daha

CS 194H Winter 2022

Peter Ling, Drew Silva, Eli Waldman, Olivia Wang

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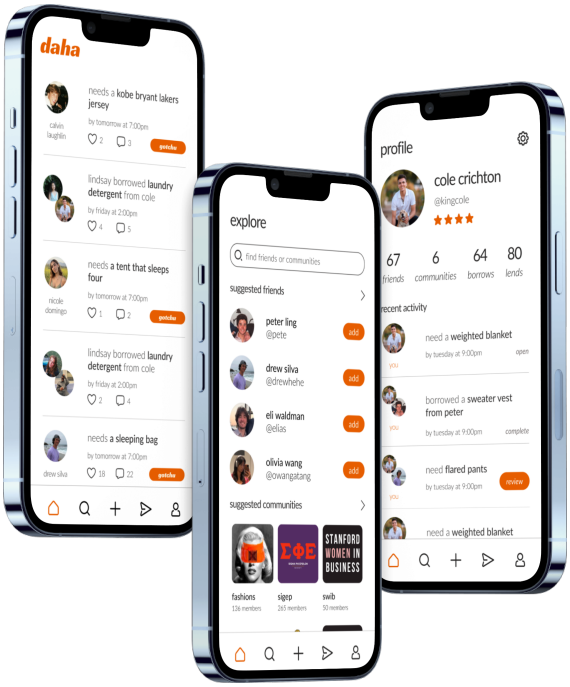
Problem Description

College students are always borrowing from each other. Clothes, utensils, tools, gear, etc. Most of these items are needed on short notice and for one-time-use occasions. The most common method for borrowing right now is through text messaging (individual conversations and group chats). As students at Stanford, we are constantly receiving messages like "daha (does anyone have a) dress," "daha skis," "daha laundry detergent." But these daha requests often get lost in the noise of other texts and don't have a high response rate. Another popular solution is to simply buy what you need online, and with platforms like Amazon who offer overnight shipping, it's easier than ever. However, this kind of solution encourages overconsumption and waste, especially for one-time-use items like clothing and gear.

Why buy when what you need already exists around you?

Solution Overview

daha (short for "does anyone have a") is a peer to peer lending platform for college students. We make it easy for students to find what they need from the community around them. By allowing users to notify their entire network with only one post, we simplify the borrowing process on campus. We hope daha encourages resourcefulness and builds sustainable habits among college students. Ultimately, we want our users to turn away from overconsumption and turn to using what already exists in their community.



Tasks

Simple – create a daha post

Creating a daha post and blasting it out to your network is a core functionality of our platform. We believe this task will be the most frequented and as such should be the easiest to use for our users. This task requires users to create a post, fill out the different fields (item, color, size, need by, return by, etc.), and publish it to their feed.

Moderate – join a daha community

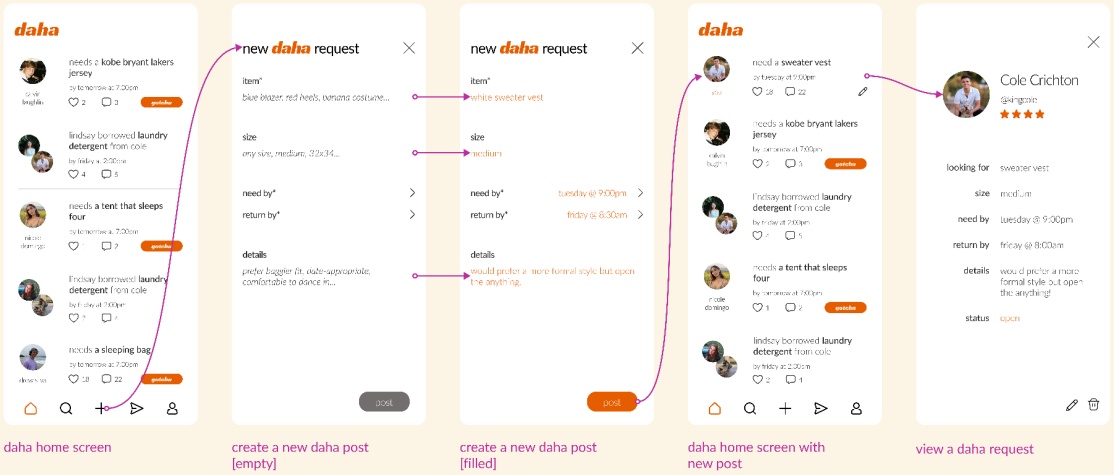
To encourage community-building on the daha platform, we hope to onboard pre-existing clubs and organizations at colleges. Users can choose to send daha requests to specific groups (dorms, clubs, teams) or to their entire network. The more communities that a daha user is a part of, the wider their reach is when they post a daha request. Groups also have chat functionalities. This task requires the user to navigate onto the explore page, find a community of interest, and request to join that community.

Advanced – write a review of daha experience

Creating a safe and trustworthy platform is our priority, especially when transactions involve in-person meet ups and lending your personal items out. That's why we believe a review system is vital to our model. By rating your daha experience with another user, we hope to build a culture that encourages and rewards users who respect other people's time and items. With ratings and traits (on-time, clean, reliable, etc.) displayed on every user's profile page, we hope that users feel safe about lending and borrowing from others. Our platform makes reviewing as easy as possible with nudges to review post-transaction, clickable traits as icons on the review form, and a space to elaborate if necessary. This task requires users to find one of their past transactions, fill out a short review form, and submit the review.

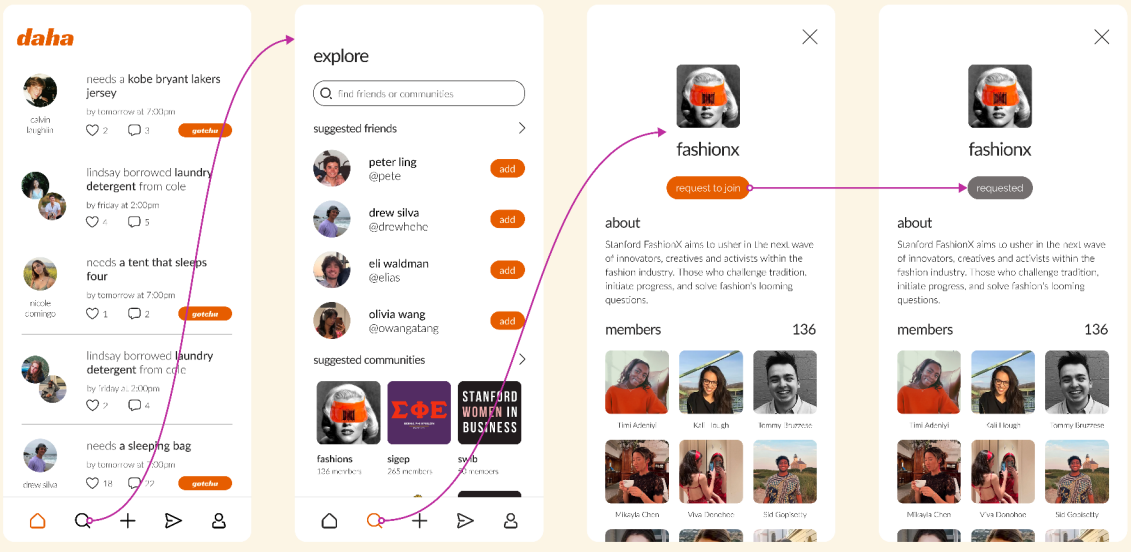
Task Flows

Simple – create a daha post



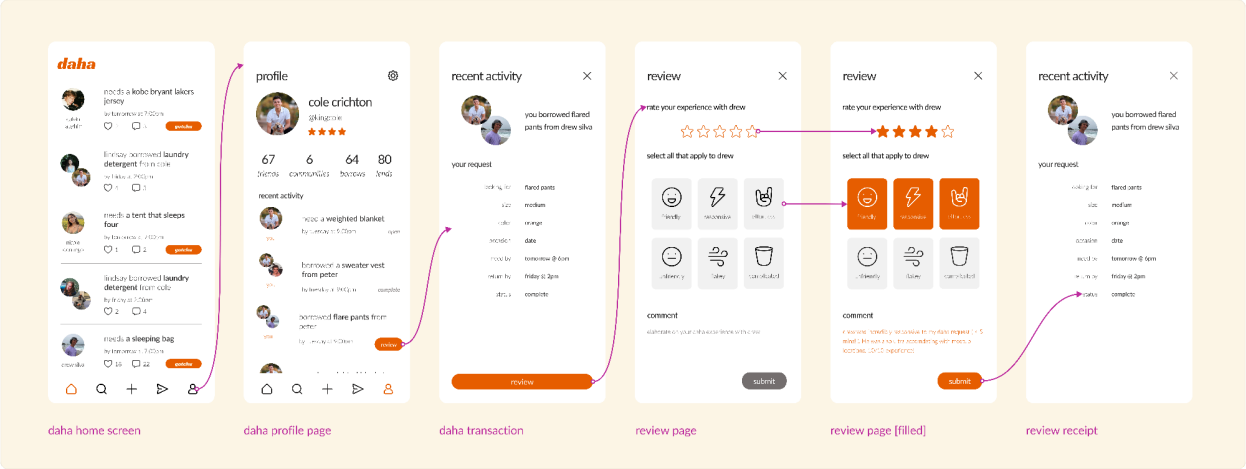
daha home screen | create a new daha post [empty] | create a new daha post [filled] | daha home screen with new post | view a daha request

Moderate – join a daha community



daha home screen | daha explore page | fashionx group page | fashionx group page [requested]

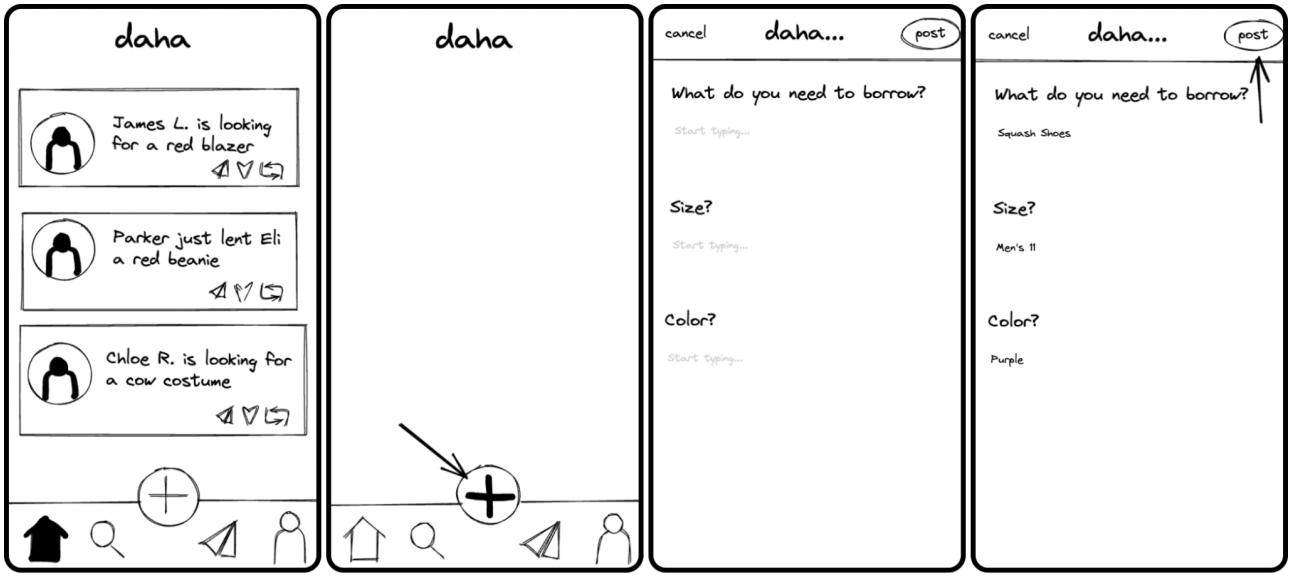
Advanced – write a review



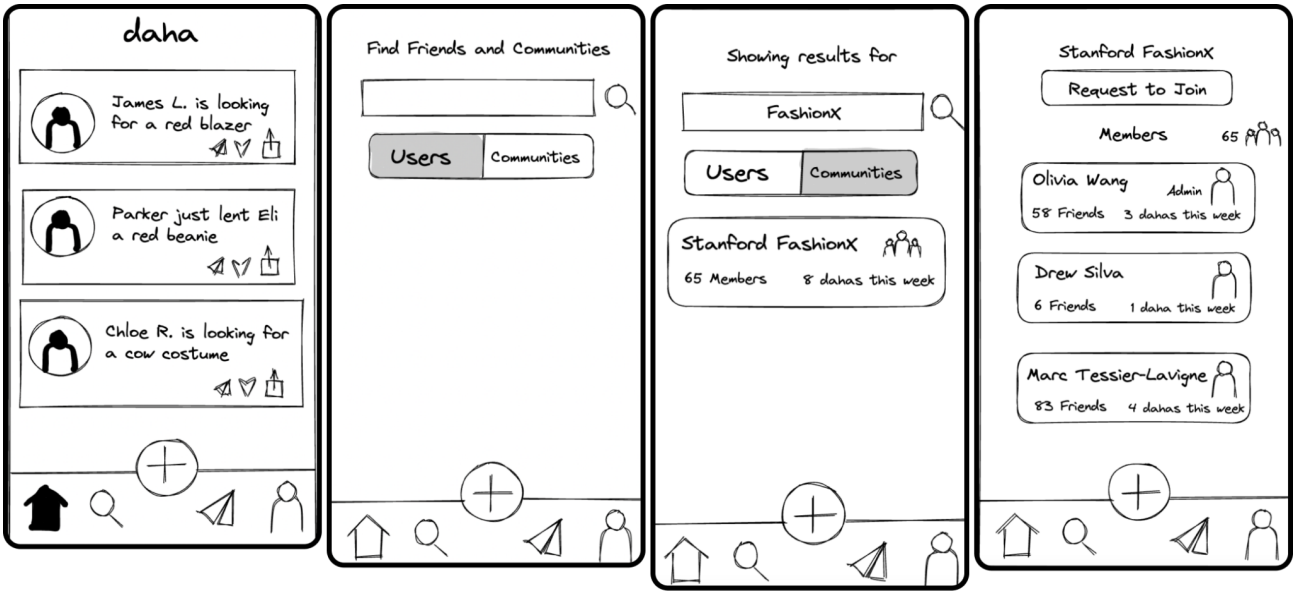
Design Evolution

Initial Sketches

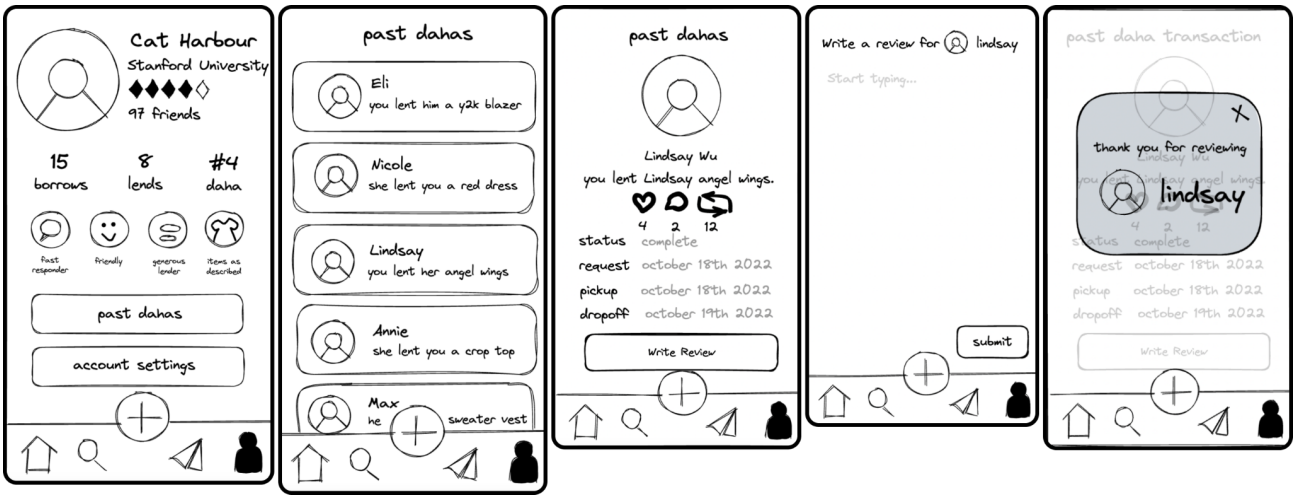
Simple task – create a daha post



Moderate task – join a daha community

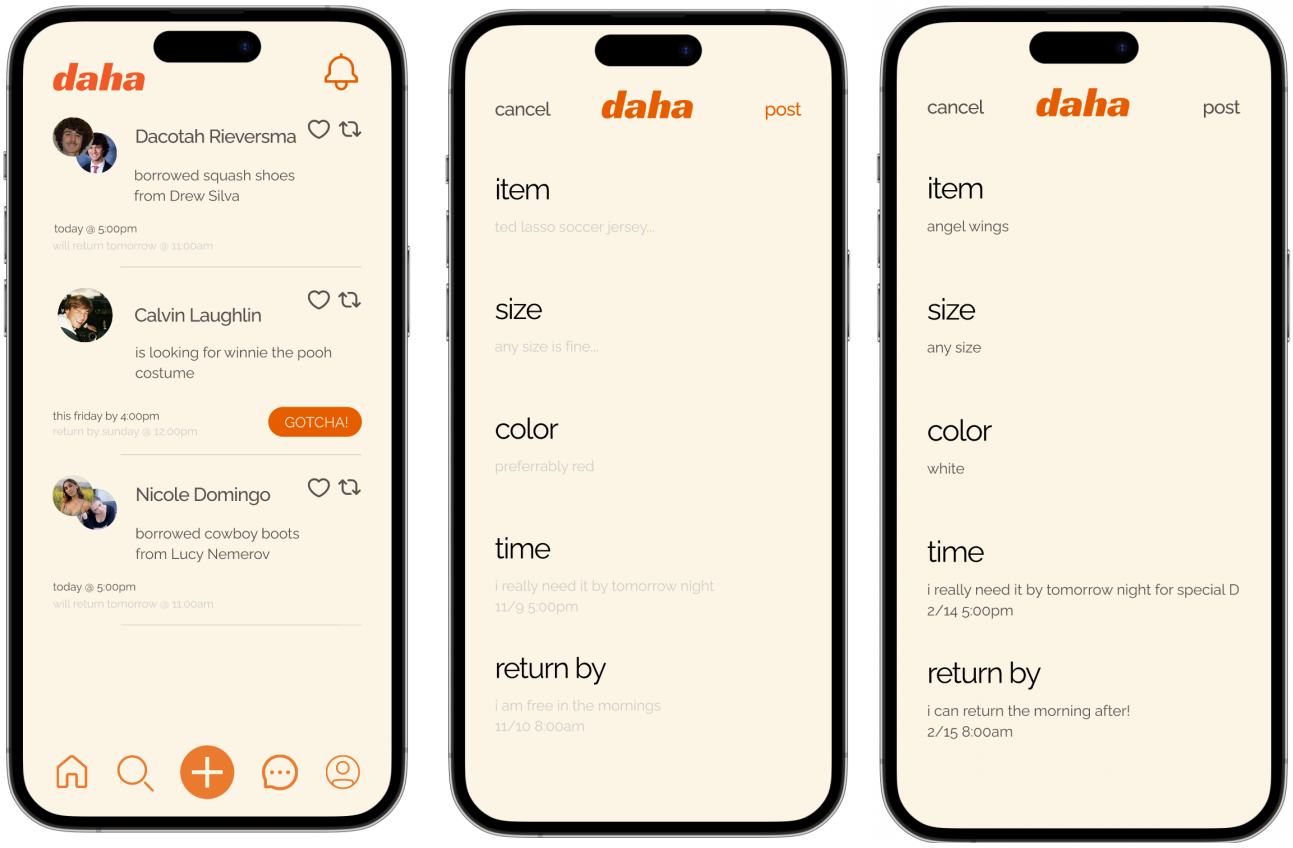


Advanced task – write a review



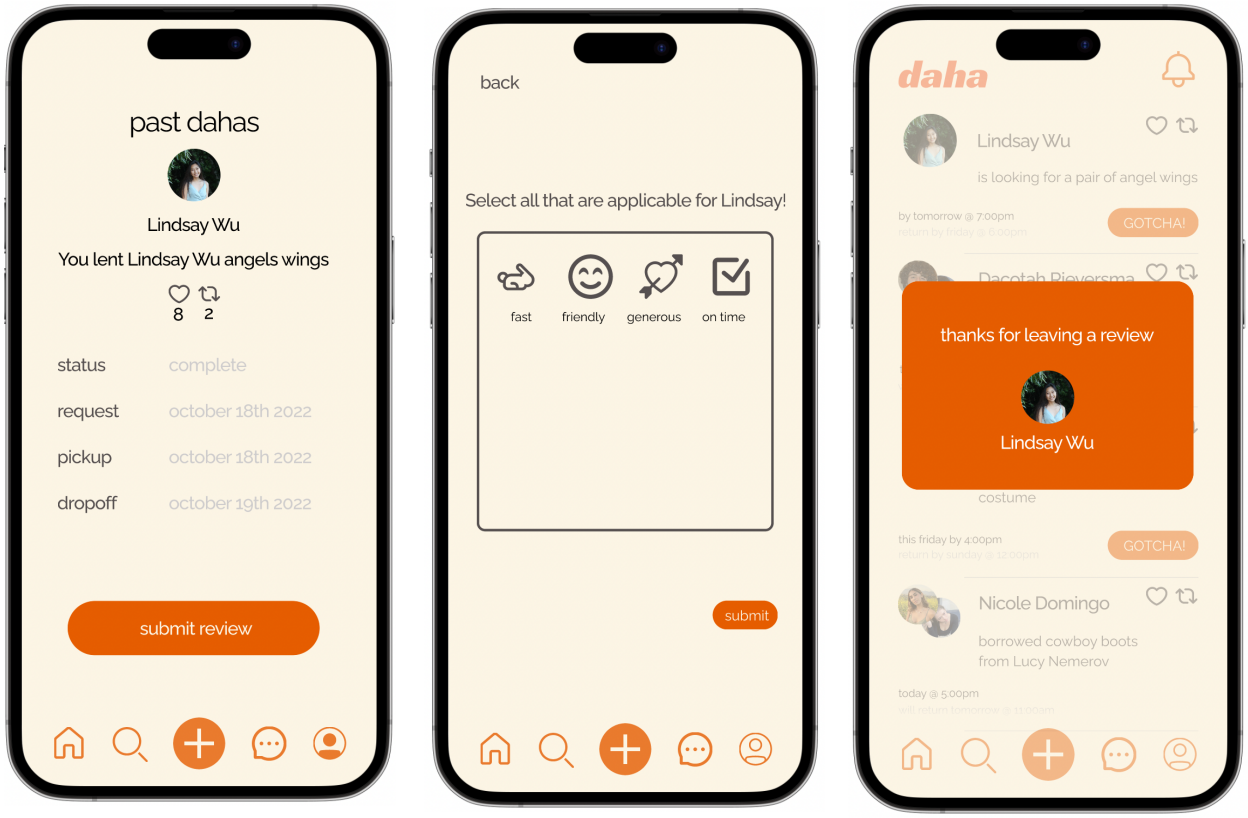
Medium-fidelity Prototype

Simple task – create a daha post



Moderate task – join a daha community

Advanced task – write a review



We passed our medium fidelity prototype off to another group within our studio for heuristic evaluation. Using Neilsen Norman's 10 Heuristics (+2 of our class' heuristics), our reviewers gave incredible feedback on our med-fi.

In total we had 48 heuristic violations, 6 from severity 3 and 6 from severity 4. We focused heavily on fixing the severity 3 and 4 violations. For your visibility, these are the exact heuristics we violated and the reasoning from the user's POV:

Severity 3

H3 – User control & freedom

- User is unable to edit daha request

H6 – Recognition rather than recall

- User is unclear what a daha is

H10 – Help and documentation

- User is unclear on which fields are required when making a daha post?

H11 – Accessible design
- User is unable to read return time on daha post
- User is unable to read text description when posting a daha

H12 – Value alignment and inclusion
- User wants to know how their privacy is protected

Severity 4
H2 – Match system and world
- User desires better signposting between screens
- User hopes for easier navigation

H3 – User control & freedom
- User notices limited use of "escape" or "back" buttons

H5 – Error prevention
- User is unable to tell that a button is clickable

H10 – Help and documentation
- How are daha's quantified?

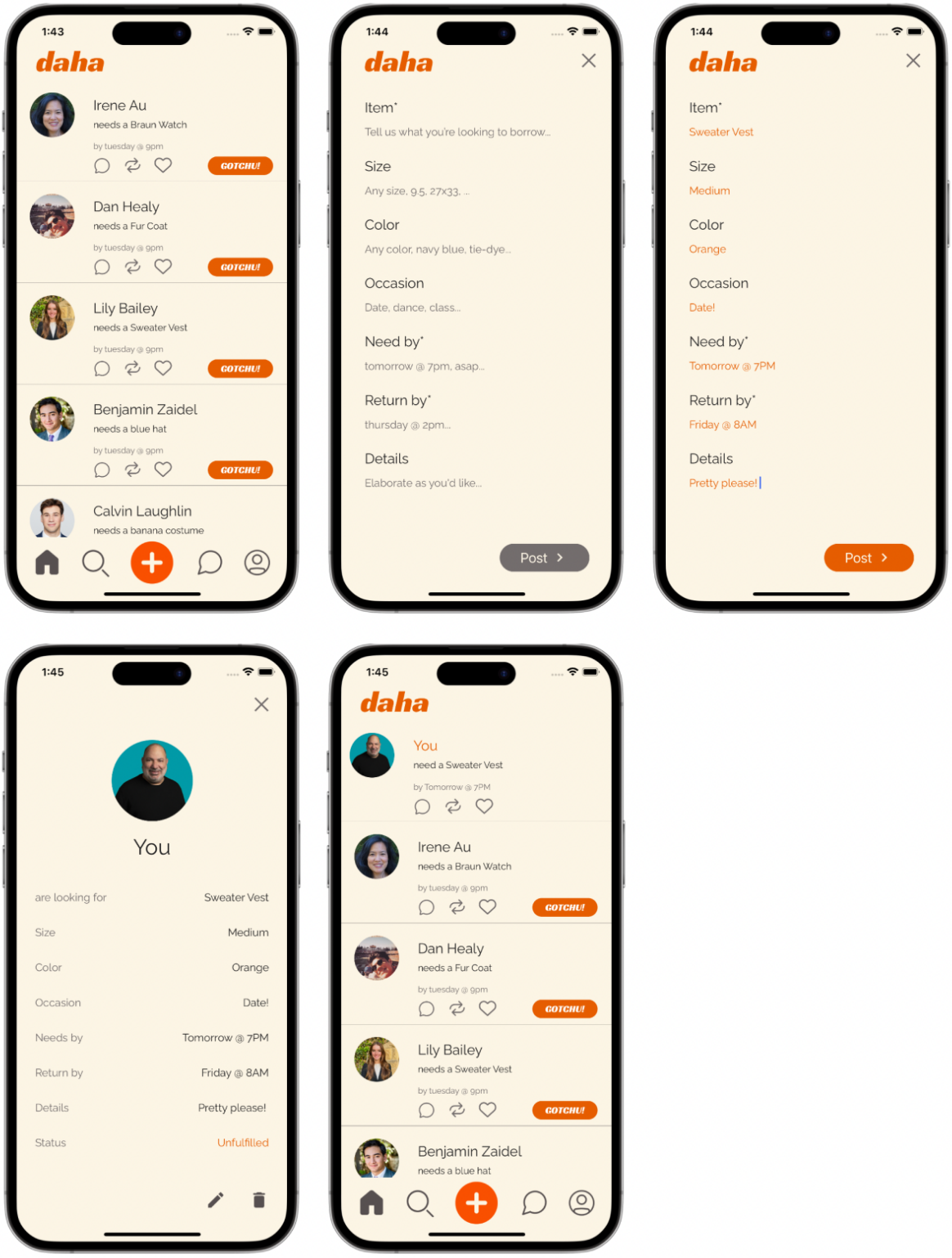
The reviewers had fresh eyes on our designs and saw the errors that previously made so much sense to us. The heuristic evaluation process was pivotal in empowering us to turn our medium fidelity designs into high-quality designs.

High-fidelity Prototype V1

We built our hi-fi prototype by incorporating design changes from our heuristic evaluation. Below are the task flows reflected in our high fidelity prototype along with sentences explaining the heuristic violation corrections and overall improvements

Splash Screen → Homepage

Simple Task – create a daha post

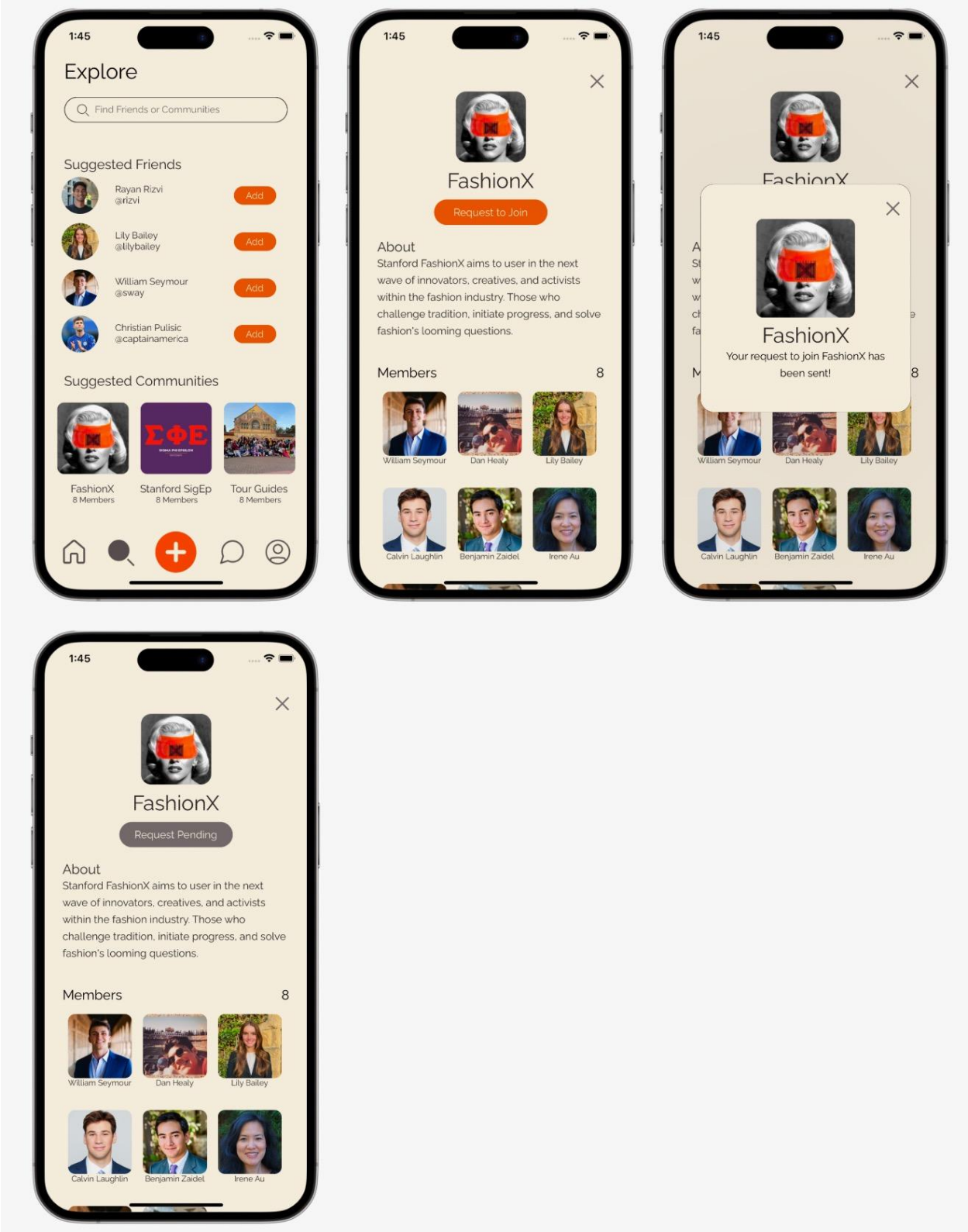


In order to make a post, the user clicks on the orange plus button, taking them to the "daha post" screen. From there, they can fill out each field, click "post". Now they are taken to the post confirmation screen where they can see what their post looks like, edit it, and or delete it. After clicking the "x" in the top right, they can now see their post on the home screen feed.

Heuristic Evaluation Improvements

- Added splash screens to inform the user what daha stands for and to express our value proposition ("explore your community's closet")
- Darkened the text in each daha post detailing the "need by" date
- "GOTCHA" changed to "GOTCHU" makes this button's purpose easier to understand
- Notifications button in top right corner removed – chat features added
- Required fields on "daha post" screen indicated by asterisks ("*")
- All buttons reworked to be more recognizable and clickable
- Edit/delete buttons added to post summary screen
- Much easier to indicate which posts are yours in feed with orange "You"

Moderate Task – join a daha community

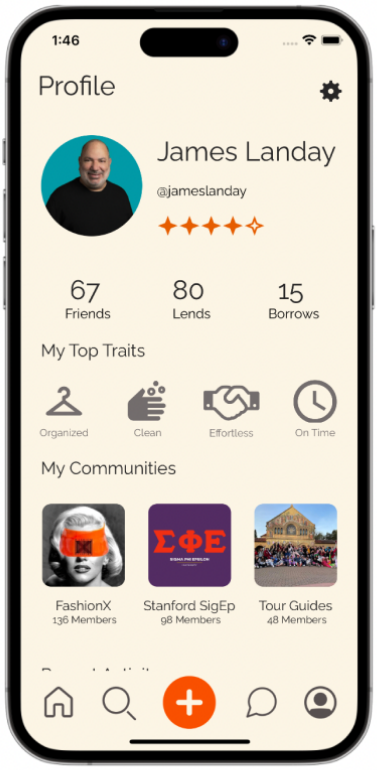


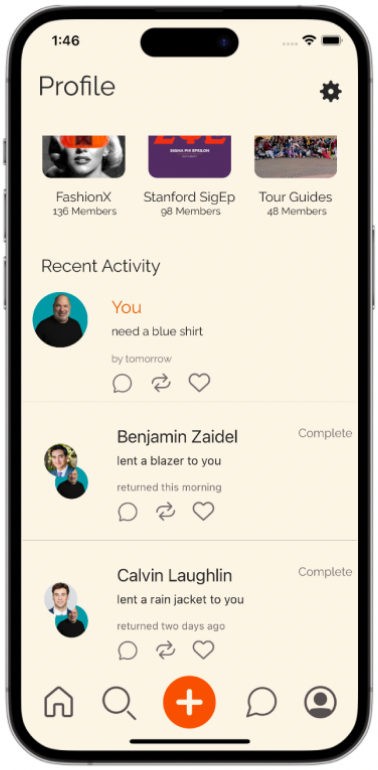
To join a community, navigate to the explore page. Click on any community under "Suggested Communities". Then, click "request to join" and exit the pop up to see your request pending.

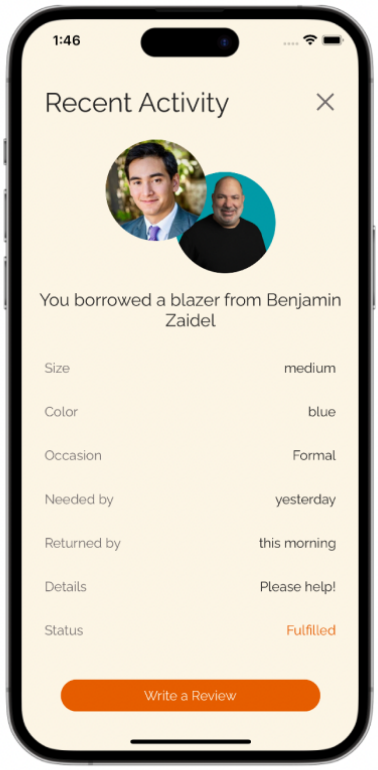
Heuristic Evaluation Improvements

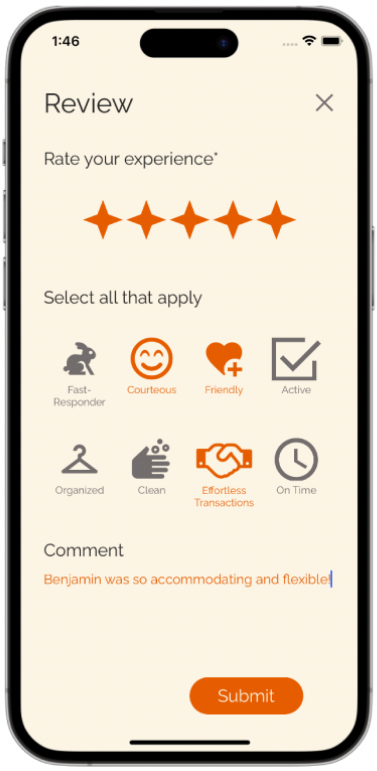
- Added signposting with "Explore", "Suggested friends" and "Suggested Communities
- Overall much more organized and click-efficient layout
- Added community description
- All community members visible
- Clear signaling with pop-up confirming request to join
- User's next steps are clear with "request pending" button turning from orange to gray.

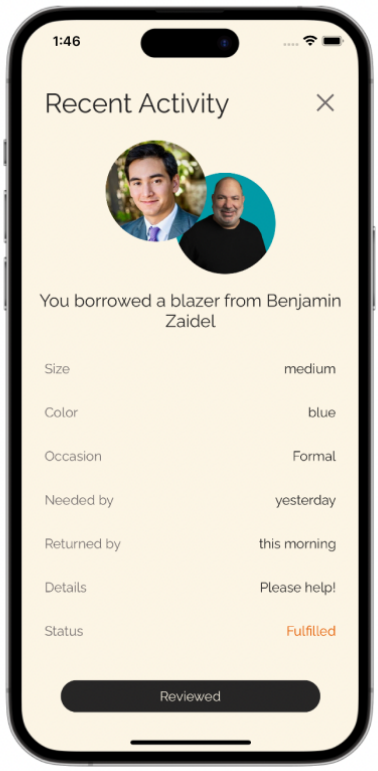
Advanced task – write a review of daha experience











To write a review, navigate to the profiles page. Scroll down to "Recent Activity" to find a past daha exchange. Click on any completed exchange to see a summary of the exchange. Click "Write a review". Select n/5 stars, select all traits that applied to this interaction, and leave a comment. Click "Submit". Exit out of the pop-up and see confirmation of your review through the updated gray "Reviewed" button.

Heuristic Evaluation Improvements

- Overall cleaner design
- Easy, intuitive review method meant to encourage more users to leave reviews
- Consistent formatting (button/text placement, size, type) throughout entire task
- Added pop-ups for clear signaling and next steps
- After leaving a review, user is taken back to start with updated environment (gray review button signaling that the user completed the task)

High-fidelity Prototype V2

Early on this quarter, we conducted a lab usability test for our V1 high-fidelity prototype. We interviewed 4 participants, standardized the interview using a detailed script, and measured many qualitative and quantitative data like completion of task, ease of use , and critical incidents.

A synopsis of our findings

- Simple Task was "simple, necessary, efficient"
- Medium Task was "great way to expand network", "easy enough"
- Advanced Task
    - No one person took the same path
    - High critical errors
    - Universal confusion

Specific points of improvement

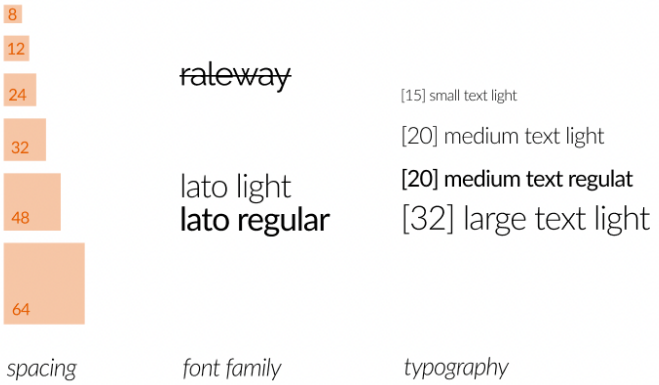
- Post screen feels cluttered
- Better confirmation after post is published
- How is the home screen organized? Can I filter my feed?
- Improved sign posting with buttons ("X" isn't good enough, consider back button)
- Distinguish between X buttons and "back" buttons
- Go to profiles from explore page
- Option to be private/public

Following this usability test, we also met with industry designer Elizabeth Lin, who gave pointers on how to elevate our interface design:

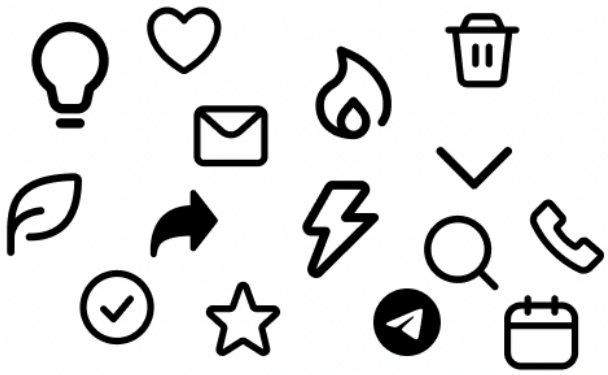
- Retire raleway
- Play around with hierarchy of daha homepage (item needed should hold more weight than name)
- Create a daha post feels like it takes a lot of work
- Icons feel bulky and don't align with daha branding
    - Leverage Fitts' law – scale down in size

With all of this feedback to work with, we got to work designing a V2 high fidelity prototype, starting with a branding refresh:

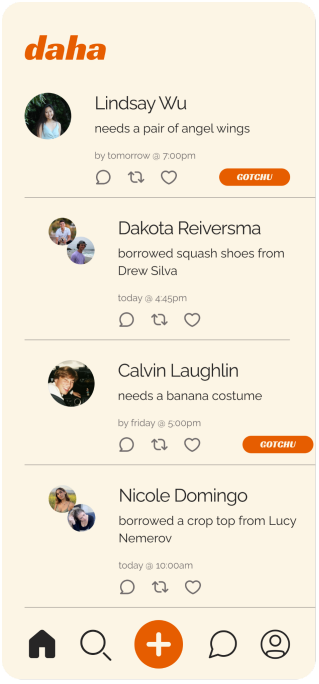
- ➔ Defined spacing guidelines
- ➔ Retired raleway and introduced lato (specifically in light and regular)
- ➔ Defined font size guidelines

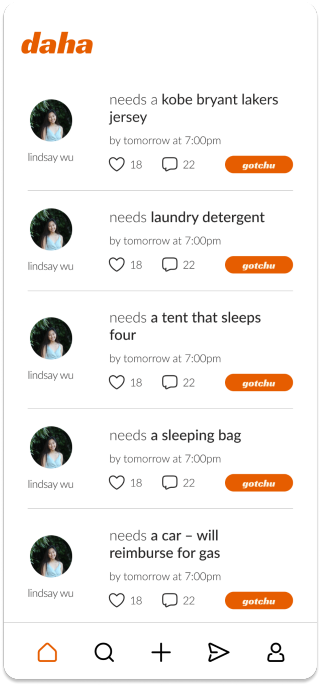


- ➔ Found an awesome icon pack on Figma's plugin that was consistent with our brand

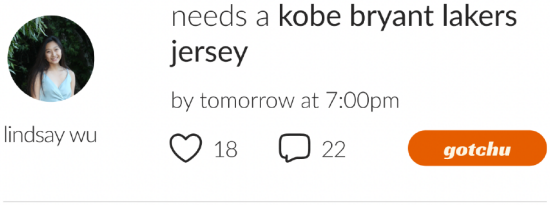


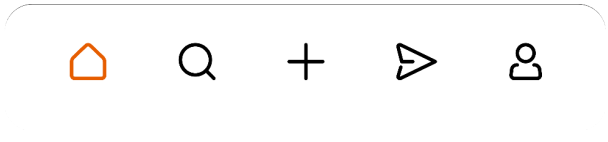
- ➔ Retired the beige background
- ➔ Upgraded the navigation bar with new and smaller icons
- ➔ Updated hierarchy of each post, emphasizing the needed item instead of name
- ➔ Retired re-daha (users indicated that it was confusing and unnecessary)





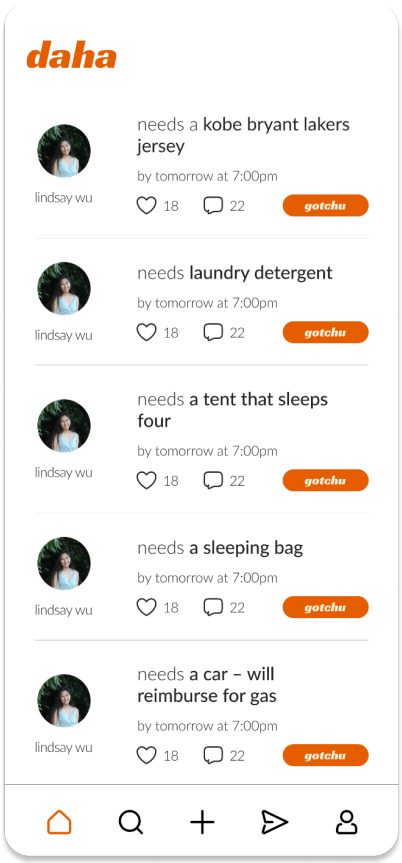
Before and After

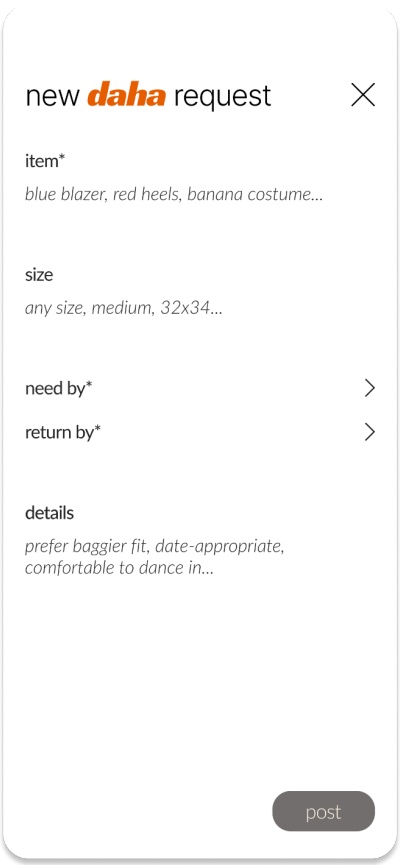


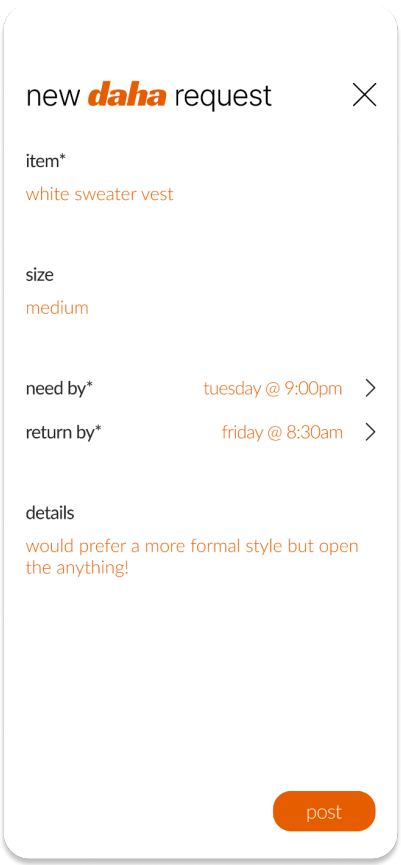


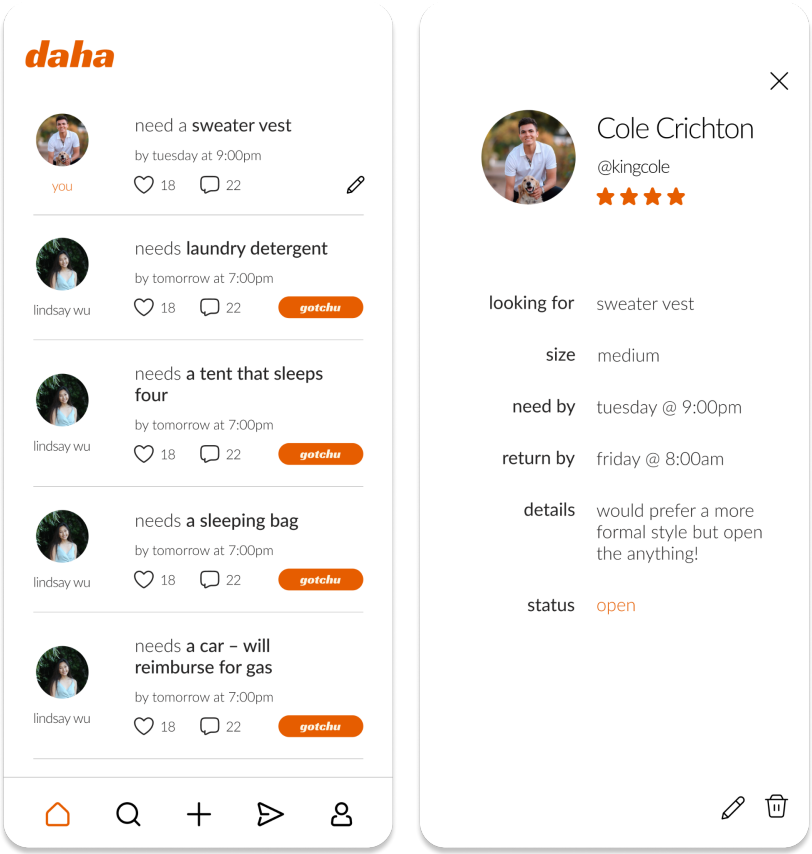
With these updated design choices, we worked to update the simple task flow and designed a new onboarding flow

Simple task – create a daha post

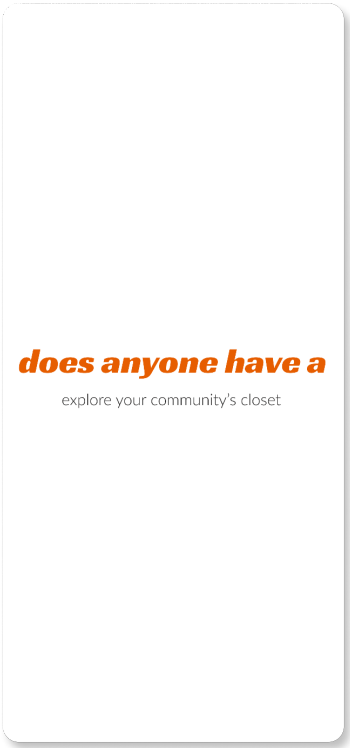


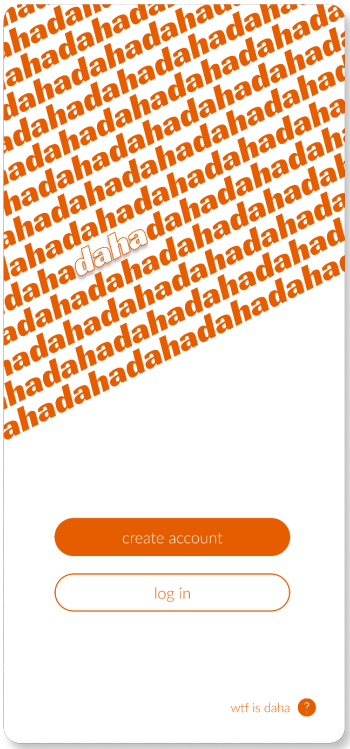


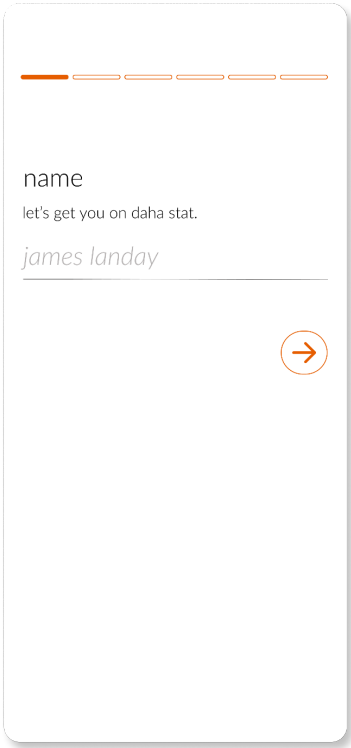


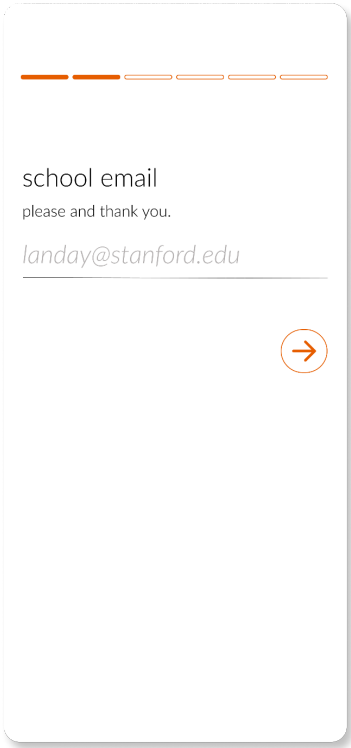

daha
need a sweater vest
by tuesday at 9:00pm
you
18
22
needs laundry detergent
by tomorrow at 7:00pm
lindsay wu
18
22
gotchu
needs a tent that sleeps four
by tomorrow at 7:00pm
lindsay wu
18
22
gotchu
needs a sleeping bag
by tomorrow at 7:00pm
lindsay wu
18
22
gotchu
needs a car – will reimburse for gas
by tomorrow at 7:00pm
lindsay wu
18
22
gotchu
Cole Crichton
@kingcole
looking for
sweater vest
size
medium
need by
tuesday @ 9:00pm
return by
friday @ 8:00am
details
would prefer a more formal style but open the anything!
status
open

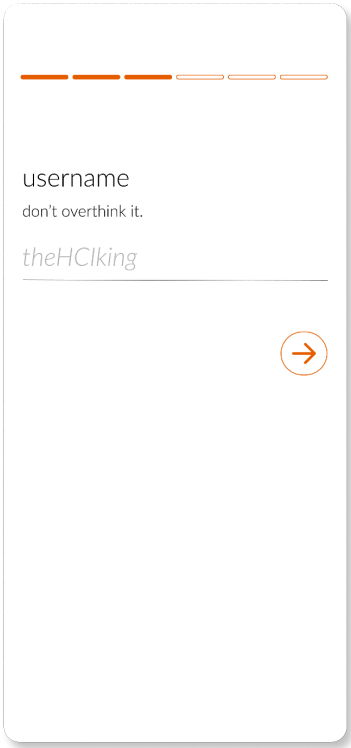
Onboarding flow

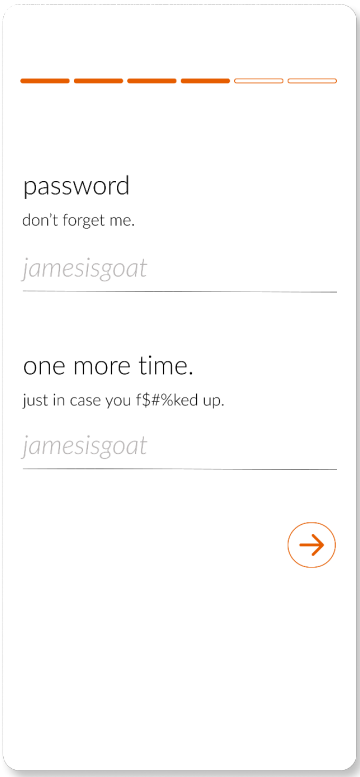


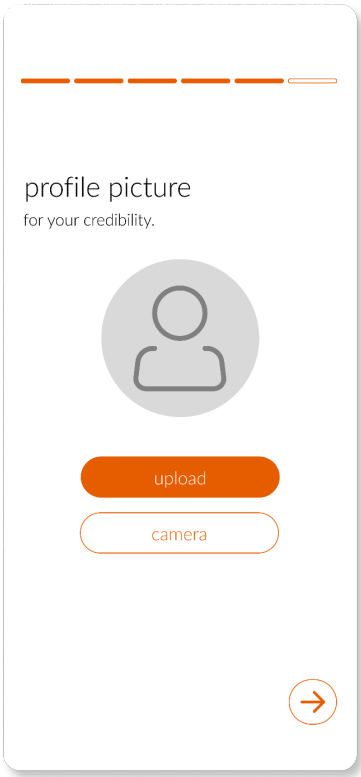


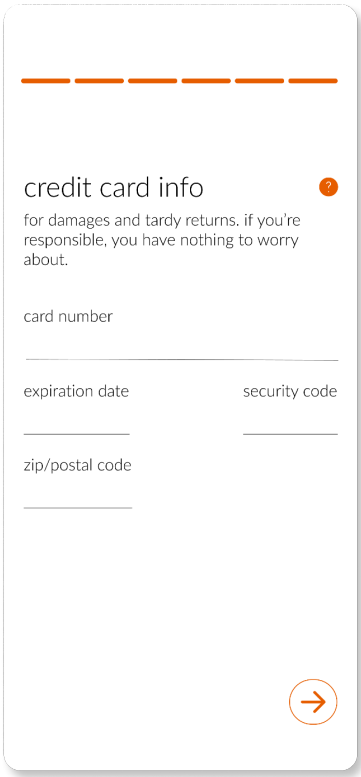


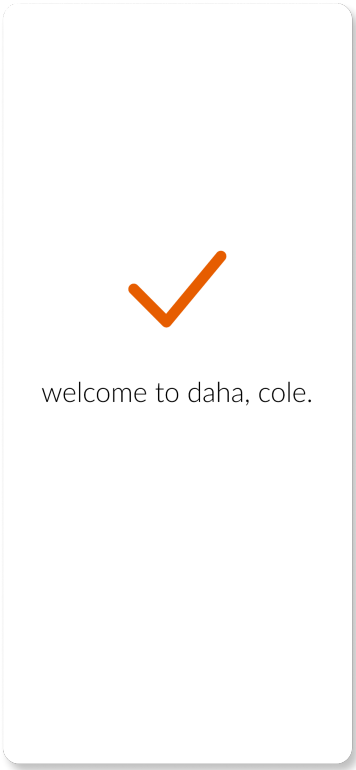


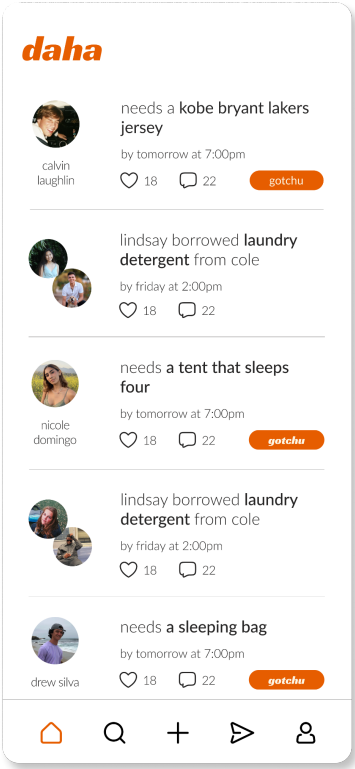



password
don't forget me.
jamesisgoat
one more time.
just in case you f$#%ked up.
jamesisgoat


profile picture
for your credibility.
upload
camera


credit card info
for damages and tardy returns. if you're responsible, you have nothing to worry about.
card number
expiration date
security code
zip/postal code


welcome to daha, cole.

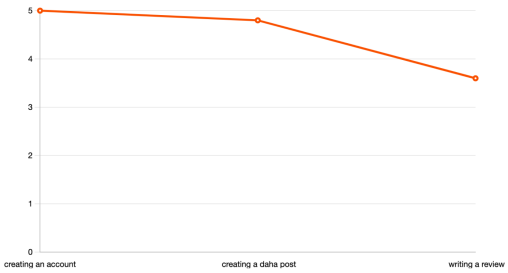

daha
calvin laughlin
needs a kobe bryant lakers jersey
by tomorrow at 7:00pm
18
22
gotchu
lindsay borrowed laundry detergent from cole
by friday at 2:00pm
18
22
nicole domingo
needs a tent that sleeps four
by tomorrow at 7:00pm
18
22
gotchu
lindsay borrowed laundry detergent from cole
by friday at 2:00pm
18
22
drew silva
needs a sleeping bag
by tomorrow at 7:00pm
18
22
gotchu

High-fidelity Prototype V3

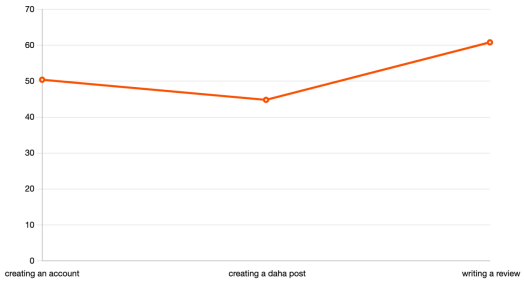
We tested our V2 prototype (simple task and onboarding flow) in a field usability test to see how users resonated with our updated designs. In a similar fashion, we interviewed 5 users using a standardized script and recorded qualitative and quantitative data.

Following is a quantitative snapshot of the users' experience with daha through the 3 tasks.

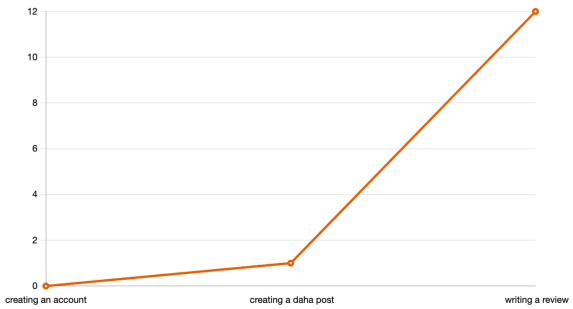
ease of use



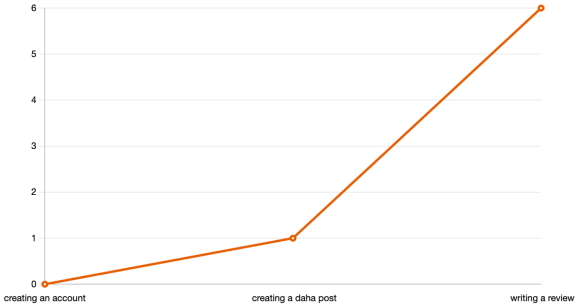
completion time



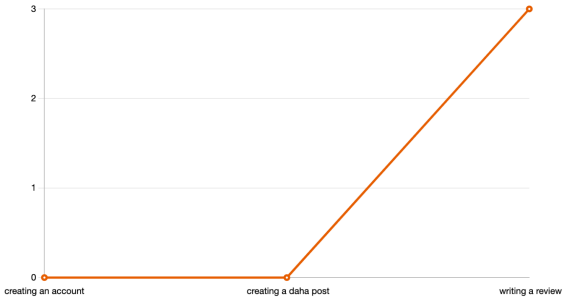
number of hesitations



number of misclicks



number of critical errors



the averages

avg. ease of use	4.5/5
avg. completion time	52 sec
number of hesitations	13
number of misclicks	7
number of critical errors	3

the big win

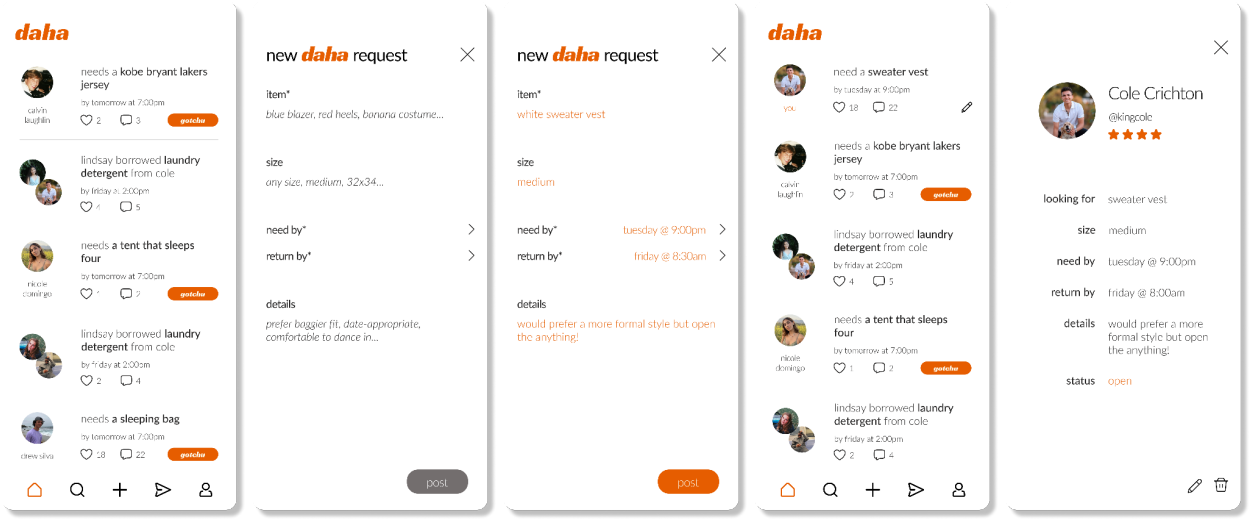
100% of users would prefer daha over their current borrowing routine

These were the main observations and resulting action items:

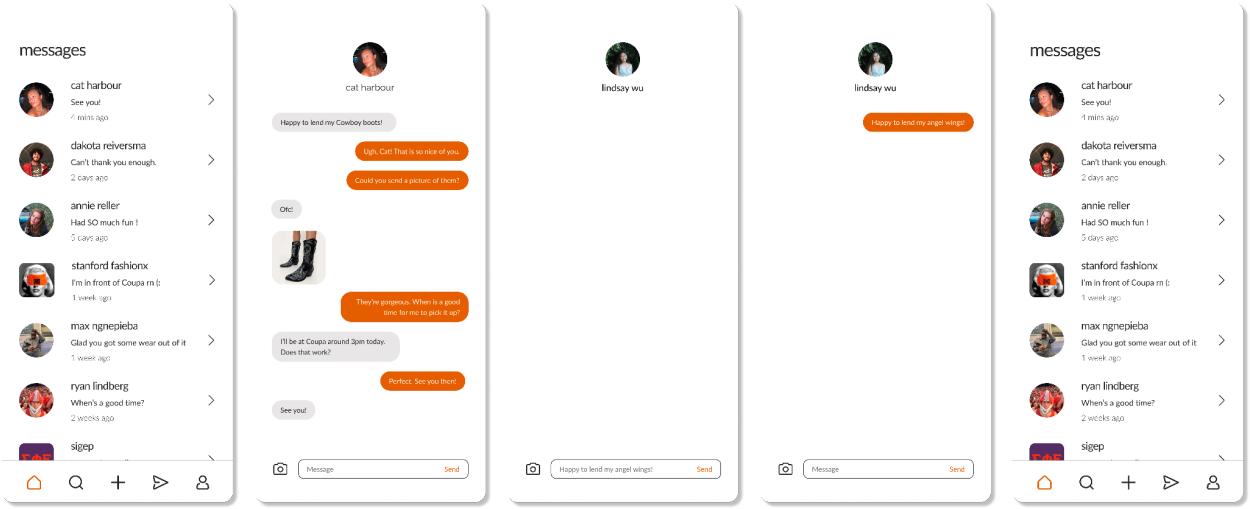
- Navigation to write a review improved after providing high level overview and walkthrough of app
    - A tutorial of the app might be important post-account creation
- Return time is incredibly important for trust and visibility, but some items don't necessarily have a return date (eg. bandaid, snacks, disposable items)
    - Rethink the requirements of return by date (does it need to be a requirement?)
- Heavy resonation with UX writing
    - Continuation of this tone and style throughout the app (with pop ups, reviews)
- The third task of writing a review continues to be the most difficult
    - Prototype a pop up that nudges users to go straight to review OR create a clear CTA on profile page for outstanding reviews
- 2 of our users were ultra curious and were clicking buttons that weren't prototyped – specifically profile pictures
    - Link screens and create more fluidity between pages
- For the most part, users did not find issue with the profile picture part of onboarding, but it may be a point of exit for users who are not comfortable with uploading an image
    - Competitive analysis and industry research on photo requirements. potentially make it a skip for now step.

With all this feedback, we worked to design a final V3 high fidelity prototype.

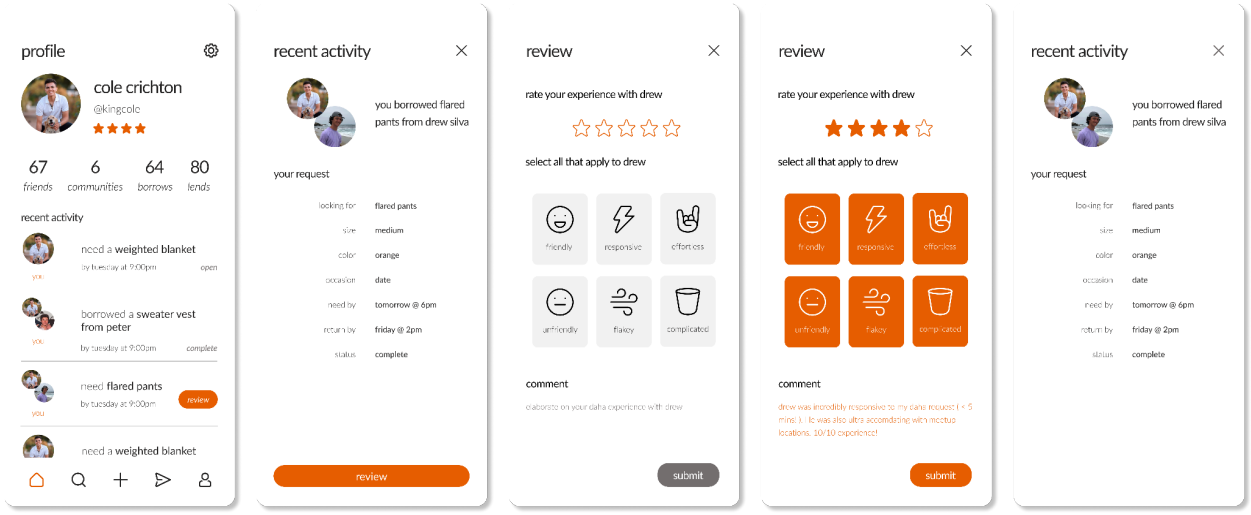
Simple task – create a daha post



Moderate task – join a daha community



Advanced task – write a review



Over the course of these two quarters we've learned three main evaluation techniques: Nielsen's heuristic evaluation technique, lab usability testing, and field usability testing. Of these three, we found Nielsen 's heuristic evaluation to be the most valuable for improving our prototype's usability. This is because of how thorough and detailed the feedback was. To recall, a group of 4-5 people were asked to sit down by themselves and critically test each screen and all of its features. That the evaluators had to categorize each mistake as well as each mistake's severity provided us with immediate information on which changes to prioritize. Individuals then came together to discuss every possible heuristic error, which meant no comment slipped through the cracks. Finally, anonymity of the final feedback report meant extreme directness. We did not take anything personally because we knew this feedback was discussed and agreed upon by a whole group.

With the lab and field usability tests, we were testing mostly on our friends (as they are the target user). As much as we tried to standardize our interviews, the setting naturally felt more casual and fun. Not to say that casual and fun can't be a part of usability tests, just that by interviewing our close peers, the chances are higher of them being less transparent and detailed with their feedback.

Final User Interface

In the final UI design, users can create an account, create a daha post, respond to other users' daha requests, explore and join (a limited number of) communities, and review previous daha transactions.

To create a daha post, the user must click on the '+' button on the bottom navigation bar and fill out the required fields. They then press 'post' and will immediately see their daha request in the feed. Users are able to like and comment on their own or other people's posts. Users can respond to other users' daha requests by clicking on the "gotchu" button on the right hand side of the homescreen.

To explore and join communities, the user must click on the search icon on the bottom navigation bar. They can select any of the hard-coded communities on the interface and request to join.

To write a review, the user must click on the profile icon on the bottom navigation bar. They will see their past daha transactions below their bio, and they will see call to action buttons for posts that remain unreviewed.

To Be Implemented

We hope to integrate email verification into our onboarding process. This will ensure that users are real students and prevent any bots/spammers/scammers from creating accounts. Afterwards, we hope to implement a functioning messages component. Currently our messages are hard-coded on the frontend to appear to "send" but users cannot actually interact with each other yet. When we have securely implemented email verification, users will be assigned a uuid on account creation, and these uuids will be used to create a functioning messaging system. We have decided to leave messaging unimplemented until we are sure that account creation and email verification and completely secure and functioning as intended. Finally, because the nature of our product relies heavily on students using the app often and demanding/supplying items often, we are hoping to design and build a reward system and a notification system.

Tools

After using Figma to prototype and design our screens, daha was written in React Native and used Supabase to store information in the backend. We used Expo Go to host our app for testing and demonstration purposes, and utilized GitHub for version control and collaboration purposes. We are grateful for the incredibly well-taught Figma 101 and Design Systems workshop early in the fall quarter which empowered us to realize our vision into a flexible, high-fidelity design. We are also incredibly thankful for the CS47 teaching team for their support in teaching us React Native/Expo/Supabase and Github from the ground up. None of us had experience with React Native/Expo/Superbase before this project, so there was a big learning curve with these specific tools. React offered a wide variety of importable libraries and styles. Expo was extremely helpful for visualizing changes and simulating the app both with and without a physical device. Our Supabase

backend allowed for all of our user data to be stored in one place. As a result, a user's profile information, including profile image, username, and name were stored in the backend upon account creation. Data from new daha requests were also stored and loaded on the homescreen. While we are proud to have such functionality on the backend, we want to ensure that our database is entirely secure before we allow users to interact with each other.

Wizard of Oz & Hard-Coded

While we were able to implement all 3 of our tasks (in addition to a new onboarding flow), some features are wizard of oz and remain hard-coded.

The following components of the app have been simulated using the Wizard of Oz technique:

- Sending a friend request/requesting to join a community does not actually send a request to another user/community, as the only user is the one we hard-coded for the demo
- Leaving a review on someone's profile appears mark the transaction complete
- Responding to another user's daha request (and messages in general) appears to work as the message seems to send, but users cannot yet interact with each other on the app

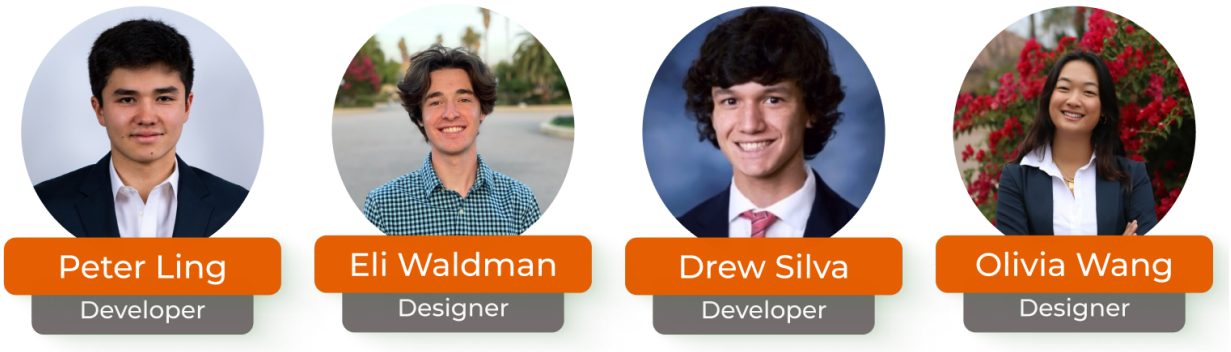
The following components of the app have been hard-coded for demonstration purposes:

- Our home page feed is loaded in with general daha requests that test users have input overtime. In our actual implementation, this feed would be tailored to a specific user, only showing the content from their friends and communities, and these interactions between users would be account-specific
- The rating, top traits, and past daha transactions on a user's profile page are hard coded
- The messages page is hard-coded with friends and messages. In our actual implementation, this feed would be tailored to a specific user, only showing messages from their friends and communities
- The explore page features hard-coded users and communities to add/join
- Suggested friends and suggested communities are hard-coded (should be customized based on user's network)

Check Out Our...

- Website
- Concept video
- High-fidelity video prototype
- Final high fidelity prototype
    - Readme
    - Download the Expo Go app
    - Scan this QR code →

Making It Real



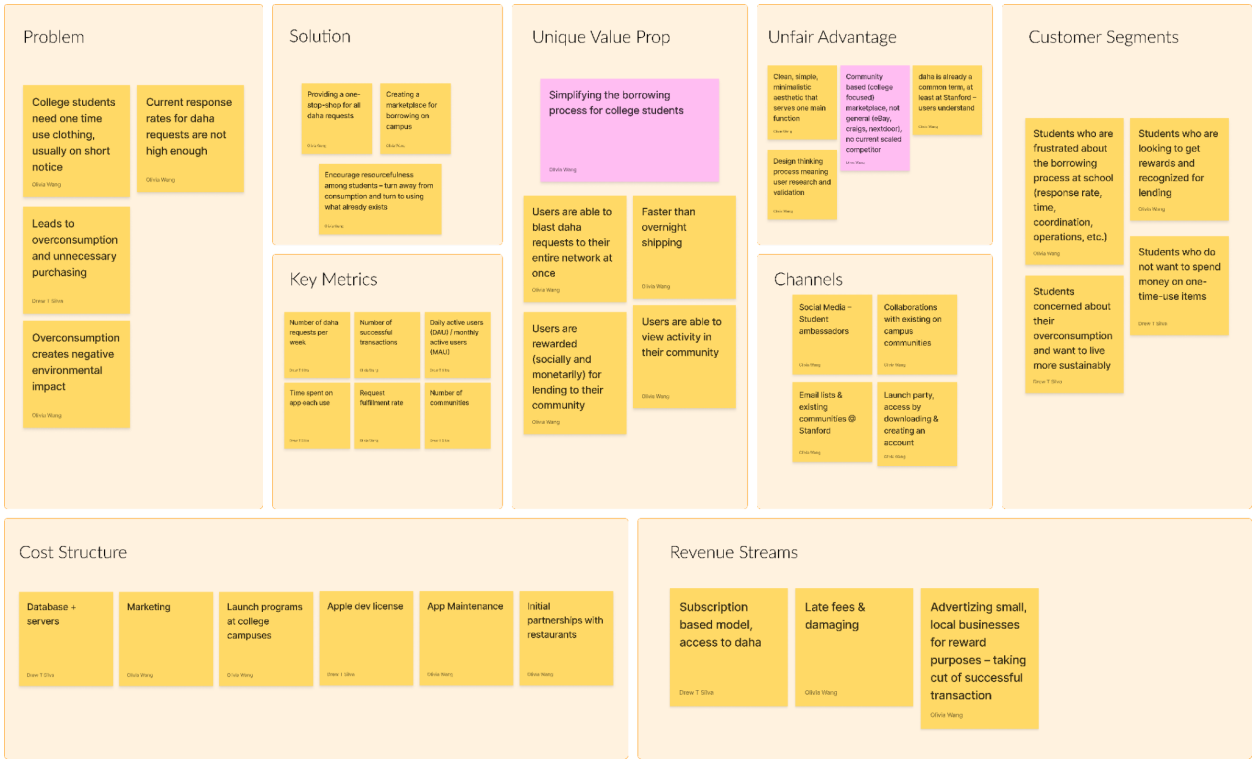
Peter Ling is a junior studying Computer Science with a concentration in Human-Computer Interaction. He is passionate about learning and applying his programming and design background to build products that can be used by people of all technical abilities.

Eli Waldman is a junior studying Symbolic Systems and Human Biology. He also works as a project manager for Stanford Marketing Group where he leads each project from a multidisciplinary perspective steeped in storytelling, data analytics, and creative problem solving.

Drew Silva is a junior studying Computer Science and Economics. He has worked as a full stack software engineer and teaching assistant in the computer science department, and is interested in working at the intersection of sustainability and technology.

Olivia Wang is a junior studying Symbolic Systems and Human-Computer Interaction Design. She is also pursuing a Masters in Sustainability and hopes to work at the intersection of fashion, sustainability, and technology. She has worked as a product manager, UI/UX designer, and consultant for various companies and organizations.

The Business Model



daha aims to simplify the borrowing process on college campuses. We provide a one-stop-shop for all things borrowing. By making borrowing the most convenient option (as opposed to current solutions like overnight shipping), we hope to encourage resourcefulness among students and reward sustainable habits. Our customers are college students, but more specifically they are made up of a demand side (students who are in need) and a supply side (those who are willing to lend).

An incredibly important part of this business model will be finding methods to incentivize the supply side. Without students frequenting the app everyday in search of something to lend, daha will serve merely as a platform full of unfulfilled requests. To encourage students to lend, daha hopes to partner with local businesses and offer rewards for lenders. For example, for every 5 lends you make, daha will reward you 10% off at a local restaurant or thrift store. Ideally these partner stores align with our mission and core value of sustainability.

In talking with Manu Kumar of K9 ventures, we hope to bring in revenue through a subscription service. Our users could, for example, pay $1/month or $10/year to have access to the product. Alternatively, we could sell daha as a service directly to schools. In our case, Stanford would pay for an annual access fee upfront on behalf of their students and we could work with the school to launch and onboard students at the beginning of the year. We believe the latter is a more realistic, accessible, and lucrative option.

The market for daha is made up of 19.3 million students across 4000 different colleges. This is just in the United States. We hope to initially launch and test our product first at Stanford, and ideally expand school-by-school across the country. Many of our non-student test users have also expressed excitement about the ability to use daha at home, in their apartment buildings, and in their neighborhoods (much like how Nextdoor works), and this is one expansion strategy we would consider as we scale daha.

We hope that the long term impact of daha is to encourage resourcefulness and reward sustainable habits among students. By building a muscle memory in their formative years for borrowing-first then buying only if necessary, we hope that daha users will grow into conscious and circular citizens.

Summary

daha (short for "does anyone have a") is a peer to peer lending platform for college students. We make it easy for students to find what they need from the community around them. By allowing users to notify their entire network with only one post, we simplify the borrowing process on campus. We hope that the long term impact of daha is to encourage resourcefulness and reward sustainable habits among students. By building a muscle memory in their formative years for borrowing-first then buying only if necessary, we hope that daha users will grow into conscious and circular citizens.