DSCI454
Process Book

Spring 2022

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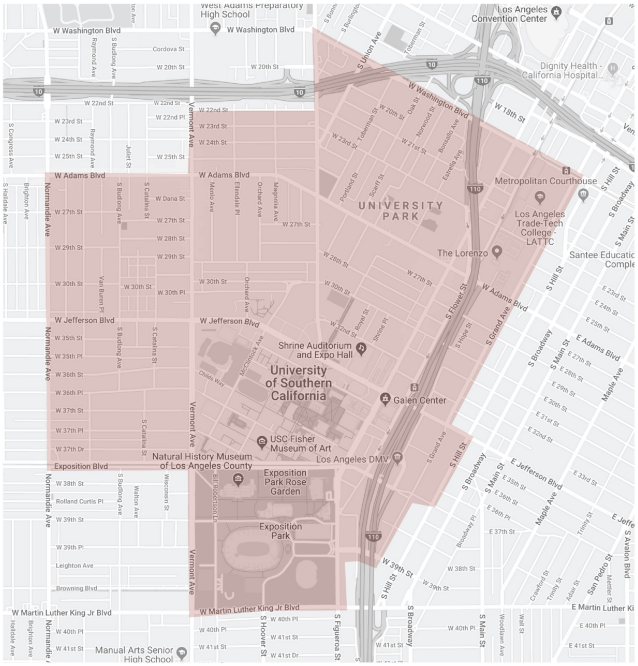
Defining the Problem

Problem Statement

As USC students, one thing that usually comes to our mind when people talk about the neighborhood around USC is safety issues. Every week Trojan Alerts will send out roughly 5-7 email notifications reporting safety incidents around USC. For a lot of students living off-campus, safety has become their top concern when commuting to or from campus early in the morning or late at night. The current Lyft program greatly alleviates this issue, but the service is limited to a certain area. The relevancy of this problem to our daily life leads our group to think of ways to address this problem.

Fig1. Coverage area of Lyft Safe Ride Program



Location/Site

The site our group chooses for this project is the housing areas of USC living off-campus, which include areas around the University Park neighborhood and further down to ktown/downtown Los Angeles.

Initial How Might We Statements

1. How might we make students living off campus feel safer commuting to campus?
2. How might we facilitate shared transportation methods in the community?
3. How might we get cheaper commuting services?

Provisional Persona

Fig2. Primary User

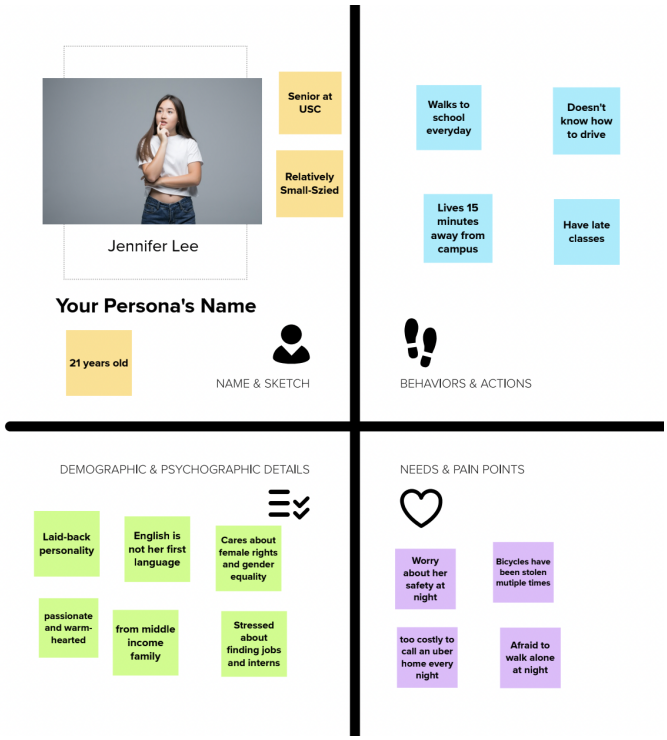


Fig3. Secondary User

In our personal persona, our primary users are students who live off campus and walk/skateboard to school everyday. They have classes at night and are concerned about safety issues around campus.

Our secondary users are students who own a car but do not drive often to campus because they are concerned about parking fees. They are equally concerned about safety issues as our primary users but think driving to campus is not an environmentally-friendly behavior.

Understanding the Problem

Desktop Research

From desktop research, we learned that there are several commuting methods depending on where students live. For those living in student apartments, they typically walk to campus while for those living in individual houses within the lyft program coverage, they usually scooter or skateboard to campus. For students who live in individual houses outside of lyft program coverage, they usually choose to drive to campus. While for those living further away in downtown or ktown, they typically drive or call uber to school.

Interview Goals

To better understand our user needs and pain points, we conducted three interviews (two face-to-face and one through Zoom) with students living off-campus. Prior to the interview, we were not sure if we should work on the current transportation sharing method (Scooter, Bike) or should we propose another system to enhance the commuting experience for students. Therefore, our goal was to verify our provisional persona and to understand the most pressing issues for students commuting to campus.

Screener criteria

Either/or:

1) USC affiliates who live off-campus within or close to the Free Lyft area and at least 15 minutes to walk to school
2) USC affiliates who drive to school

Screening Questions

1. Are you a USC affiliate? (Yes)
2. Do you live off-campus within or close to the Free Lyft area? (Yes)
3. How often do you come to campus? (At least three times per week)

Interview Questions

- General geographical information

1. Where do you live? (East/West/North of USC campus)
2. How would you describe your neighborhood?

- Commuting experience:

1. When do you commute to/back from campus?
2. How do you commute to/back from campus? (Walk/scooter/skateboard)
3. How often do you commute to/back from campus?
4. Do you often commute alone?
5. How would you describe your commuting experience in terms of time, convenience, safety, etc.?

- For affiliates who walk to school:

1. Feelings of current public transportation methods:

    a. Shared Scooter
    b. Campus Bus
    c. Shared Bicycle
    d. Subway
2. Have you used any of the above transportation methods?
3. How would you describe your experience with using it/them?

- For affiliates who drive to school:

1. Their experience of driving to school:
2. How much time do you spend on driving to/from campus?
3. Where do you park your car?
4. How much do you spend on parking?

Insights and Findings

After the interview, we generated a word list based on the user's feedback and we found out that the most commonly used words are: are safety, cost, parking fee, and trojan alert.
As we have expected, our participants were concerned about the safety issues around USC. They were glad to have the Lyft Safe Ride Program but would like to extend its operating hours. Also, they thought the current Trojan Alert was not very effective as it was text-heavy and they wouldn't usually look into the details of it.
One thing that helped with our direction with the project was that none of the participants had experience using shared scooter or bikes commuting to or from campus as they either thought it was not necessary or simply too dangerous given the road condition around USC. Therefore, we decided that we wouldn't focus on improving the shared transportation experience.

Consolidated How Might We Statement
How Might We make students living off campus spend less and feel safer commuting to campus?

Scenario Mapping
We divided our scenario mappings into two settings–driver side scenario and rider side scenario.

1. Driver side Scenario MappingDrivers who want to save money on daily commuting
    - **Actor:** USC Senior Jennifer
    - **Motivator:** Jennifer owns a used car from her family. She is willing to drive to school as she lives 20-mins walk from school. However, the expensive parking fee and the rising cost for fuel is holding her back.
    - **Intention or intent:** wants to save money on daily commuting. Hopefully She could get rid of the parking fee.
    - **Action:** Originally, Jennifer decided to walk to school as a 20-mins walk is not so long, but can save her a lot of time. On one occasion, her friend Lisa told her there was a new campus service that could let her share a ride with another

student rider, and let the rider pay for her parking fee.

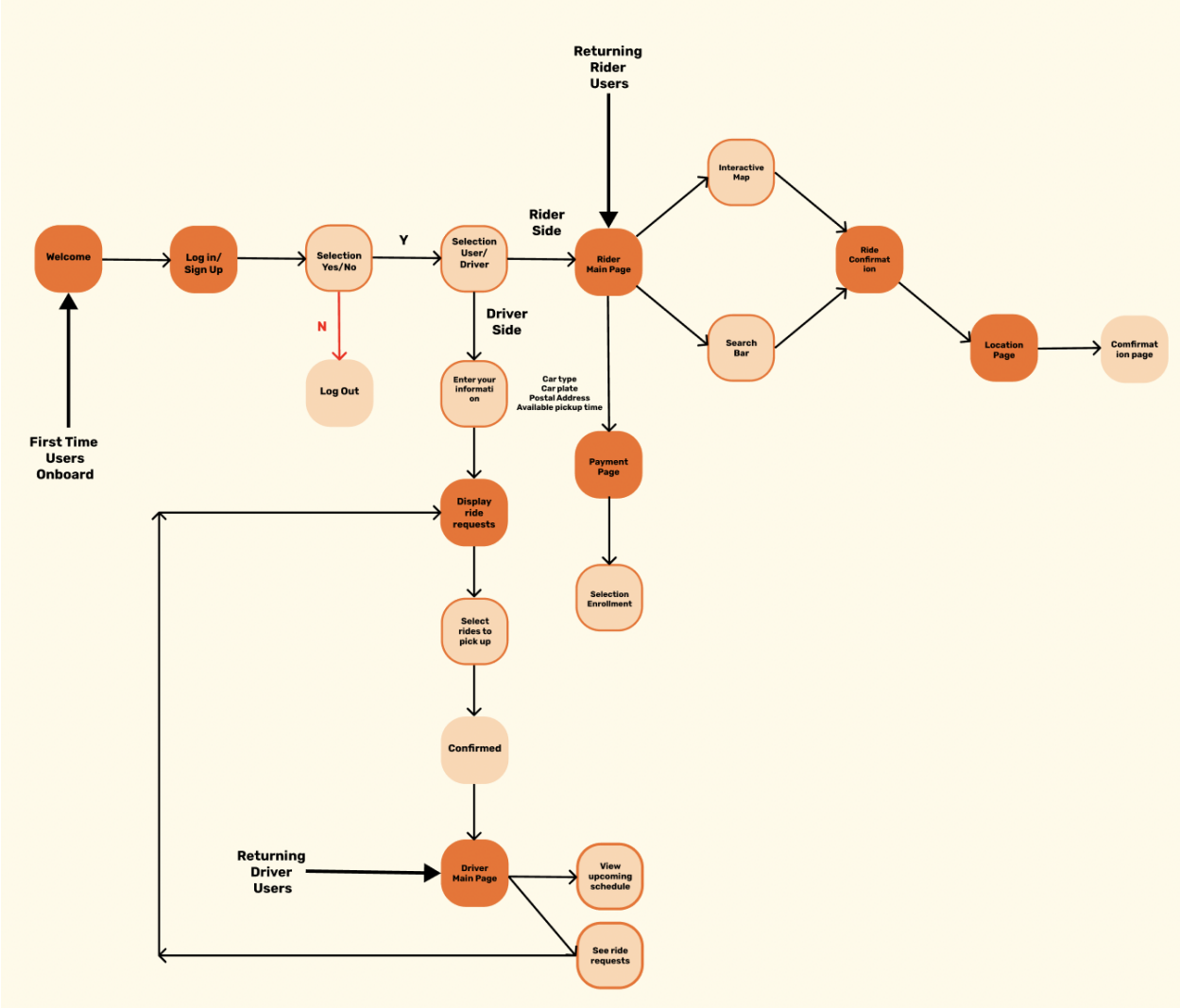
- **Resolution:** Jennifer signed up for the RideDuo Program and received a 700-dollar bill for her contribution to RideDuo this semester. It is enough for the parking fee and even for the fuel cost.

2. Rider side Scenario Mapping: Riders who want to commute more safely and efficiently.
    - **Actor:** USC Freshman Vanessa
    - **Motivator:** Vanessa lives off campus, 20min' walk from USC campus. She wants to go back home at 1:00 AM after studying in Leavey Library.
    - **Intention or intent:** wants to find a way of commuting back cheaper, sooner and safer.
    - **Action:** She chose the expensive way and planned to call an Uber that costs $20. Her friend Lisa told her there was a new campus service that could let her share a ride with another student driver.
    - **Resolution:** She arrived home safely without the need to walk or call an Uber. Vanessa got back home safely and cost her only a little.

Design the Solution

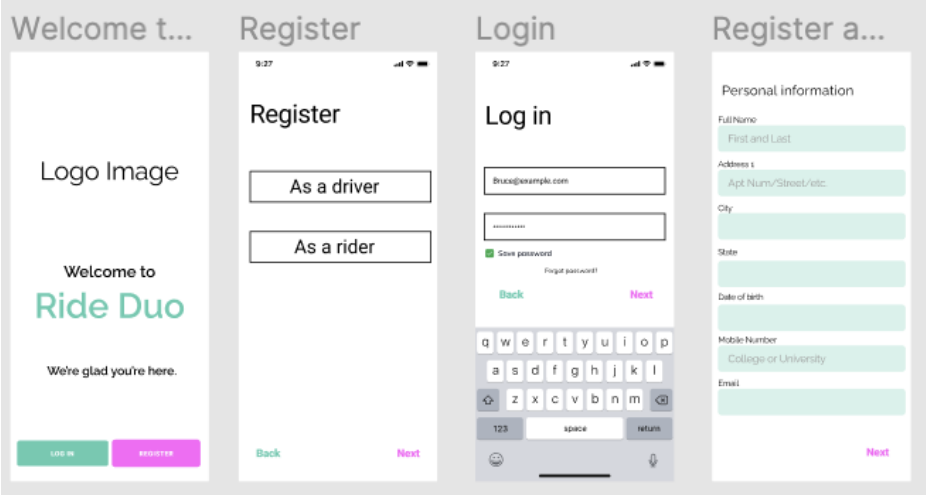
Given safety and cost as the two major user pain points, our group decided to design an app that enables rideshare within the USC community. Student drivers will get reimbursed for offering a shared ride to or from campus and student riders will get free and safe rides.

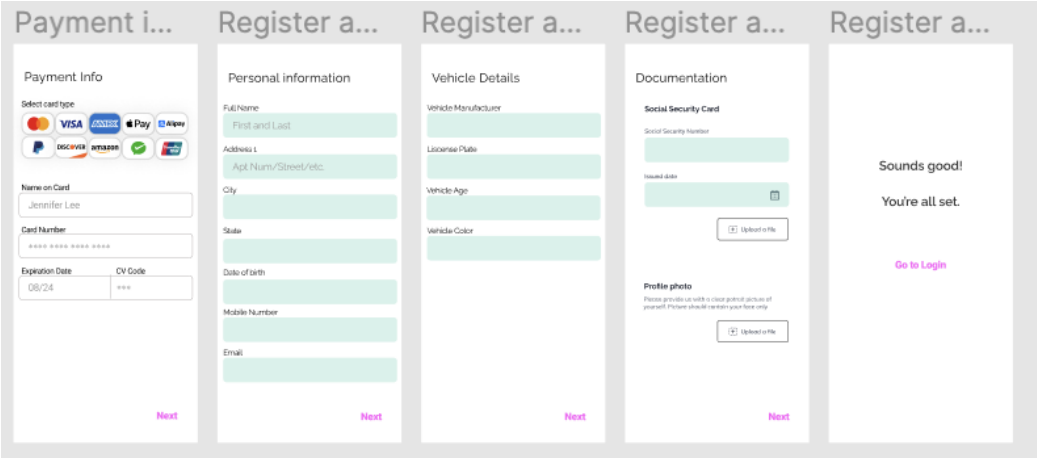
User Flow



Prototyping: Mid-Fidelity Wireframes

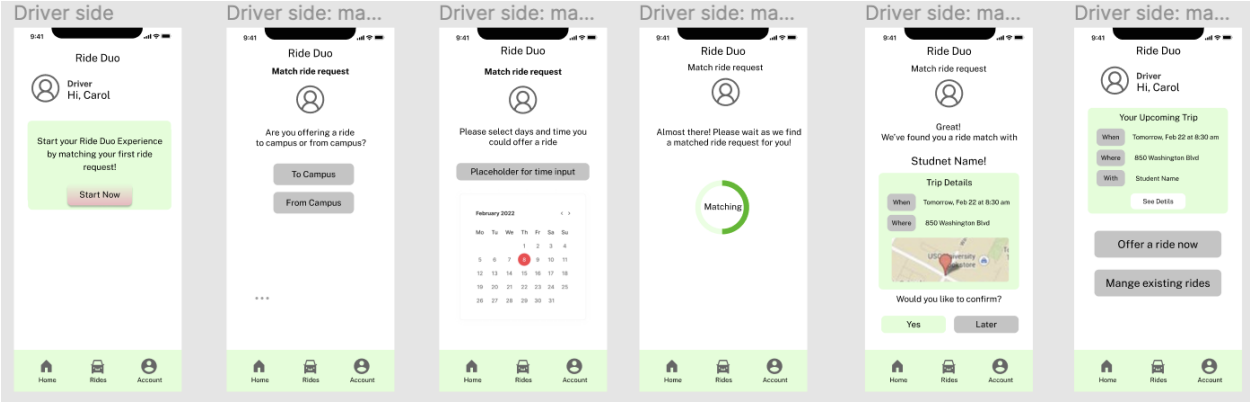
<u>Onboarding:</u>
The user could choose to either register as a driver or as a rider. They will then be prompted to enter their personal information: Riders will need to enter their home address and payment information; Drivers will need to upload their vehicle information in addition to basic personal information.





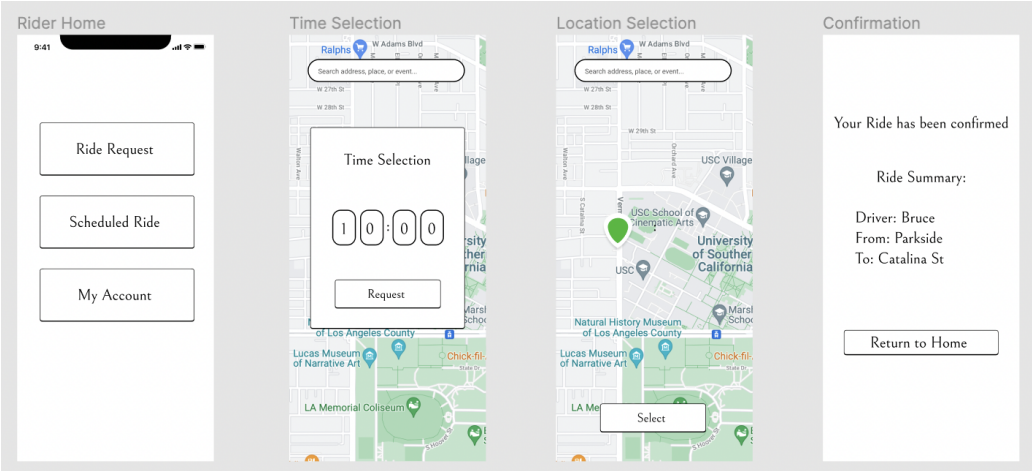
Driver Side:

The main function we designed for the driver side is matching with a ride request, which starts from the home page and follows the steps of selecting direction, choosing time and dates. The system will automatically match with posted ride requests and display all matched ride requests. Driver will be prompted to confirm the ride request once a selection has been made.



Rider Side:

The main function we designed for the rider side is posting a ride request. Similar to the driver side, it starts from the home page and follows the steps of selecting time and choosing locations. The system will post a ride request afterwards.



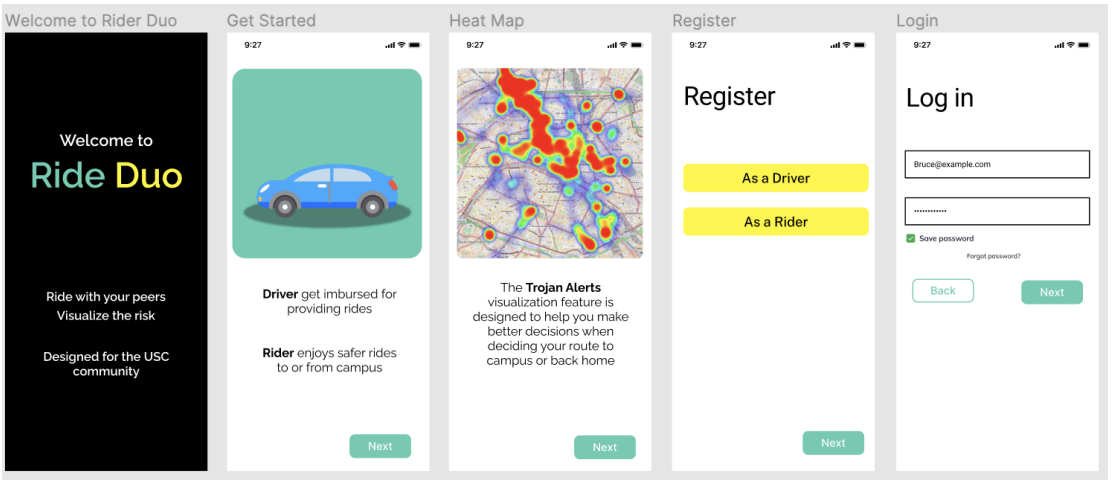
Prototyping: Some updates

Based on class feedback on improving color scheme, consolidating details of ride scheduling, we made the following updates to our wireframe. We also added a Trojan alert visualization feature to our app (please refer to final prototype).

Onboarding:

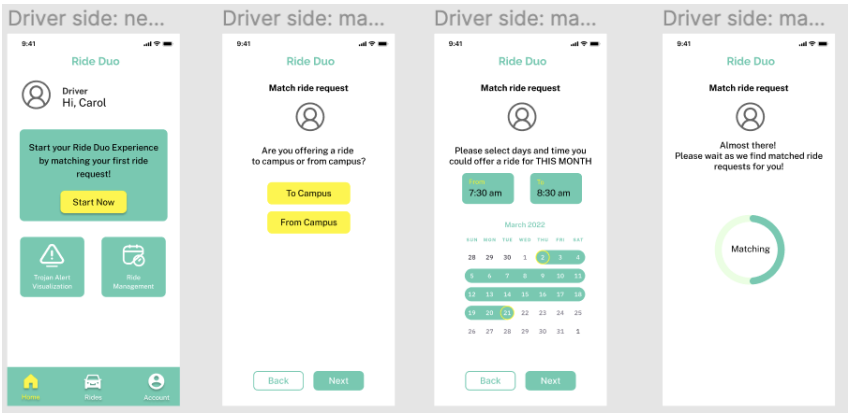
For onboarding a brief introduction of our product functionality was added.

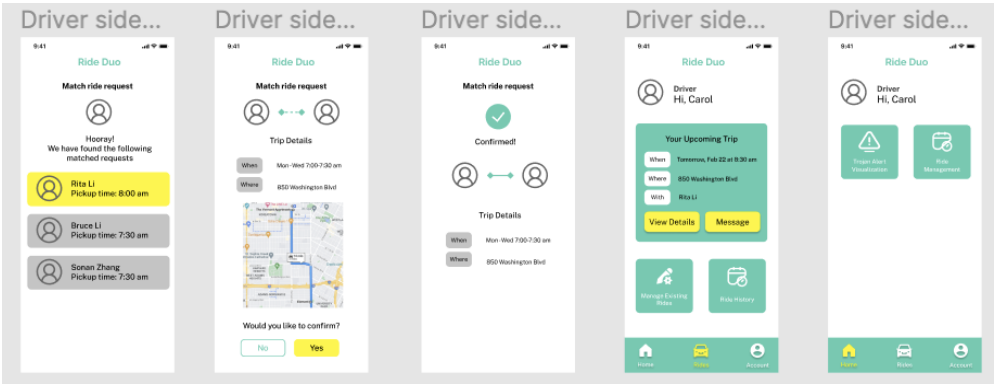
Update 1:



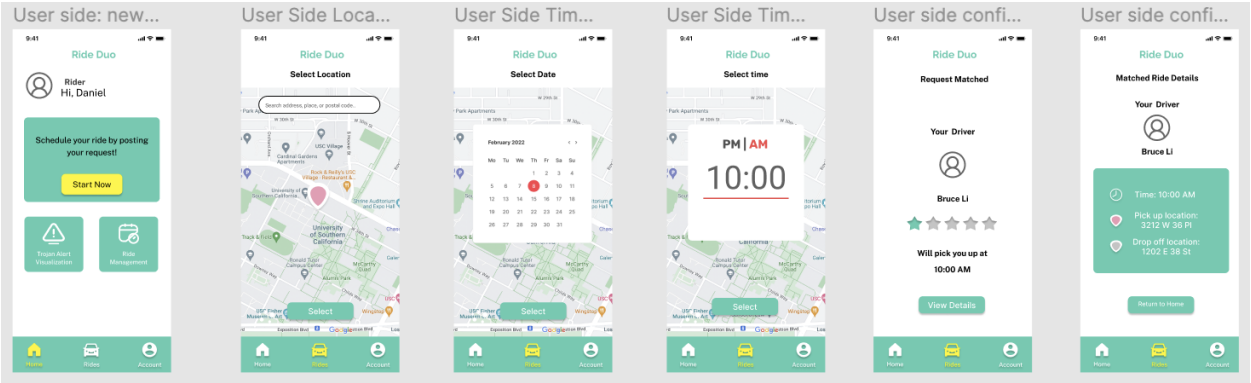
We decided on our color theme and applied it to both driver and rider sides. More steps were added to the ride scheduling steps.

<u>Driver Side:</u>





<u>Rider Side:</u>



Usability Testing (Bruce/Sonan)

After creating a prototype for our app, we then conducted usability tests with three perspective USC students. To standardize our testing procedures, we used the following testing script.

Testing script

- Introduction
  Thank you for participating in our usability test. As we have learned from many students living off-campus, a major concern is the safety issue commuting to campus either early in the morning or late at night. Since the Lyft Safe Ride program only runs within a certain area during a limited time, a lot of students are unable to enjoy the benefits of it.

  Therefore, we have designed RideDuo as the solution to this problem space, which pairs up student riders and student drivers to share rides to or from campus.

- Problem space
  We identified USC's commuting system as our problem space, and we designed this app to enhance a more efficient and safer commuting environment.

- Participant Information
  1) How often do you commute to school?
  2) By what method do you commute to school?
  3) How long does it take you to commute to school?
  4) If the participant drives to school: How much do you spend on parking weekly?
  5) Do you check Trojan Alerts on a regular basis to stay informed?

- Run the test
  Task 1: You need transportation to school. Please schedule a ride to school in the morning via the app.
  Task 2: As a driver, you would like to match with a ride request to USC.
  Task 3: You would like to see which part of the neighborhood around USC has more crime incidents in the recent week.

Results and Findings

From the three usability testing we conducted, we found that participants were generally clear about our app flow with minor mistakes and confusion along the way. The results were aligned with our expectations.

The onboarding process was easy and clear for participants. However, one of them asked if she could continue as a guest without registering.

For the driver side, participants were fine with the initial steps of matching with a ride request but were unsure what they could potentially get if they have completed one ride, as it was indicated in the onboarding process that they would get reimbursed. Participants were glad to have an interactive map that visualized Trojan Alerts. However, one of them mentioned that she was confused about the meaning of different densities of colors in the heat map mode.

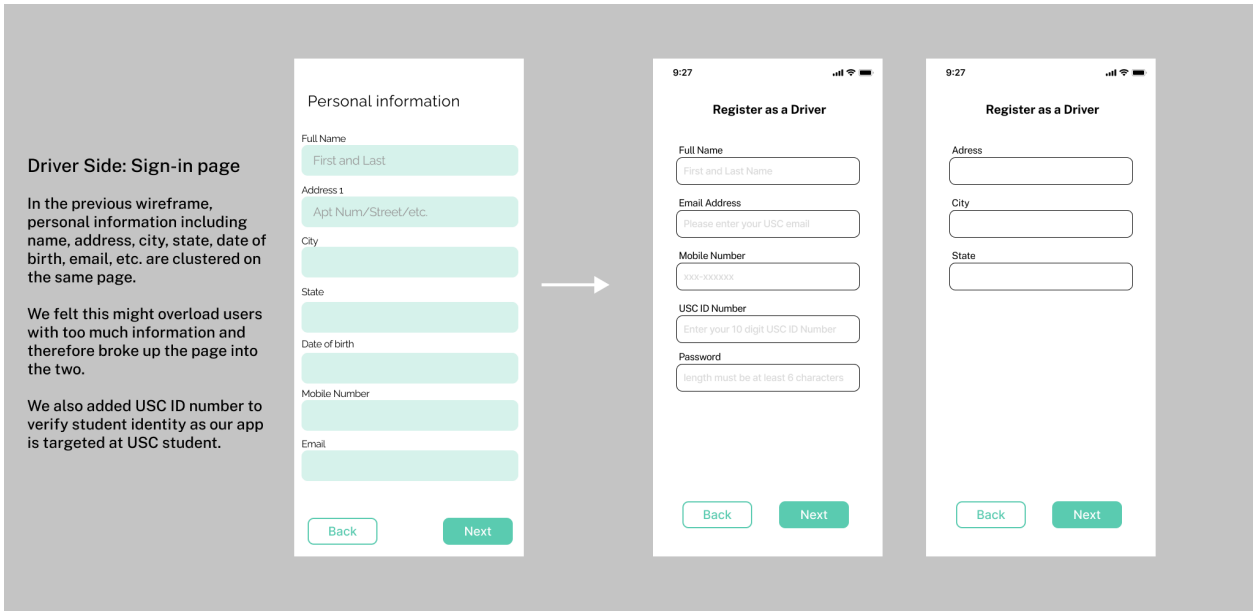
For the rider side, two participants were confused by the texts on certain buttons. On the time selection page, they were unsure if the time entered was am or pm.

The findings from our usability testing have pointed out several changes and improvements we need to make, including a clearer indication of rewards for student riders, further details on the heatmap.

Design iterations

Based on the feedback from our usability testing, we made the following changes to our wireframe:

Onboarding



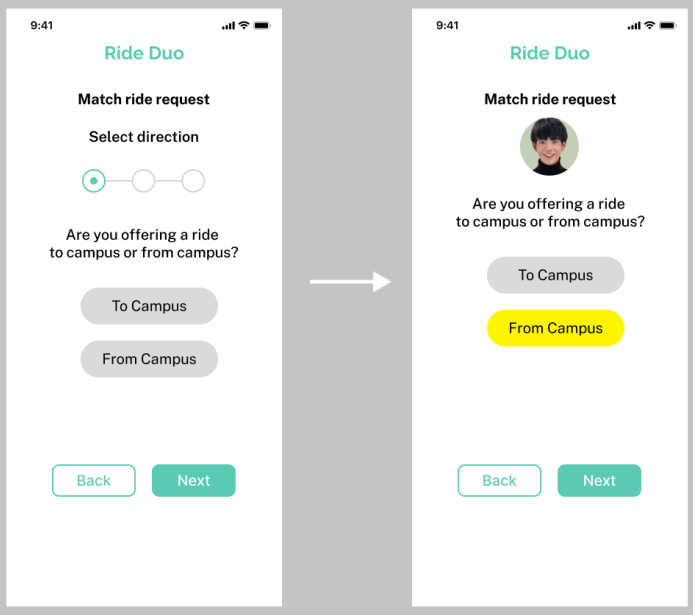
Driver Side

Driver Side: Match ride request

One participant mentioned that having a profile photo on every step looks a bit weired, and we agreeed

We therefore replaced the original profile photo with a progress bar to better inform users about their current status in the process of matching ride request, so that they know what to expect.

We also added a subtitlte for each step: select direction -select time-select date, etc.



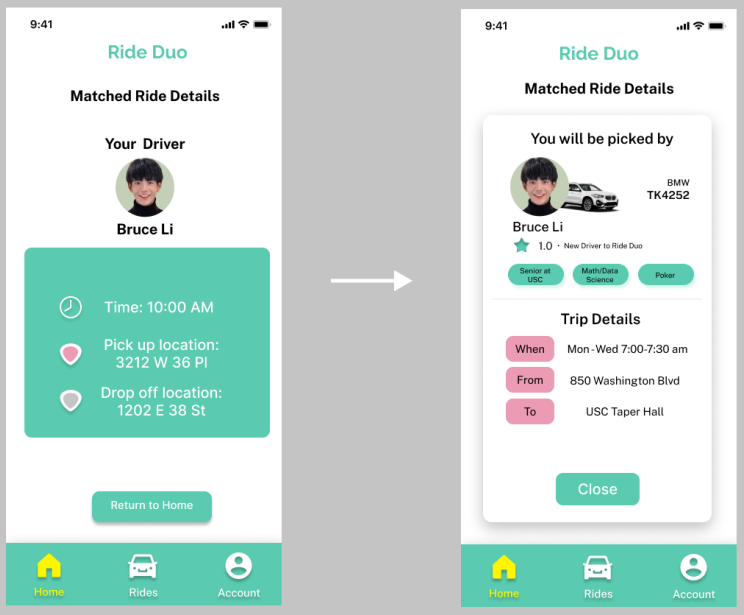
Rider Side

Rider Side: Matched ride request

One participant noted that the confirmation page of ride request is a bit unclear given the background color.

We therefore changed the design and used a transparent background.

We also added more details about the driver, including rating, and vehicle information to increase the sense of secuirty. We also included some personalized tags to give the driver some personality to create a friendly feeling within the USC commuity.



Trojan Alert Visualization

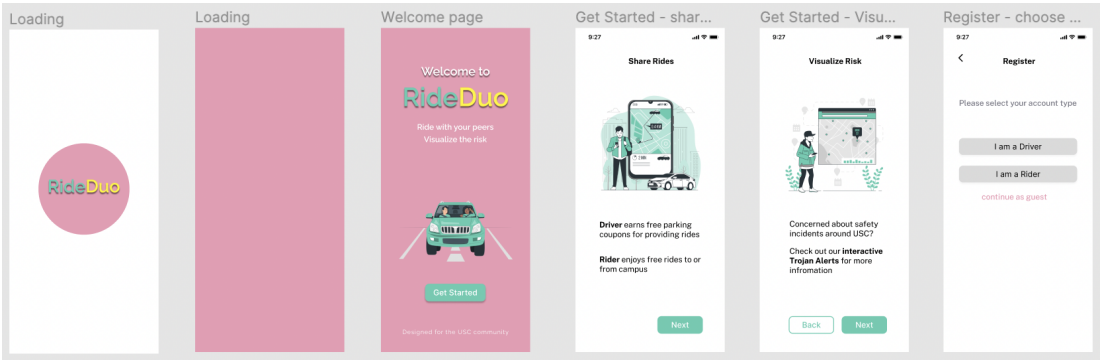
Trojan Alert Visualization: Heatmap

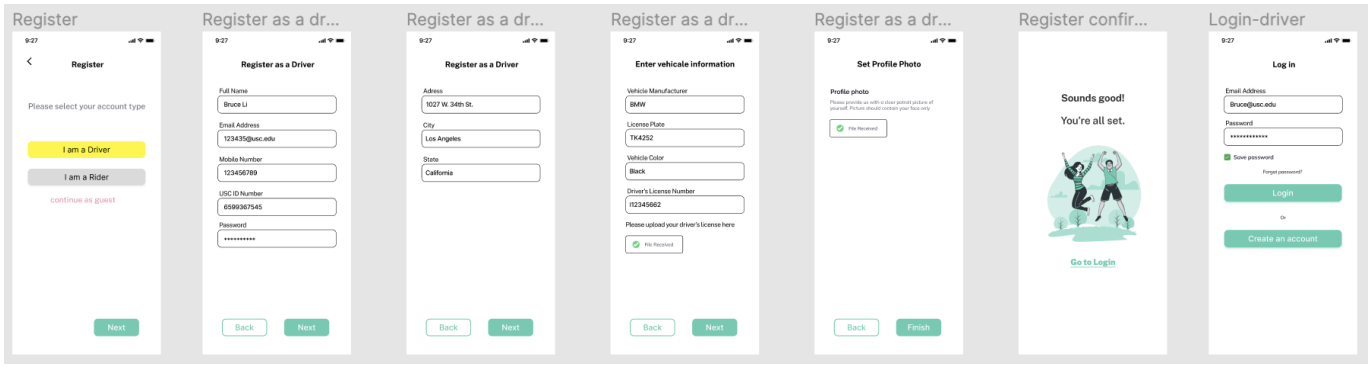
One participant asked about the exact meaning of different density of colors shown on the heatmap, a valid point we didn't expect.

We therefore added a legend bar that will display itself if hovering. Based on our observation, we hypothetically made the categorizations that areas with 20-30 safety incidents in the past 30 days would be given a red color, areas with 10-20 incidents would be given a green color and areas with less than 10 incidents will be given a yellow color.

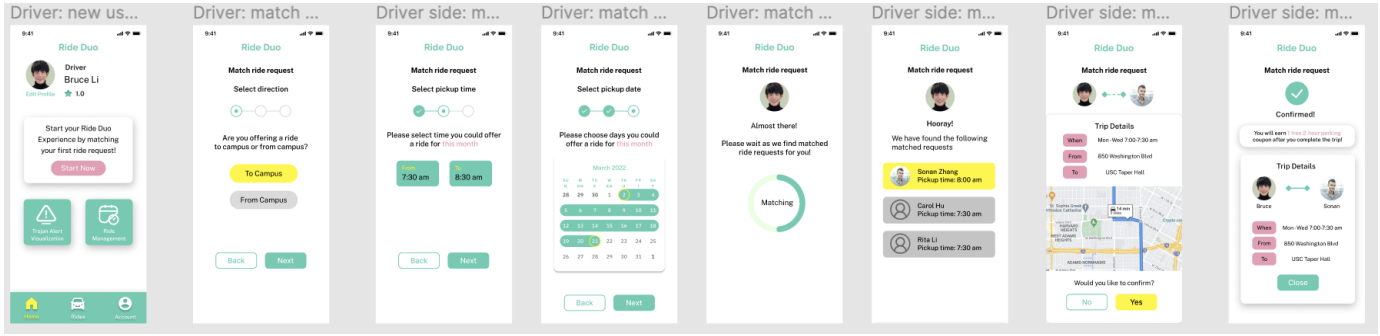
Final Wireflow

Onboarding

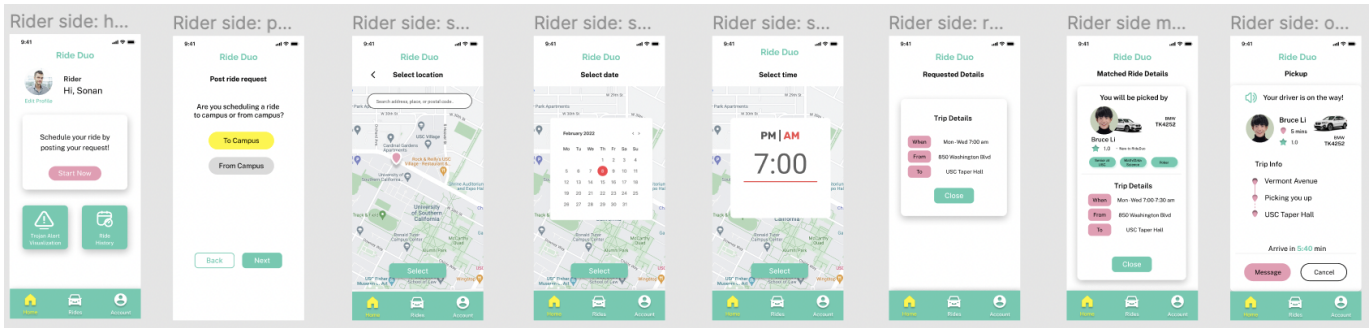


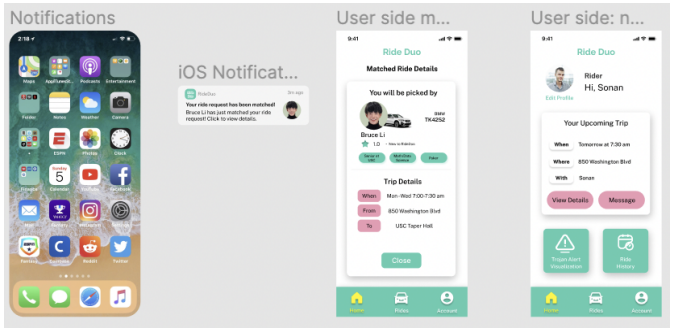


Driver-Side

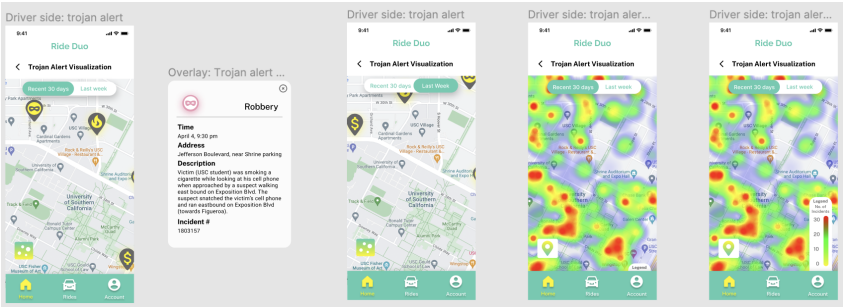


Rider-Side





Trojan Alert Visualization



Conclusions

Reflections

It is very rewarding to see ourselves thriving through the whole process of designing a solution to a current transportation problem. From initial brainstorming to user interview, from simple wireframe to final animated prototyping, we managed to see how our decisions, either on prioritizing product certain features or making changes to visual design, were guided by findings from user research and usability testing. We realized the importance of adopting the appropriate research methodology, for example in our initial user research, we would have more evidence to guide our product design if we could use a survey to reach a greater audience rather than conducting interviews.

In addition, we were surprised to find out that users were able to notice many details that we as creators were negligent in. Those details were sometimes critical to the overall user experience.

Next step

One question our group has is if this solution is possible to recommend to the USC administration as they will be offering the parking coupons to students or should riders pay a fixed subscription fee to enroll in this program?

If possible, we would like to further consolidate current functionality and develop other features of our app, for example enabling rescheduling or canceling of a specific ride and adding the reward page where free parking coupons were displayed on the drivers' side.

Links

Final Presentation:
https://docs.google.com/presentation/d/1-Lhih-DZo-ieN1NqVSwXHSn6Wi9NVG02RQf4FUOFkhE/edit?usp=sharing
Figma Link:
https://www.figma.com/file/dHuQqjCdhX2PVRb2ATvoZi/RideDuo%3A-Wireframe-2.0?node-id=322%3A4622