daha

explore your community's closet

CS 147 Fall 2022

Peter Ling, Drew Silva, Eli Waldman, Olivia Wang

December 11th 2022

Table of Contents

Summary & Next Steps

- Key Learnings on Design Thinking
- Key Learnings on Sustainable Habits
- Key Learnings on daha
- Future Work
- Final Remarks

Project Name & Value Proposition

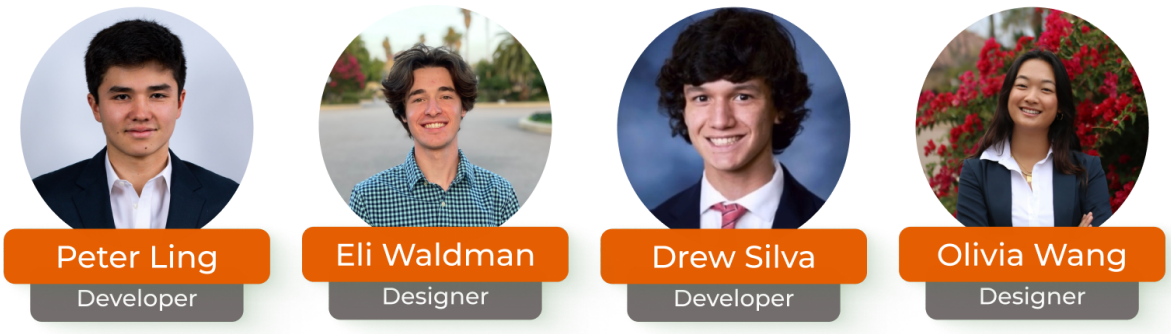
Project Name

daha

Value Proposition

explore your community's closet

Team Member Names and Roles



Problem and Solution Overview

College students often want to borrow clothing from others, oftentimes on short notice and for one-time-use occasions.

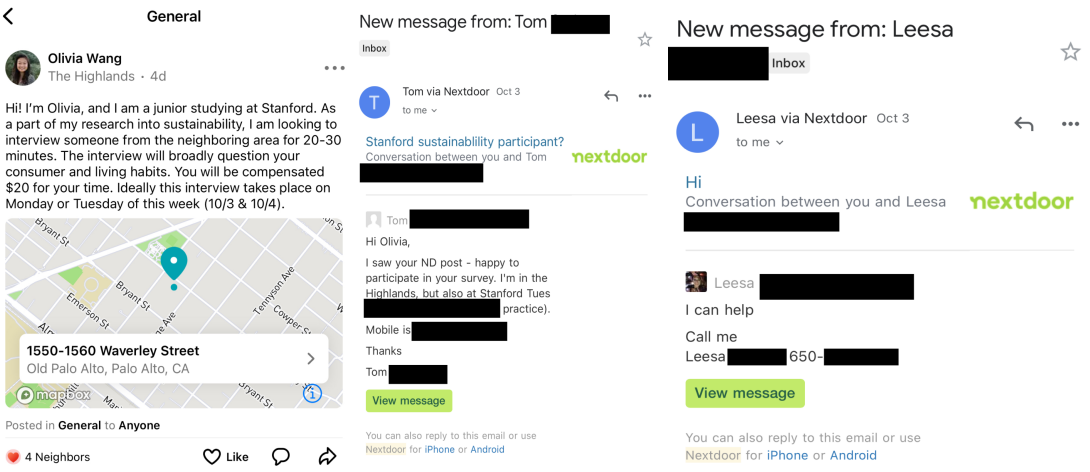
daha is a peer to peer lending platform for college students. We make it easy for students to find what they need from the community around them. By allowing users to notify their entire network with only one post, we simplify the process of borrowing. We hope daha encourages resourcefulness and builds 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. To further our sustainable mission, we intend on rewarding students who lend through Daha with deals at local and sustainable businesses.

Needfinding

Interviews

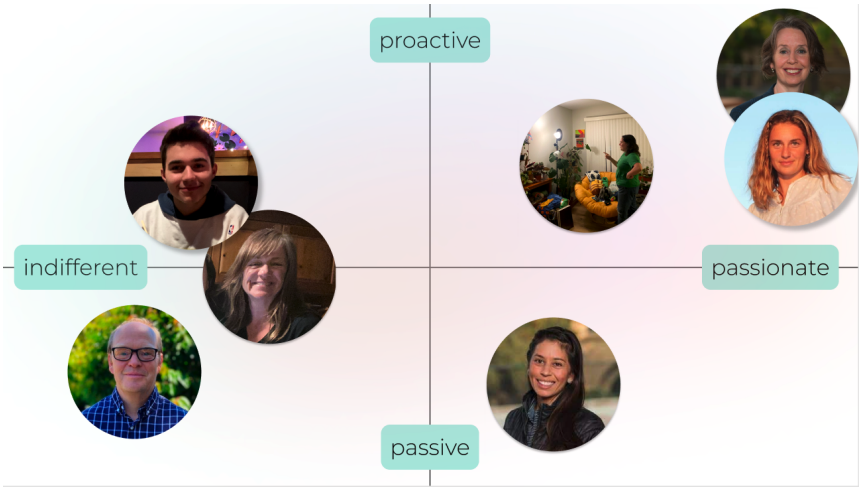
As a part of the Sustainable Habits studio, we began our journey understanding how broad of a field sustainability is. We knew we had to narrow down and hone in on a smaller domain within the field of sustainability, ideally a domain we all cared about. In our first meeting, we mass-brainstormed a variety of topics that we each personally felt tied to. We bonded over our frustrations about fast fashion, food waste, and plastic waste. The overarching theme was consumerism, and this was the direction we wanted to head in. Consumerism is, of course, still incredibly broad, but it gave us the direction we needed to begin interviews.

We dove right into drafting thoughtful interview questions and sourcing interviewees. We interviewed a total of seven people with a wide variety of backgrounds, opinions, and levels of care for sustainability. Our interviewees ranged from ages 20 to 75, undergraduate students to tenured professors, activists to (in)activists. We sourced interviewees from NextDoor (a community engagement application that allows posting to local neighborhood groups), GroupMe messaging, emailing Stanford professors, and texting our individual friends. Six of our seven interviewees came from NextDoor or emailing Stanford staff.



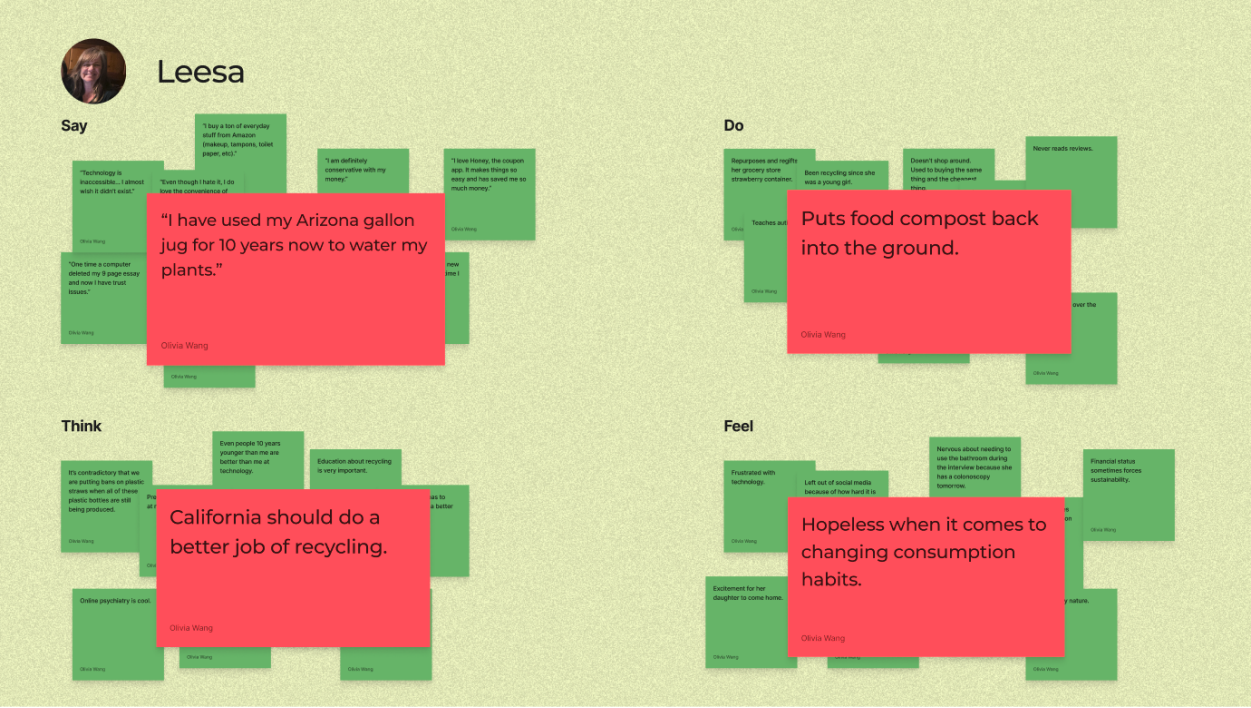
For our first round of needfinding interviews, we interviewed 4 people: Leesa (stay-at-home mom), Jessica (farm programs coordinator, extreme user), Thea (college student), and Sybil (Stanford Earth Systems professor, domain expert). We inquired broadly about their routine, their consumption habits, and their knowledge of sustainability. All of our interviewees expressed incredibly thoughtful insights. Thea, for example, talked about how business motives often fail to align with sustainable goals, while Sybil emphasized how important it is for consumers to learn about their favorite businesses' environmental/sustainable practices in order to make the most educated purchasing decisions. We felt validated and even more motivated by their insights. We were able to build rapport, be flexible with our interview outline, and guide the interviewee back on track to the problem space if they veered off topic. One thing we did find challenging was walking the line of guiding but not forcing the interviewee to a certain talking point.

After analyzing the first four interviews, we knew that changes had to be made. We redefined our domain (consumerism was simply too broad) to e-commerce, refined our questions to focus more on retail consumption and less on lifestyle habits, and found three more interviewees: Jess (Stanford junior, outdoors lover, extreme user), Ramez (Northeastern junior and casual shopper) and Tom (dad of four and avid online shopper). When closing out this second and final needfinding round, we aimed to interview a very diverse set of participants: in gender, background, and thought (as pictured in this diagram).

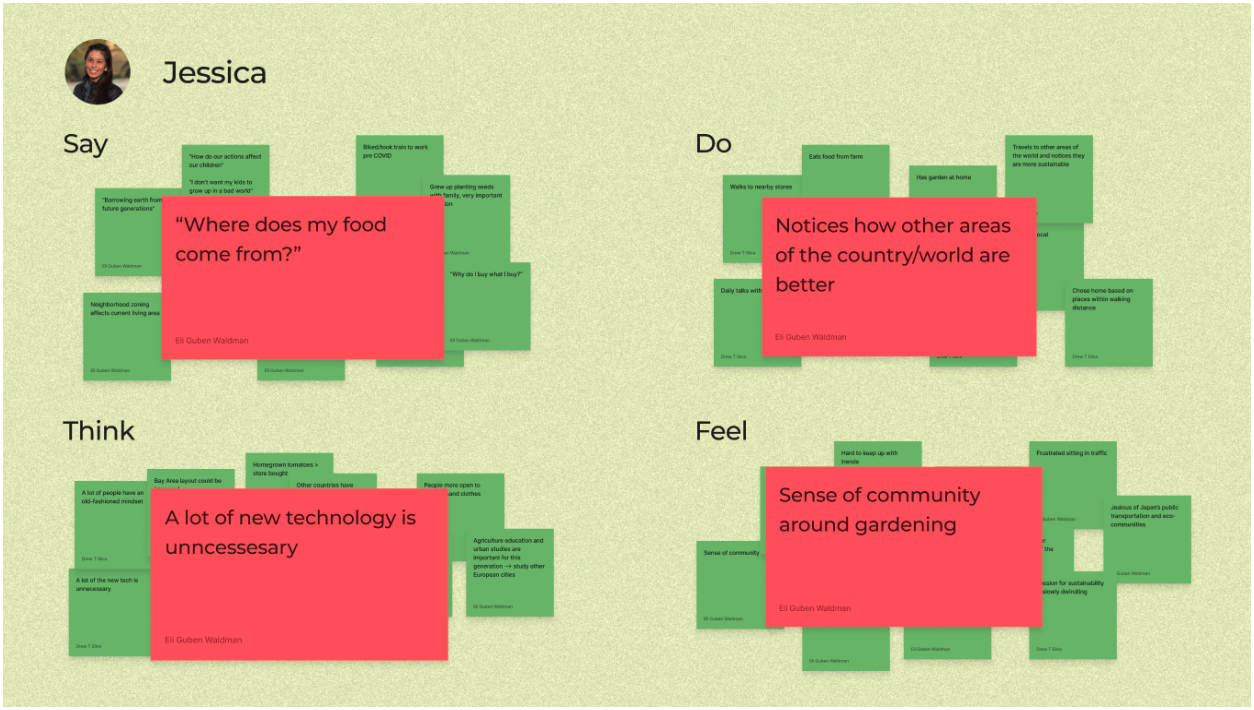


Synthesis

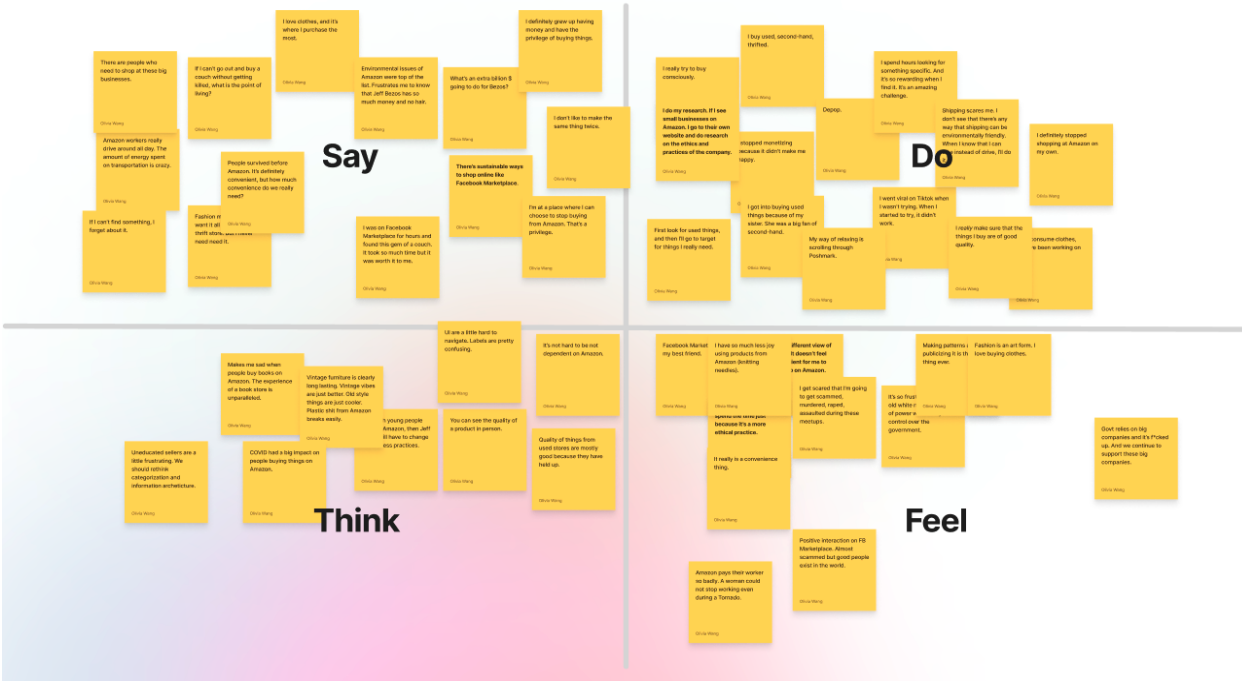
Coming into these three interviews with the confidence of already having conducted four, we gained many new insights. In order to format our analysis, we took to using empathy maps. We created empathy maps for each interview in the first round of interviews (see Jessica's and Leesa's below). And for the last three interviews, we decided to combine all three of our interviews onto one empathy map to track similarities and contrasts between what the interviewees spoke about.



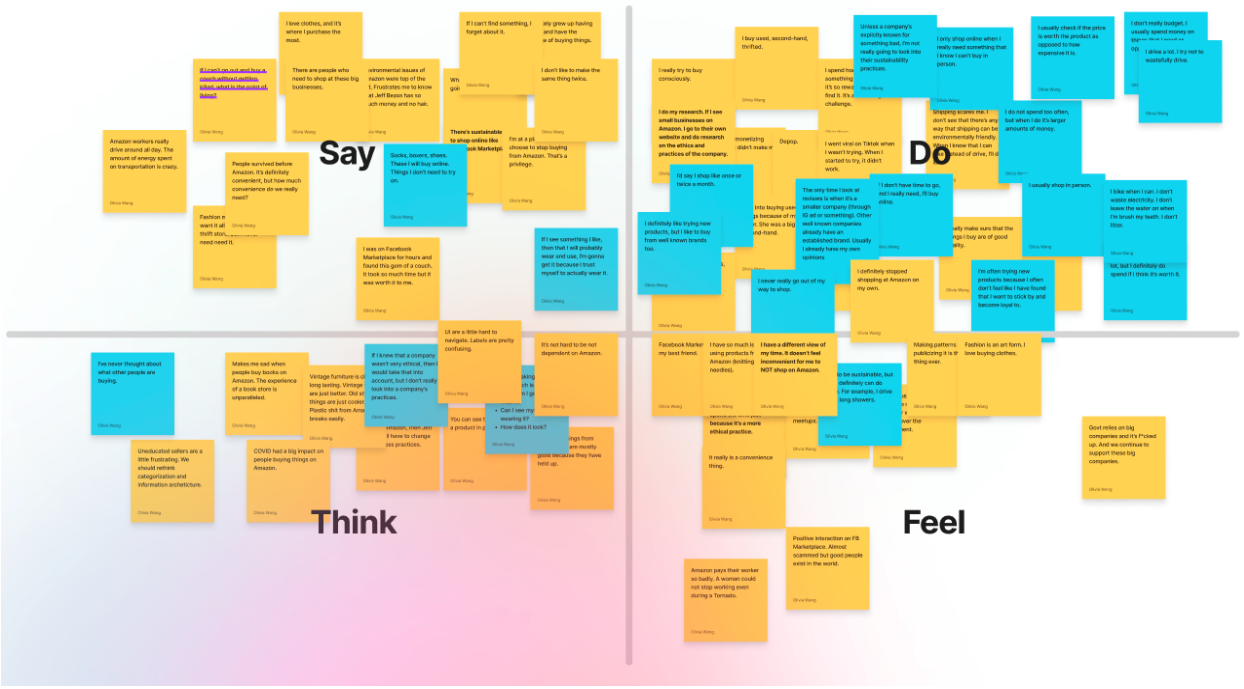
Leesa's Empathy Map and Major Insights



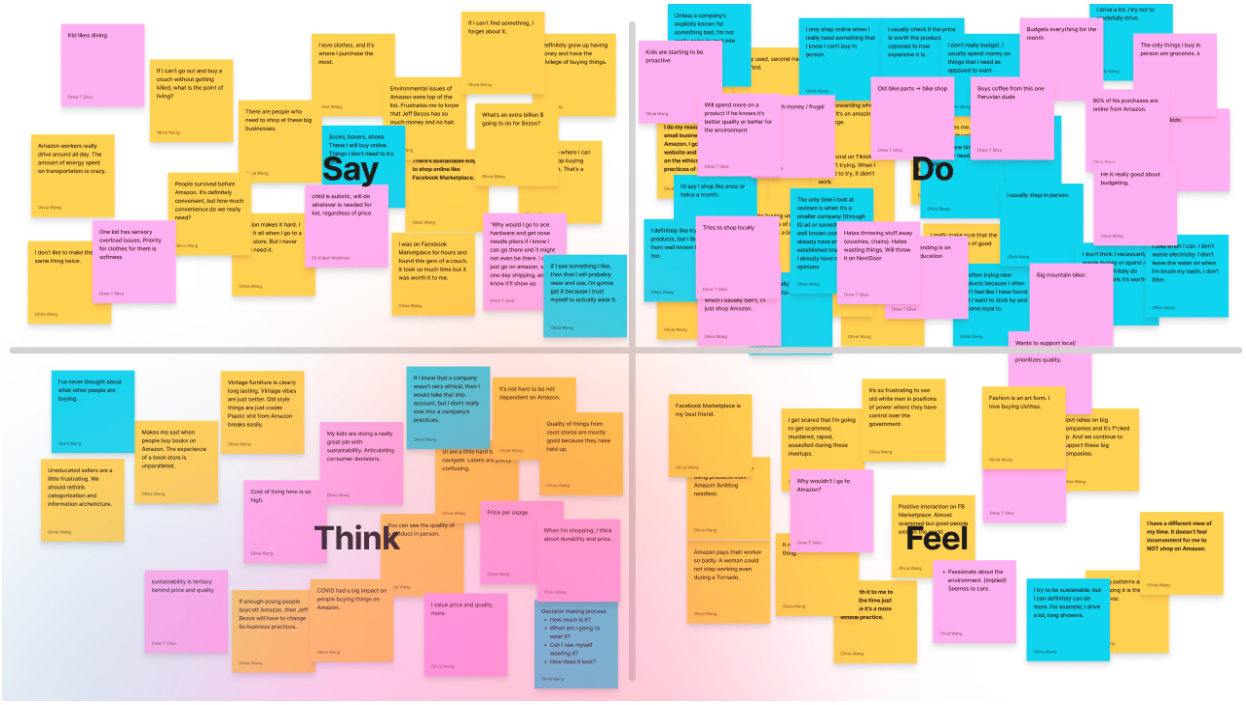
Jessica's Empathy Map and Major Insights



Jess' Empathy Map



Jess + Ramez's Empathy Map



Jess + Ramez + Tom's Empathy Map

Through this process, we found new, helpful insights that pushed us in a clearer direction. We discovered that the most important needs voiced from our interviewees were the need for cheap, sustainable options that are easily accessible, as well as easier ways to communicate and connect with eco-communities.

POVs & Experience Prototypes

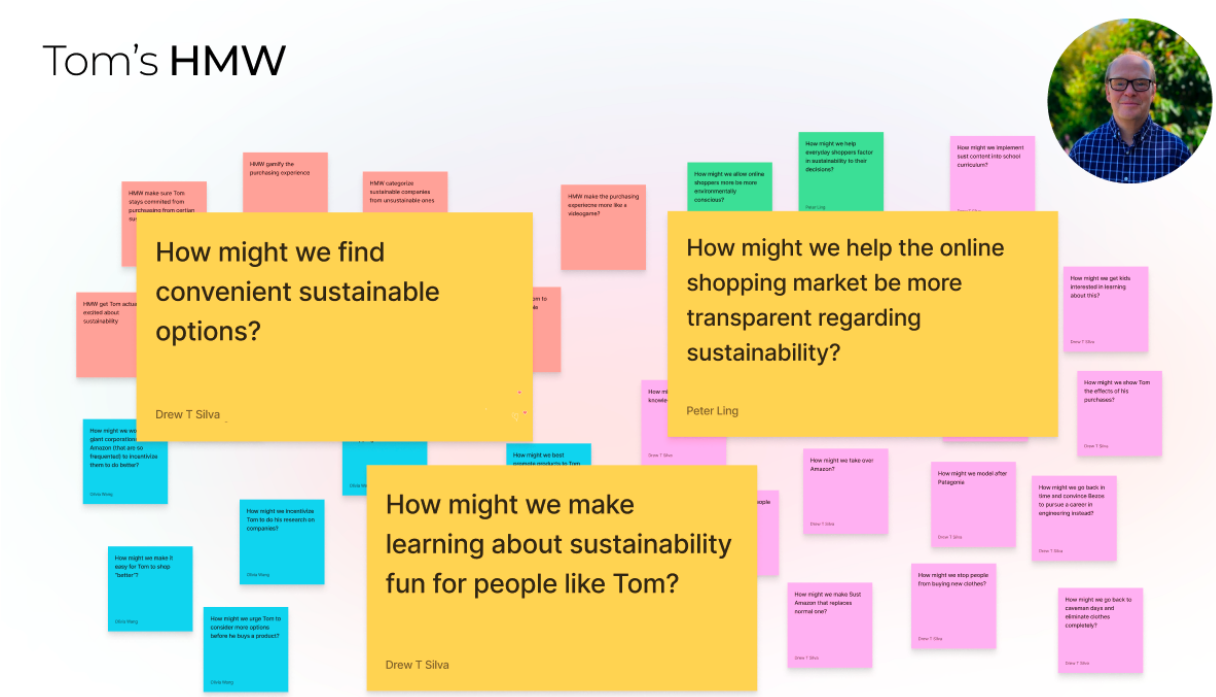
With insights gained from our interviews and some promising pain points/aspirations obtained from our interview analysis, we created POV statements for our most engaging interviews (Tom, Jess, and Jessica), while also keeping in mind diversity of thought and background.

After we created each POV, we rapidly brainstormed 35 HMW statements for Tom, Jess, and Jessica each. This was done in quick fashion to gather as many thoughts/ideas as possible, no matter how ridiculous each one was. We boiled down the 35 HMW per interviewee to the 2-3 most interesting, and from there we brainstormed potential solutions. This was by far our most productive, chaotic, and fun meeting, and we walked away with 3 solutions that we were incredibly excited to test.

Tom's POV

- **We met** Tom, a biotech researcher and father of four teenagers living in San Mateo.
- **We were surprised to notice** that even though he cares about sustainability more than the average person, he does the vast majority of his shopping on Amazon.
- **We wonder if this means** that Tom prioritizes convenience and ease over sustainability.
- **It would be game changing to** educate him about the sustainability differences between online vs in person shopping.

Tom's HMW Highlights



Jess' POV

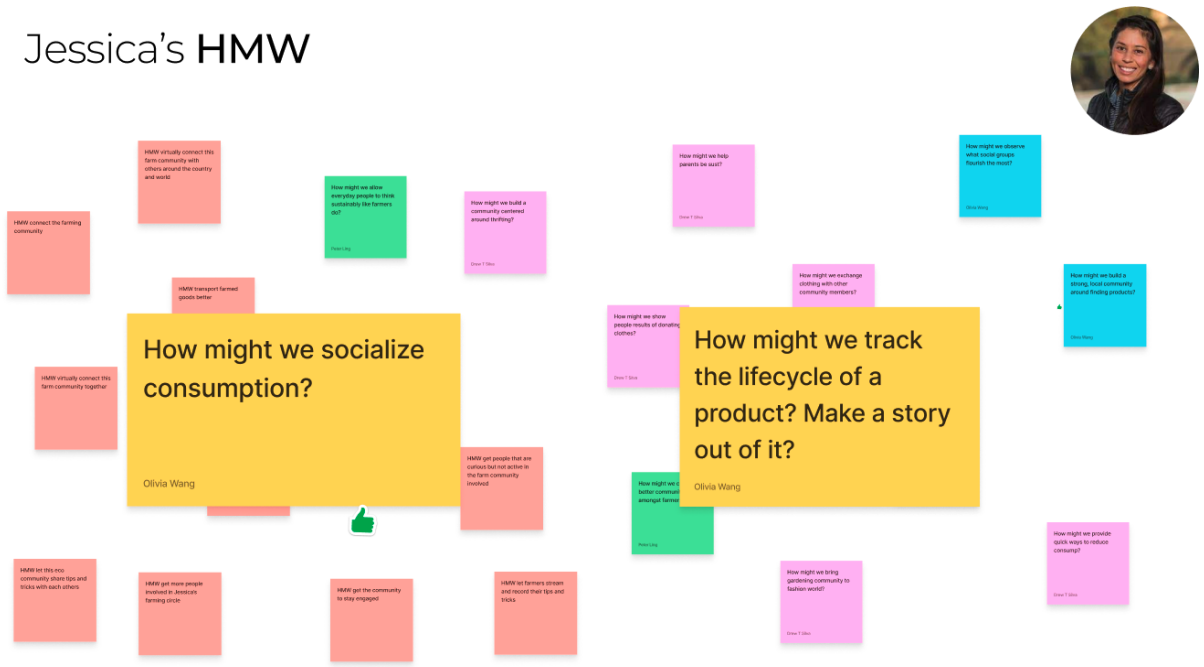
- **We met** Jess, a student at Stanford University who only buys second hand goods (clothes, furniture, yarn, you name it)
- **We were surprised to notice** that she acknowledges the convenience of online shopping for other people, but she herself is "obsessed" with finding used goods
- **We wonder if this means** that Jess views sustainable living as a natural hobby and a lifestyle, rather than a conscious decision
- **It would be game changing to** recreate/bestow her experience of second-hand, in-person shopping for others.

Jess' HMW Highlights

Jessica's POV

- **We met** Jessica, the program coordinator at the Stanford Educational Farm who lives in South Bay and loves to garden
- **We were surprised to notice** that Jessica really cares about where her produce comes from and where her waste goes after.
- **We wonder if this means** that she feels a greater sense of attachment to the products whose story she knows.
- **It would be game changing to** find a way to emulate this attachment for others with their clothes.

Jessica's HMW Highlights



Top 3 HMWs

- **How might we** show Amazon's effect on the environment every time they make an Amazon purchase?
- **How might we** track and make a story out of the lifecycle of a product?
- **How might we** socialize consumption?

Top 3 Solutions

1. LifeCycle

   Allows students to track the lifecycle of their clothes, to see both where their clothes come from and what happens to them after they are no longer needed
2. Nudge

   Exposes users to more sustainable shopping options by way of a reward system
3. DAHA

   Allows college students to find clothes that they need from others easily

Experience Prototypes

We then went into prototyping/testing each solution to determine which one we should continue with.

1. Lifecycle

   Assumption If people knew where their clothes came from, they would be more emotionally attached & invested

   The key aspects of the Lifecycle experience prototype centered around the classic interview format (one that we were now very well acquainted with). We asked 10+ of our friends about their wardrobe. We asked questions such as "do you care about where your clothes come from?" and "Do you have any

emotional ties to any clothes?". We wanted to see if people had a deep care and appreciation for their clothes, and where that care stemmed from. Upon asking these questions and even making adjustments to our questions as we interviewed more participants, we found that almost no one had any attachment to most items in their wardrobe. With a pretty clear answer and evidence mounting up against our assumption that people care about where their clothes come from, we knew Lifecycle was not going to work.

2. Nudge

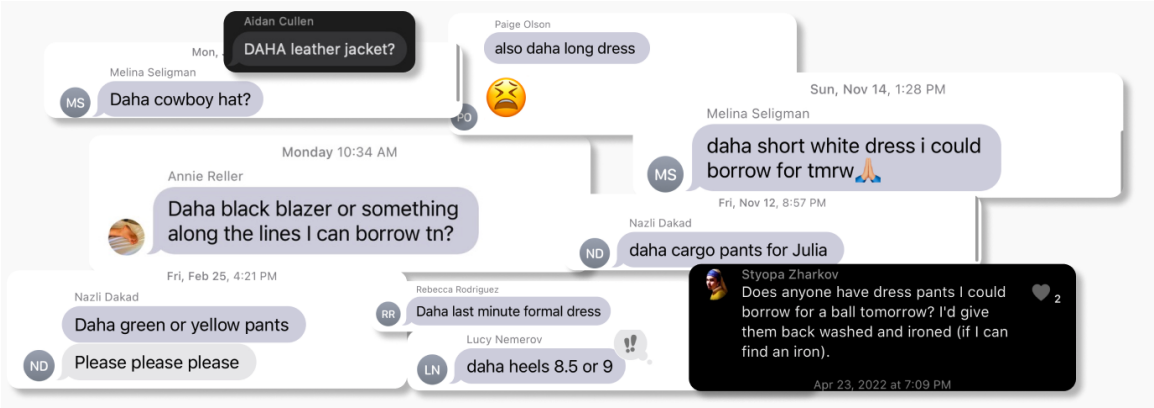
Assumption People want to learn more about the products they buy, and if nudged might change their consumption behavior as it relates to sustainability.

The key aspects of the Nudge prototype focused on a multi-staged buying test. We showed the participant two brands of laundry detergent: Tide and a made up brand. Attached to Tide was a $15 price tag and attached to the made up brand was a $20 price tag. We then asked the participant to select which one they would purchase. After making their selection, we then showed the carbon emission information for each brand, with Tide being 10% greater than the made up brand. We asked participants to select which brand they would purchase. For both buying questions, an overwhelming majority of the participants selected the cheaper option (Tide), regardless of how much greater its carbon emission output was over the made up brand. This demonstrated to us that Nudge could be a risky choice when picking our final solution due to the fact that almost all of our participants did not take carbon emissions into account when making a purchase and decided to go with the cheaper option.

3. daha

Assumption People need one-time use clothing on a short notice, but response rates are often not fast enough.

To clarify, the term "daha" is short for "does anyone have a," and it is a popular utterance among Stanford students. On a daily basis, we receive texts like "daha dress for dance," "daha laundry detergent," "daha blazer." We believe the term "daha" embodies ultimate resourcefulness: use what already exists around you instead of buying new things. The need for borrowing is clear, and our mission is to make it as convenient as possible.



The key aspect of the daha experience prototype was testing daha response times; we wanted to send daha texts to our own group chats and test response rates to see if people are willing to lend clothes for one-time use occasions. We sent out daha texts to 5+ group chats each. We tracked response times and if the request was ever fulfilled. Our results were incredibly interesting. What went well was that most people (especially first circle friends) were keen on letting others borrow their clothes for a short period of time. But,

response rates were slow to third tier communities. In fact, some of our daha requests were never even fulfilled.

Out of the three prototypes, daha aligned most with the key learnings and goals we define from our needfinding phase:

- Build sustainable habits through community
- Cut down on unnecessary consumption
- Default actions for users so it's as convenient and seamless as possible

We all understood the need for daha (we've daha'd to others in times of desperation and been daha'd to). Above all, we were all extremely excited about making this popular Stanford term a reality. We unanimously decided to proceed with daha as our final solution!

Final Solution – daha

Description

A platform that allows college students to easily borrow clothes from each other.

Target Audience

College students & other tight-knit communities.

Who Might Be Left Out

We hope to create a convenient and safe platform for college campuses to facilitate borrowing and lending. Naturally, this leaves non-college communities out. Specifically, we think suburbs and neighborhoods could benefit immensely from a specific platform like daha to participate in more borrowing and lending. These are often the communities that resort to buying instead of borrowing for convenience reasons. Expansion to non-college communities is definitely something daha is considering for the future.

Another obvious point of exclusion is the barrier to entry we pose as an app-based platform. The population who need to borrow things the most might not have the luxury of having a mobile phone or constant access to the internet. Experimenting with physical pop-up sites is something we would consider if our virtual model fairs well.

Tasks

1. **Simple task – 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.

2. **Moderate task – 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.

3. **Advanced task – write a review of daha experience**

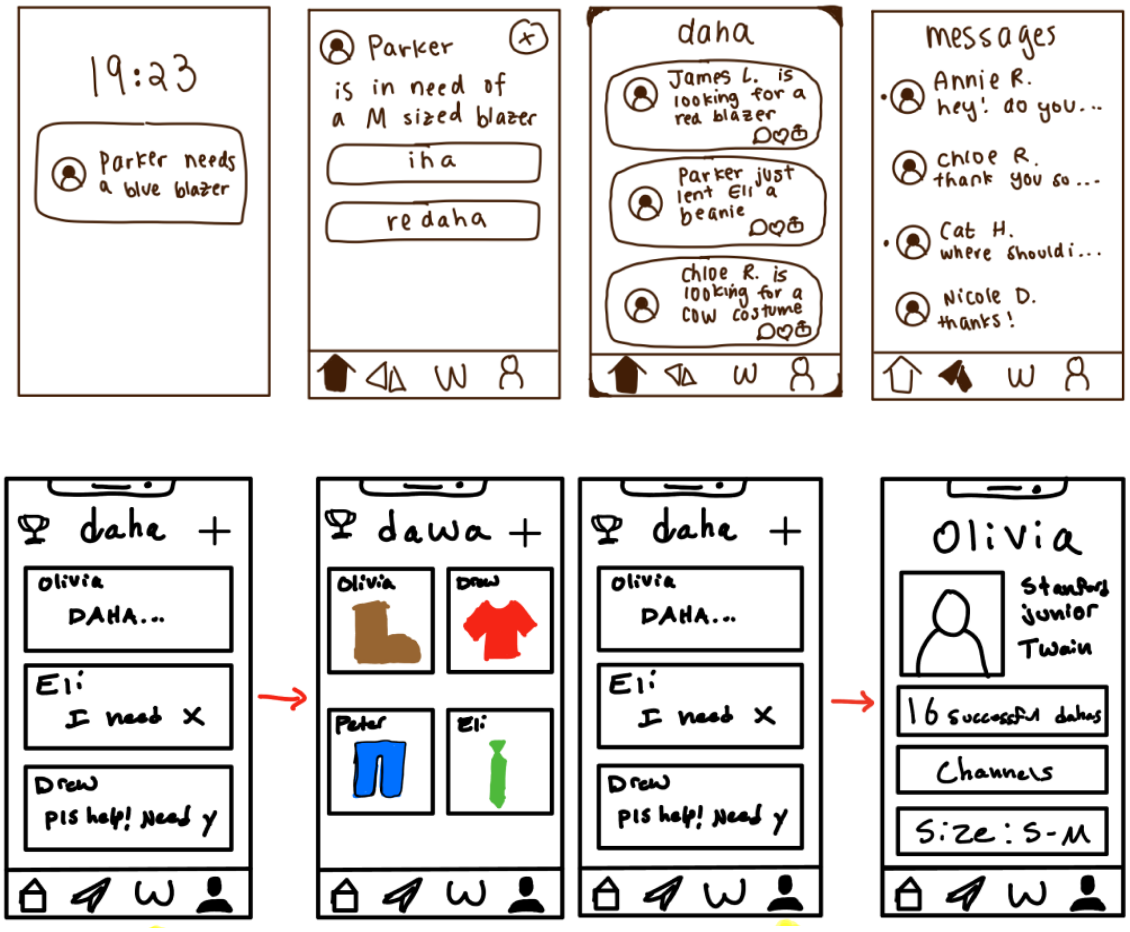
   Creating a safe and trustworthy platform is our priority, especially when transactions involve in-person meet ups and lending your personal items out. That's why we believe a review system is vital to our model. By rating your daha experience with another user, we hope to build a culture that encourages 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.

Design Evolution

Initial Sketches

During the initial sketching stage, we brainstormed various concept directions, including physical robots, mobile applications, wearables, and augmented reality. The two realizations that excited us the most were mobile applications and augmented reality:

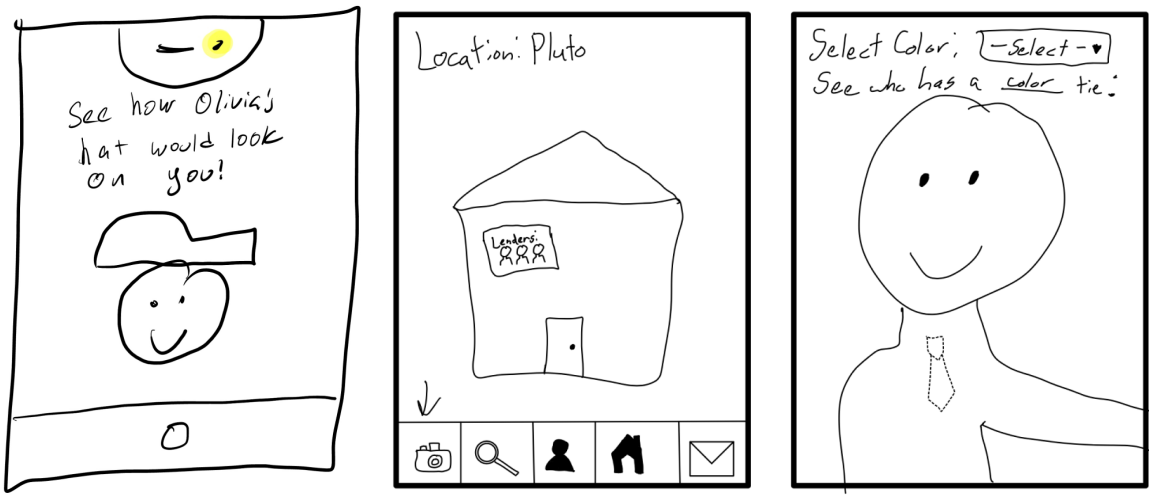
1. Mobile application



What was encouraging to us about using a mobile application was the fact that they are one of the most accessible technological options. Our entire target demographic

(college students) has cell phones, so a mobile application could reach the most people possible, whereas not all college students have access to a VR headset.

2. Augmented reality



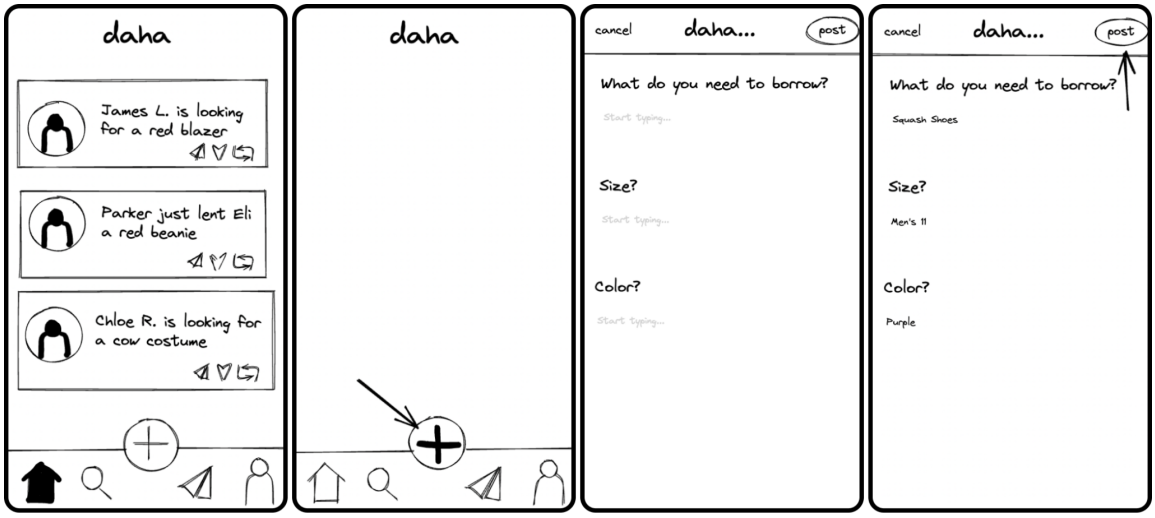
What we liked about AR was how interactive and flexible it was. The user could see themselves in the clothing item, regardless of shape or size. However, we didn't possess the technical skills to implement such a design. With the mobile app, we knew it was possible to create, would reach a wide audience, and have a larger user base since currently people are more familiar with mobile applications than AR products.

After analyzing the feasibility of each realization and voting on the idea we were most excited to design and build, we decided to proceed with the mobile application concept, addressing all 3 tasks.

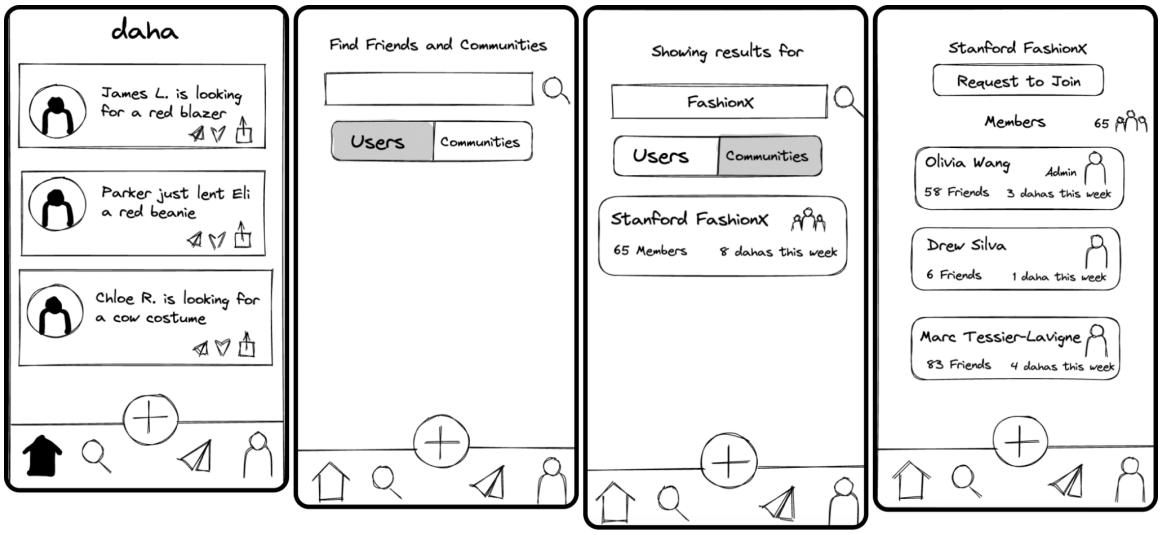
Low Fidelity Prototyping

We dove right into low-fidelity prototyping our tasks, leveraging the convenient and collaborative features of excalidraw.com:

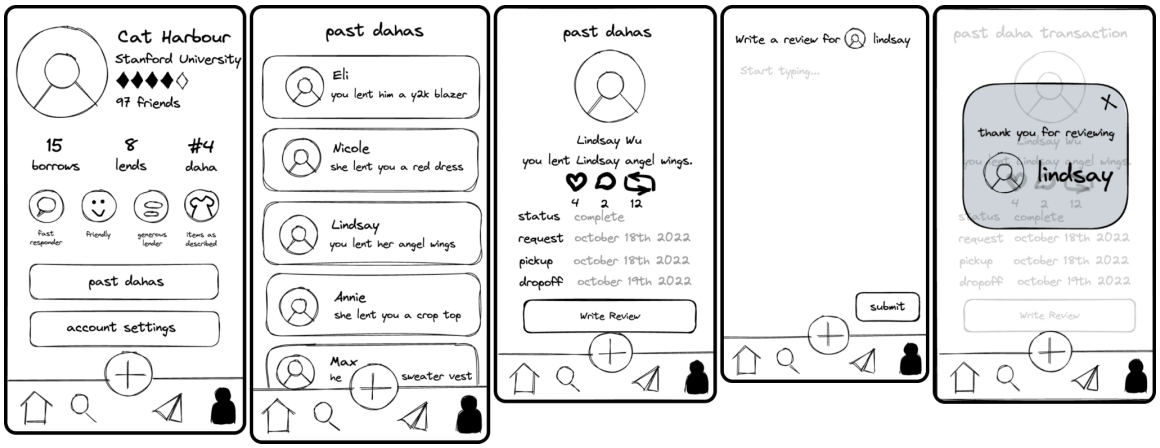
1. Create a daha post



2. Join a daha community



3. Write a review of daha experience



Usability Testing

With these low-fi prototypes, we began usability testing. We tested on 4 college students, 2 Stanford students and 2 students from Connecticut and Virginia. We were particular about finding students to test our prototypes with since daha is designed for tightly knit communities, mainly college campuses.

Our first interviewees, Ben and Ava, had thoughtful insights and creative suggestions:

- I understood all the icons
- Time is never listed anywhere
- Leaderboard would be great
- Feels like venmo
- I would want convenient meeting locations

We recorded the number of errors they made in completing each task, and within 2 tests were able to notice some common patterns in error. Specifically, they both struggled to complete our complex task of leaving a review. They had no idea where to find this function. What seemed so obvious to us (after hours of discussion) was in fact not so obvious to our users. This low-stakes testing was incredibly helpful before we got caught up in the details of medium and high fidelity.

Once again, we created revised screens with the feedback from Ben and Ava and prototyped our low-fidelity screens in preparation for our next 2 interviews. We made flexibility a new usability goal with the goal of having every screen be easily accessible. After having our final two students test the revised prototype, we walked away with a handful of big picture goals and design updates.

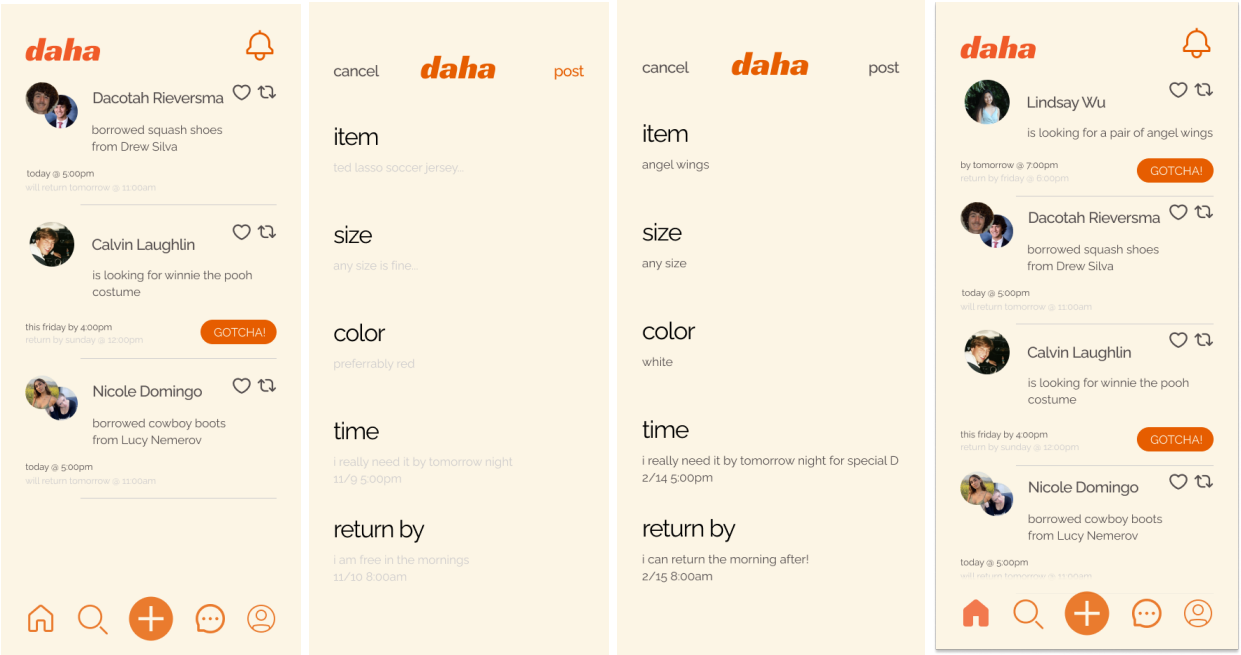
1. Different people have different perspectives. There need to be multiple pathways to complete each task since sometimes the goal is ambiguous.
2. A notifications feature should be added (past dahas, community interactions, likes, comments, etc)

3. The bottom navigation bar needs to be improved/changed in a big way. This is how users navigate around the app, it needs to be consistent and intuitive
4. Writing a review should be accessible from various points (user profile, past transactions, explore, etc.)

Usability testing was critical in defining what features and flows we needed for the medium fidelity prototype.

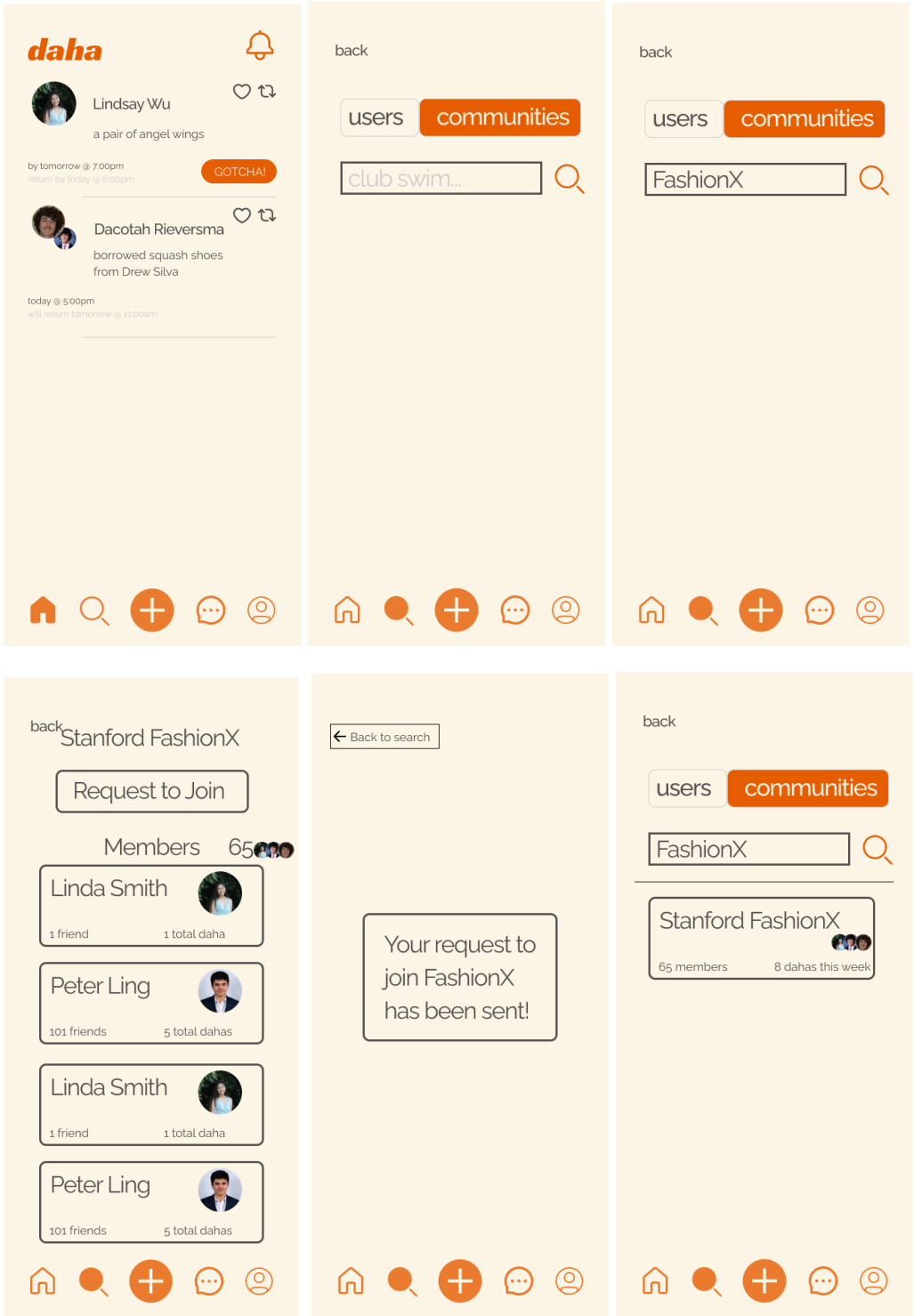
Medium Fidelity Prototyping

1. Simple Task – create a daha post



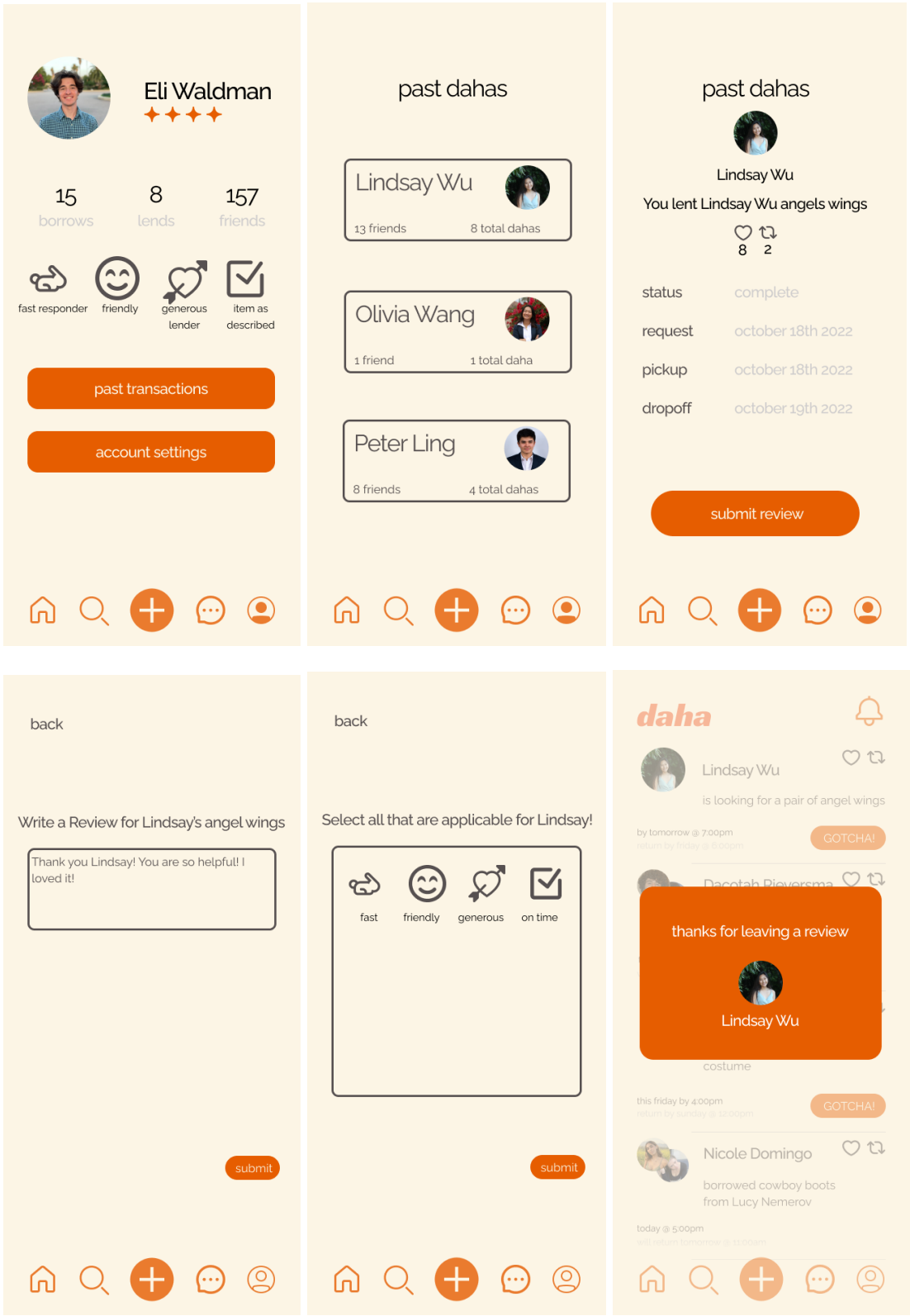
To make a post, from the homescreen, click the large orange plus, fill out the daha request, and then click post to publish your post to the feed

2. Medium Task – Join a Community



From the explore page, toggle the "users/communities" button to communities, click on FashionX (or any other community), and click request to join.

3. Write a review of daha experience



From the profiles page, navigate to "past dahas", click on any previous daha, click submit review, and then write and submit your review.

Heuristic Evaluation

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?

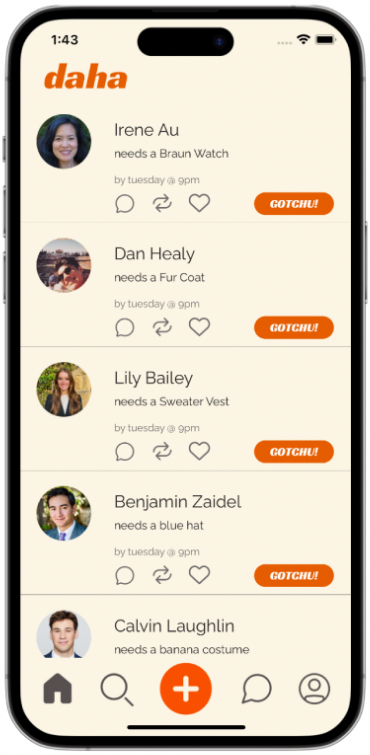
The reviewers had fresh eyes on our designs and saw the errors that previously made so much sense to us. The heuristic evaluation process was pivotal in empowering us to turn our medium fidelity designs into high-quality designs.

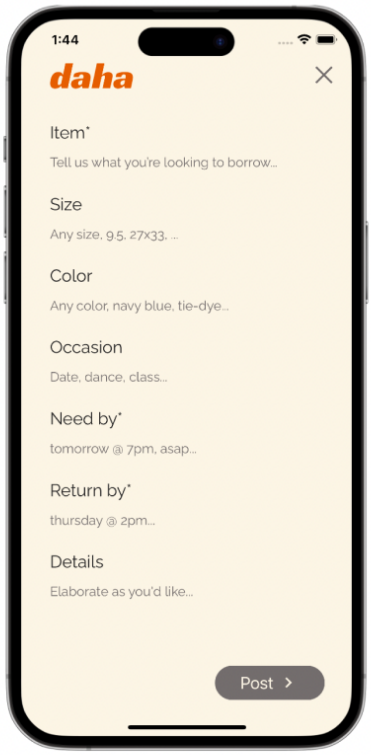
High Fidelity Prototyping

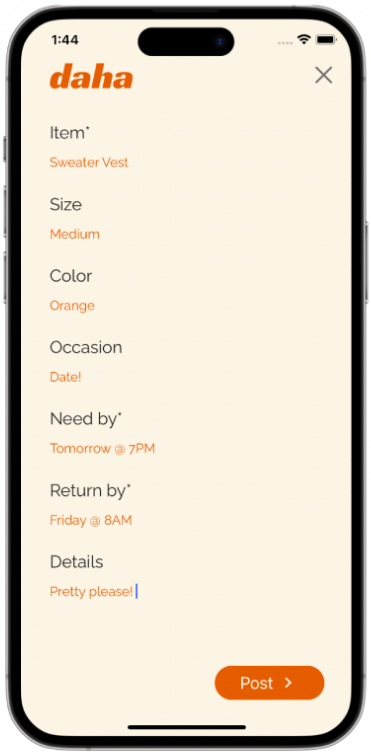
We built our hi-fi prototype by incorporating design changes from our heuristic evaluation. Below are the task flows reflected in our high fidelity prototype along with sentences explaining the heuristic violation corrections and overall improvements

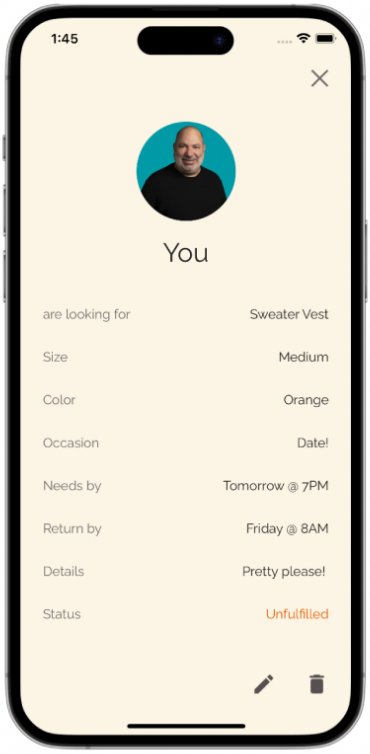
Splash Screen → Homepage

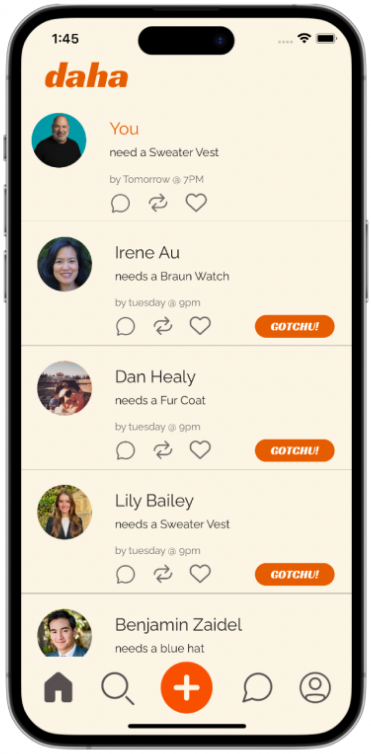
1. Simple Task – create a daha post









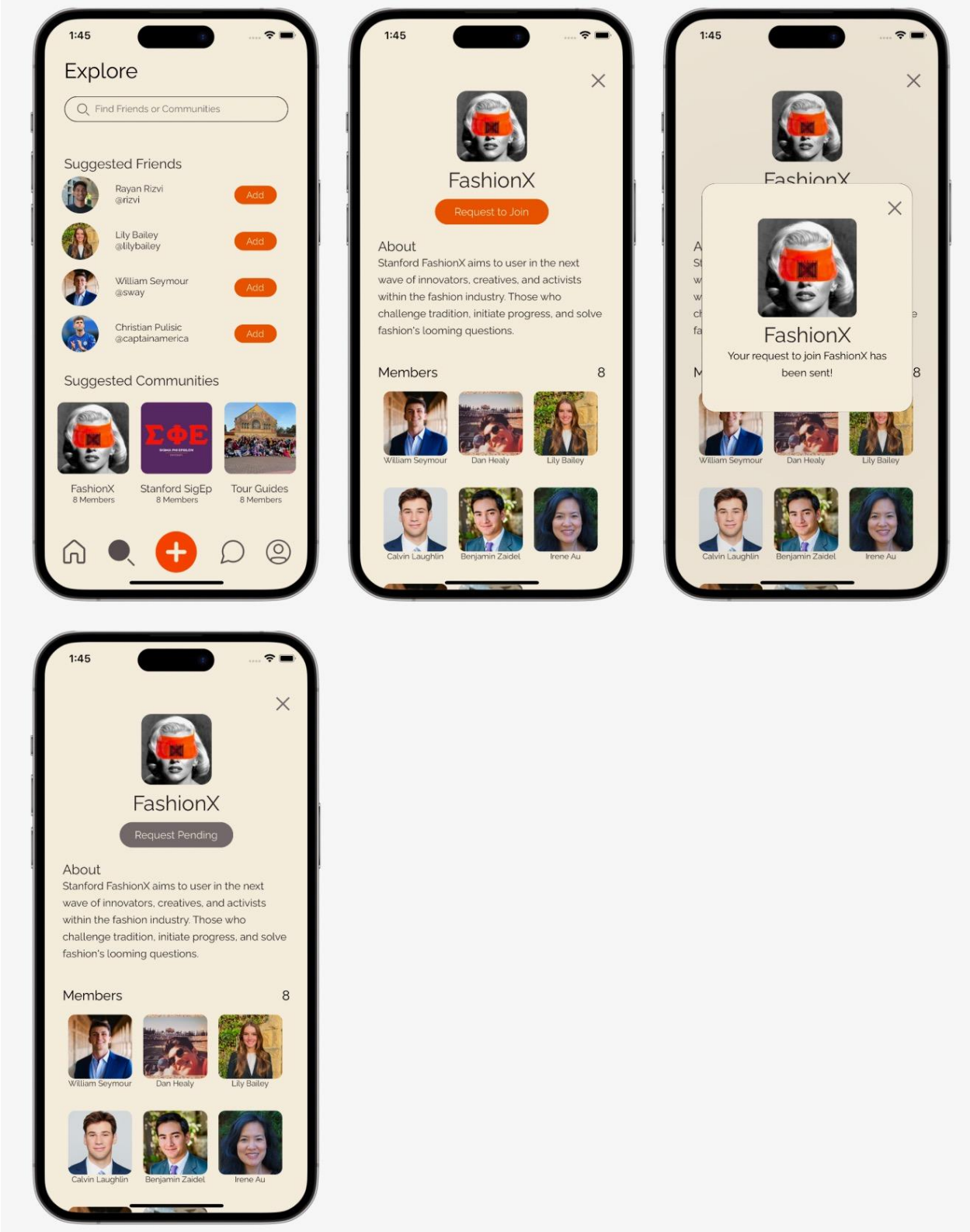


In order to make a post, the user clicks on the orange plus button, taking them to the "daha post" screen. From there, they can fill out each field, click "post". Now they are taken to the post confirmation screen where they can see what their post looks like, edit it, and or delete it. After clicking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

2. Medium Task – join a daha community

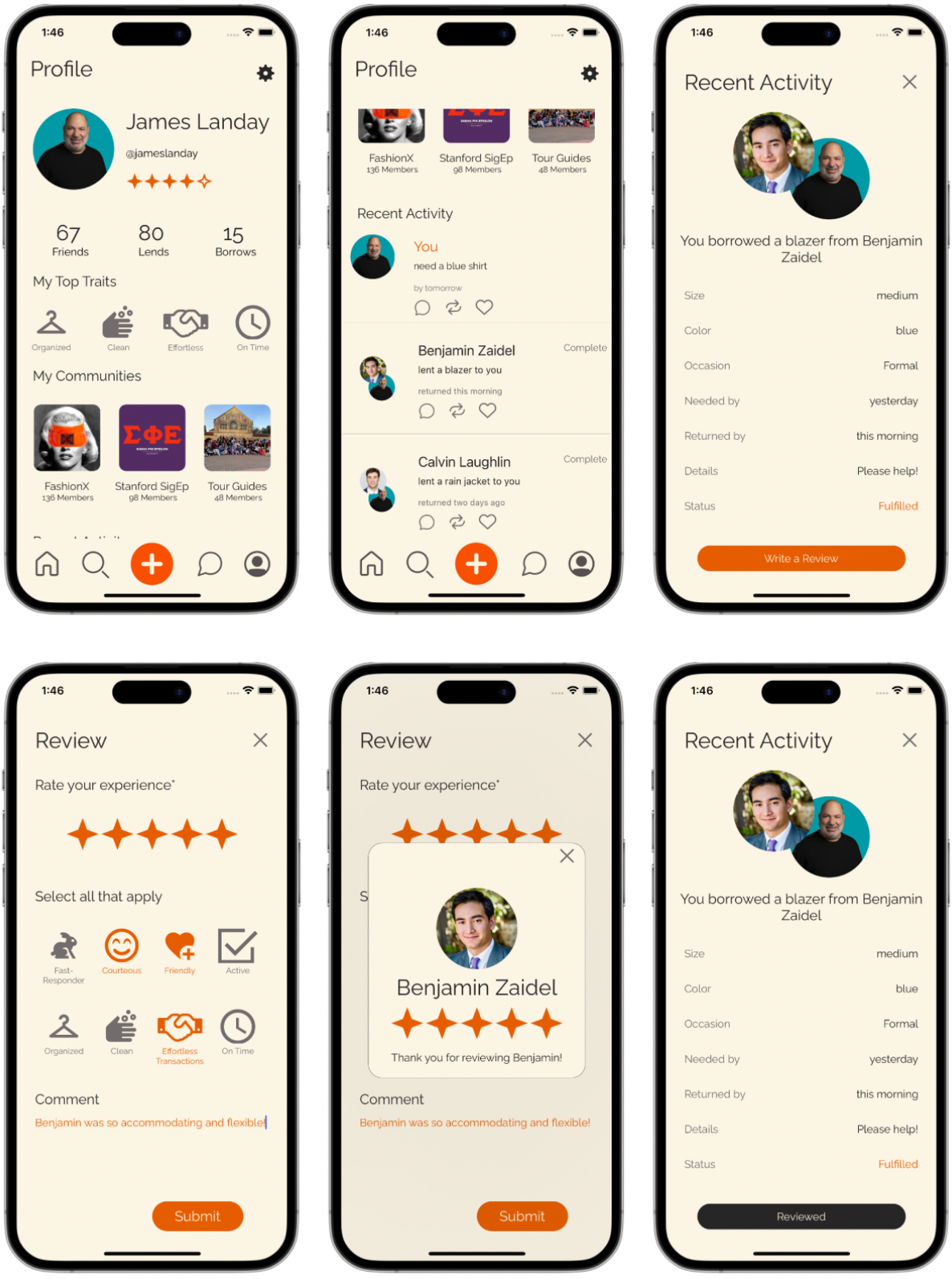


To join a community, navigate to the explore page. Click on any community under "Suggested Communities". Then, click "request to join" and exit the pop up to see your request pending.

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.

3. Complex 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)

Values in Design

At the beginning of the design process, we articulated three values that we hoped for daha to embody. Throughout the weeks of design and development, we found ourselves constantly going back to our values to make our design choices. These values are community, safety, and respect.

Community

We hope daha strengthens the community that uses it. By encouraging resourcefulness among students and empowering them to look for what they need from the community around them, we hope to spark new interactions and friendships among our users. We hope to convey the convenience of borrowing and build sustainable habits within them as they transition into adulthood. This value is encoded into our app with a social home page and an explore page for discovering new users & communities. The home page features all the recent activities and daha requests in a user's network. Ideally, exposure to others' use of daha encourages them to borrow and lend through daha, too. The explore page is an opportunity for users to add and join new communities, broadening their network and increasing their daha request exposure.

Safety

We want users to feel safe when they use daha. Since transactions will always involve in-person transactions, prioritizing our user's safety is critical. Since we are launching on college campuses, we will only be onboarding users who can verify their school email. This immediately prevents anyone outside of the college community from joining our platform. Users will know that everyone on the platform, at the very least, is from their school. When users send out daha requests, it sends only to their network (the friends and communities that they chose to add/join). In this way, users will know of the people that they are lending to/borrowing from. Even with our "re-daha" feature (where a friend can repost your request to their network), there will be mutual

connections between a lender and a borrower. This significantly reduces the potential stress and anxiety that a user could feel about a meetup. In our chat functionality, we detect language which signals that users are coordinating to meet up, and we will auto-recommend predetermined, public, and popular locations on campus for the transaction to happen.

Safety to us also means privacy with regards to our users' data. To encode this value, daha will be transparent to our users about how their data is being used. We will not publicize/sell personal information to other users nor other companies.

Respect

The nature of daha relies on students to lend their clothes to others in need. As such, we designed daha to be an environment where students are rewarded for respecting each other's time, personal items, and identity. Mainly, we encourage and nudge users to review each other post-transaction. Reviews will be a fundamental way for users to build their credibility (or not). On every user's profile page, they will have a general rating out of five, as well as the user's top traits (clean, easy-transaction, return-on-time, etc.). We hope that this kind of transparency will encourage respect for each other's time, schedule, and personal belongings.

We also want daha to be a platform where everyone feels welcome, represented and empowered to engage in the beautiful activity of borrowing and lending. We plan on detecting inappropriate content and language and removing users who do not follow our guidelines for respect.

Conflicting Values

The two biggest conflicting values are community and safety. daha relies on tight and large communities in order for daha requests to be fulfilled. At the same time, we understand the anxiety of meeting up with another student, even if they do go to your

school. We want users to feel safe and confident in their transactions. We address this conflict by limiting daha requests to send only to a user's own network (and potentially their friends' if their friends choose to re-daha their request). In this way, there is always a mutual connection between lender and borrower. We do not want users to feel obligated to meet up with anyone that they don't want to, so we do not implement read-receipts in our chat functionality. Finally, we hope that reviews provide a sort of assurance of a user's past transactions and history. In these three ways, we hope to walk the line of community and safety.

Final Prototype Implementation

Tools Used

We utilized Figma, React Native, and Supabase to build our high fidelity prototype. We are grateful for the incredibly well-taught Figma 101 and Design Systems workshops that 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 from the ground up.

Wizard of Oz and Hardcoded Data

We were able to implement all 3 of our tasks. With limited time to build, though, some features were not able to be implemented and remain hardcoded and/or simulated for the purpose of demonstration (for now!).

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 is also a fake interaction, as no user will be on the receiving end of this review.
- Our home page feed is automatically loaded in with several daha requests and recent activity. 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 following components of the app have been hard coded for demonstration purposes:

- The user profile page, including their image, name, rating, top traits, and recent transactions are hard coded

- The home feed is pre-populated with various daha activity from the user's network
- The messages page is pre-populated with several messages between the user and his friends regarding upcoming, future, and past daha transactions
- The explore page features hard-coded users and communities to add/join
- The status of a user's daha requests (completed vs. open) are pre-determined
- Suggested friends and suggested communities should be customized based on user's network, but are currently hard-coded

Summary & Next Steps

Over the past 10 weeks, our team has lived and breathed daha. Through iteratively interviewing over a dozen stakeholders, we learned and validated a need among college students. They are constantly looking to borrow clothes for one-time-use and often on a short notice. Since this realization, we have been on a mission to simplify this process, hopefully reducing their consumption and building sustainable habits in the process.

Key Learnings

- Empathizing and Listening to Our Users

  By far the most valuable steps of our iterative design process came from interviewing our users and listening to the needs and wants of the people that we hoped to design for. We started off wanting to solve the overconsumption issue. And it was only through listening to and analyzing the experiences of our interviewees that we realized the concept of daha. We certainly aren't solving the overconsumption issue entirely, but we are helping to build more sustainable habits of resourcefulness among our users.

- Utilize Robust Testing and Evaluation Techniques

  Our second key learning from the design thinking process was the importance of using different types of user testing and evaluation for getting truly robust and diverse design feedback. User feedback from usability testing of our low-fi prototype, for example, yielded different types of insight compared to the results of heuristic evaluations of our medium-fi prototype. Our usability tests helped us define a logical flow of each task, while the heuristic evaluations

helped us workshop the effectiveness of important screen elements like button size, in-app text, and error handling.

- The circular economy market remains underserved

  Despite the hundreds of sustainable technology companies and consumer brands that are emerging, the overconsumption market remains vastly overlooked. Especially within fashion and retail, there is a blatant amount of greenwashing and performative activism that leads consumers to feel good about themselves and their purchases. Let us not forget that the real meaning of sustainability means not producing anything new. Any brand that claims sustainability but creates new products is inherently not sustainable at all. We hope to see more initiatives on behalf of creating a circular economy – a world where all products are built for multiple life cycles, to be reused, recycled, and repurposed.

Future Work

Our team is excited to continue building daha in CS194H! We cannot wait to explore even more advanced methods for designing, prototyping, and evaluating user interfaces to computing applications. We want to build out a functional backend so our friends can start beta-testing daha. Something we haven't had much time to think about in this course is the business feasibility of our concept. We received a lot of positive feedback (as well as constructive criticism) from our peers and the Expo judges regarding the practicality of daha, and we hope to use 194H as an opportunity to tease out these details together.

Final Remarks

Thank you for following along on daha's design journey! Creating this project was the most unique learning experience for all of us. We have never been more proud to

show our work off to our family and friends. We want to give a special thank you to Professor Landay and our TA Maya Srikanth for an epic quarter of learning.

Appendix

Make sure to check out our –

- Website
- Concept video
- Demo video
- Final high fidelity prototype
    - Username – dahateam
    - Password – 9+D#3bKLCmv9j9j