

## **D4: Design Statement**

**Topic area: Transportation**

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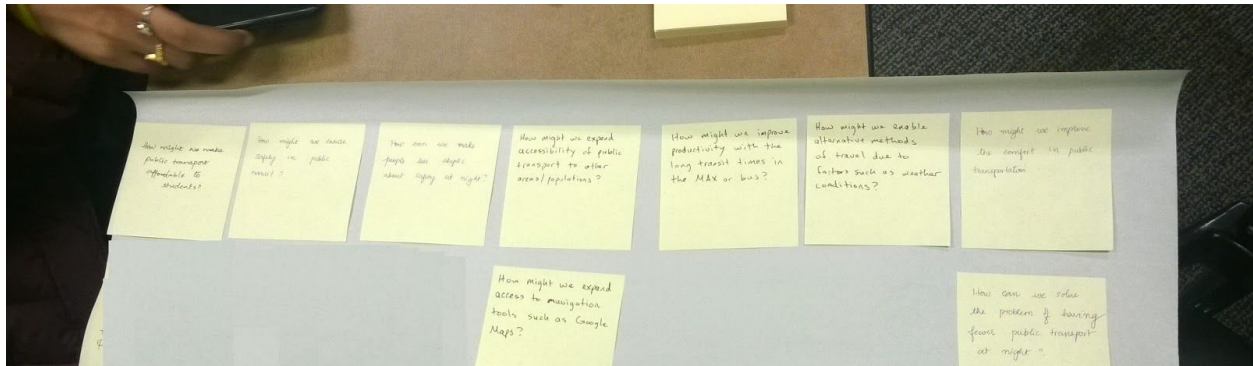
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## Part 1 : Brainstorming Documentation

### Brainstorming Session 1: “How-might-we” questions

1. ... make public transport affordable to students?
2. ... ensure safety in public transit?
3. ... make people less skeptical about safety at night?
4. ... expand accessibility of public transport to other areas/populations?
5. ... improve productivity with the long transit times in the MAX or bus?
6. ... enable alternative methods of travel due to factors such as weather conditions?
7. ... improve comfort on public transportation?
8. ... expand access to navigation tools such as Google Maps?
9. ... solve the problem of having fewer public transport at night?
10. ... improve the passenger experience at Trimet bus/MAX stations?

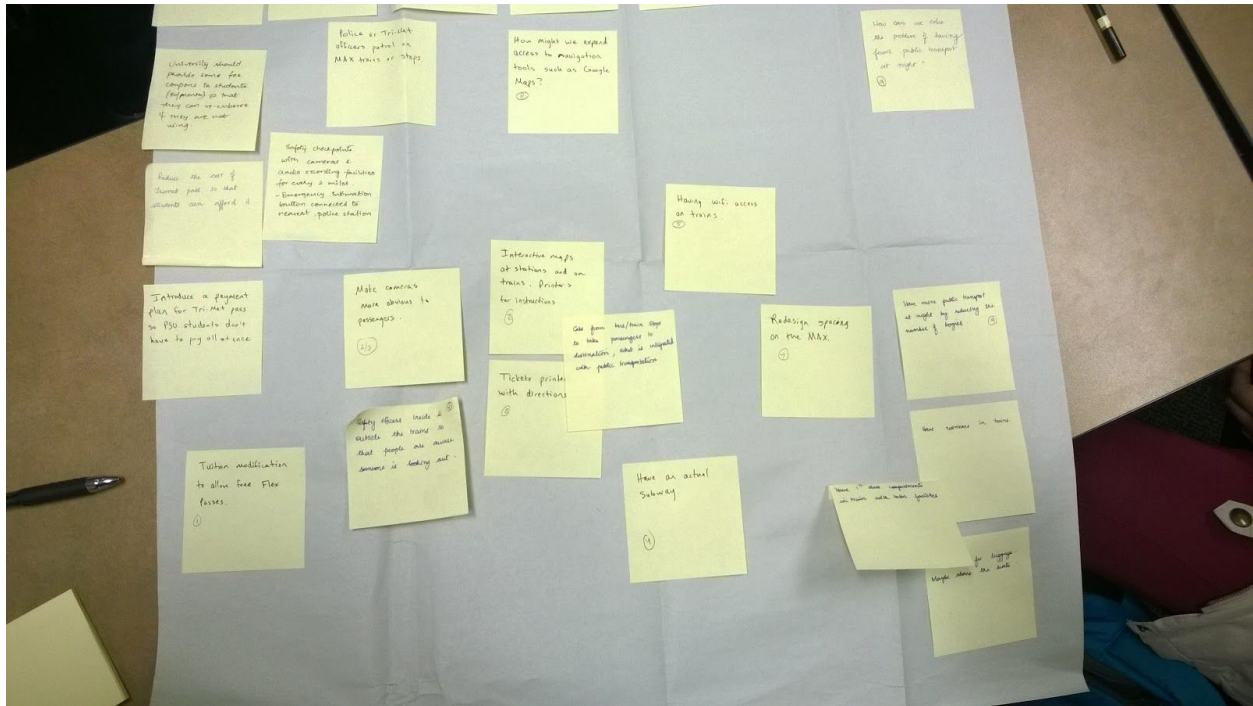


**Figure 1:** Facilitators and participants: Krishna, Matthew, and Pravallika.

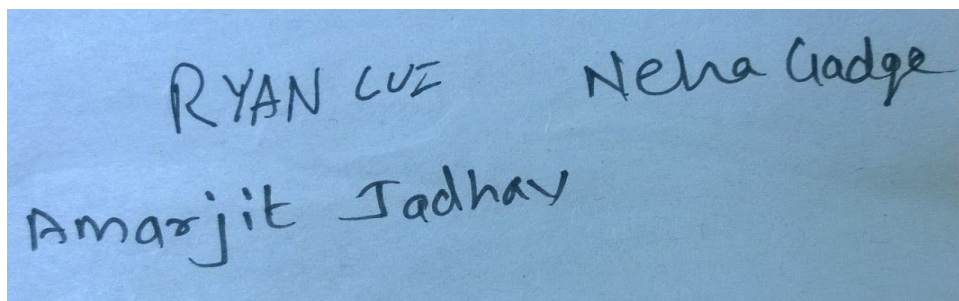
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HCI Design Project

## Brainstorming Session 3: Solution 2



**Figure 3.1:** Facilitators: Krishna, Matthew, and Pravallika. Participants: Ryan, Neha, Amarjit, and those mentioned as facilitators.



**Figure 3.2:** Participant signatures.

Additional design solutions that are not identified in session 2 are obtained in this brainstorming session through interaction with actual users. Ryan Lui, Amarjit Jadhav and Neha Gadge participated in this session and helped us in moving forward by adding some more possible solutions.

## Part 2 : User Needs Summary

### *1. How might we make public transport affordable to students?*

During our interviews we spoke to students who were talking about how transportation is not very affordable to them. They mentioned that Trimet quarterly fee could be lower.

### *2. How might we make people less skeptical about safety at night?*

During interviews almost everyone we interviewed spoke about how they are concerned about their safety. Either in public transportation or walking alone at night.

### *3. How might we improve the passenger experience at Trimet bus/MAX stations?*

People were expressing their opinion that it would be easier if there are better facilities at bus/train stations.

### *4. How might we expand access to navigation tools such as Google Maps?*

During interviews people told that even though we have google maps it would be helpful if there are maps in common places.

### *5. How might we improve comfort on public transportation?*

Some of our interviewees discussed their issues with riding the MAX. These issues related to things such as spacing and seating.

The user needs we chose for story boarding are the ones we heard most during our interviews and also was highlighted in our personas. So we had decided to go with issues like affordability and safety in design part. By discussing with our team we were able to select the most important ones.

## Part 3 : Design Alternatives

The following are the 3 design alternatives that we are moving forward with after the brainstorming sessions.

1. PSU Carpooling app
2. Safety checkpoints with cameras and emergency button
3. Redesign ticket stations: print directions, interactive map, etc.

### 1. PSU Carpooling app

An app that facilitates providing free rides for the people (either Student/ Professor/ Anyone who is a part of PSU) to/from the college campus. People provide their basic details like name, PSU ID, address, contact number, PSU email, and any government issued ID number while registering in the app. In addition to this details, the ride sharer provide additionally their vehicle details. When a user needs a ride, they post their current location and time of pickup. Similarly, when ride sharer is available to offer a ride, they post the time, location and number of seats available. When a user sees a ride offer, they can request for the ride and ride sharer can either accept/decline the request. This app facilitates the user to book more than one seat in a ride. Ride sharer gets monthly summary as total number of points earned in the month and number of pickups. They can also accumulate earned points and redeem them for rewards such as a free meal in campus, coupons, reimbursement for gas.

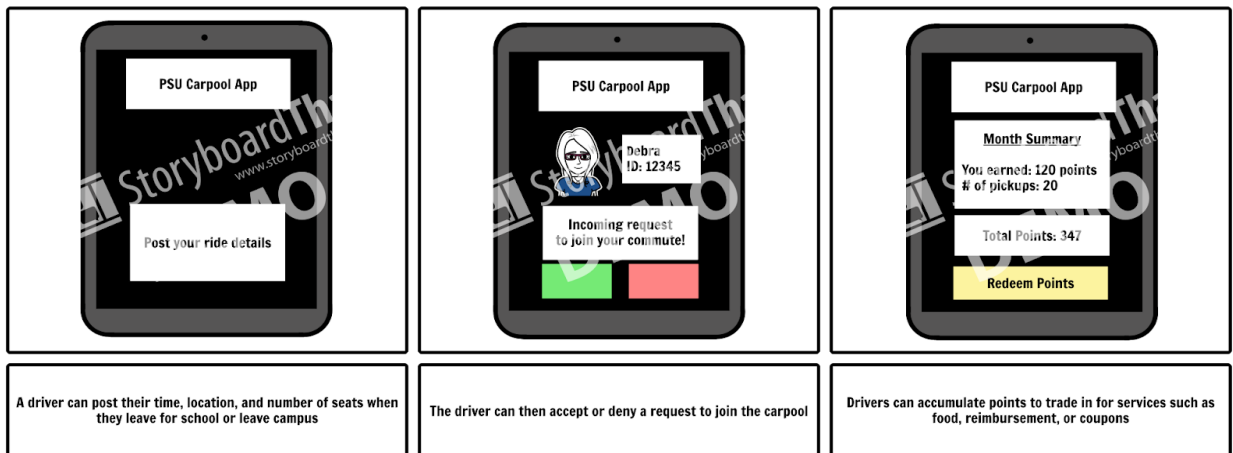
#### Storyboard #1:



It is evident from the storyboard that the person is short of money and using this carpool app he got a free ride to the campus. He saved money and time and also he's comfortable. This use-case is constructed from ride requester's perspective.



## Storyboard #2:



The ride sharer is posting his location, time and availability of seats. He has an option to either accept or decline the incoming request. He gets month end summary and can redeem the points. This use-case is developed from rider sharer's perspective.

- The problem identified in D3 is that students cannot afford to use public transport on a regular basis to go to college campus. So, considering this PSU Carpooling app solution, students can get free rides every day to and from the campus. It is also useful for students who stay away from campus and work outside the campus.
- This solution best addresses the affordability issues faced by a lot of students. This solution also saves time for the students and avoids waiting for MAX/Trimet. This can be also viewed as a better option during rainy days. This solution is designed in a broader perspective and can be used by anyone who is part of PSU, people with disability, people with children, etc.



## 2. Safety checkpoints with cameras and emergency button

Safety checkpoints are constructed for every 1-2 miles in inner lanes. Each checkpoint has an emergency button and live relay to the nearest police station. Police monitor the screen regular and can inform to patrol if there is an emergency situation. This ensures safety of public even during nights.

### Storyboard #1:



A girl is walking alone at night on a road with no street lights and her phone is also dead. Suddenly she saw a bandit coming towards her. She's really tensed and quickly she walked to the nearest checkpoint and hit an emergency button. As soon as the button is pressed, an automatic alert is sent to police notifying an emergency from specific location. Police arrived within no time and caught hold of the bandit.

### Storyboard #2:



Police are monitoring the situations at all checkpoints. They saw a guy threatening a girl in the screen in a particular location. They immediately sent an alert for a rescue operation in

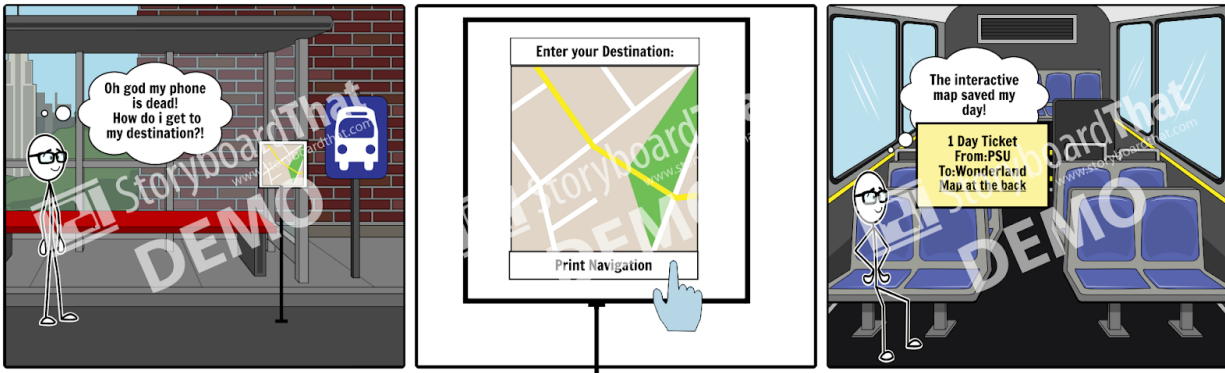
that location. Police can rescue her immediately and she's feeling safe now. Though she is not in a situation to press the emergency button, she got help immediately.

- The problem identified in D3 is that people feel that it is not safe to travel at night. For example, even if they use MAX, once they come out of the station they have to walk alone home at night and they are really worried about safety. With the introduction of these safety checkpoints, there is also a continuous monitoring of inner lanes.
- This solution provides an answer to 'how might we make people less skeptical about safety at night?' There is an emergency button and also live relay to police station that is monitored continuously. This solution additionally addresses the safety issues in the day also. The data from live relay can be stored for any future reference also. This checkpoints are like hidden police eye.

### 3. Redesign ticket stations

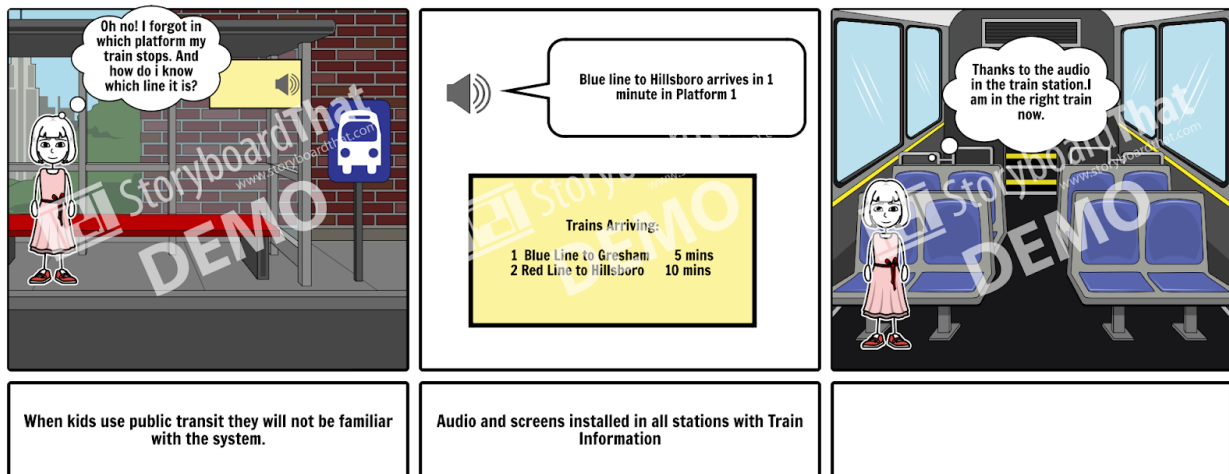
Ticket stations can be redesigned to providing print directions, interactive maps, information screens and announcements facilities.

#### Storyboard #1:



A person is new to a location but unfortunately his phone is dead and now he's is confused how to go to his destination. With introduction of interactive maps in the station, he entered his starting location and destination and got a route map that can be printed at back of the ticket. He's happy and confident now.

#### Storyboard #2:



It is difficult for kids and people new to a location to understand about the transportation system in that area. Introduction of announcements and screens help people not to get confused and helps their experience of travelling alone. Little kid is confused on which platform should she board the train and which train to get into. With the announcements and information on screens she boarded the correct train.

- The problem identified in D3 is that there are certain conditions where public transportation is not always reliable. This solution helps reduce daily stress and makes public transportation more reliable in that modern tools become publicly accessible.
- This solution improves better user experience and comfort using public transportation. It also provides better accessibility to google maps. In these cases, navigation tools such as printed maps are not always reliable when you need to look up a specific location and need directions to get there. This is solved by redesigning the ticket stations so that these tools are provided for people without internet access.

## Part 4 : Design Choice

The design solution we chose to move forward with in our design project is the PSU Carpooling App. This design solution focuses on two how-might-we questions:

- *How might we make public transport affordable to students?*
- *How might we enable alternative methods of travel due to factors such as weather conditions?*

The carpooling app is a service that allows students at PSU to find free rides to or from campus from other students. This app provides a solution to the two how-might-we questions listed above: free rides are affordable and are an alternative to riding the MAX or bus. Drivers can benefit from providing these services from PSU.

The provision for this program can be handled by organizations partnering with PSU such as environmental organizations, or PSU alone. The incentives that this solution provides would benefit everyone. Ride sharers can ride for free, drivers can earn perks and reimbursement for gas money they are already using anyway, PSU would deal with fewer parking spaces that are full, and there would be fewer cars on the road, reducing negative impact on the environment.

We decided on the carpooling app over the checkpoint stations and the redesigned ticket stations because we felt like it was a solution that matched our ambitions of exploring a newer or innovative method of daily travel. It also touched on a few other issues we gathered from our observations, interviews, and problem statement, such as improving comfort and reliability during unpredictable circumstances.

## Part 5 : Reflection

The brainstorming sessions were very productive to our design project. The second session with just our team members didn't differ too much between the third session with outsiders. The contributions from the others were helpful because they provided three extra sets of perspectives and experiences of daily travel. Both of these sessions produced the ideas we chose for our storyboards. Although we did come up with great ideas during our second brainstorming sessions, the third sessions provided not necessarily more "valuable" ideas, but some fresh ideas. One thing we would do differently next time would be to set up additional brainstorming sessions with other different outsiders.

To decide on our three design ideas, we had our brainstorming ideas laid out in a chart when we were deciding the 3 design ideas. We wanted to make sure that 3 most important issues make it to the storyboard. So we discussed about the issues that most of the people were concerned about in the interviews and our observations. Also by looking at our how might we questions we were able to narrow down our most important issues. And then we went through all the ideas we came up with and shortlisted a few which each of us thought was good. Later we discussed why it was important and finally decided on three ideas.

We learned a few things from creating our storyboards. These were mainly scenarios that we had to come up with in order to better grasp how our solutions can be applied to the real world, such as how to redesign ticket stations, and how practical the carpooling app would be. We relied on the PSU student persona to influence our creation of the storyboards. The one solution we decided on was the result of a group discussion both online and in person. The discussion wasn't too extensive or challenging in making the final decision, since we all had a similar mind and interest in the carpooling app.