



SINGLE-USE PARKING PERMIT PURCHASES VIA

# The UW Transportation Services Customer Portal

Usability Study Results Analysis

Night Riders

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# PROJECT OVERVIEW



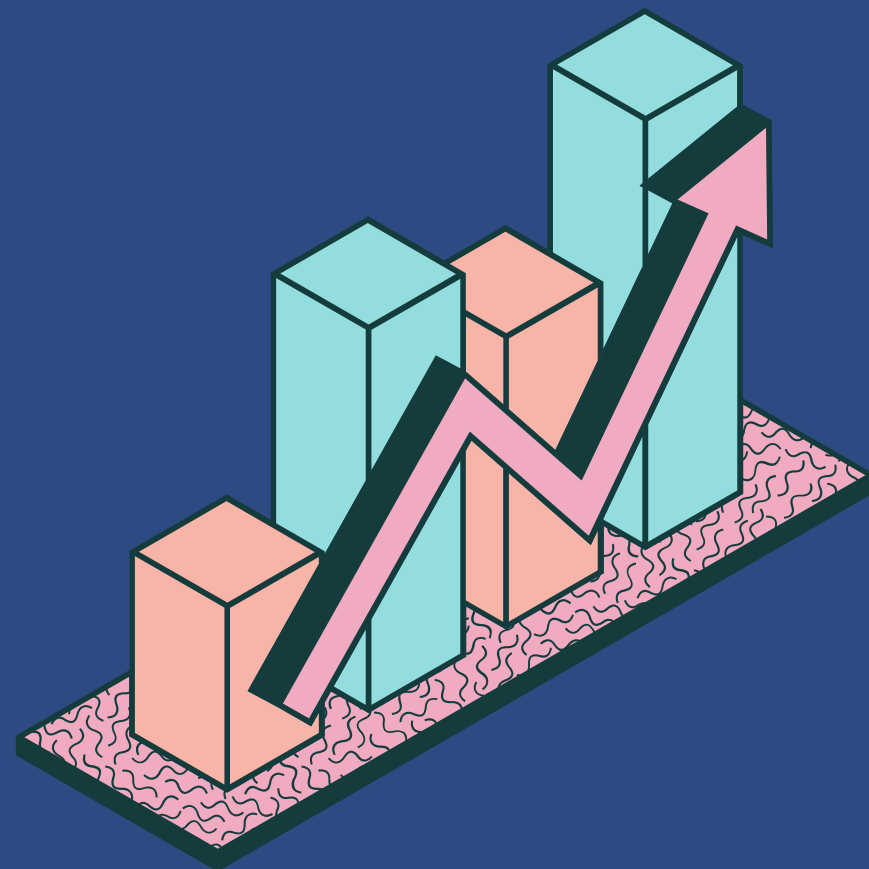
**CUSTOMER PORTAL**

# Research Questions

- ➔ What are the main usability issues students face when trying to buy a parking permit through the parking customer portal?
- ➔ How satisfied are people with the customer parking portal overall?
- ➔ How navigable do new versus experienced online portal users find the system?
  - ➔ *All users tested had prior experience but also struggled with a novel scenario*

# Research Methods

## METHODS AND COMPONENTS



## OVERVIEW

This study was a Moderated Usability Test used to collect summative data. Participants attempted to complete a set of representative task scenarios presented to them and provided feedback regarding the usability and acceptability of the user interface

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## STUDY GOAL

The goal of this study was to identify issues that users face when navigating the customer portal to purchase parking permits as well as potential errors and design inconsistencies in the interface

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## TEST COMPONENTS

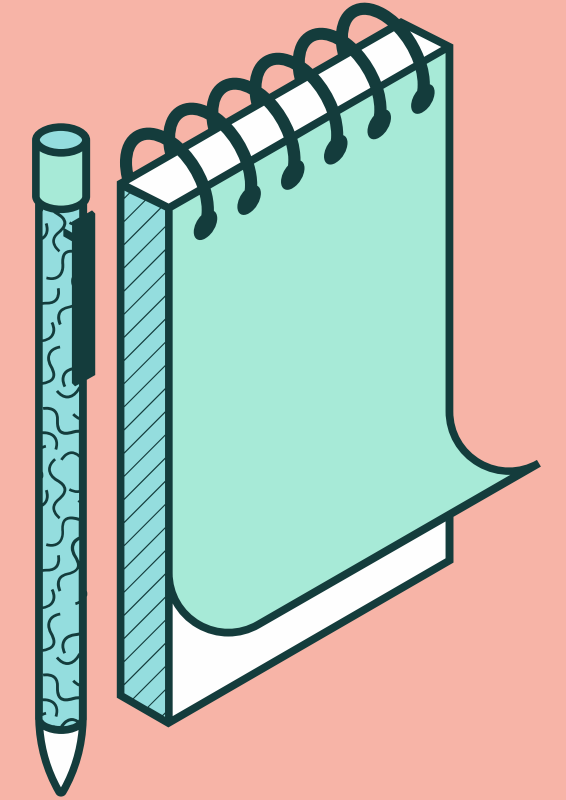
- Facilitator briefing and introduction on interface evaluation
- Pre-test demographic and use questionnaire
- Scenario and task presentation with post-task question (SEQ) on ease of use
- Post-test questionnaire addressing overall experience (SUS) and session debriefing

# Participants

## RECRUITMENT, DEMOGRAPHICS, PREFERENCES, AND NUMBERS

### Participant Outreach

A screener was posted to several University of Washington Slack channels and in a University of Washington Reddit forum to help find participants.



### Screener Criteria

- Members of the University of Washington (student, staff, or faculty)
- Possessed a valid driver's license and access to a vehicle

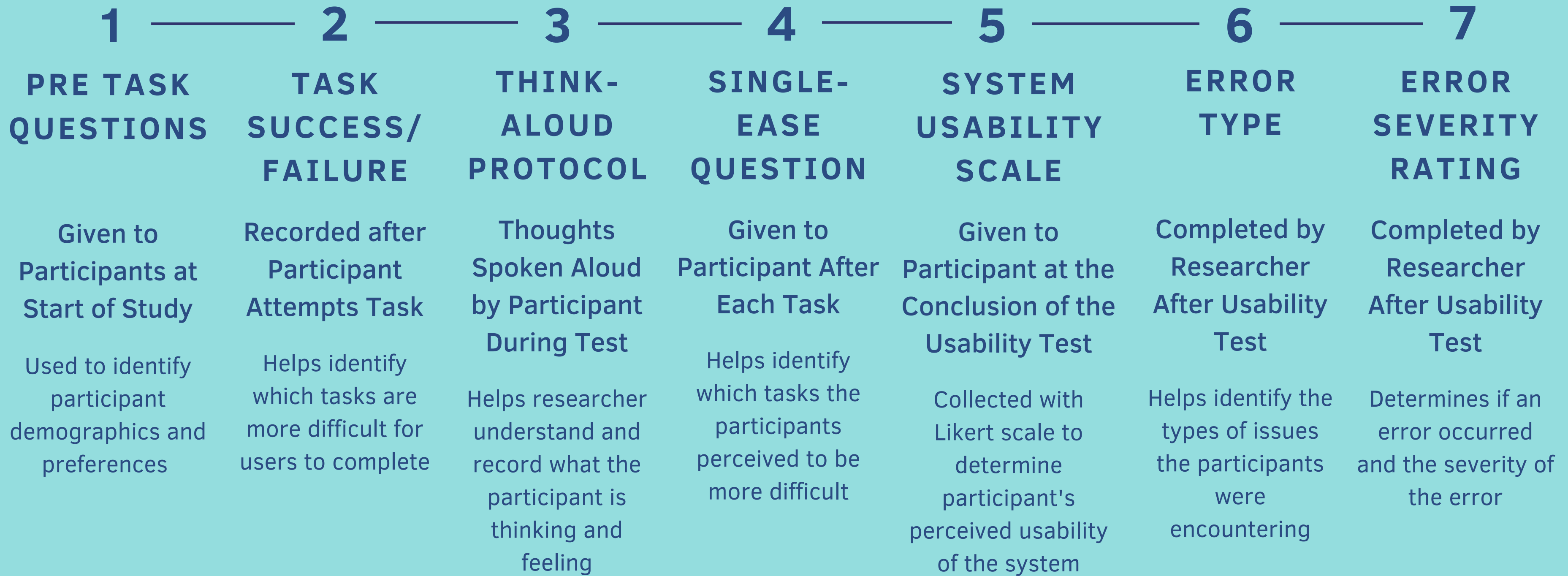
### Participant Groups

- **Initial Ideal Group:**
  - Eight (8) UW Students
    - Four (4) new users
    - Four (4) experienced users
- **Final Group:**
  - Six (6) members of the UW community
    - Regardless of experience

### Participant Demographics

- Age Range: 25-44
- UW Members: 4 Student, 2 Faculty
- Experience: 6 have used the parking portal
- Parking Preferences: 6 use the UW Garages
- Driving Preferences: 3 sometimes drive, 2 often drive, 1 always drives
- Other Methods: 6 use Pay by Phone app
- Tech Savvy: 5 very, 1 somewhat

# Data Collected



# FINDINGS

# Study Findings - Overview

WORKED WELL

NEEDS IMPROVEMENT

FINDING	RECOMMENDATIONS	PARTICIPANTS
Access to Less Expensive Parking	N/A	P1, P4, P6
Adding New Vehicles	N/A	P2, P3, P4, P5, P6
Prior Permit Purchase Details	N/A	P2, P3, P4, P5, P6
Confirming Current Permit Purchase Details	N/A	P3, P4, P5, P6
Organization of Information	Use filters and sorting for permit, lots, dates selection Integrate an interactive map	P1, P2, P3, P5, P6
Redundant Steps & Inputs	Reduce Redundant Fields Reduce Redundant Steps	P1, P2, P3, P4, P5, P6
Saved User Data & Preferences	Allow shortcuts with frequently-used selections Enable payment shortcuts and autopay methods	P1, P2, P3, P5
Prominent Help and Guidance	Place Help Options Prominently Use Clear Tooltips Throughout Interface	P1, P3, P4, P5, P6





# Interface Wins

## IDENTIFYING WHAT WORKED WELL

- ➔ 3 of 6 participants reported satisfaction that the interface offered access to parking at lower rates.
- ➔ 4 of 6 participants rated adding a new vehicle to their account as easy or very easy (a 5th said "neither easy nor difficult")
- ➔ 5 of 6 participants found records of prior permit purchases easily or very easily (a 6th said it was "neither easy nor difficult")
- ➔ 4 of 6 participants ranked confirming the details of their permit in the cart and purchasing cart contents as easy or very easy

# Interface Challenges

## IDENTIFYING AREAS FOR IMPROVEMENT



### System Usability Scale Scores

A 9-Question SUS was administered post-scenario to all participants. Questions used a Likert scale from “Strongly Agree” to “Strongly Disagree,” to correlate usability to a point value from 1 to 5. Final SUS scores determine a Usability rating out of 100 points.

Participant results:

- SUS scores ranged from 5.6 to 50.4 points
- The average participant score was 29.4
- Grade = F
- Outlook = Room for Improvement

### Severity Ratings

Severity ratings were assigned to Areas of Improvement based on an average of team members’ individual ratings of the finding on the following scale, adapted from the severity rating scale published by Jakob Nielsen:

- 0 = No Problem
- 1 = Cosmetic Issue / Minor Problem
- 2 = Mid-Level Problem
- 3 = Major Problem
- 4 = Catastrophic Issue

Findings in this presentation are severity 3.

SUS Score	Grade
> 80.3	A
68 – 80.3	B
68	C
51 – 68	D
< 51	F

# Area for Improvement: Organization of Information

## SEVERITY RATING: 3

- 5 of 6 participants disagreed or strongly disagreed with the statement "I found the various functions of this interface were well-organized" in the SUS Questionnaire
- 5 of 6 participants rated the central task of reserving parking as difficult or very difficult on the SEQ
- 3 of 6 participants had difficulty identifying the best parking permit type for the scenario
- 6 of 6 participants had difficulty identifying and selecting a convenient parking lot using the lot list and reference maps



## Select Permit

Select the permit you wish to purchase/reserve. Review all information regarding the permit you wish to purchase/reserve prior to purchasing/reserving. For more information about each permit option, please visit the Transportation Services products page: <https://transportation.uw.edu/park/student-employee>

Select	Quantity	Permit Fee	Permit Description	Permit Effective	Permit Expires
<input type="radio"/>	1	\$48.00	BIKE HOUSE / Annual	07/01/2022	06/30/2023
<input type="radio"/>	1	\$3.03 / day	DAILY / Night	-select-	-select-
<input type="radio"/>	1	\$3.03 / day	DAILY / Saturday	-select-	-select-
<input type="radio"/>	1	\$7.28 / day	E18 VALUE / Short-Term	-select-	-select-

## SELECTING PERMIT TYPE FROM LIST

"A lot of scrolling [...] I just want to one-click and be done. [...] I don't need all these options here." (P1)

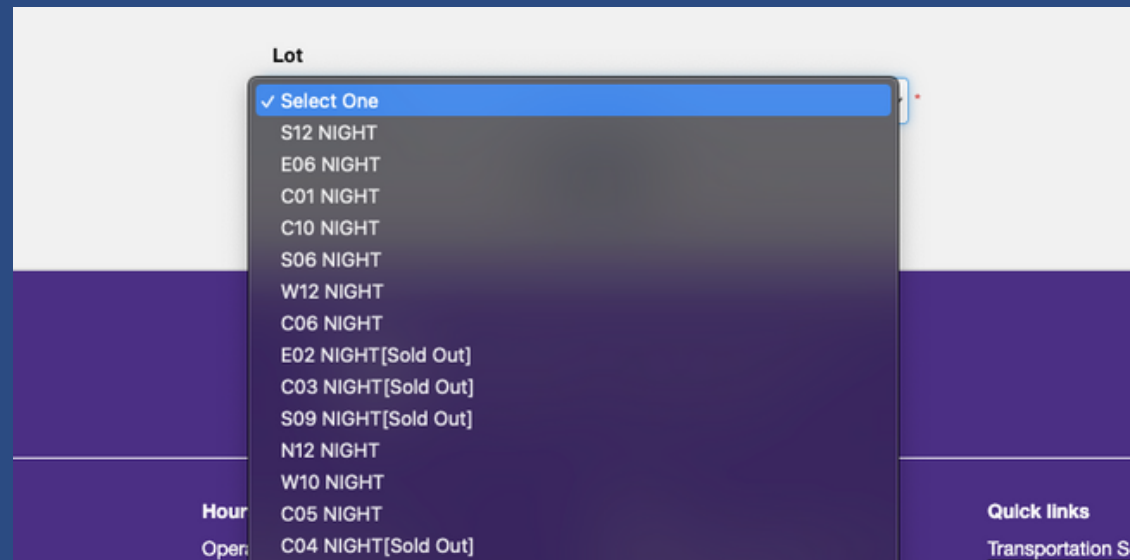
## SELECTING LOT FROM DROP-DOWN MENU

"The lots list is not alphabetical or organized and the link to a map takes you to a separate tab. Then [you] have to remember what lot you want from the map and need to navigate the dropdown to find it" (P2)

"How did this list get here and why do I have to do the searching? Alphabetize it. Who is this built for? This isn't built for users." (P4)

## UTILIZING LINKED CAMPUS REFERENCE MAP(S)

"[The] campus map is huge and hard to read [and] lots are not always clearly labeled." (P5)



# Recommendations

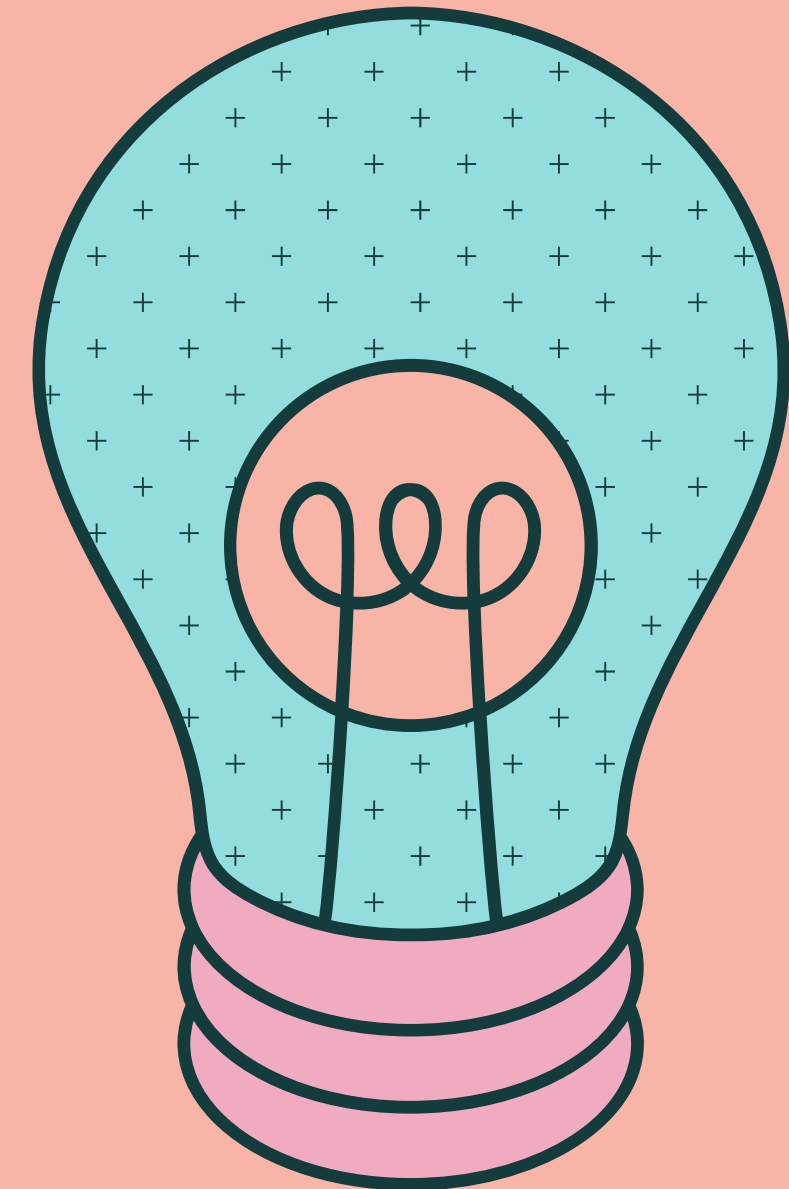
FOR CLEARER, MORE INTUITIVE ORGANIZATION  
OF INFORMATION & SELECTIONS

## Use Filters and Sorting for Permit, Lots, Dates Selection

Interactive filter and sort options  
enable intuitive choices while  
interpreting large data sets

## Integrate an Interactive Map

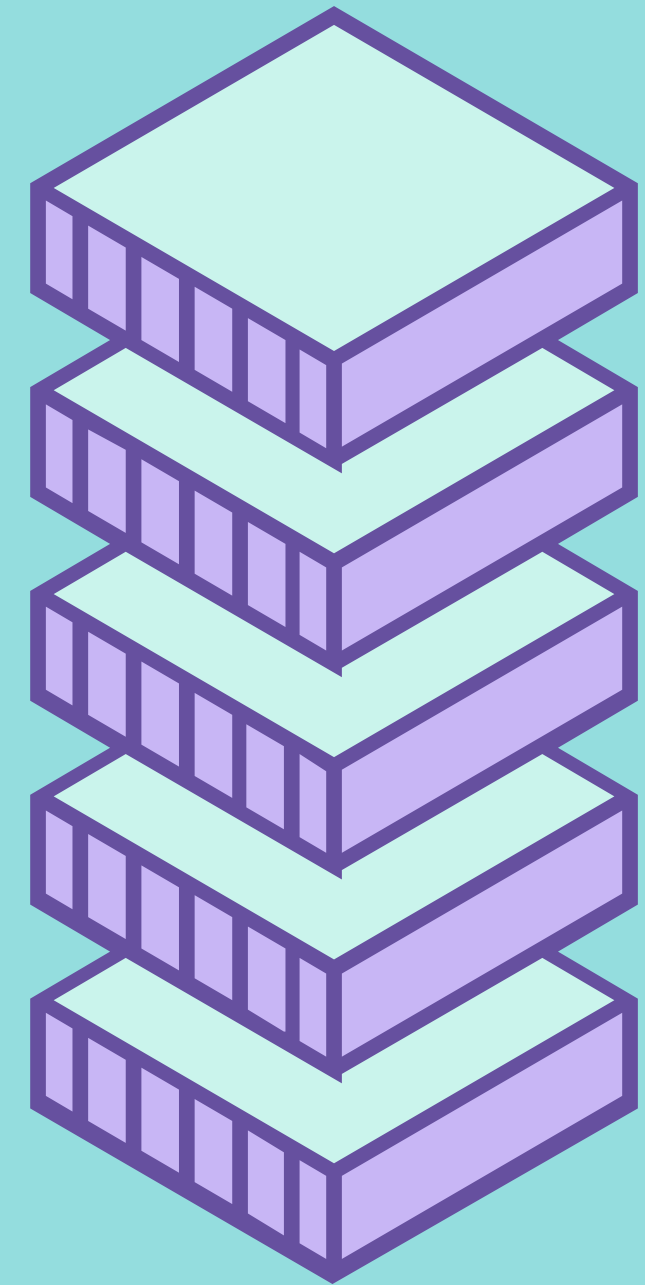
All 6 study participants expressed a  
desire for a more easily searchable  
map to increase lot discoverability

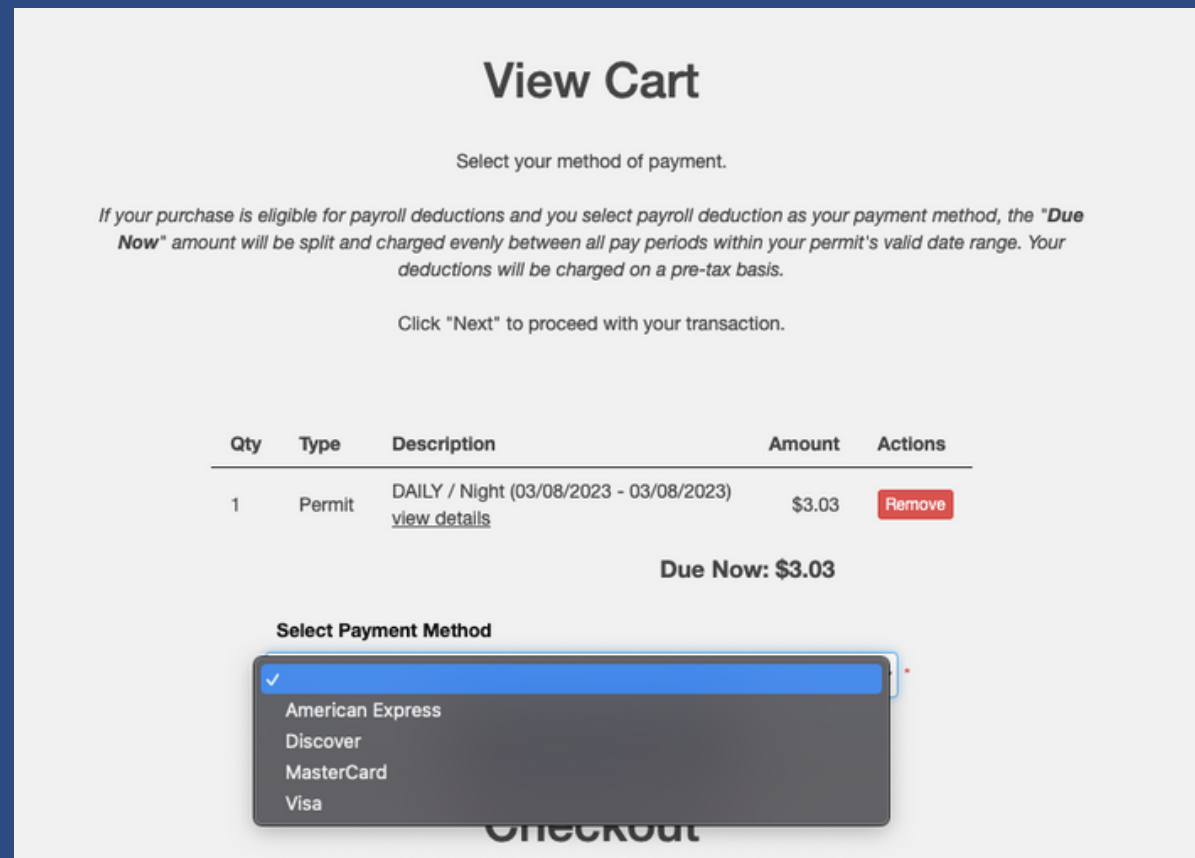


# Area for Improvement: Redundant Steps & Inputs

## SEVERITY RATING: 3

- 4 of 6 participants commented on the high number of steps required to book a parking permit
- 3 of 6 participants noted specifically that content within these steps/pages was repetitive
- 6 of 6 participants remarked that they were required to select payment type multiple times





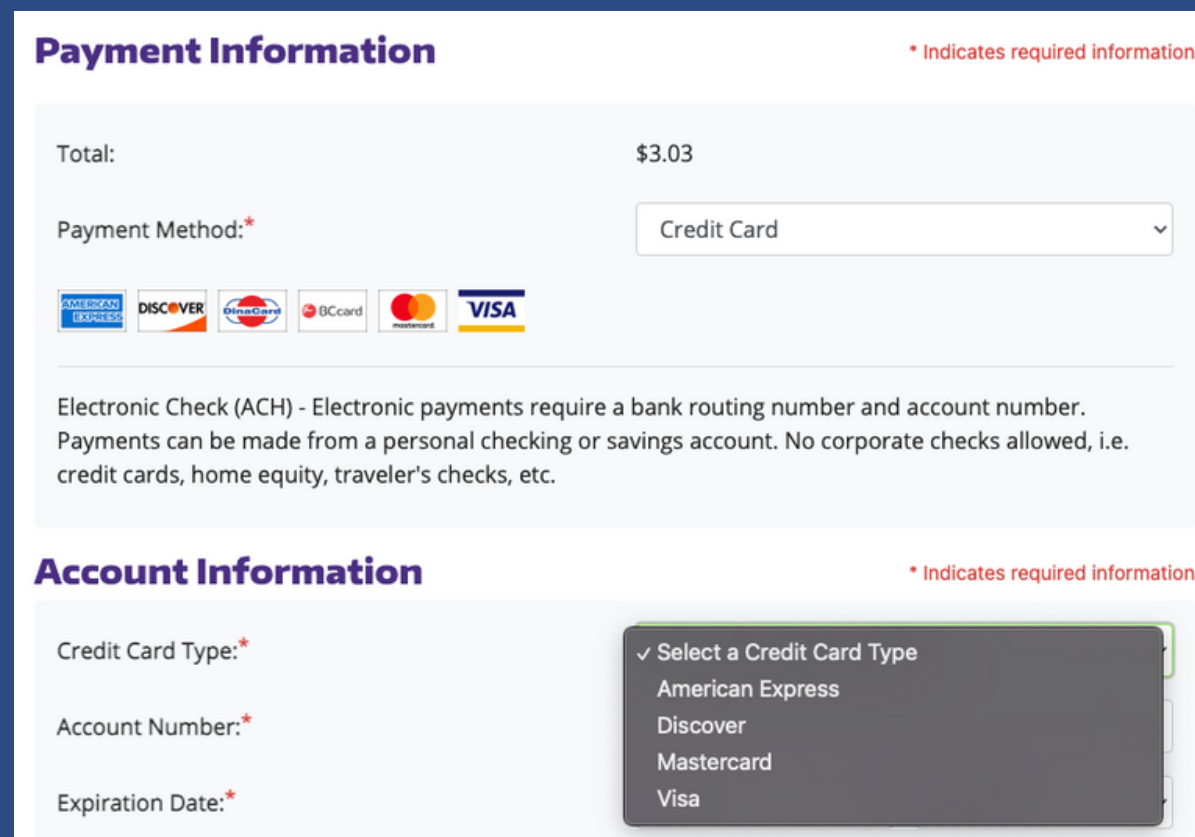
## REDUNDANT INTERSTITIAL & CONFIRMATION PAGES

“[It] takes a lot of time to complete, especially where several tasks happen numerous times. [...] Overall this process was redundant and unnecessarily repetitive.” (P2)

“[There are] 20 clicks/steps for one part, could take 2 or 3.” (P1)

“I wish it was straight click-through. Too much redundancy in the system.” (P5)

“It takes double the amount of time it should.” (P3)



## MULTIPLE SELECTIONS OF PAYMENT TYPE

“This bugs me the most because I have to select Visa and then will get it again.” (P3)

“Why do I have to do that again? What’s the point of telling them Visa if have to enter this all on this page?” (P4)

# Recommendations

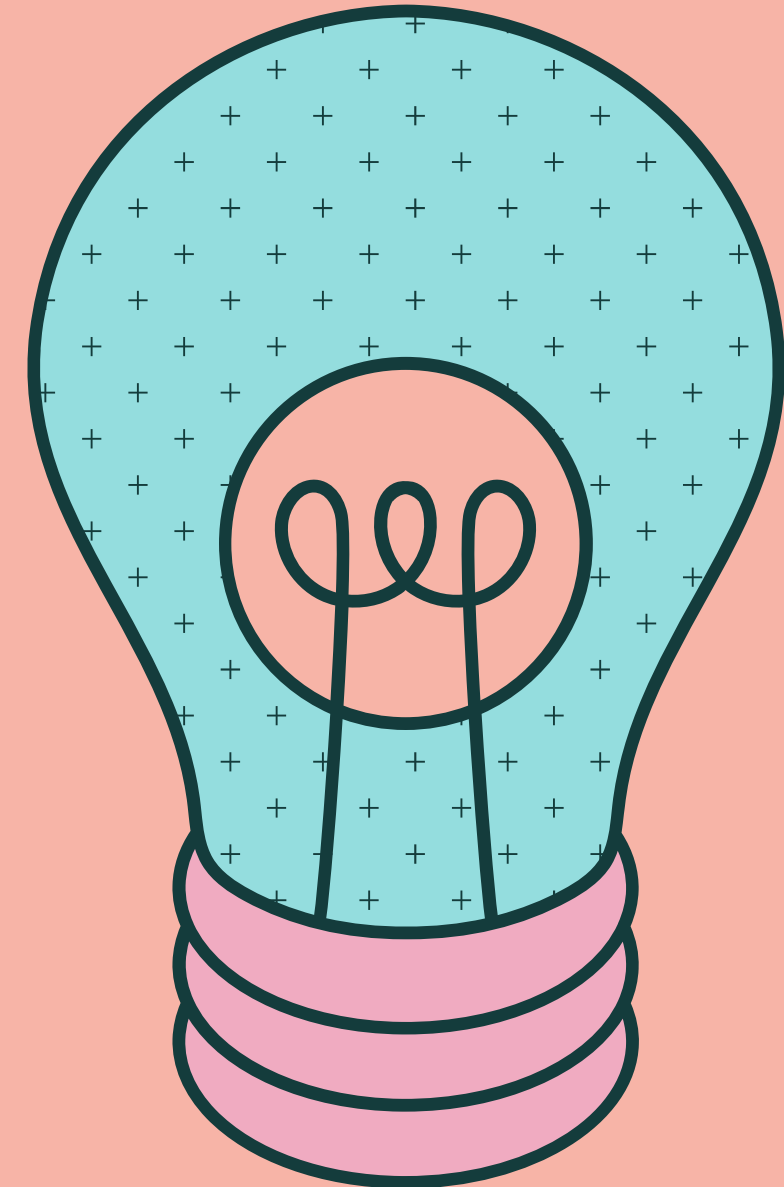
FOR A MORE STREAMLINED WORKFLOW

## Reduce Redundant Fields

Eliminate places where users need to input the same data twice

## Reduce Redundant Steps

Consolidate steps and interstitial pages requiring users to review similar information



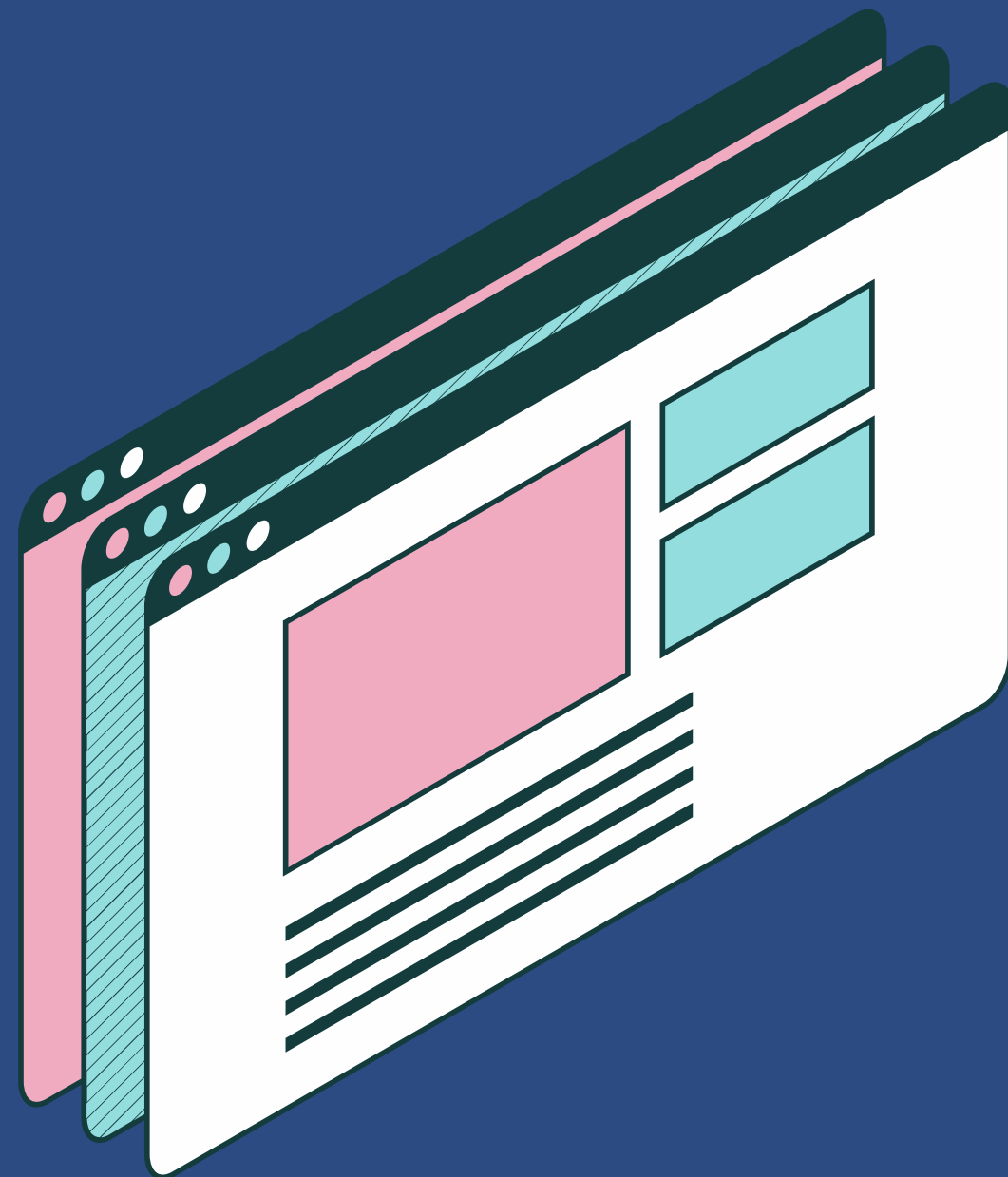


# Area for Improvement: Saved User Data & Preferences

## SEVERITY RATING: 3

- 4 of 6 participants agreed or strongly agreed with the statement "I thought there was too much inconsistency in this interface" in the SUS Questionnaire
- 4 of 6 participants noted they cannot save payment information for future use or use quick-pay options
- 5 of 6 participants expressed the desire for the interface to remember common selections as shortcuts





## WHEN SELECTING PERMIT/LOT/VEHICLES

“It’s just really time consuming. [...] Inputting everything over and over is cumbersome. [...] Saving most-favorite lots and permits so you could one-click purchase it [would be helpful].” (P1)

“Should store information and be more streamlined and a simple few clicks to complete.” (P3)

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## WHEN ENTERING PAYMENT INFORMATION

“On my phone, I have it autocomplete, but the autocomplete has issues, too. [...] It would be nice if it was all saved.” (P1)

“[Would] be cool if I could use Paypal or Apple Pay or Google Pay here. I spend so much time putting in credit card credentials all over the place and takes time out of my human life.” (P4)

“It doesn’t store it from the day before which pisses me off.” (P3)

# Recommendations

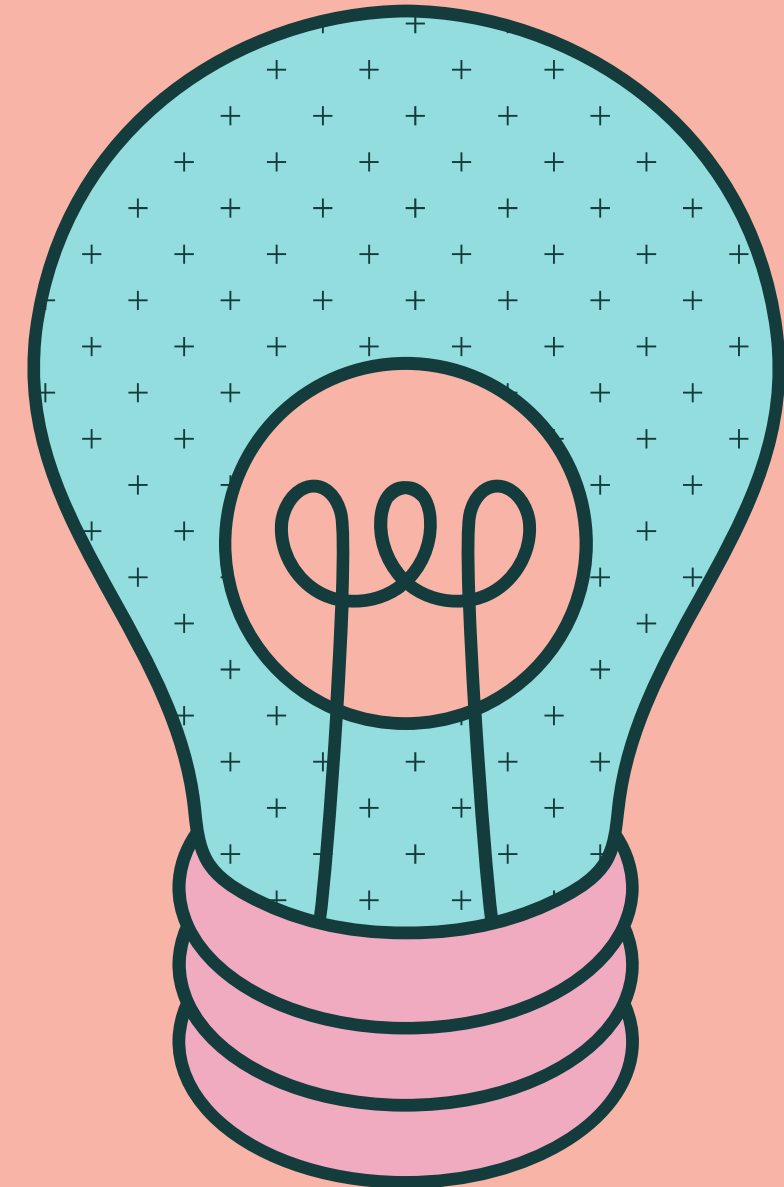
FOR TIME-SAVING SHORTCUTS

## Allow Shortcuts with Frequently-Used Selections

Enable users to save frequent permit/lot/vehicle combinations for future use

## Enable Payment Shortcuts and Autopay Methods

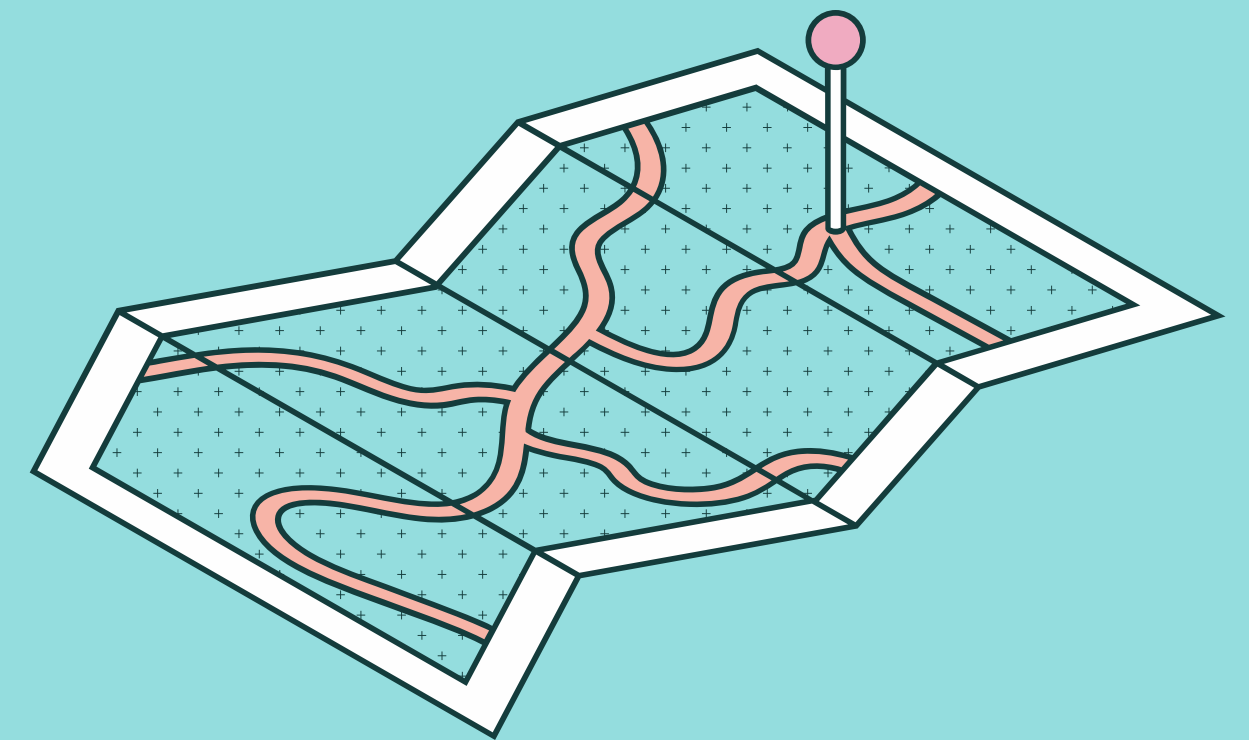
Integrate options for saving financial information or payment shortcuts



# Area for Improvement: Help and Guidance

## SEVERITY RATING: 3

- 5 of 6 participants disagreed or strongly disagreed that the interface provided sufficient help or supportive information
- 6 of 6 participants could not locate information on how to cancel a parking permit and rated the task difficult or very difficult
- 4 of 6 participants abandoned rather than seeking help and said they would pay a higher rate or park without paying rather than asking for help



## Account Information

### ADDRESS

3729 WALLINGFORD AVE N, SEATTLE, WA  
98103

ADD NEW +

Info

Addresses of this type cannot be modified online.

## Your Permit Details

Your permit details are below. If you have a Pay-Per-Use permit, you will be charged based on your usage.

**Permit Number** ONLNDY000305498  
**Type** Night  
**Amount Due** \$0.00  
**Status** Issued  
**Issue Date** 03/06/2023  
**Effective Date** 03/08/2023  
**Expiration Date** 03/08/2023

### Associated Vehicles

Plate Number	Plate State	Vehicle Make	Vehicle Model	Vehicle Color
<a href="#">BNR1473</a>	WASHINGTON	Mazda		Red

**i** At least one vehicle must be linked to your permit at all times. This permit is only valid when linked to the license plate of a vehicle currently parked on campus.

To remove a vehicle from your permit but not from your account, click the "Delete" button next to the vehicle you would like removed.

## LOOKING FOR HELP RESOURCES

“Interface doesn’t offer much guidance on what to do if I need to do something besides those basic tasks. Don’t remember even seeing a phone number or anything [...] no indication on interface that’s an option.” (P4)

"There's not clear info or guidance." (P1)

“In the past, I went to the gate. The person at the gate was not helpful. Didn’t know about permits. One laughed at me.” (P6)

## CANCELING A PERMIT / UPDATING ADDRESSES

“It should tell me in the portal how to do it.” (P5)

“I actually don’t even know how to do this. [...] I would just give up and go to class.” (P1)

“Why can’t I change this online? — If I can’t, tell me why!” (P4)

# Recommendations

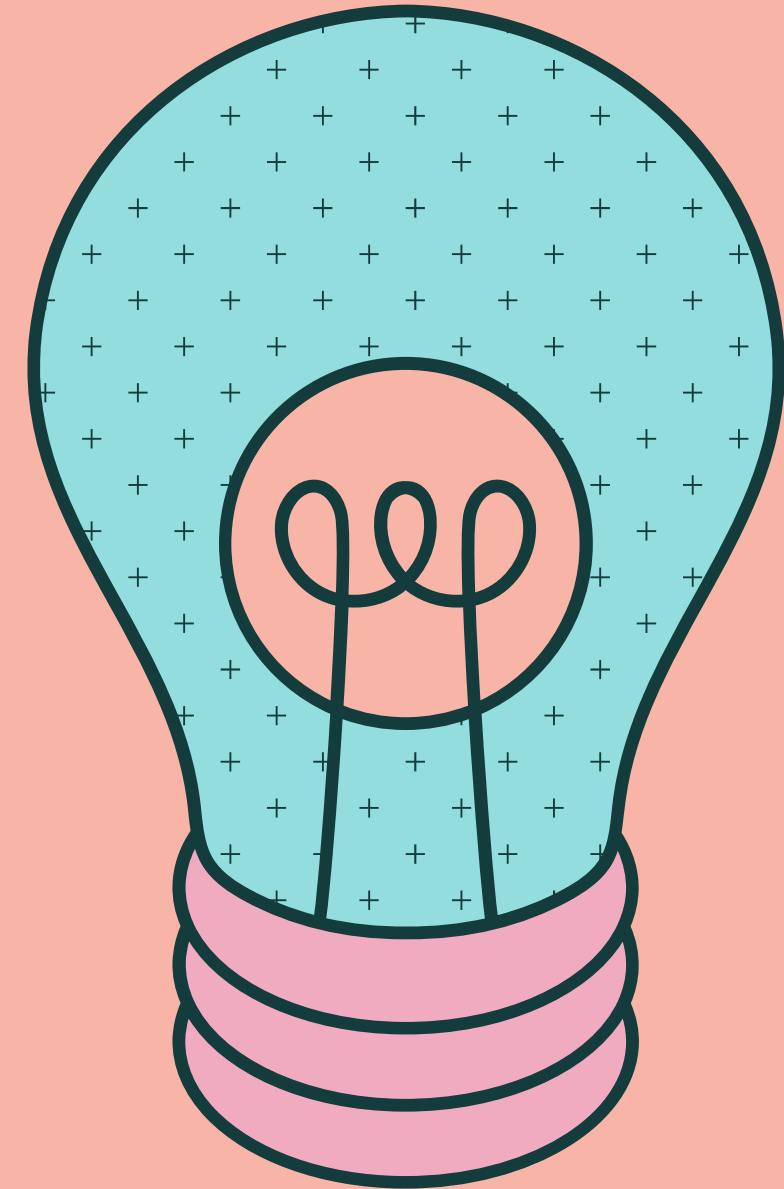
FOR SUPPORTING USERS WITH GUIDANCE

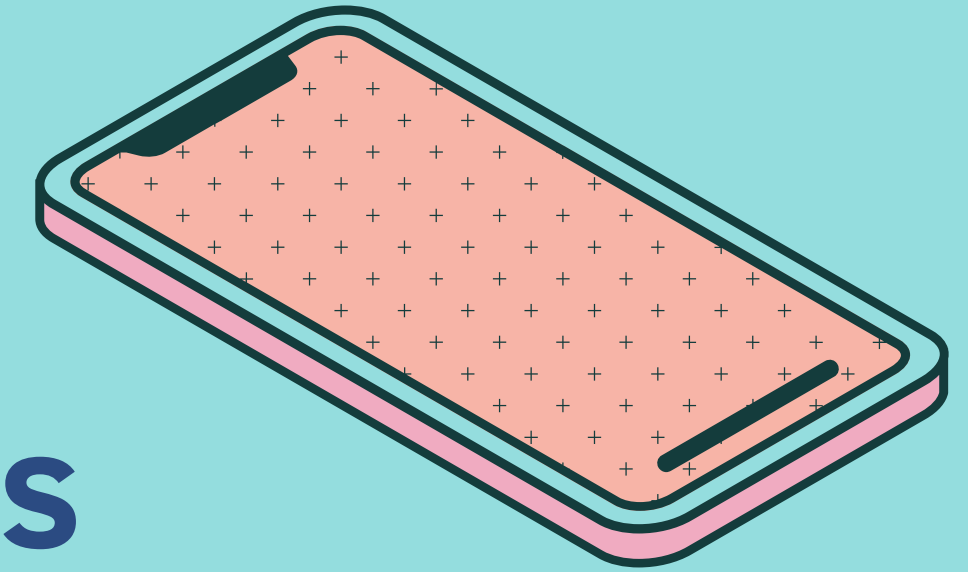
## Place Help Options Prominently

Feature helpful resources in a more visible location

## Use Clear Tooltips Throughout Interface

Supplement current tooltips with clear references, resources, hints and guidance



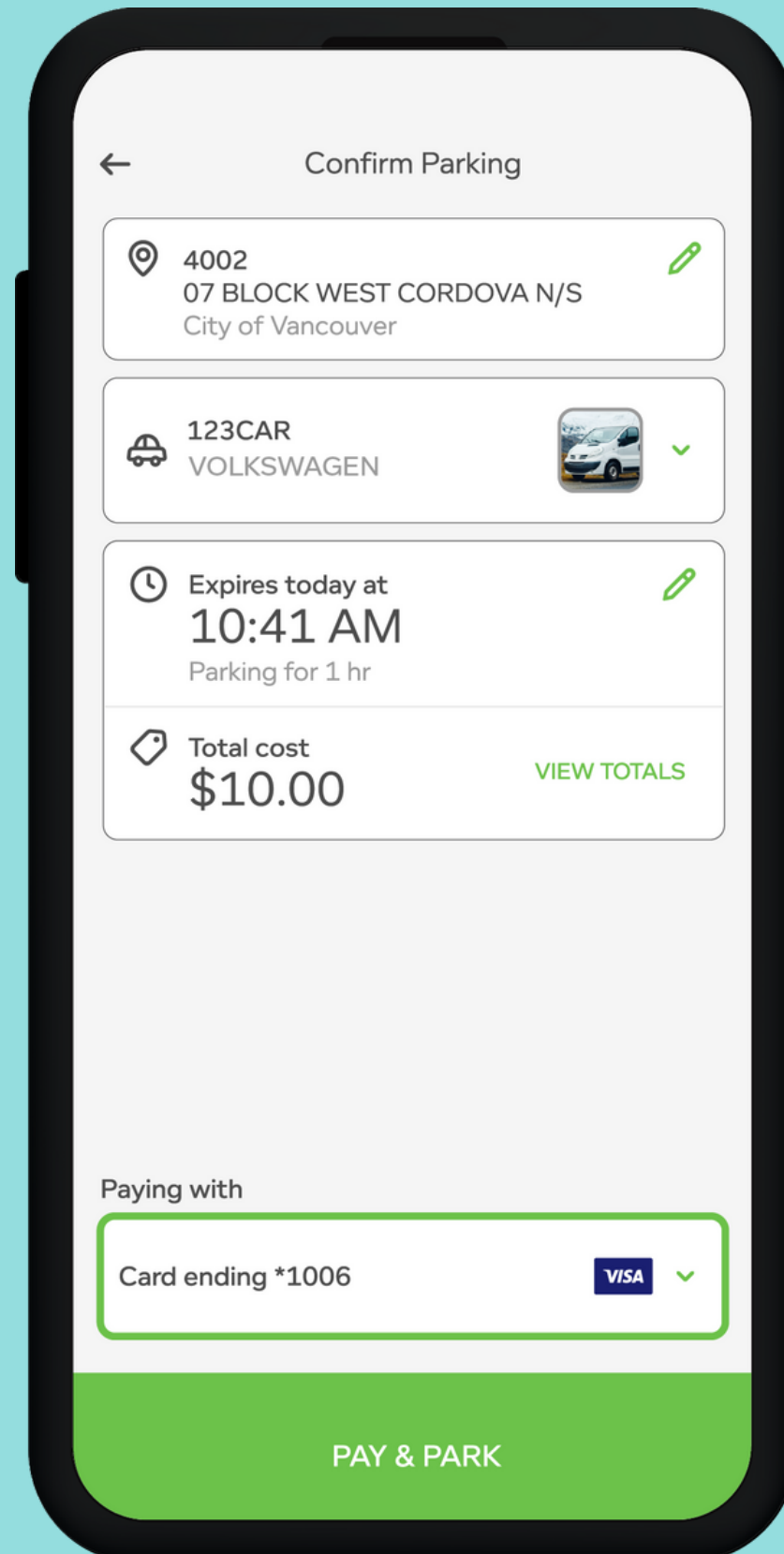


# Further Recommendations

## A COMPARISON WITH THE PAY-BY-PHONE APP

6 of 6 participants indicated a preference for using the Pay-by-Phone mobile app to pay for on-campus parking due to its ease of use (few steps, saved user data, mobile-friendly, fast) despite a higher price point and access to fewer lots.

The recommendations of this team in this presentation and report will enable Transportation Services to create a more competitive interface and ensure greater market share.



# REFLECTIONS



# What Went Well

- ➔ Recruiting through UW HCDE Slack channels
- ➔ Setup and documentation
- ➔ Usability test script
- ➔ Participants' understanding of tasks and questionnaires

## Setup Checklist

### Pre-Session:

- Book room for session on UW campus
- Send session time & location reminder to participant
- Decide on roles (facilitator, note taker, observer)
- Print out tasks, forms, script, and other required documents
- Compile necessary equipment / paperwork and assign who is bringing what (usability study kit, laptop for participant, clipboards, 4 pens, dummy Visa card, participant incentives)
- Pack water for all attendees

## TASK ONE

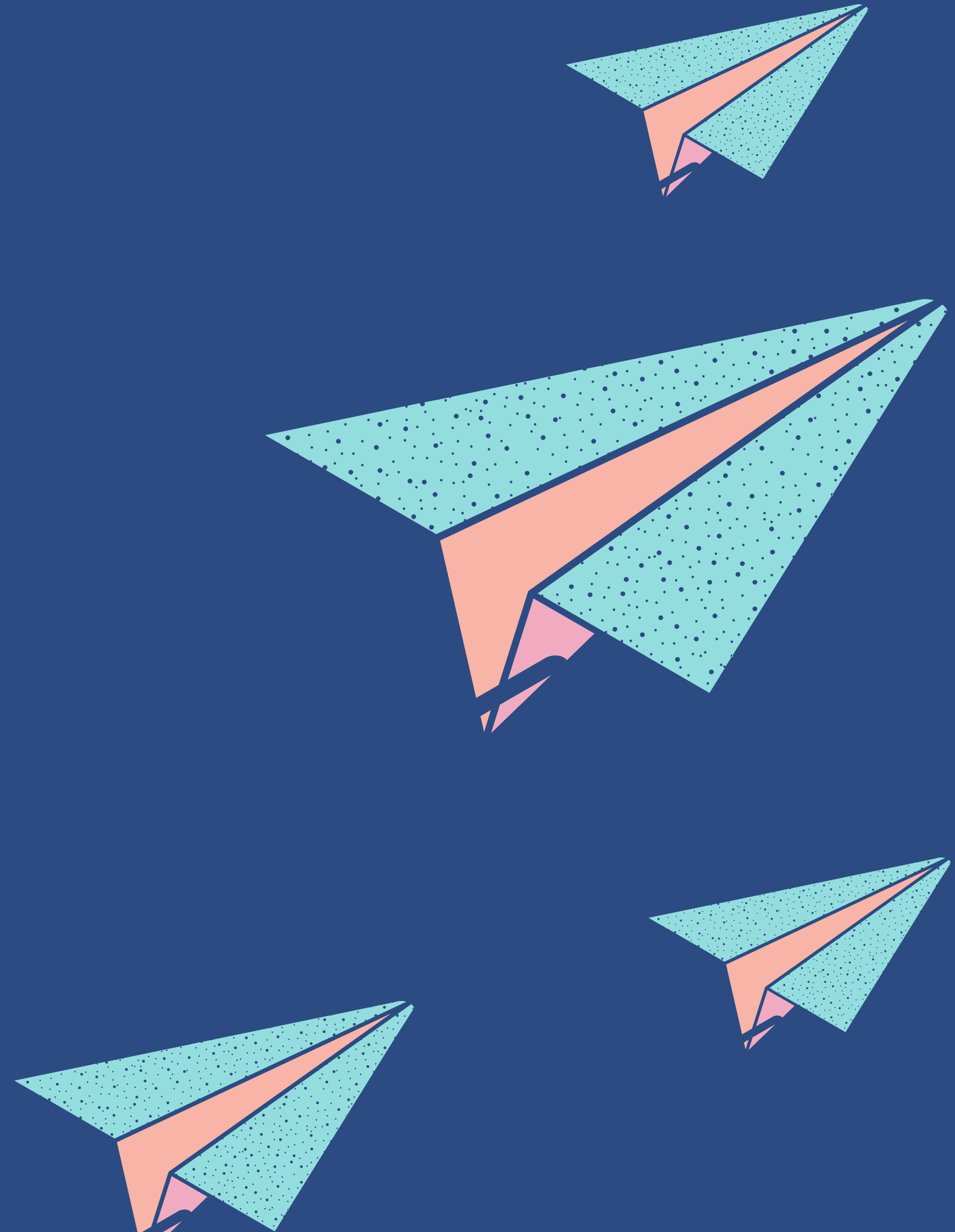
	Very Easy	Easy	Neither Easy nor Difficult	Difficult	Very Difficult
<b>How challenging was the task you just completed?</b>	1	2	3	4	5



# Different Approaches

- ➔ Recruit both students *and* faculty from the beginning
- ➔ Prepare for both in-person and remote sessions
- ➔ Offer more availability for session times from the start
- ➔ Make more explicit notes about when tasks started and ended for the facilitator

**QUESTIONS?**



# APPENDIX

# Participant Details

- ➔ Six participants: Four (4) students, two (2) faculty members
- ➔ Parking methods: All participants had used the parking portal before the study. Other parking methods used included pay-by-phone and gatehouses
- ➔ Tech-savvy? Five (5) of the six (6) participants considered themselves to be tech-savvy
- ➔ Gender: Of the participants who responded, three (3) self-identified as male and two (2) identified as female
- ➔ Age: Of the participants who responded, ages ranged from 25 to 44 years old

See [data logging sheet](#) for more details

# Study Details

## METHOD USED: USABILITY STUDY

- ➔ Two remote sessions were held on Zoom, with the facilitator and note-taker meeting in person at the University of Washington
- ➔ Four sessions were held in person at the University of Washington campus. Three were held in Odegaard, one in the HUB
- ➔ Sessions conducted between 2/17/23 and 2/25/23

Participant	Date Meeting	Time Meeting	Room/Location Reserved
1	2/17/2023	11:30-12:30	Odegaard 334
2	2/17/2023	12:45-1:45	Odegaard 331
3	2/23/23	2-3	Odegaard 316/Remote
4	2/24/23	9-10	Odegaard 316/Remote
5	2/25/23	9-10	HUB
6	2/25/23	10:30-11:30	Odegaard 316

# Task Success/Failure

Task	P1	P2	P3	P4	P5	P6	Average Success Rating	
Finding Parking Portal	1	1	2	3	1	1	2	<b>Key:</b>
Selecting Permit and Parking Lot	1	1	3	2	1	2	2	1 - Success
Confirm Permit details and purchase	1	1	1	1	1	1	1	2 - Success, but needed assistance
Find previously purchased Permits	1	1	1	1	1	1	1	3 - Failure (gave up, did not complete)
Cancel already purchased Permit	3	2	2	2	2	1	2	
Add new vehicle to Portal	1	1	2	1	1	1	1	
Update living address to new location	2	1	3	1	1	1	2	
Need help in the Portal	3	2	1	1	1	1	2	

# Error Severity Rating

Task	P1	P2	P3	P4	P5	P6		
Finding Parking Portal	Errors: None	Errors: None	Errors: 1 interpretation, several navigation Severity: 2	Errors: selection-finding right lot, Severity: 3	Errors: None	Errors: None		<b>Key:</b>
Selecting Permit and Parking Lot	Errors: None	Errors: None	Errors: 1 interpretation Severity: 1	Errors: 1 interpretation Severity: 1	Errors: None	Errors: 1 interpretation. Severity: 1		1 - Irritant
Confirm Permit details and purchase	Errors: None	Errors: None	Errors: None	Errors: None	Errors: None	Errors: None		2 - Moderate
Find previously purchased Permits	Errors: None	Errors: None	Errors: None	Errors: None	Errors: None	Errors: None		3 - Severe
Cancel already purchased Permit	Errors: 1 interpretation, 1 navigational, Severity: 2 Moderate	Errors: multiple navigation Severity: 3	Errors: several navigation errors within portal Severity: 2	Errors: 1 navigational Severity: 1	Errors: navigational, interpretation Severity: 2	Errors: None		4 - Unusable
Add new vehicle to Portal	Errors: None	Errors: None	Errors: navigational, interpretation, different than Staff portal Severity: 2	Errors: None	Errors: None	Errors: None		
Update living address to new location	Errors: 1, interpretation, Severity: 2	Errors: None	Errors: navigational Severity: 2	Errors: None	Errors: None	Errors: None		
Need help in the Portal	Errors: 1 Interpretation, Severity 4	Errors: navigation, interpretation Severity: 2	Errors: None	Errors: None	Errors: None	Errors: None		



# Post-Task Question

HOW CHALLENGING WAS THE TASK YOU JUST COMPLETED?

Task	P1	P2	P3	P4	P5	P6	Average Task Rating		
Finding Parking Portal	4	2	3	4 (5 if website only)	4	1	3	<b>Key:</b> 1 - Very Easy 2 - Easy 3 - Neither Easy nor Difficult 4 - Difficult 5 - Very Difficult	
Selecting Permit and Parking Lot	4	4	4	4	5	1	4		
Confirm Permit details and purchase	4	3	1	1	2	1	2		
Find previously purchased Permits	3	2	1	1	1	1	2		
Cancel already purchased Permit	5	5	4	5	5	5	5		
Add new vehicle to Portal	3	2	2	1	1	1	2		
Update living address to new location	5	3	2	3	1	5	3		
Need help in the Portal	5	2	1	1	1	5	3		
<b>Average rating:</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>			

# SUS Results

Prompt	P1	P2	P3	P4	P5	P6			
I felt very confident using this interface.	5	4	1	2	3	3			<b>Key:</b>
I think that I would like to use this interface frequently.	1	5	5	4	5	5			1 - Strongly Agree
I think that most people would figure out how to use this interface very quickly.	5	2	3	3	3	5			2- Agree
I think that this interface was easy to use.	5	4	4	2	4	5			3- Neither agree nor disagree
I think this interface provided sufficient help/supportive information when needed.	4	2	4	4	4	5			4- Disagree
I found the various functions of this interface were well-organized.	5	4	5	3	4	5			5- Strongly disagree
I found the interface unnecessarily complex.	1	2	5	4	1	1			
I thought there was too much inconsistency in this interface.	1	2	3	4	2	1			
I needed to learn a lot of things before I could get going with this interface.	1	3	3	1	2	1			
<b>SUS SCORE</b>	14	36.4	44.8	50.4	25.2	5.6			<b>Average</b> 29.4

# Resources

- ➔ [Data logging sheet](#): Participant information, location details, overall pre-test questionnaire results, success/failure data, error severity rating, ease of use SEQ, SUS results
- ➔ [Participant documents](#)
- ➔ [Usability study kit](#)
- ➔ [University of Washington's parking portal](#)