OneRideAway

Sustainability Project: Mobile Application Proposal
November 1st, 2012

Compiled by:
Ai Cheng Wang, Sarah Alebachew, Sungyoon Kim,
Phongsakorn Liewsrisuk, Oleksiy Khudoliy, Caroline Okocha

Comment [l1]: Good job! 3.6. I love the idea, and it's clear that you put a lot of thought into the design and approach. Make sure you proofread, though – I felt like your written proposal wasn't as polished as the oral presentation you gave.

Letter of Transmittal

Sungyoon Kim, Ai Cheng Wang, Phongsakorn Liewsrisuk,
Oleksiy Khudoliy, Caroline Okocha, Sarah Alebachew
HCDE 333
Address: University of Washington

Date: October 30th 2012

Name of Client: University of Washington Community
Client's Address: Department of Human Centered Design & Engineering 428 Sieg Hall Campus Box 352315

Purpose: To propose our team's sustainability project

Dear Ms. Owen,

We are submitting this letter to propose our sustainability project, "OneRideAway." This application is designed to provide the University of Washington community with a convenient and environmentally friendly way to commute. We hope our project will successfully meet all university commuters' needs, decrease traffic congestion around campus, and reduce their carbon dioxide emission.

In this project, we will conduct two surveys: one pre application survey and one post application survey among university community members. Through survey analysis, we will reflect on the difficulties and preferences of commuting to campus and design the OneRideAway application to solve these issues and address the commuter's needs as much as possible. Compared to commuting to campus alone, this application will enable users to carpool in a more effective way. This project is expected to save energy, create a better campus environment, and reduce traffic around the campus.

Included in this report are the background, problems, features of the application, and cost analysis. Thank you for taking the time to consider our proposal.

Respectfully yours,
Sungyoon Kim
Ai Cheng Wang
Phongsakorn Liewsrisuk
Oleksiy Khudoliy
Caroline Okocha
Sarah Alebachew

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Executive summary

OneRideAway is a sustainability application developed by our team of engineering seniors at the University of Washington. We are addressing the problem of large amounts of CO2 emission into the atmosphere from commuters that drive to campus daily ~~and~~ as well as the lack of a convenient application that organizes carpools. From a UPASS survey taken in 2010, we found that 21% of the total population drives to campus alone. Therefore there is a large market to promote sharing rides through our app. This mobile app will allow users to have an easier, convenient, and safer option to find a ride to share.

What makes this app stand out from other rideshare mediums is that OneRideAway is only available to UW staff and students. You must have a UW Net ID to log on to the app and create a profile. This ensures each users safety because each ride is documented in the app's database and traceable to each user. The ability to chat, rate, and review the other users makes the experience more personable and encourages future organized ride shares. The cost of each trip is calculated based off of the pick-up and drop-off locations, the amount of people in the car, and the current price of gas. This trip cost will be automatically charged to the user's ~~husky~~ Husky card account once a ride is accepted on the app. This eliminates any discrepancies of how much a trip costs and when a driver will get their money.

The steps we will take to create this application include student surveys, talking to UW administration, creating a mock design, software designing, testing the application, and marketing the product. The student surveys are to make sure we are reaching the largest market with the designated pickup and drop-off locations, types of smart phone users, and willingness to share a ride. We will then make sure we can link UW Net ID's to this application by proposing it to the UW administration. After we create the mock design and get a final design set, we will start the software design. We will then test the application with a group of students on campus. Once the survey analysis is complete, we will market our final product by posting flyers and posters and purchasing ad space on similar mobile apps such as OneBusAway and the UW Mobile app. Once this application proves to be successful we hope to extend it to other internal networks of institutions and companies such as Boeing, Microsoft, or other universities. We hope you closely consider our proposal and thank you for taking the time to read it.

Comment [I2]: Good exec summary, but keep in mind that executive summaries usually include a brief overview of the cost as well.

Introduction

Background

It is a known fact that driving provides the most convenient mode of transportation for students who have to commute from far distances to the University of Washington (UW). In fact, the results from a 2010 U-PASS survey reported that 21% of the total population ~~in~~ of the UW (67,265 students, staff, and faculty) drive alone (Figure 1). Unlike buses, driving provides a continuous, faster and more comfortable way to commute to and from campus. However, with benefits come some disadvantages, some of which are detrimental to the environment. More specifically, vehicles produce carbon emissions, which are gases in the atmosphere that can contribute to global warming. On average, 8.92*10-3 metric tons of CO2 are emitted per gallon of gasoline. The U~~niversity of Washington~~ is a campus striving to reduce its ecological footprint. Thus, there is an incentive to provide a way to reduce the amount of emissions from vehicles that commute to campus.

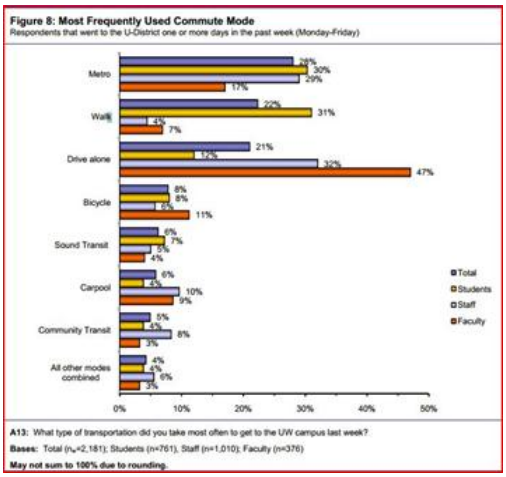


Figure 1. 2010 U-PASS Survey Summary Report. February 2011

The Problem

As mentioned earlier, 67,265 students, faculty and staff were reported in 2010 to drive alone to campus. The problem that arises here is that these drivers are not utilizing their full seat capacity and are thus contributing to carbon emission at a greater rate than a carpooling vehicle. The other issue that exists is the lack of a convenient tool that organizes carpooling for those who wish to either provide or receive a ride to campus. There isn't a community network established that allows individuals to contact others for a ride to campus nor is there a convenient payment method set in place to provide to the drivers.

Scope

Our team will create a systematic application for UW students that provides an easier way to commute. This application enables riders to find a driver who can take them to UW campus by selecting a meeting spot. The riders also can check drivers' ratings done by other users and select their drivers accordingly. The cost of ride will be charged to the users' husky I.D account and it will depend on how many people they ride with, price of gas, and distance. This application is not only expected to provide UW students an accommodation for their commuting to school, but to also reduce carbon dioxide emissions by encouraging carpooling among UW students; therefore, it will contribute to provide a better environment for our campus community as well. To execute this project, our team will hire software engineers to develop the application, and also

advertise this application to students on the campus so that this application can be integrated into the university community more readily.

Format

~~This report will discuss our~~ We propose to create~~creation of the~~ OneRideAway, a user friendly app that effectively organizes carpools to and from the UW for students, staff and faculty. First we will discuss the technical information regarding the app, which highlights its key design features and provides a snapshot into the user interface functionality. Then we will provide a statement of work which will discuss the process in how this proposed project will be conducted. Lastly, we will also provide a cost analysis that will provide all the cost related requirements to carry out the design on OneRideAway.

Technical Information

Survey

~~Two major surveys will be taken place~~We will conduct two major surveys:~~,~~ the pre app design survey and the post app design survey. Both of the surveys will be conducted through UW Catalyst Tools because a majority of the students and faculty ~~have familiarization~~are familiar with Catalyst and can easily access the survey through their Catalyst Tools~~;~~. In addition, our team can easily collect all the survey output results. The first survey will be conducted before the release of demo of our OneRideAway app, and the second survey will be conducted after the release.

1. Pre App Design Survey

The purpose of the pre app design survey is to collect a sufficient amount of relevant data that will give our team a basic picture to design our app OneRideAway. All the UW students and faculty~~ies~~ will receive this survey invitation, and their responses to this survey are completely voluntary.

1. 1 Pre App Design Survey Sample Questions

- What means of transportation do you take to come to UW campus?
- How long does it take you to come to the UW campus?
- Do you feel comfortable to carpool with other UW students or faculties?
- If so, where do you like be picked up on the UW campus?
- If you have a car, are you willing to let other UW students or faculties carpool with you?
- Do you own a smartphone or personal tablet? If so, does it run Android or OS?
- Would you like to sign up for the demo ~~try out~~t of our app OneRideAway?

1.2 Pre App Design Survey Data Analysis

After we receive a good amount of survey responses, our team will conduct a data analysis to help us to develop our app. That will help us to extract information we need to figure out good pick-up and drop off hot spots, and to choose the app operation platform.

2. Post App Design Survey

The purpose of the post app design survey is to collect sufficient ~~amount of~~ feedback and evaluation from the people who signed up for the app demo try out. We will use these responses to modify and improve our app design. The responses to this survey are completely voluntary.

2.1 Post App Design Survey Sample Question

- Do you like the app user interface?
- Is it easy for you to navigate around the app?
- How many times did you use this app?
- Do you like the user rating system?
- How do you like the inter-app chat system?
- Are you looking forward to the finished design of OneRideAway?

Feature

In order to make the OneRideAway application successful and useful, our team came up with six excellent features that will make the users' commuting experience much easier. These features include a simple and user friendly interface, city hubs, internal chat, account system linked to myUW, and an option to submit feedback.

1. Simple and user friendly interface

The most important thing that we can provide to users (in our case the UW~~University of Washington~~ population) is simplicity. The reason why most of the mobile apps are successful these days are because they are simple and user friendly. Using the mocks for the app that will be created by hired designers and the surveys described from the above section of the proposal, we will engineer such an app that will be simple and user friendly.

2. City hubs

City hub is an idea where each city will contain a designated region where students or faculty can easily be picked up or dropped off by their commute passengers. This will ensure house anonymity of each passenger, making pickups and drop-offs more comfortable. Additionally, it will ~~make easier on~~ provide convenience for the driver~~,~~ because it will require memorizing only few locations where he or she has to drive. Lastly, each hub location will be created based on the students' surveys and on users' in app feedback.

3. Internal chat

Under each hub's destination ride topic the user will find an online chat feature, where he or she can discuss the details of the ride with their driver. Communication is a top priority for the OneRideAway application~~,~~ because it provides safe and healthy environment, in which students and faculty members will not be pressured to ~~take on~~ride with people who are complete strangers to them. To be able to talk to your commuters before the ride will reduce some of the stress when you meet people for the first time.

4. Account system linked to myUW

With the agreement of University of Washington staff, OneRideAway application will allow only people who have myUW accounts to login. This will help uniquely identify each person, and reduce the threats of spammers and harassers. Additionally, each user will be able to pay for their ride through their husky money management account allowing fast and easy access to commuting.

5. Reputation system
Each driver and passenger will have their own reputation system. On one side, this system will ensure safe commute for the passengers, since they will be able to read a review about driver's skills. On the other, this reputation system will help drivers easily choose safe and non-disruptive passengers.

6. Feedback
To improve OneRideAway application each user will be able to leave their own feedback about the system and raise any concerns or problems that they might've encountered throughout the app. That way our engineers will be able to gear this application towards a more user friendly environment for the students and faculty members.

Mock Design

1. When the app launches, it immediately displays the following screen (Figure 2).
2. Click "Log in with your UW NetID" button to login.
3. Navigate the app with the buttons at the bottom: New Ride, BookMarks and Search (Figure 3).
4. Clicking on the New Ride Button will display the following screen (Figure 3).
5. After completing the required information, click Post Ride at the bottom right to post.
6. Navigate the app with the buttons at the bottom: New Ride, BookMarks and Search (Figure 3).
7. Clicking on the New Ride Button will display the following screen (Figure 3).
8. After completing the required information, click Post Ride at the bottom right to post.
9. Clicking the Search button will display the following screen (Figure 4).
10. Clicking the Search button will display the following screen (Figure 4).
11. Click on a car icon to see the name of the driver, their rating, the pickup and drop-off location, the leaving time and the seat space available (Figure 4).
12. Search for more drivers in other areas by dragging and zooming the map.
13. Click List button on the upper right to navigate to list interface on the following page.

Figure 2. Mock design: login screen (OneBusAway).

Comment [I3]: Nice integration with your figure.

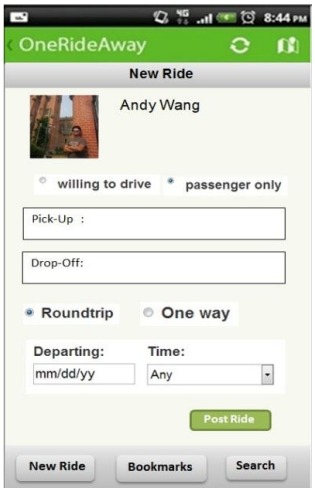


Figure 3. Mock design: Create a ride (OneBusAway).

Figure 4. Mock design: City hub map (OneBusAway).

14. Clicking the List button will be display the following screen (Figure 5).
15. The Driver is listed on the left; the destination, leaving time and space available are shown in the middle; the rating for the driver is displayed on the right (Figure 5).
16. Click the profile picture of the driver for more information and reviews of the driver.
17. Click on Map button on the upper right to go back to the previous Map interface.
18. When viewing the profile information, the reviews of the driver can be read at the bottom of the interface (Figure 6).
19. Estimated trip cost, Willing to Drive, Pick-Up Hot Spot and Request Ride button are displayed in the middle while profile picture and Chat with Driver button are shown on the left (Figure 6).
20. Click Chat With Driver option to chat with the driver.
21. Click Request Ride option to request for ride. Note: Only one ride can be requested per passenger.

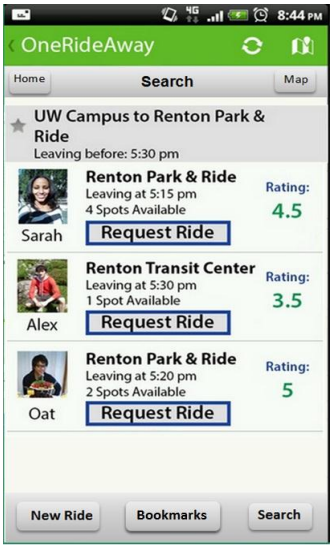


Figure 5. Mock design: Ride options (OneBusAway).

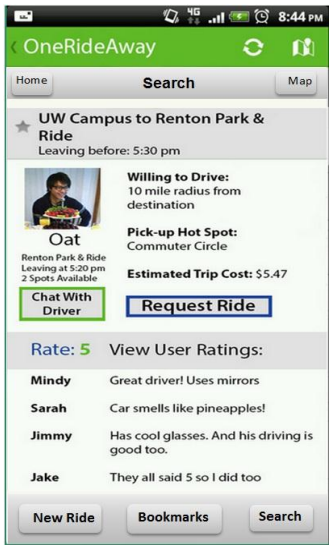


Figure 6. Mock design: Ride details (OneBusAway).

Statement of Work

The scope of work in creating OneRideAway includes planning, surveying students, designing a mock up, testing the user interface, redesigning the mock up and finally implementation. Our team will hire software engineers to develop the application and to also advertise this application to students on the campus. We will carefully review our cost analysis in pursuing this project. This project is non-profitable and meant to be designed for the convenience of the university community. The timeline for this project is provided below in Figure 7.

Comment [l4]: This would be a great place for a bulleted list!

Project Timeline

Comment [I5]: Make sure you introduce your figures before you include them.

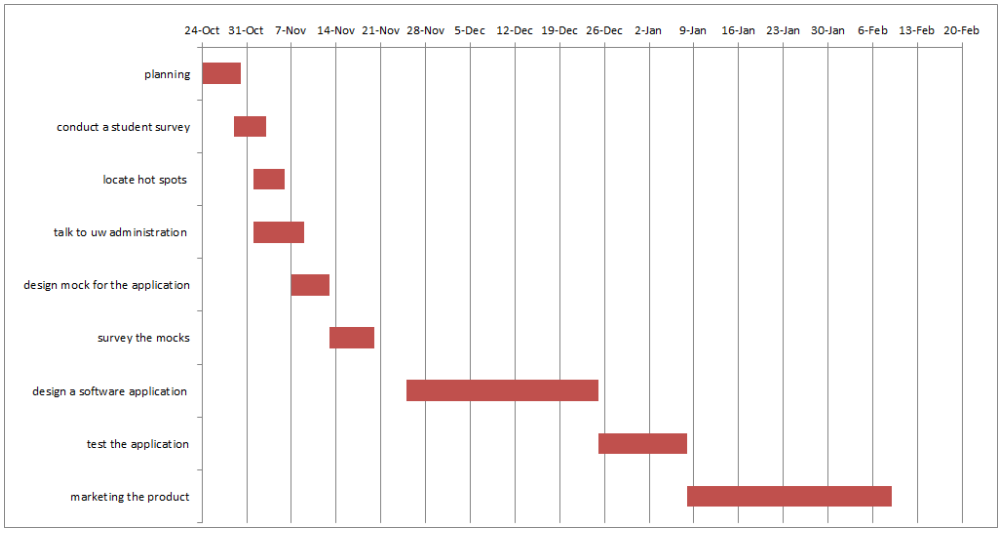


Figure 7. Gantt Chart.

Personnel Information

Ai Cheng Wang, senior, electrical engineering major, UW.
Ai Cheng has solid understanding of the fundamentals of electrical engineering and its related disciplinary, mainly concentrating on power electronics, electric devices, and sustainable energy. He has obtained much laboratory and project design experience along his course works.

Sarah Alebachew, senior, electrical engineering major, UW.
Sarah has experience in electrical engineering fundamentals with a focus in power electronics. She has had experience with making android applications in her EE courses. She has developed contacts with many individuals with experience with programming and software design.

Sungyoon Kim, senior, electrical engineering major, UW.
Sungyoon is concentrating in power electronics and has an internship experience at Samsung Engineering regarding to his concentration area. He also served in the army and developed his leadership while serving as a platoon leader.

Phongsakorn Liewsrisuk , senior, electrical engineering major, UW.
Phongsakorn has an associate of science in Computer science with internship in software development. His interests lie in Human Computer Interaction, particularly connecting user interface with architecture.

Oleksiy Khudoliy, senior, computer engineering major, UW.
Oleksiy is graduating with Computer Science degree this fall. He is also currently interning full time at Amazon designing backend for a project. One of his passions is to develop android mobile applications, which will be beneficial for this project.

Caroline Okocha, senior, industrial engineering major, UW.
Caroline is currently pursuing her bachelors of science in Industrial and Systems Engineering. From courses in statistical methods she has a background in analyzing survey statistics and drawing valid conclusions. In addition, she has had industry experience in her major through her internship with Boeing this past summer as an industrial and systems engineering intern.

Cost Information

Most sustainability projects require a large amount of funding and a lot of effort. However, this project is very feasible and easy to implement. The cost for OneRideAway consists of three major parts: Design, Programming, and Marketing. Since we are creating it on the campus of the University of Washington, there are countless resources available to us for free or substantially cheap prices. The cost breakdown for the rest of the components is fairly simple.

Design cost

Considering our technical background within the group, the initial design will be created by us. We then will consult the CSE department of the school and look for further design specifications. We also will need to get a patent for our design and the application interface so we won't have to worry about any copyright infringement.

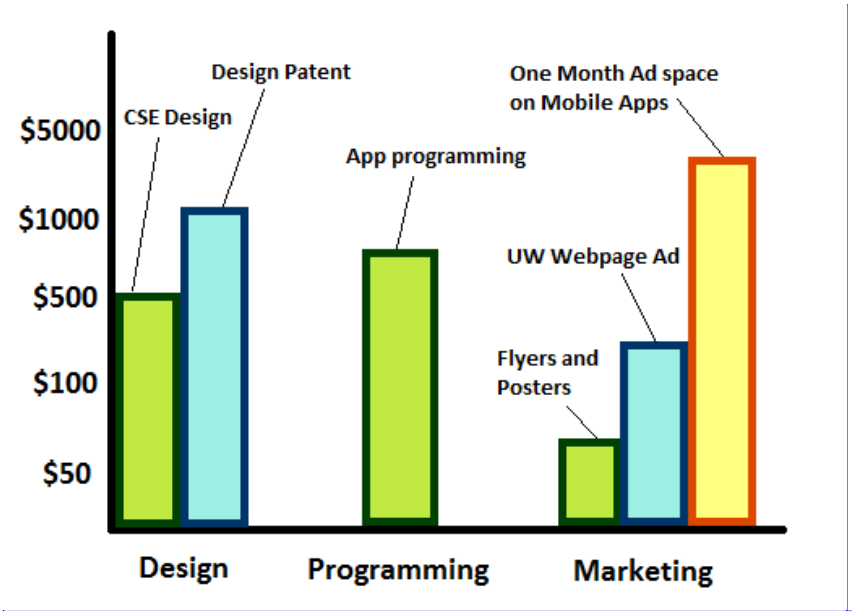
Programming Cost

The programming for the app will also be done by the CSE department at the University of Washington. We will hire a group to work on the programming of the application under the supervision of Alex, our own programmer within the group.

Marketing Cost

We are considering a couple forms of marketing to get the word out about our application. We will make flyers and business cards for the app and hand them out around campus, purchase ad space on existing applications such as OneBusAway, and get the UW to feature the app on the main webpage for a month.

The bar chart in Figure 8 represents the projected amount of money that will be spent on each part of our project.



Comment [I6]: I don't understand the color classification in this graphic. A pie chart might illustrate this better.

Figure 8. Projected Cost Analysis.

Summary and Conclusion

In conclusion, OneRideAway provides a cost effective solution to the carbon emission problem that arises from single drivers commuting to the UW campus. It provides a network of people who are either offering or needing rides and organizes the components that go into carpooling into a quick and easy way. This application ensures that cars commuting to and from the UW are utilizing their seat capacity, thus decreasing the amount of traffic congestion as well as the commuters' ecological footprint.

As mentioned earlier, the next step will be conducting surveys to help assess the needs of our application's target audience as well as to assess the current design features of the app. From there we will determine hot spots for drivers and discuss with the UW administration how to link the payment features through the husky card account. We will then design a mock up of our application and then obtain results from the design with another student survey. From there we will design the software component of the mobile application, test it, and then proceed to marketing the app. We look forward to the success of this project and will consider extending it to other institutions and companies looking for a similar application to drive their commuter community together.

References

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