Parking Meter CS 465 Project

Our project is a new parking meter system that we hope will make it easier to find parking and refill your meter. We would like to evaluate its effectiveness in this study.

First, please fill out the pre-evaluation survey. Then you will be asked to use each of the three interfaces we are testing (the parking meter, the text messaging system, and the website) in a random order. After trying each interface, please fill out the corresponding evaluation form.
Pre-Evaluation Survey

1. Age:
   □ 16-25
   □ 26-35
   □ 36-46
   □ 46-56
   □ 57 and over

Parking Meter

2. How often do you use parking meters?
   □ 4 or more times a week
   □ 1-3 times a week
   □ 1-3 times a month
   □ Never

3. How comfortable do you feel using parking meters?
   Not Comfortable 1 2 3 4 5 Very Comfortable

4. Do you own a cashkey (parking meter key)?
   □ Yes
   □ No

5. When using a parking meter, how often do you pay using your cashkey?
   □ Always
   □ Most of the time
   □ Sometimes
   □ Hardly ever
   □ Never

6. On average, how far from your destination do you park?
   □ Less than two minutes
   □ Two to five minutes
   □ Five to ten minutes
   □ More than ten minutes

7. How often does your meter expire before you leave the parking space?
   □ Most of the time
   □ Often
Some of the time
☐ Rarely / never

8. What are some features you believe current parking meters lack?

Text Messaging

9. Do you own a cell phone?
☐ Yes
☐ No

10. How often do you carry your cell phone around with you?
☐ Always
☐ Most of the time
☐ Sometimes
☐ Hardly ever / never

11. What text-messaging capabilities does your cell phone currently have?
☐ Both send & receive
☐ Only receive
☐ Neither

12. How many text messages do you send/receive in a week?
☐ 50 or more
☐ 30-49
☐ 10-29
☐ Less than 10
☐ None

13. How comfortable would you feel using a service that required you to send/receive text messages?

14. What concerns, if any, would you have using a service that required you to
15. How often do you enter your credit card information online to make an online purchase?
   □ 1 or more times a week
   □ 1-3 times a month
   □ 1-3 times a year
   □ Never

16. Have you used a Parking Services website before? If so, for what city?
   □ Yes City:__________________________
   □ No

17. If you answered “Yes” to the above question, what services did you use the website for?

18. How likely would you be to use a website to pay for parking citations?
   Not Likely 1 2 3 4 5 Very Likely

19. How likely would you be to use a website to buy a cashkey?
   Not Likely 1 2 3 4 5 Very Likely
Parking Meter Evaluation

1. How easy was the parking meter interface to use?
   - Hard 1 2 3 4 5 Easy

2. How clear were the parking meter's instructions?
   - Not clear 1 2 3 4 5 Clear

3. How intuitive was the parking meter's use of color?
   - Not intuitive 1 2 3 4 5 Intuitive

4. How convenient would this parking meter be to use?
   - Inconvenient 1 2 3 4 5 Convenient

5. What are the strengths of this interface compared to the standard ones in use today?

6. What are the weaknesses of this interface compared to the standard ones in use today?

7. Comment on the placement of elements (coin slot, time display, etc.) on the parking meter.
8. What changes (if any) would you make to this interface?
Text Messaging Evaluation

1. How easy was the text messaging interface to use?
   Hard  1  2  3  4  5  Easy

2. How time-consuming would it be to use this text-messaging system to refill your meter?
   Time-consuming  1  2  3  4  5  Quick

3. How convenient would the text-messaging system be to use?
   Inconvenient  1  2  3  4  5  Convenient

4. How likely would you be to use this system?
   Unlikely  1  2  3  4  5  Very Likely

5. How clear were the instructions provided in the text message for refilling your meter?
   Unclear  1  2  3  4  5  Very Clear

6. What are the strengths of this interface?
7. What are the weaknesses of this interface?

8. What changes (if any) would you make to this interface?
Website Evaluation

1. How easy was the web interface to use?
   Hard  1  2  3  4  5  Easy

2. How intuitive was the website's navigation?
   Not intuitive  1  2  3  4  5  Intuitive

3. How time-consuming is it to use this web interface to refill your meter?
   Time-consuming  1  2  3  4  5  Quick

4. How convenient would this website be to use?
   Inconvenient  1  2  3  4  5  Convenient

5. How likely would you be to use this site?
   Unlikely  1  2  3  4  5  Very Likely

6. What are the strengths of this website compared to the standard ones in use today?
7. What are the weaknesses of this website compared to the standard ones in use today?

8. Comment on the visual layout of the page (tabs, text, color scheme, etc.).

9. What changes (if any) would you make to this website interface?
Summary of Results

Our survey was administered to seven people. The feedback on the surveys for the meter, the text messaging system, and the website were mostly positive. With the exception of likelihood of using the text-messaging interface, all metrics (ease of use, intuitiveness, convenience, quickness, and likeliness of use) on all three interfaces scored over 4.0 (on a scale from 1 to 5) on average. The website scored particularly high.

On the pre-survey, four out of the six people who responded to the question about how far from their destination they park said they parked between two to five minutes away. The other two said they park on average five to ten minutes away. Our parking meter turns yellow when five minutes are left, so this should hopefully be a good amount of warning time that would allow people to get back to their meter and refill.

Also, only one of the respondents (out of six who answered) said their meter never/rarely runs out. Two people said their meter often runs out and three said their meter sometimes runs out. This is something our new meter could help with.

On the evaluations, the text-messaging interface scored lower than the website in all categories. This is probably due to our survey group's overall limited experience with text messaging. Of the seven people we surveyed, only one sent more than 10 text messages per week. This explains the lower scores in ease of use, convenience, quickness, and likeliness of use.

Text-messaging also scored lower in intuitiveness. The feedback from users seems to suggest this is because a lot of memorization is required in order to refill the meter: phone number to text, meter number, cashkey number, and ordering of the elements in the
text message. Feedback for the website also mentioned as a weakness that memorization of meter number was required.

This is bad design on our part. We came up with a solution to rectify it: we could add a button where a user could request meter refilling information. Our parking meter would be able to print a card containing refilling information, including:

- Phone number to text
- The meter number
- Instructions and example for refilling the meter
- Website URL

Other changes we would make would be minor changes to the refilling meter pages on the site to take into account feedback about how some parts of the page were confusing (the naming of the tab, text that stays on the page when not necessary).

Number of people surveyed: 7
Pre-Evaluation: Parking Meter

How often do you use parking meters?

- 1-3 Times a Week
- 1-3 Times a Month
- Never

Do you own a cashkey?

- Yes
- No

Note: Person who owns cashkey uses it most of the time he/she parks in a metered spot.

Features current parking meters lack:
- Refill from a distance
- Notify users of expiration
- Easy way to check balance
- Get money back if there is still money in meter when you return
- Pay using a credit card

Average comfort level with interacting with current parking meters:
3.43 (1=not comfortable, 5=comfortable)
Pre-Evaluation: Text Messaging

How often do you carry your cell phone around with you?

- Always
- Most of the time

What text messaging capabilities does your cell phone currently have?

- Both Send & Receive
- None

How many text messages do you send/receive in a week

- 30-49
- Less than 10
- None

Concerns with using a service that would require sending/receiving a text message:
- Low phone battery
- Lack of service in some areas/buildings
- Going over current text messaging limit
- Being charged for sending/receiving text messages

Average comfort level with using a service that required sending/receiving text messages:
3.5 (1=not comfortable, 5=comfortable)
Pre-Evaluation: Website

How often do you enter your credit card information online to make an online purchase?

- More than 1 time a week
- 1-3 times a month
- 1-3 times a year

Have you ever used a Parking Services website before?

- Yes
- No

Note: Person who has used a Parking Services website used the Champaign website in order to buy a parking permit for UIUC parking
Post-Interaction: Parking Meter

Strengths:
- Makes it obvious when meter is running low
- Does more than a regular meter
- Time is in big text
- Easy to tell if meter is available
- Colors made it more pleasant to interact with
- Instructions were clear

Weaknesses:
- Have to remember phone number to text a refill
- Dirty meter may obscure the text

Suggested Changes:
- Website URL in instructions
- BIGGER TEXT
- Add amount of money you put in to the interface
- On meter, instead of “white meter=full, put white=>5 min
- Make the phone number an acronym so that it is easy to remember
- Coin slot in the center, at the top
- Meters should have 2 slots, one on each side
- Different color if there is time remaining in meter
Post-Interaction: Text Messaging

Strengths:
- Easy to refill
- Txt messaging is intuitive (Note: response from person who texts 30-49 per month)
- Text message received was clear
- Text and meter had same instructions on how to refill
- Example on meter was helpful
- Convenient - don’t have to leave desk

Weaknesses:
- Requires familiarity w/ text messaging (Note: response from person who texts less than 10 per month)
- Have to remember meter#, cashkey#, #quarters order
- How quickly would meter update is a concern
- Annoyed if no unlimited texts

Suggested Changes:
- Make reminder message less wordy
- Put example of text message in text instead of just on meter
Post-Interaction: Website

Strengths:
- Easy to Use
- Tabs are intuitive
- Address of meter is mentioned in meter search
- Buttons are well-placed
- Not cluttered

Weaknesses:
- Requires you to remember the meter #
- When you click on refill, the question changes but you don’t realize since it is on the same spot
- Buy a cashkey button should be at the top
- Checking meter balance could be more obvious

Color/Visual Layout:
- Buttons placed well
- Logout button is easy to find
- Very clear
- Plain

Suggested Changes:
- Email reminder when meter is running low
- Explanation for a citation
- Change “Refill Meter Tab” to “Check Meter Balance”
Post-Interaction: Overall

- Easy
- Intuitive/Clear
- Convenient
- Quick
- Likelihood of Use

Graph showing comparisons between Text Messaging, Website, and Parking Meter for each category.