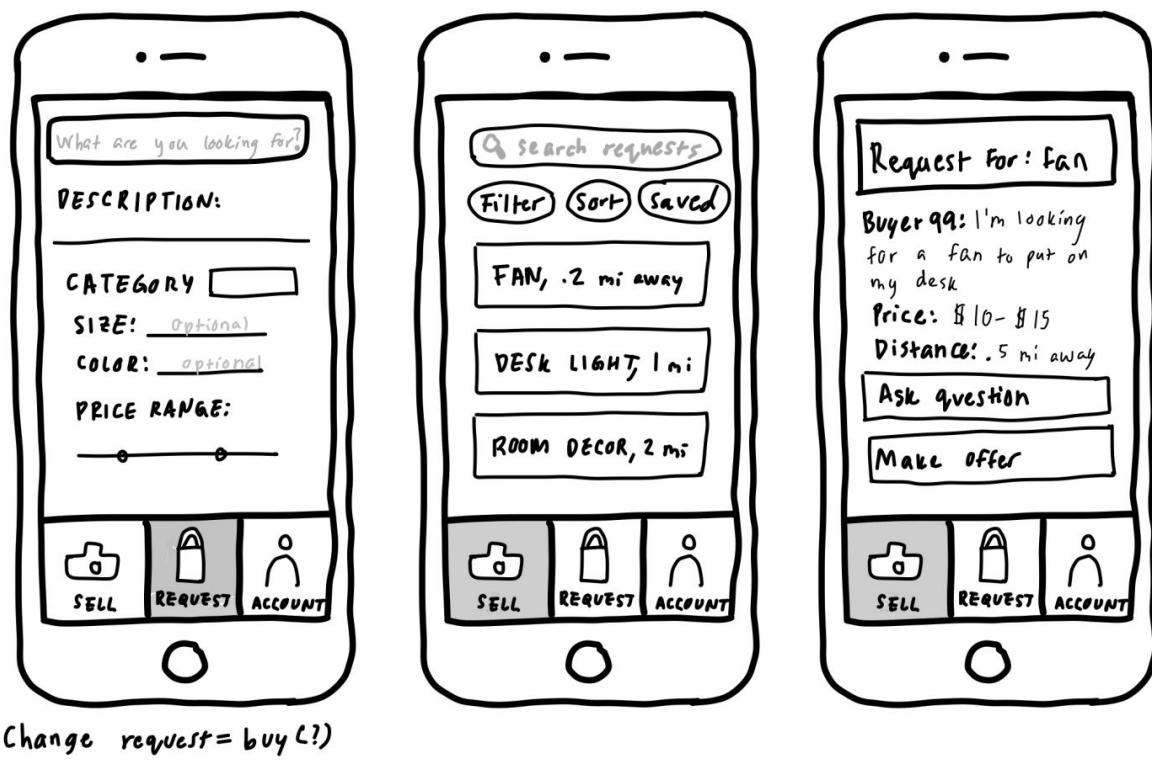
Top Left: Filter screen. Shows a sidebar with 'Color' filters (blue, black, white) and a 'Category' filter (furniture, electronics, clothing). A 'Requested' search bar shows 'Desk' with filters for '1 mi away' and 'Price range: \$50-70'. Buttons for 'Ask question' and 'Make offer' are shown. A 'Sort by' dropdown menu lists 'price' and 'distance'.

Top Right: Request screen. Shows fields for 'Request Item:' (text input), 'Additional Comments:' (text input), 'Price Range:' (checkboxes for min and max), 'Category:' (checkbox menu), 'Color:' (checkbox), and 'Size:' (checkbox). A 'Sort by' dropdown menu is also present. A 'Submit' button is at the bottom.

Bottom Left: Sell screen. Shows a list of items to sell: Mini-Fridge, Fan, Iron, Desk lamp, and a 'Custom:' field. A note says 'Check the items you have that you'd be willing to sell. We'll notify you when we have a buyer.' Below is a checkbox for daily digests.

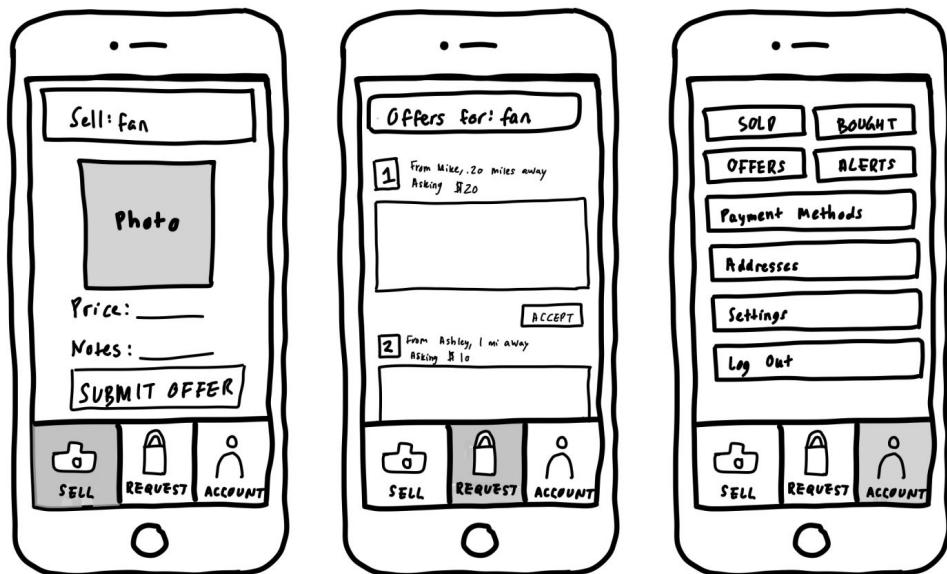
Bottom Right: Account screen. Shows sections for 'BOUGHT', 'SOLD', 'SAVED', 'ACCOUNT INFO', and 'PAYMENT'. A 'Save' button is at the bottom.

Figure 4: Web/tablet oriented interface



Change request = buy (?)

Figure 5: Mobile-oriented interface



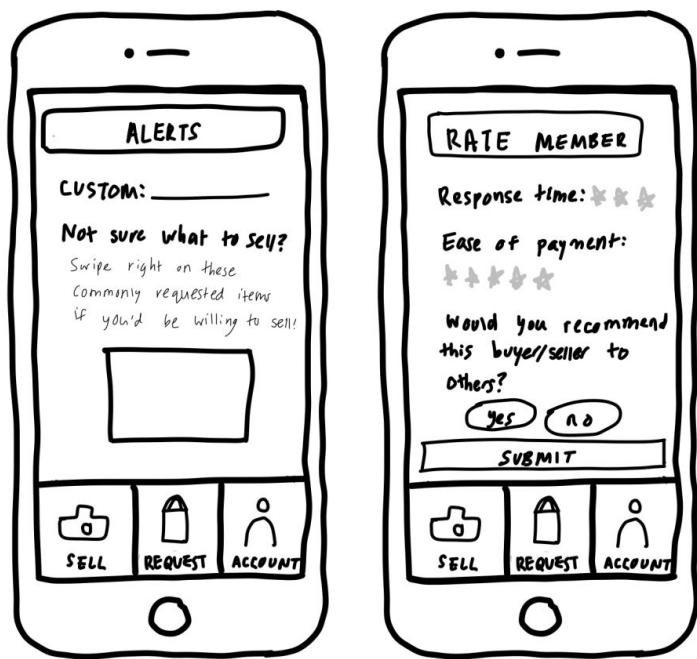


Figure 6: Step-oriented mobile interface with alerts

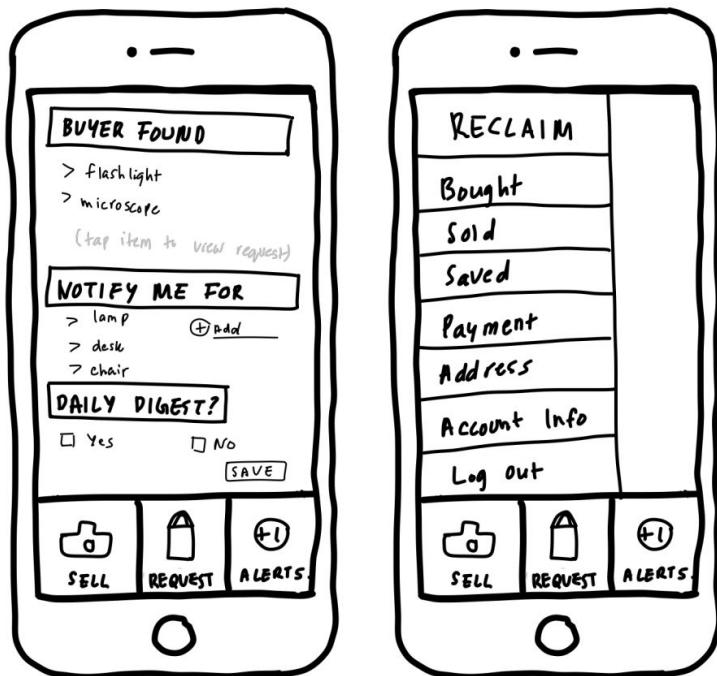


Figure 7: Mobile concept interface for alerts and menus

Synergy between App/Website and Alexa / Siri

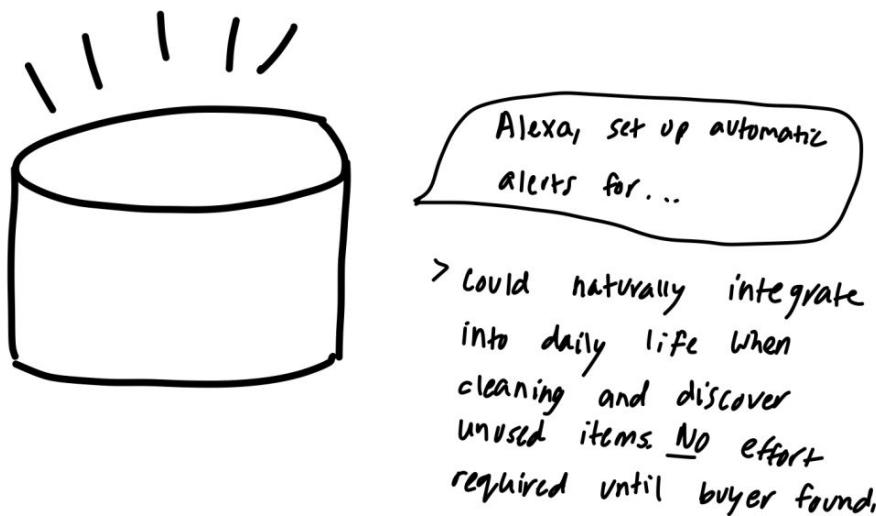


Figure 8: Extra voice-operated interface

Concept Refinement

Of our six concept realizations, we find that the *map based interface* (Fig. 2) and the *mobile-oriented interface* (Fig. 5-7) are the strongest candidates. Below, we storyboard these designs in slightly more detail.

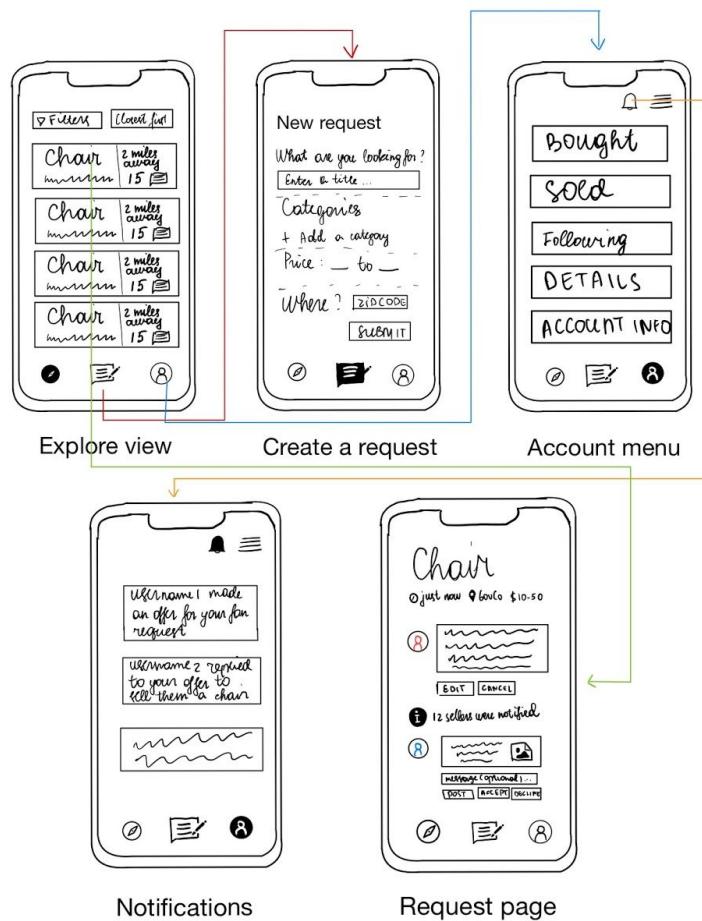


Figure 9: Linear mobile-oriented interface storyboard

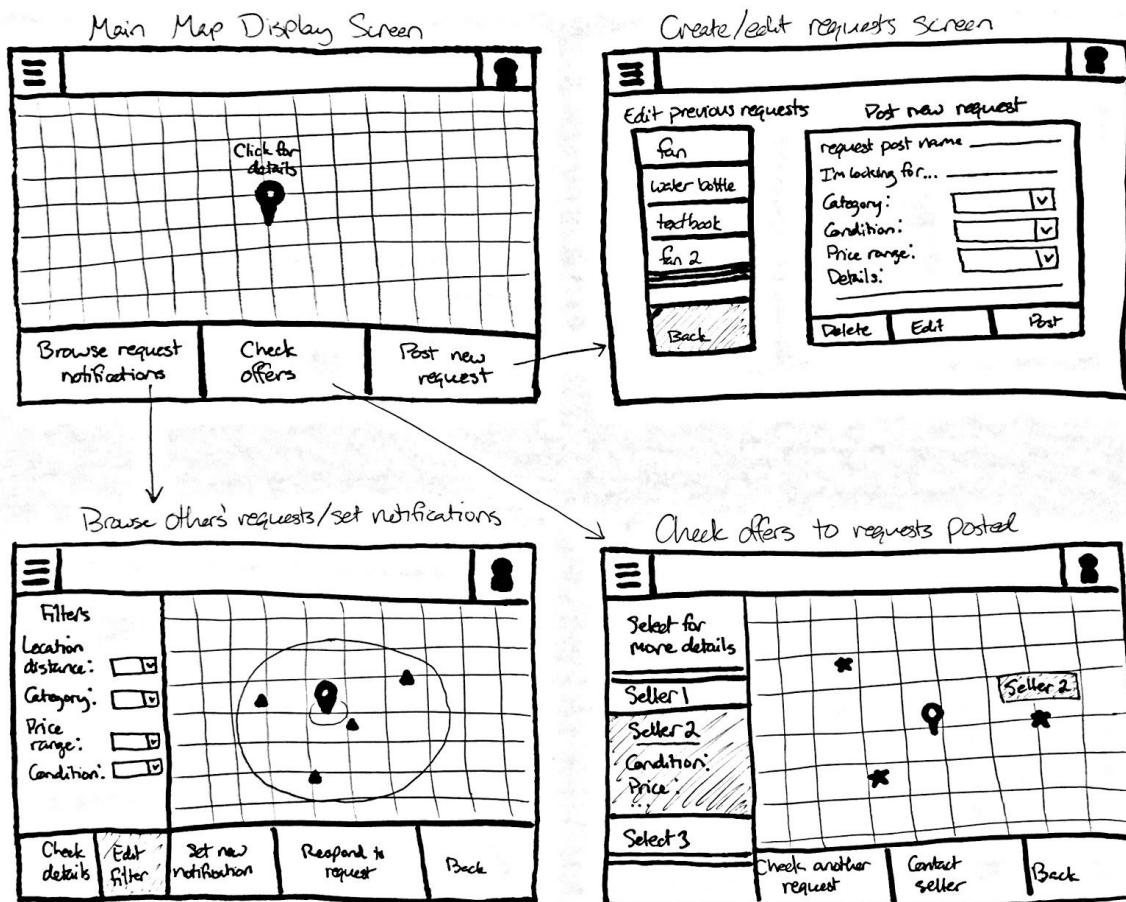


Figure 10: Map-based interface storyboard

Concept Selection

We find the more linear mobile-oriented interface stronger than the map-based interface. Displaying requests and offers according to location inhibits other forms of browsing (e.g., by price, time, etc.), making the standard mobile interface likely more intuitive and flexible.

Map-Based Interface

Pros

- Emphasizes locality
- Feels almost like a treasure map; it's fun

Cons

- Focusing on location hinders browsing in other ways (e.g., by price, relevance, etc.)

- Makes finding mutual a meeting place very simple
- Might encourage trust between buyers and sellers by emphasizing shared community
- Sharing your location—even approximately—can make some uneasy; a map-based interface would amplify those feelings
- Not every person or item has a clear location (things and people move!)
- Difficult to view multiple requests contextually (if they are too far away)
- Dense areas (such as cities) may appear crammed

Linear Mobile Interface

Pros

- More familiar interface, even if the concept is novel
- No risk of overcrowding; requests and offers are essentially just lists
- Sorting is possible and intuitive
- Supports users sharing only approximate locations

Cons

- Less exciting and novel than the map-based interface
- Unlike a map of requests and offers, a list does not cleanly map to anything in the 'real world'
- Does not inherently emphasize locality and community

Task Storyboards

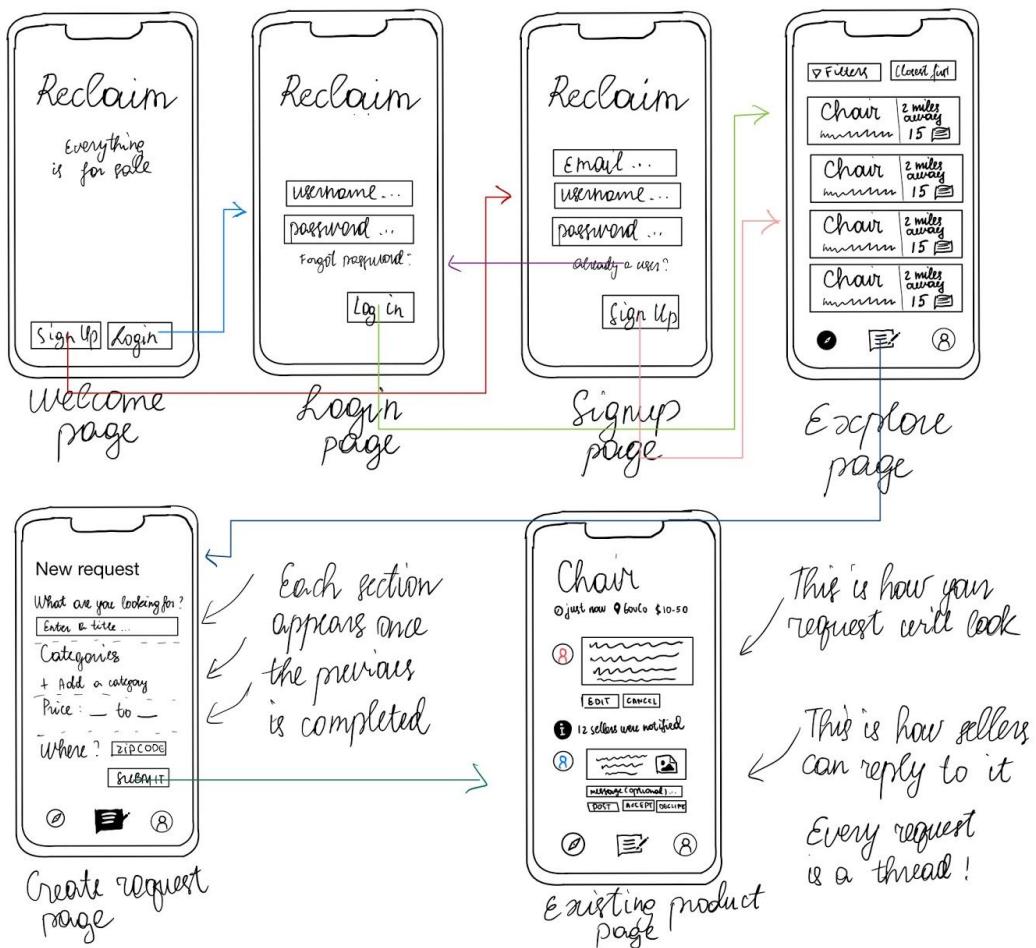


Figure 11: Storyboard for requesting an item (simple task)

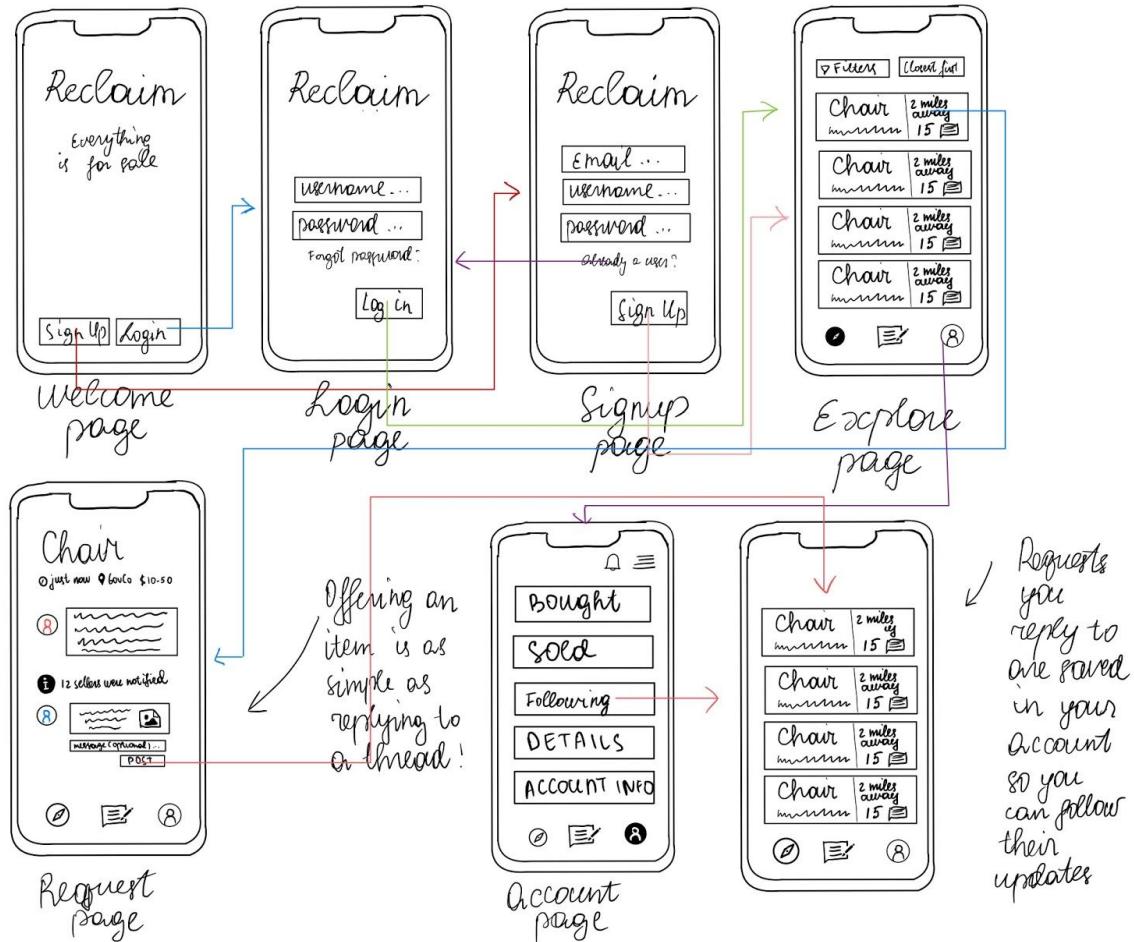


Figure 12: Storyboard for posting an offer for a request (medium task)

Note that in the low-fi prototype, we changed the language and structure of the account view. We realized that hiding all subviews behind an additional tap was unnecessary, and that 'following' requests was redundant to simply having a list of your own offers and requests.

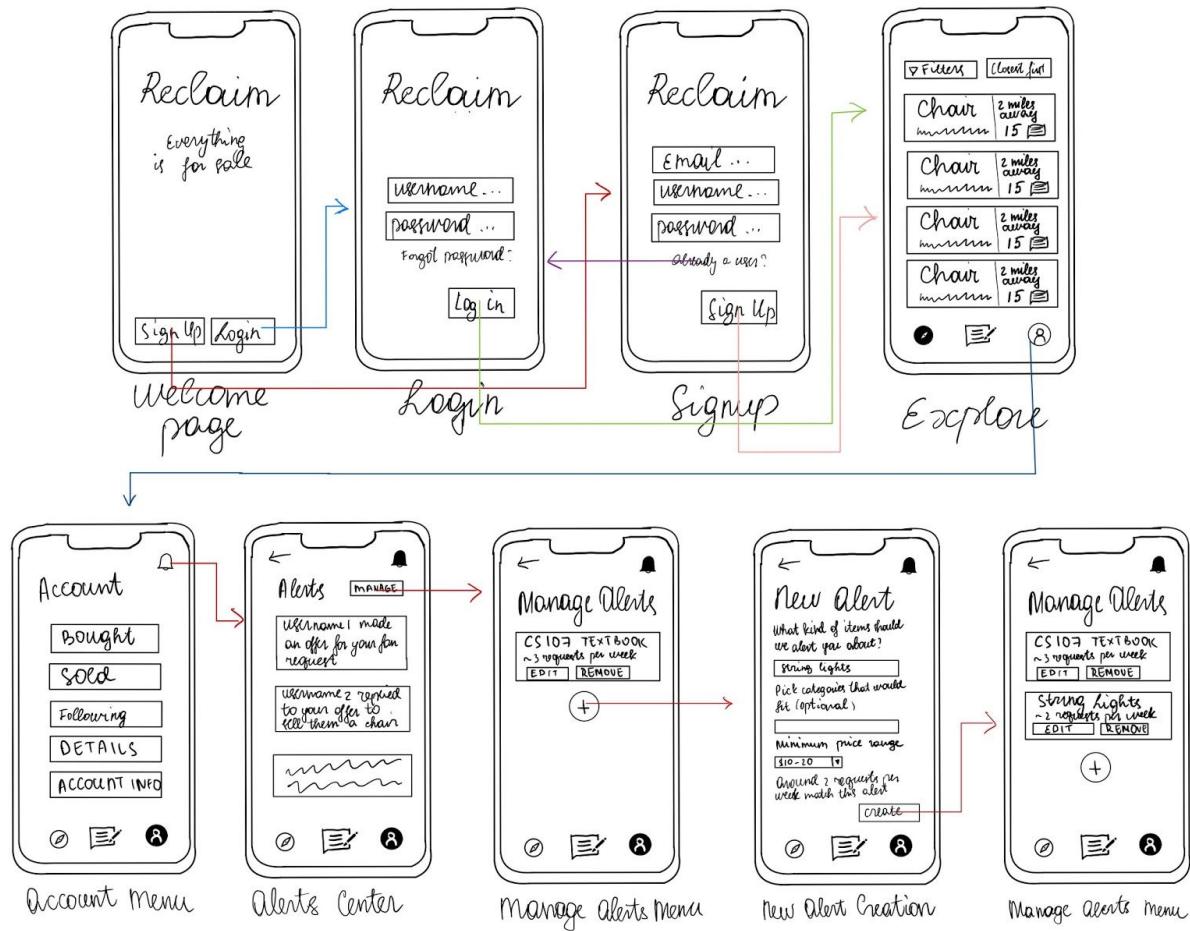


Figure 13: Storyboard for setting up automatic alerts (complex task)

Low-Fi Prototype

With our interface selected, we built a low-fi prototype using Balsamiq. The prototype provides wide coverage of our application, but is far from exhaustive: many tangential functions (such as logging in and managing one's account) are not included. All form fields are autofilled, and all data is hard-coded. To keep our prototype low-fi, we used all of Balsamiq's sketch-like defaults (including their default font), kept our interface entirely grayscale, and elided many interface elements.

Tasks



Figure 14: Flow for requesting an item

Reclaim

Low-Fi Prototype



Figure 15: Flow for making an offer

Reclaim

Low-Fi Prototype



Figure 16: Flow for accepting an offer

Reclaim

Low-Fi Prototype



Figure 17: Flow for setting up automatic alerts

All Screens

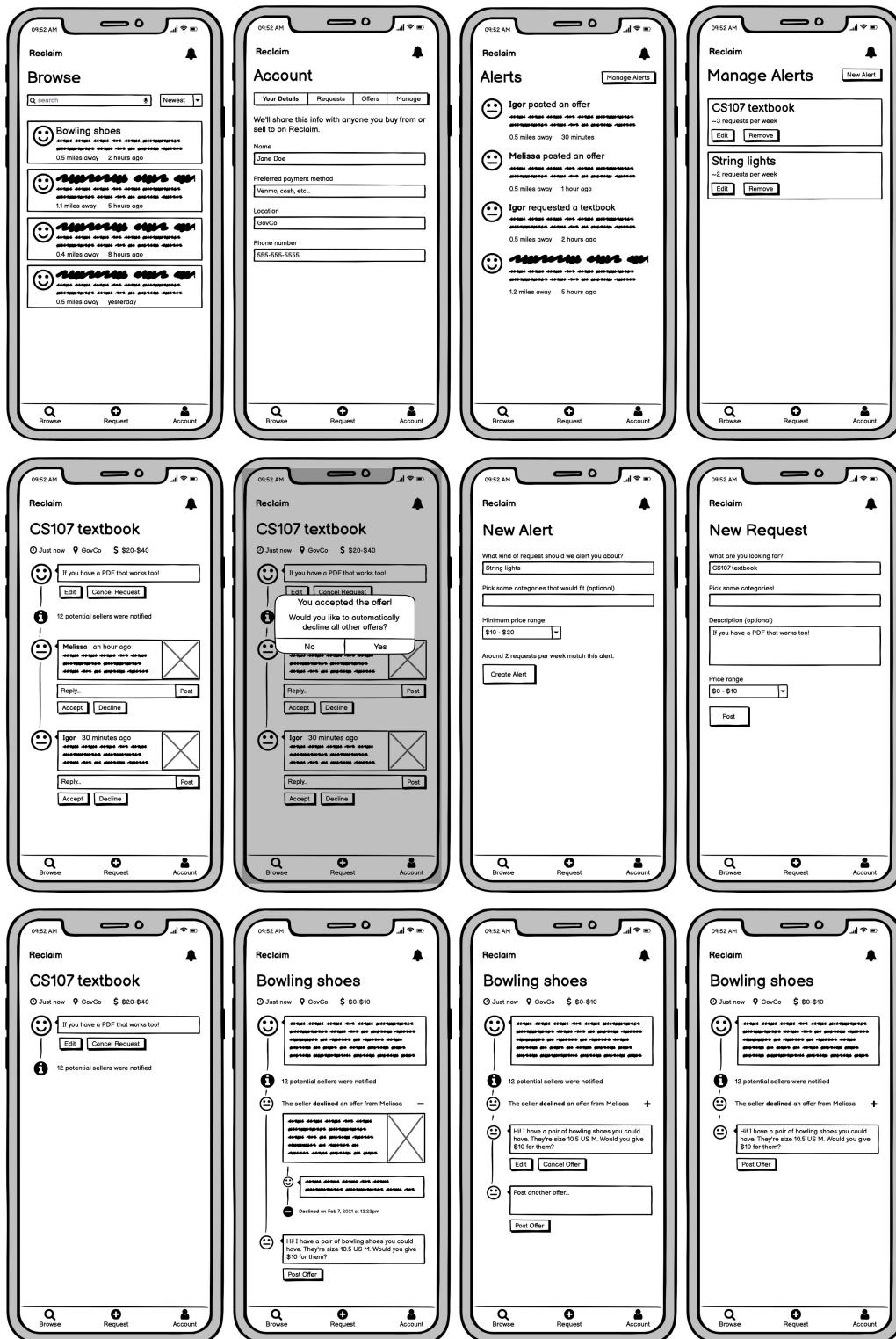


Figure 18: Overview of all screens

Critical Interface Elements

Our interface uses touch input to move through visual screens. Below, we list the critical interface elements:

<i>Interface Element</i>	<i>Functionality</i>
Request list	List of all nearby requests according to users' searching and sorting preference
Bell button	Access notifications (updates on user's own offers and requests) and alerts (messages about requests the user might be able to fulfill)
Browse button	View nearby requests
Request button	Create a new request
Account button	Manage one's own personal details and preferences
Request page	Novel, unified page where requests, offers, and offer decisions (accepted, declined, etc.) are shown in one unified context for both buyer and seller. All offers are public to everyone on the platform .

Testing Methodology

Participants

We tested our interface with four different users spanning three different demographic categories: high school students (1), college students (1), and adults (2). All participants live in urban or semi-urban areas where local reselling and purchasing activity is strong. We recruited our participants through friends and peers so that no team member had direct connection to any participant.

Environment

The interviews took place remotely via Zoom, and participants navigated our prototype on their phone. We asked participants to hold their phone such that both their face as well as their phone screen was visible to their camera.

Tasks

We asked participants to perform four tasks: post a request for an item (simple), post an offer for someone else's request (medium), compare and respond to offers for their own request (from the first task; medium), and set up automatic alerts for items (complex). Together, these tasks cover the key functions of Reclaim.

Procedure

We started each interview by introducing Reclaim, getting our participant's consent to record, and setting up the prototype on the participant's phone. Then, we asked participants to perform each of the four tasks. Finally, we asked participants brief follow-up questions.

For each interview, we assigned different team members to each of the roles; we used a script to ensure consistency across interviews. Rotating roles was necessary due to the scheduling requirements of our participants. Every team member led one interview.

For each interview, we had a greeter/facilitator and two observers. (Building our prototype in Balsamiq meant that we did not need a dedicated computer role.) We recorded all our interviews using Zoom.

Due to financial constraints, we could not offer participants any compensation beyond our gratitude.

Test Measures

For each interview, we noted:

- **Successes** — instances where our interface effectively served the participant
- **Errors** — instances where our interface confused or otherwise failed the participant
- **Delights** — instances when our interface made the participant happy
- **Timing** — approximately how long the user took to complete each task, bucketed into *quick*, *medium*, and *slow*. These are subjective and do not correspond to exact time buckets.

Results

See the Appendix for detailed event logs. Critical incidents are summarized for each task.

Task 1: posting a request

- Task went smoothly for all participants.
- Timing: all were quick
- Delights: one participant (#1) commented on how easy it was

Task 2: posting an offer

- Went smoothly for all participants.
- Timing: all were quick
- Delights: two participants (#3 and #4) appreciated being able to see declined offers

Task 3: accepting someone's offer

- All participants tried navigating to account or did not immediately know where to look; thinking to look in notifications took a moment.
- Timing: 3 medium, 1 slow
- Delights: two participants (#2 and #4) commented on how much they liked the 'decline all other offers' popup

Task 4: setting up automatic alerts

- All participants had some trouble here; most looked in 'account' to manage alerts and didn't think to do it in notifications. Once they found the right view, creating an alert went smoothly.
- Timing: all were slow
- Delights: two participants (#1 and #2) commented on how much they appreciated the ability to create alerts

Discussion

Our tests revealed significant strengths and weaknesses in our interface, but we found that users were generally quite happy with it. The main strength we identified was the unified public request view: as both buyers and sellers,

participants appreciated being able to see *all the activity* related to a request in a single nested timeline (as opposed to distinct views for each offer, for example). Participants had no trouble replying to offers using this view, and two even noted how much they appreciated being able to see others' declined offers.

Some participants found it challenging to locate and reason about their own requests in the interface. For example, they tried using the "request" button in the bottom menu, which we originally intended for it to be a button simply to create *new* requests. We are considering moving the personal request list view—which we originally buried in settings—to the bottom menu in place of the "new request" button.

Alerts had more fundamental issues. For example, some participants were unsure about how "alerts" for item requests differed from general phone notifications. Additionally, participants thought of the notifications view as a read-only part of the interface and were surprised to find automatic alert management functionality there. (Most participants first checked the 'account' view.) We plan to deeply rework automatic alert management functionality, partly by moving management into a redesigned account view, but also by renaming "automatic alerts" to "subscriptions."

In general, we were happy by how the participants received our interface. While the tests revealed several organizational flaws in the design, it also inspired clear ways to fix the issues.

Appendix

Critical Incidents

Red is bad, *green* is good.

Participant #1

Incident	Severity
----------	----------

Wasn't sure whether she needed to click browse when she was already on the browse page. (Task 2)	2
The hardest part was understanding what the difference is between request and browse.	4
Couldn't find the alerts center. (Task 3)	4
Finding how to manage the alerts even after knowing where the alerts center is was hard. (Task 4)	4
Posting an offer was easy. (Task 2)	1
Liked the option to see the history of a request (including declined offers) because it provides a better sense of what the buyer wants. (Task 2)	4
Thought the idea of managing alerts was very convenient. (Task 4)	2

Participant #2

Incident	Severity
Went to account -> requests before navigating to notifications. (Task 3)	3
Had to look for where to set up automatic alerts. Went to browse and account before navigating to notifications. (Task 4)	3
Confusion about the meaning of "manage notifications". Thought	2

“manage notifications” is related only to notification frequency and did not think this was a fitting name for adding new alerts. (Task 4)	
Liked the ability to see past offers. Said it helped her to know what the buyer was looking for and that it helped her to not make a request similar to one that was denied. (Task 2)	2
Liked that she could automatically decline the other offers when she accepts one - said it's <i>really convenient</i> . (Task 3)	3
Appreciated the automatic alerts feature so that she would not have to keep refreshing if looking to sell an unrequested item. (Task 4)	1

Participant #3

Incident	Severity
Had hesitation on the price input field as it could be difficult to judge increments with increased prices. (Task 1)	1
Liked the transparency of seeing other sellers' declined offers to better understand what the buyer is looking for. (Task 2)	2
Was curious about why there would be an option to decline all offers rather than have it be automatically implied. (Task 3)	2
Was making decisions between whether notifications would be in “account” or under the “alerts” bell	3

icon. Would make sense for him if notifications could be accessed both ways. (Task 4)	
Wanted to know if the display for "seller details" would show things like pricing so that the buyer could compare offers. (Task 3)	1
Thought that it was easy and intuitive to post a request. (Task 1)	1
Quickly found how to look at offers through "browse." (Task 2)	1

Participant #4

Incident	Severity
Enjoyed how simple requesting an item was; contrasted it to the standard process of posting an item for sale online (task 1)	2
Easily posted an offer from the request page (task 2)	1
Tried to expand declined offer by clicking on text (only + button was interactive) (task 2)	3
Tried to get to her own request using the "+ Request" tab (that only allows creating new requests) (task 3)	4
Did not immediately find/identify notification bell (task 3)	3
Appreciated the "decline all other offers" popup (task 3)	2
Tried to manage alerts through account tab (it was under notification	4

bell) (task 4)	
Easily created alert once she realized it was under the bell; had no trouble describing categories she'd apply to the alert. (task 4)	2

Consent Forms

This student team is interviewing and observing as part of the coursework for a Computer Science course CS 147 at Stanford University. Participants provide data that is used to understand the possible opportunities of the design. Data may 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 (Miles McCain, Melissa Weyant, Disney Vorng, and Igor Barakaiev) 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 maintained 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 research and my participation in it. I give my consent to have data collected on my behavior and opinions in relation to the team's research. I also give permission for images or audio/video recordings of me being interviewed to be used in presentations or publications, as long as I am not personally identifiable in the images/video. I understand that I may withdraw my permission at any time.

Name _____ Redacted _____

Participant Number _____ Redacted _____

Date _____ Redacted _____

Signature _____ Redacted _____

Witness name _____ Redacted _____

Witness signature _____ Redacted _____

This student team is interviewing and observing as part of the coursework for a Computer Science course CS 147 at Stanford University. Participants provide data that is used to understand the possible opportunities of the design. Data may 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 (Miles McCain, Melissa Weyant, Disney Vorng, and Igor Barakaiev) 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 maintained 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 research and my participation in it. I give my consent to have data collected on my behavior and opinions in relation to the team's research. I also give permission for images or audio/video recordings of me being interviewed to be used in presentations or publications, as long as I am not personally identifiable in the images/video. I understand that I may withdraw my permission at any time.

Name _____ Redacted _____

Participant Number _____ Redacted _____

Date _____ Redacted _____

Signature _____ Redacted _____

Witness name _____ Redacted_____

Witness signature _____ Redacted_____

This student team is interviewing and observing as part of the coursework for a Computer Science course CS 147 at Stanford University. Participants provide data that is used to understand the possible opportunities of the design. Data may 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 (Miles McCain, Melissa Weyant, Disney Vorng, and Igor Barakaiev) 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 maintained 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 research and my participation in it. I give my consent to have data collected on my behavior and opinions in relation to the team's research. I also give permission for images or audio/video recordings of me being interviewed to be used in presentations or publications, as long as I am not personally identifiable in the images/video. I understand that I may withdraw my permission at any time.

Name _____ Redacted_____

Participant Number _____ Redacted_____

Date _____ Redacted_____

Signature _____ Redacted_____

Witness name _____ Redacted_____

Witness signature _____ Redacted_____

This student team is interviewing and observing as part of the coursework for a Computer Science course CS 147 at Stanford University. Participants provide data that is used to understand the possible opportunities of the design. Data may 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 (Miles McCain, Melissa Weyant, Disney Vorng, and Igor Barakaiev) 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 maintained 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 research and my participation in it. I give my consent to have data collected on my behavior and opinions in relation to the team's research. I also give permission for images or audio/video recordings of me being interviewed to be used in presentations or publications, as long as I am not personally identifiable in the images/video. I understand that I may withdraw my permission at any time.

Name _____ Redacted_____

Participant Number _____ Redacted_____

Date _____ Redacted_____

Signature _____ Redacted_____

Witness name _____ Redacted_____

Witness signature _____ Redacted_____