Gary Kuo | Steven Kwan | Amanda Shen | Jennifer Yang
CSE 440 | Spring 2011 | Fogarty
Contextual Inquiry

EZ Meter

Members and Roles

Steven Kwan: Lead

Amanda Shen: Writing

Jennifer Yang: Design

Gary Kuo: Usability

Problem and Solution Overview

The City of Seattle currently uses centralized, receipt-printing, parking pay-stations for 9,000 parking spots in 22 of its neighborhoods. Although this system has allowed for many benefits such as the ability to pay with credit or debit cards and reduced street clutter, it has resulted in increased paper usage and expressed frustrations due to money wastes, time constraints, and vandalism. EZMeter, a portable parking permit, is a solution for Seattle residents that eliminates the need for the paper receipts and brings convenience and the ease of prepayment to street parking.

Contextual Inquiry Participants

EZMeter's target audience are people who park and pay for metered parking within Seattle for any amount of time. We identified these people as our audience since our goal is to make paying for parking easier for them. To help us better understand what current problems exist with parking in busy neighbourhoods, we chose to conduct an contextual inquiry around the University District in the early afternoon and spoke with a diverse mixture of students, professionals, and short-term visitors. The University District represents academia and small businesses, both of which depend on temporary parking for their participants and customers.

In order to perform the inquiry, we broke up into teams of two in an effort to not intimidate our participants. We stationed ourselves near the parking pay stations at different parts of University Way

NE and approached individuals when they started the process of paying for their parking. Throughout the process, we observed people quickly paying for parking and hurrying back to their cars. After each session, we quickly proposed our alternative solution to the participants. Although we would have preferred to have a longer period of time with each participant, we ultimately found that the rushed experience gave us a more realistic insight into the contexts of paying for parking.

Participant 1: Al

Al is a retired man in his 60's who parks his car on the streets several times a week. Al turned out to be an ideal subject in our contextual inquiry, as he represents the everyday person who uses street parking and isn't a student or a professional. He usually pays using coins but finds this to be quite annoying since he typically carries one-dollar bills, which current pay-stations do not accept. Although Al typically carries around his credit card, he only uses it to pay for transactions that are over $20.

Participant 2: Don

Don is someone who does not speak English very well and there was a language barrier when we conducted our contextual inquiry with him. As a male nail salon attendant in his 30's, he parks on the street about once every month and pays for parking using quarters. Since he does not frequently park, Don is a great example of a participant who casually uses the parking system in Seattle. Although Don is not fluent in English, he understands how to use the pay-station.

Participant 3: Shelby

Shelby is a busy student at the University of Washington who also works at a hotel. Since she uses street parking when she goes to school or at least once per day, we found that Shelby was a very strong representation of drivers who park on a daily basis. Shelby had a rushed personality that we found was common throughout our contextual inquiry.

Participant 4: Robin

Robin is another female student at the University of Washington. However, unlike Shelby, Robin parks around 1-3 times a week and is a good example of someone who occasionally pays for parking. Robin is incredibly busy as well. Inside her car is a designated trash bag, which Robin uses to dispose old receipts after the receipt expires.

Participant 5: Michelle

Our final participant is Michelle, a property manager from California. Although she often pays for parking in her home state, she only parks in the University District when visiting her daughter, who currently attends the University of Washington. Therefore, she is quite unfamiliar with the current parking system in Seattle. Michelle is well-aware of receiving a ticket for parking longer than the time she paid for and she makes it a habit to return to her car at least 10 minutes before her time expires, since Michelle does not know about the extra 5-minute leeway that is offered for those who paid for parking. Even though she is not from Seattle and may not know about some of the parking services offered, Michelle definitely knows to throw away the receipt after she has finished parking.

Contextual Inquiry Results

Simplicity

Most of the participants we observed were in a hurry, which further frustrated participants, since some voiced that the meters were slow in processing credit cards and printing the receipts. However, the participants did state that paying for parking was a simple process when the meters did work properly. Don, who did not speak English fluently, also said that the current system was easy even for those with a language barrier. Similarly, Michelle had little trouble using the pay-stations in Seattle to pay for parking time and obtaining a parking receipt, despite being from out of state. When asked whether a prepayment device for parking would make the process even faster, some participants were hesitant about the idea, as they were worried that it might be more complicated and bothersome to carry around another payment device.

What was also frustrating for some participants was the need to dispose the parking receipts after use. We noticed that, from our contextual inquiry, most participants discarded their receipts into a trash can nearby or collected them for disposal later. None of our participants knew or mentioned that it was possible to recycle the receipts. This reaffirmed that the current system is encouraging paper waste.

From these results, we have found that our device must be simple, convenient, and intuitive in order to be accepted by potential users. In addition, our device must be able to end the payment process in a simple manner, which would ensure a fully-intuitive process of paying for parking.

Convenience

Despite the simple process, there were several inconveniences that participants did not enjoy about the current parking system. For example, most of the participants did not like having to walk back and forth between their car and the pay-stations. The current options for paying for parking also bothered most participants, such as Al and Robin. They would have loved for the pay-stations to accept bills in order to avoid having to carry coins all the time. Most users expressed that the machines did not always work and sometimes rejected certain types of payments.

In order to keep track of time, most participants also complained about the need to keep track of the expiration time on the receipt. Some participants knew about the 5-minute leeway after parking expiration, while others did not. All of the participants solved this problem by returning to their vehicles 5-10 minutes earlier, which was both inconvenient and time-consuming. They did this because most of them were afraid of receiving a ticket. Shelby, in particular, was especially careful since she had often been ticketed in the past for being a few minutes late. Don, on the other hand, usually pays for more time than he needs just to be on the safe side.

These were all pointed out as inconveniences to our participants. These results make it clear that convenience is a major consideration for the participants. When we proposed our device as a means of bringing more convenience, some participants were intrigued and agreed. Those who disagreed were concerned that the device would be an extra hassle. They were also concerned that the prepayment option we suggested would mean intensive planning in advance, which might also bring more complication and confusion. Therefore, as we design our solution, it will be important to offer the most popular payment options and an easy way to help participants keep track of time.

Reliability

The reliability of the pay-stations was another major concern for participants. Most of them have experienced situations where the machines became unresponsive, in which they had to seek other pay-stations to pay for parking. In addition, sometimes the machines do not take coins or accept credit cards. They also reported that some machines were vandalised or had graffiti on the display, making it incredibly difficult to see how much time they were paying for. For the participants who were busy and in a hurry, they said that the machines were slow in taking payments from credit cards and printing receipts. These results indicated that the reliability of the system is a critical factor in the process of paying to park. Any other alternative to the current system will need to address reliability in order to appeal to existing or potential customers.

We really wanted to speak to a Seattle Police Department (SPD) Parking Enforcement Officer (PEO) to gain additional feedback about the current system of paying for parking. We were hoping that they would be able to answer questions such as what aspects of the current parking system works well and how it could be improved. However, we were unable to schedule a time with a PEO, nor were we able to schedule a time with our SPD alternative, a parking enforcement officer from the University of Washington Commuter Services. We are still trying to contact the Seattle Parking Services Office and hope to be able to speak to a parking enforcement officer soon to gain further insight and feedback.

New and Existing Tasks

Easy Task - Pay for parking

Ashley is 21-years-old, a junior at the University of Washington, and a waiter at Red Robins in downtown Bellevue. She lives in the Shoreline area near Shoreline Community College. She needs to park her red Ford Focus near campus everyday for her hour-and-a-half Dinosaurs 101 lecture in Condon Hall and then drive across the 520 to Bellevue for work. Since she works at Red Robins, she does not need to pay for parking in Bellevue. She usually wakes up late due to partying all night long and is in a hurry when searching for and paying for parking. Since she is always in a hurry, she likes to use quarters since it is faster than having the machine process her UW debit card. However, since she uses quarters for both parking near campus and doing her laundry every Monday, Wednesday, and Friday, she must get two rolls of quarters from the bank at least once a week. She is tech-savvy and is willing to try new technologies.

This small task is created for on-the-go students who are always in a hurry. They have a set routine for daily activities and parking.

Medium Task

Mark is 32-years-old and is a professional who works as a salesman in downtown Seattle. He often meets with clients who also work in Seattle for proposal meetings and pitches. When he travels to meet other companies, he usually needs to find street parking for an hour or two. Today, he has a meeting with a client at Union Square in downtown Seattle. The meeting runs for about an hour and things are looking pretty good. His client is very interested in the product that Mark has pitched. His client suggests that they should head over to Sullivan's for a drink after the meeting. Since the

economy is bad and Mark really needs to pay off his car loan, Mark really hopes to seal the deal with this client. Therefore, he really needs to impress this customer. However, Mark only paid for an hour of street parking and needs to add more money to park longer.

This medium task is for professionals who have schedules that may change easily. They might need more time or need to park in another location.

Hard Task

Kelly is a 42-year-old grandmother from the golden state of California. Kelly is a retired nurse. She used to work at Sunny Hospital near Santa Clara. She loves to bake apple pies. Kelly is currently in Seattle visiting her daughter, Angie, in the hospital. Her daughter has just given birth to a healthy baby boy who is 5 pounds and 6 ounces. She is somewhat unfamiliar with the parking system Seattle. It is Sunday and she wants to park close to the Memorial Hospital near Capitol Hill. She notices a nice parking spot next to a green pay-station about a block away from the Memorial Hospital, in-between a black Mercedes Benz and a white Honda Civic. She understands that she can only pay for two hours at a time because of the well-designed sign near the payment machine. She decides to pay for the maximum time and then makes sure to come back out if necessary to renew her parking, since it has been a long time since she has seen Angie and she has brought one of her famous apple pies. Because of this, she is sure that it will take more than two hours. When she inserts her credit card, nothing happens. Kelly is confused as to why her payment is not being accepted and tries again and again.

This task is mainly carried out by those who do occasional parking and are unfamiliar with the parking system. Specifically, they don't know that parking is free on Sundays and on certain days of the year.

Sketches

We sketched out three different ideas of implementing the EZMeter Parking system. Each one approaches the problem differently but addresses at least one of the aspects of our results.

Sketch 1: EZMeter Card System
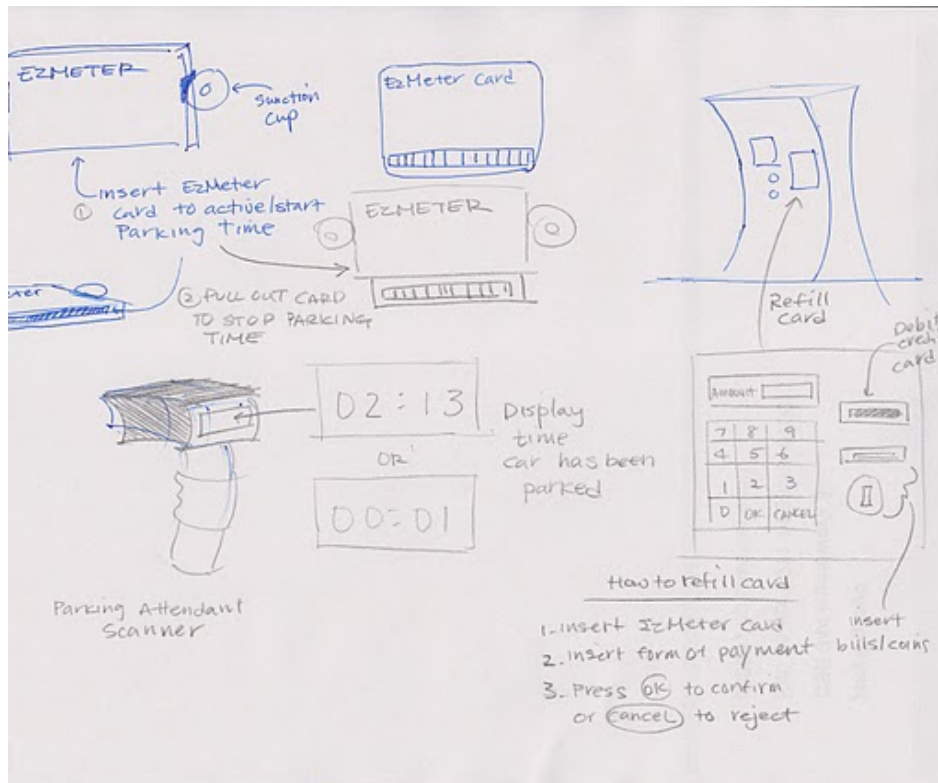
This system consists of three components on the driver's side and one component on the validating side. The person who parks will have a card that is somewhat like an ORCA card which he can put money into. He will also have a device that is suction-cupped to a window. When he parks, he inserts the card into the device, which will start a counter for time elapsed. The device itself will have a GPS system that will be able to determine rates for certain locations. The parking attendant will have a scanner that can pull information off the card when it scans. He will be able to determine if the card has sufficient funds and is correctly deducting payment from the driver. This system addresses the concern of simplicity, since the user can just insert their card and go.
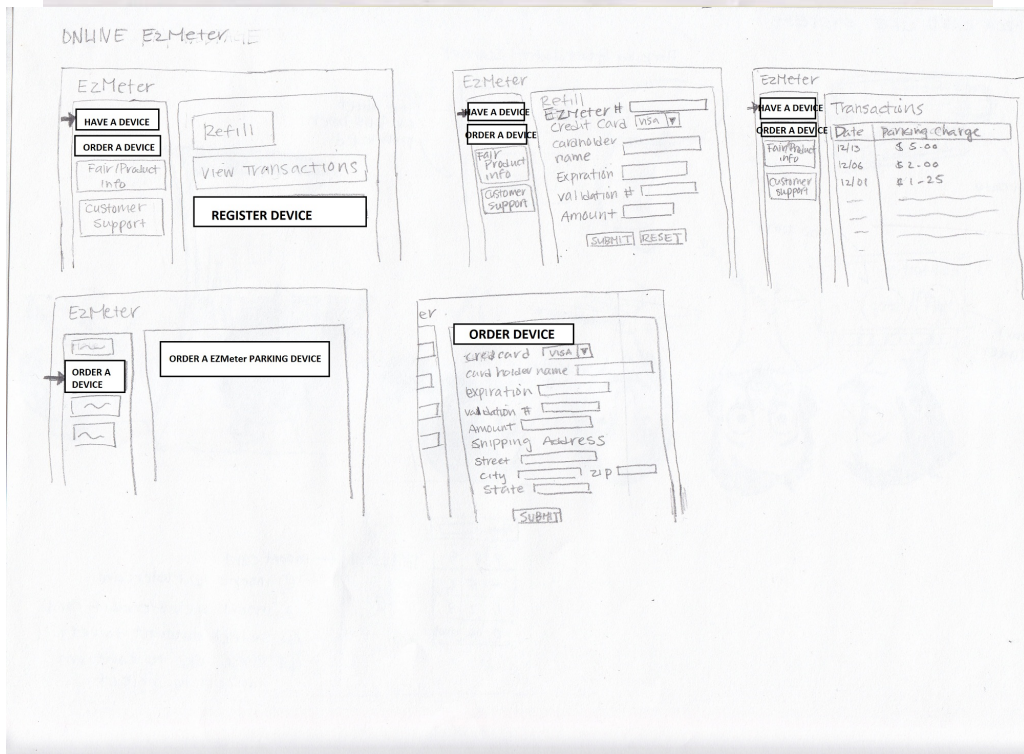
Sketch 2: License Plate System
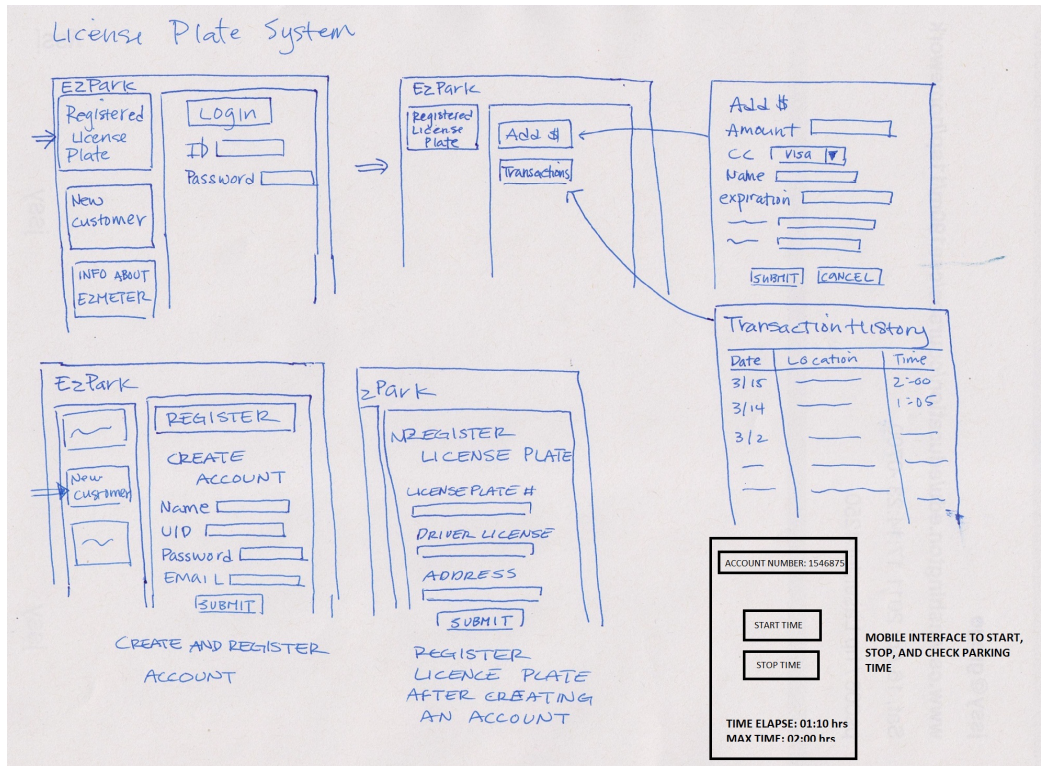
The license system consists of two components. There will be a web page where users can register their licence with an account, refill their account and track account activity. Once a user has registered and added money to their account, they just need to download the mobile application. When the user parks, they simply log on to their account and start, stop or track the payment timer. The parking attendant will also have a mobile application where they can look up license plates to validate whether the driver has started payment for parking and how much time has elapsed. This system addresses the concern for simplicity and convenience, since there is no external device to purchase.

Sketch 3: EZMeter Timer System

Device view

time counts up ↑ max time.

01:43

○ ○
Start   Stop.

deducts the amount of time shown from account.

Backview

Ez-meter

XX-XXXX-XXXX

Device unique ID.

gps knows rates for location
— sync'ed w/ mobile app.
↳ text message alert.

Refill Stations

$

VISA mastery

for debit/credit card

for inserting coins

mobile app screen

Time elapsed

1 : 43.

max time : XX:XX

Exit

ONLINE EzMeter.

EzMeter

HAVE A DEVICE
ORDER A DEVICE
Fair/Product info
Customer Support

Refill
View Transactions
REGISTER DEVICE

EzMeter

HAVE A DEVICE
ORDER A DEVICE
Fair/Product info
Customer Support

Refill
EzMeter #
Credit Card [Visa ▼]
cardholder name
Expiration
validation #
Amount
SUBMIT RESET

EzMeter

HAVE A DEVICE
ORDER A DEVICE
Fair/Product info
Customer Support

Transactions

Date	Parking charge
12/13	$5.00
12/06	$2.00
12/01	$1.25

EzMeter

ORDER A DEVICE

ORDER A EZMeter PARKING DEVICE

ORDER DEVICE

Credit card [VISA ▼]
Card holder name
Expiration
validation #
Amount
Shipping Address
Street
city   zip
State
SUBMIT

Our last system also has three components on the user side. There is a device that is similar to a timer that users will put on their dashboard while parking, a mobile application to track parking information and time, as well as a refill station and payment portal. There are two options for payment. The first one is a refill station that is similar to the current parking meters, where users will only have to visit the machine once in a while to refill. The second payment portal is a website where users can order, register, or refill a device. The parking attendant would simply check the timer to see if it is counting the time elapsed and make sure that the max time has not passed. This system helps users keep track of time and adds convenience to users by offering multiple payment options.