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Usability Test Plan

PARKU

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1 Document Overview

This document describes a test plan for conducting a usability test during the development of PARKU. The goals of usability testing include establishing a baseline of user performance, establishing and validating user performance measures, and identifying potential design concerns to be addressed in order to improve the efficiency, productivity, and end-user satisfaction.

The usability test objectives are:

- To determine design inconsistencies and usability problem areas within the user interface and content areas.
- Exercise the application under controlled test conditions with representative users. Data will be used to assess whether usability goals regarding an effective, efficient, and well-received user interface have been achieved.
- Establish baseline user performance and user-satisfaction levels of the user interface for future usability evaluations.

2 Test Setup

2.1 Participants

There will be thirty participants recruited to represent the overall demographic of the LSU campus. They will be recruited using Facebook groups and discord servers offering students free lunch and early app access to participate in a test for a new parking app. To characterize the eligibility of potential recruits we will screen them based on parking pass type to achieve an accurate breakdown of commuters and residents. Proof of COVID-19 vaccination will also be required. Participants will be expected to have a moderate understanding of their own mobile device.

Participants will be selected from the pool of applicants based on their likelihood to need a parking app, their mobile device and their knowledge of both mobile apps. They will be selected to achieve an accurate representation of the apps expected userbase with a bias being put on commuters and iOS users.

The participants' responsibilities will be to attempt to complete a set of representative task scenarios presented to them in as efficient and timely a manner as possible, and to provide feedback regarding the usability of the interface. The participants will be directed to provide honest opinions regarding the usability of the application, and to participate in post-session subjective questionnaires and debriefing.

2.2 Training

The participants will receive an overview of the usability test procedure, equipment, and software.

2.3 Sessions

There will be three sessions consisting of 10 participants each. Developer team will fix problems and bugs between sessions in approximately one week intervals.

2.4 Procedure

Participants will take part in the usability test at Patrick F. Taylor Hall room 1350 in order to test as close to where it will be used as possible. They will be expected to bring a smartphone that fits or succeeds one of the specifications in the table below. Participants will be expected to download and setup the app to their personal mobile device. Their interactions will be monitored through a live recorded video feed from a camera in the testing room, with the developer team monitoring live for more data capture.

Device	Operating System
iPhone 7	iOS 14
Samsung Galaxy S8	Android 10
Google Pixel 1	Android 10
OnePlus 6	Android 10
Moto G	Android 10
LG G7	Android 10
Huawei 2019	Android 10
Nokia 2018	Android 10
Sony Xperia L1	Android 10

To ensure the safety of the participants and the facilitator, the participants will all be assigned seats evenly spread across the room and the facilitator at the front of the room. Participants will sign an informed consent that acknowledges: the participation is voluntary, that participation can cease at any time, and that the session will be videotaped but their privacy of identification will be safeguarded. The facilitator will ask each participant if they have any questions.

Participants will take a pretest asking them their major, age, gender, device and OS, approximate technological literacy, and parking pass type. The facilitator will explain that the amount of time taken to complete the test task will be measured and that exploratory behavior outside the task flow should not occur until after task completion. The handout sheet in front of them will show their tasks and the facilitator will ask everyone at the same time to start a task, and to briefly raise their hand when finished in order for the facilitator and developer team to mark their time.

The facilitator will instruct the participant to ‘think aloud’ so that a verbal record exists of their interaction with the application. The facilitator will record body and

verbal language on an excel sheet. The application will also log data for each user that will be sent to the developer team.

After each task, the participant will complete a post-task questionnaire on their handout directly below the task prompt. Facilitator will ask if anyone has any questions or comments. Once they are resolved, the facilitator will ask everyone to move on to the next task and repeat. After all task scenarios are attempted, each participant will complete a post-test satisfaction questionnaire. The facilitator will ask again for questions or comments, then thank them for their time and dismiss everyone.

3 Roles

The roles involved in a usability test are as follows. An individual may play multiple roles and tests may not require all roles.

Trainer

- Provide training overview prior to usability testing
- Communicate with the facilitator the most frequently asked questions to prepare them for any additional questions that participants may have through usability testing.

Facilitator

- Assist the participants when they need support during the usability test
- Prepare participants by giving a brief overview of the study before testing
- Lead the test observers' debriefing session to identify the issues that occurred during testing

Data Logger

- Developer team will log data from live stream
- Facilitator will log data, mainly subjective and intangibles

Developer Team

- Observe the participants as they navigate through the parking app.
- Take notes throughout the usability test to keep track of the problems identified.
- Communicate with the trainer and facilitator the most common issues that the participants had that involved training prior to usability test

Test Participants

- Ask questions as needed to the facilitator if stuck on something for the application
- Utilize all features to look for any bugs/errors within the application
- Verbally communicate issues within the application, so that the observers can take note of the issue

3.1 Ethics

All persons involved with the usability test are required to adhere to the following ethical guidelines:

- The performance of any test participant must not be individually attributable. Individual participant's name should not be used in reference outside the testing session.
- A description of the participant's performance should not be reported to his or her manager.

4 Test Protocol

4.1 "Get it" Tests

For the "Get it" tests, there are four tests that the participants are given to ensure they understand the basic purpose of the app.

"Get it" tests:

- What is the main purpose of this app?
- Who is this app for?
- While using this app, can you schedule to be parked in a certain spot?
- Can you use this app on another campus?

4.2 Key tasks

The usability tasks were derived from test scenarios developed from use cases and/or with the assistance of a subject-matter expert. The tasks are identical for all participants of a given user role in the study.

The following tasks will be given to the participants:

- Create an account to log into the app
- Modify the dark mode setting
- Locate a lot that has the least available parking spots
- Identify whether a parking spot is taken
- Reserve a parking spot
- Add your current school schedule to the application
- Add a friend to your "Park Pals" list
- Find a user to carpool with
- Locate empty parking spots within the lot that the participant desires
- Identify all three of the added app features

4.3 Data Collection

- How many times a participant gets frustrated (i.e. sighing, loss of temper, clenching of jaw, placing hands over head, facial expressions)
- How many times a participant gives up
- Time spent on each screen
- Number of different screens required to get to goal
- Tasks completed correctly without assistance
- Tasks completed correctly with assistance
- Tasks completed incorrectly
- Number of critical errors
- Number of non-critical errors
- Time required to complete each task

4.4 Questionnaires

Post task questionnaire:

- On a scale of one to ten, how challenging was this task?
- Did you enjoy performing this task?
- Is there something that could be changed to make it better?

Post-test questionnaire:

- Would you use this app?
- What would you change about this app?
- Did you feel that this app infringed upon your privacy rights?
- Would you use the park pals feature?
- Would you use the carpool feature?
- Would you use the scheduling feature?
- What was your favorite part about the app?
- Was there any task that you found too difficult to complete while using the app?
- Would you recommend this app to a friend?

5 Usability Goals

This section describes the usability goals for PARKU.

Key task goals

The following table defines the success metrics and goals for the participants' performance of the key tasks:

Term	Definition	Goal
Completion rate	Percent (%) of participants to complete without critical error	> 95%
Critical error	Error that results in incorrect or incomplete outcome	< 5 total
Error-free rate	Percent (%) of participants to complete without errors critical or non-critical	> 80%
Time on Task (TOT)	Time from start of task to completion	< 2 minutes
Subjective measures	Subjective opinions about a task	Task dependent

Overall Goals

With the following usability goals, the team will be able to assess the performance of PARKU:

- 100% of users should feel as if the app does not infringe upon their rights. It is crucial that users feel comfortable sharing their location as the core feature of our app depends on it.
- At least 80% of users should say that they would use the app. 80% required to ensure a profit is made after product release.
- Every user should be able to set up an account, login, and log out.
- At least 90% of target audience users should be able to find a parking spot in 3 minutes after logging into the app. The app is not useful and will fail if a user does save time using it.
- 85% of users will be able to locate the parking spot that they want to park in with less than 2 false clicks. The user interface should be simple enough to allow users to easily access the core features of the app.
- At least 75% of the users should be able to understand what the special features (carpool, Park Pals list, schedule) are for and how they can be used. It is important that a majority of users understand the value of the apps additional features to avoid gold-plating.

6 Reporting Results

The Usability Test Report will be provided at the conclusion of the usability test. It will consist of a report and/or a presentation of the results; evaluate the usability metrics against the pre-approved goals, subjective evaluations, and specific usability problems and recommendations for resolution. The recommendations will be categorically sized by development team to aid in implementation strategy. The report is anticipated to be delivered within one week.