

Evaluation Assignment - 4

Team (1) Stream Dream - App: Stream and Trail

Usability Test Plan

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Contents

1	Introduction	3
2	App Description	3
3	Outline of the Usability Test	3
4	Instructions to Participants	4
5	Signing Consent Form	4
6	Usability Questions	5
	6.1 Demographic Questionnaire	4
	6.2 Post Experiment Questionnaire	5
7	Bug Report	5
8	Test Scenarios	5
	8.1 Test Scenario 1: Checking The Basic Features of the Application for Both Views	5
	8.1.1 Test Goals	5
	8.1.2 Scenario Description	6
	8.1.3 Task List	6
	8.1.4 Quantitative Measurement List	6
	8.1.5 Qualitative Measurement List	6
	8.1.6 Potential Observations of Participant	7
	8.1.7 Bug Report Form	7
	8.1.8 Post Experiment Questionnaire	7
	8.1.9 Test Set up Details	7
	8.2 Test Scenario 2: Game Session Review	8
	8.2.1 Test Goals	8
	8.2.2 Scenario Description	8
	8.2.3 Task List	8
	8.2.4 Quantitative Measurement List	8
	8.2.5 Qualitative Measurement List	9
	8.2.6 Potential Observations of Participant	9
	8.2.7 Bug Report Form	9
	8.2.8 Post Experiment Questionnaire	9
	8.2.9 Test Set up Details	9
	8.3 Test Scenario 3: Testing Different Algorithms With Different Number of Iteration and Checking Produced Results	10
	8.3.1 Test Goals	10
	8.3.2 Scenario Description	10
	8.3.3 Task List	10
	8.3.4 Quantitative Measurement List	11

8.3.5 Qualitative Measurement List	11
8.3.6 Potential Observations of Participant	11
8.3.7 Bug Report Form	11
8.3.8 Post Experiment Questionnaire	11
8.3.9 Test Set up Details	11
9 Appendix A - Consent Form	13
10 Appendix B - Demographics Questionnaire.....	14
11 Appendix C - Post Experiment Questionnaire.....	15
12 Appendix D - Bug Report Form.....	17

1 Introduction

In this report, we provided a detailed usability information test plan for the traffic application that has educational and research purposes. It's developed by 5 undergraduate students (team 5). In this report first, we describe and summarize the application information. Then we outline the usability tests information and events like instructions, consent forms, questionnaires, test scenarios, and bugs report.

2. App Description

This app mobile based web application which is basically designed to alert the trail users regarding the trail condition and also to give the feedback and rating of the trail conditions, which will help the other trail users to get to know the trail condition before going there.

3 Outline of the Usability Test

The tasks priority for this test are:

1. Instructions to participants
2. Signing consent form
3. Demographic questionnaire
4. Performing the experiment

5. Post-experiment questionnaire There will be a total 6 testing sessions which are online through the zoom application. Each session has the duration of at least one hour. Participants should use their laptop and phone devices to access the URL web application for testing. Dates and time for this test sessions are:

1. 4/12/2021 2:00 PM
2. 4/12/2021 3:00 PM

3. 4/12/2021 4:00 PM
4. 4/14/2021 2:00 PM
5. 4/14/2021 3:00 PM
6. 4/14/2021 4:00 PM

4 Instructions to Participants

Before starting the test sessions and experiment, the experimenter should explain the goal and procedures of this application. Then participants' tasks should be explained to them briefly. The experimenter should make sure there is no risk with using this application and this application's data will be confidential. However, this application has educational purposes and professors of the class might get information about this application for educational purposes in real test purposes which is different. Also, there will be no risk of using this application. At the very end, participants will be asked regarding the usability tasks.

5 Signing Consent Form

The participant should sign the consent form that acknowledges that participants can cease from the experiment at any time if they feel uncomfortable with the test or for any other reason the privacy of their identity will be safeguarded. The participant can participate in the experiment only if they signed the consent form. We attached the consent form in Appendix A.

6 Usability Questions

We provided two different types of questions for the usability test. The first one is the demographic questionnaire which is before the scenarios experiment. The other one is the post-experiment questionnaire which will be given after the scenarios experiment being tested.

6.1 Demographic Questionnaire

After filling out the consent form participants will be asked for doing a demographic questionnaire. It has basic tasks such as participants' gender, age, major and familiarity with using the smartphone or laptop (mostly smartphone experience needed). We included the demographic questionnaire in Appendix B.

6.2 Post Experiment Questionnaire

After running the experiment, the participant will be asked to fill out another questionnaire. This questionnaire is about participants' experience with using the application. Additionally, participants will be asked to give any suggestions or comments about their experience with the application. The post-experiment questionnaire is attached in Appendix C.

7 Bug Report

If we see any error during the program running it means it is the bug. We provided the bug form in Appendix D. Every time that participants (users) encounter any error during the program running, the unique bug number and bug name will be given. If a bug shows up for the first time, the asterisk is put by the bug. For multiple occurrences of the same bug, no description is written except bug name. Also, we provided the bug location that helps us to indicate which part and page of the website (application) have the bug.

8 Test Scenarios

We provided three test scenarios for testing the application and we described each of these tests in below sections. Anyone of the tests will be done during each usability testing session through online sessions.

8.1 Test Scenario 1: Checking The Basic Features of the Authenticated User

8.1.1 Test Goals

Authenticated View:

- 1) To check if the login page and the invitation is working properly.
- 2) To upload and download the report.
- 3) To check the feedback feature is working properly.
- 4) Deleting the irrelevant reports.
- 5) Checking the trail overview as per the report specified.

Normal Users (Unauthenticated)

- 1) To check the trail conditions.
- 2) To submit the report regarding the trail condition.

8.1.2 Scenario Description

There will be two types of users for this application: 1) Authenticated users and 2) Normal users. The Authenticated users will have more features than the Normal users. Like the authenticated users can see the statistics, they can upload and download the trail report. They can delete the reports they find as incorrect or not appropriate. While the normal users can only report the trail condition, they can see the trail conditions.

8.1.3 Task List

- 1) The authenticated user opens the application, they'll click on the nav bar on the top left corner and login into their account using their credentials.
- 2) After login the user can see the trail condition in the home page.
- 3) Checking into the trail list and seeing the individual trail report.
- 4) User click on the report and should be able to give the trail report.
- 5) Users should be able to see the trail statistics by clicking on the statistics button.
- 6) On clicking the upload button the user should be able upload a .csv file which contains the trial report.
- 7) On clicking the download button the user should be able to download a .csv file which contains the trail report.

8.1.4 Quantitative Measurement List

- 1) Number of times the application crashed.
- 2) How many reports can a user submit in a particular time limit like a day?
- 3) Can the authenticated users be able to delete the reports which are incorrect and duplicate?
- 4) Does the download report feature provide the appropriate trail report?
- 5) What if the authenticated user uploads an incorrect report?

8.1.5 Qualitative Measurement List

- 1) Do all the toggle buttons are clear and easily navigated?
- 2) Can a user easily interact with the application?

- 3) Check if the application shows the appropriate report on the home page, as it is the main motive of the application.
- 4) Whether the user is in a confused state in navigating the application and if so, why?

8.1.6 Potential Observations of Participant

- 1) Time that they need to perform the tasks during each run.
- 2) Participant's level of confusion.
- 3) Their ability to understand application general functions and perform the tasks.
- 4) Participant's understanding of the user interface.

8.1.7 Bug Report Form

A Bug report form will be used to indicate functional software problems, including the person reporting the problem, the nature of the problem and instructions for replication. A Bug report form is included in Appendix D.

8.1.8 Post Experiment Questionnaire

After completing all the tasks, the participants will be asked to fill up a post-experiment questionnaire. A post-experiment questionnaire for this scenario is available in Appendix C.

8.1.9 Test Set up Details

We set up and scheduled the zoom meeting for online usability testing. At the very beginning, they should fill out the consent form and Demographic Questionnaire. The instructor and students will run the application on their laptop or mobile (preferred laptop to see the details in the share screen). Verbal instruction from the explanation parts of the test will be given to participants. During the running time of the application based on each participant's turn, they should share their screen and perform the tasks. After the test is completed, participants will fill out the Post Experiment Questionnaire.

8.2 Test Scenario 2: Trail Report Form

8.2.1 Test Goals

- 1) To check if the user is able to access the trail report form.
- 2) To check if the user is able to report the condition of a particular trail by choosing the trail name.
- 3) To check if all the features in the page are working properly like, selecting the time and date, accessing the current location, giving the caution sign and rating the visit.

8.2.2 Scenario Description

On the top left corner of the application there will be a nav bar where the user can find a toggle button called trail report. If the user clicks on it, the user is able to give feedback of the trail. Consider if a user has been to a trail, the user can share his experience as a feedback here. The user can select the trail name and the date and time of his visit and rate the visit on a scale of 5. There will be a text box where the user can share the details about the trail like how the trail is, what's the problem there(slippery, muddy). The user can also add a caution sign which alerts other trail users. The user can also add the geometric coordinates of the trail so that the trail managers and the trail users can know the exact location where the trail is not good to use.

8.2.3 Task List

- 1) The user opens the application.
- 2) On the top left corner there will be a navigation bar, click on it.
- 3) Click on the trail report option in it.
- 4) Select the trail which we want to report.
- 5) Select the exact date and time.
- 6) Rate the trail on the scale of 5.
- 7) Add your experience in the text box there.
- 8) Turn on the caution sign, if you find the trail condition is not good for use.
- 9) Use the current location feature to add the exact location where you found the trail condition is so bad.
- 10) Submit your report.

8.2.4 Quantitative Measurement List

- 1) The amount of time that it takes to export the result into the CSV file.

- 2) Can we be able to see the relevant feedback on the home page with reference to our feedback. (Like if we gave the report as the trail is not good for use, do we see the same information on the home page).
- 3) Total number of errors occurred during this report process (If we give the trail rating as 4, and there are also other users who give the rating. Does the overall rating is exceeding 5 (E.g., 5.3/5) or the rating is average of all).

8.2.5 Qualitative Measurement List

- 1) Are participants easily interacting with the application?
- 2) Do the toggle buttons and the text is clear?
- 3) If the user gives a wrong feedback or incorrect feedback, can that be reported or deleted?
- 4) Is the user satisfied with the functionalities?

8.2.6 Potential Observations of Participant

- 1) Participant's level of confusion.
- 2) Their ability to understand application general functions and ideas and perform the tasks.
- 3) Participant's understanding of the user interface

8.2.7 Bug Report Form

A Bug report form will be used to indicate functional software problems, including the person reporting the problem, the nature of the problem and instructions for replication. A Bug report form is included in Appendix D.

8.2.8 Post Experiment Questionnaire

After completing all the tasks, the participants will be asked to fill up a post-experiment questionnaire. A post-experiment questionnaire for this scenario is available in Appendix C.

8.2.9 Test Set up Details

We set up and scheduled the zoom meeting for online usability testing. At the very beginning, they should fill out the consent form and Demographic Questionnaire. The instructor and

students will run the application on their laptop or mobile (preferred laptop to see the details in the share screen). Verbal instruction from the explanation parts of the test will be given to participants. During the running time of the application based on each participant's turn, they should share their screen and do the process of reporting trail conditions. After the test is completed, participants will fill out the Post Experiment Questionnaire.

8.3 Test Scenario 3: Uploading and Downloading the Reports by Scientists/ Researchers

8.3.1 Test Goals

- 1) Is it possible to upload the report for an authentic user?
- 2) Is it possible to download the report for an authentic user?
- 3) Does the report consist of the relevant information?
- 4) Can we download the report in a selected time span?

8.3.2 Scenario Description

The Scientists and the researchers are nothing but the authentic users here. They have some more features than the normal users. Then can upload and download the reports of the trail. Those reports consist of the trail information, the sensor reading, trail users information, and their feedback. Here we are checking whether the authentic user is able to download the reports and checking whether the reports consists of the appropriate information. And also can the user be able to download the report of the particular time span, like the report of the last 5 days etc.

8.3.3 Task List

- 1) User opens the application.
- 2) Click on the top left navigation bar and then click on the login button.
- 3) Then the user logins with his credentials.
- 4) In the home page there will be options like upload and the download data toggle bars.
- 5) Click on upload data, and check whether the user can be able to upload the .csv report file or not or the user can submit the report manually by clicking the manual entry option there.
- 6) After the uploading process, the user can click on the download data, and check whether the user is able to download them with the selected time range.
- 7) And also check the downloads .csv file consists of the appropriate information or not.

8.3.4 Quantitative Measurement List

- 1) How many times a user can upload the data and download the data.
- 2) Does the downloaded data consist of the relevant information or not.
- 3) Does the downloaded data is within the selected time range.

8.3.5 Qualitative Measurement List

- 1) How much participant satisfaction with the application functions?
- 2) Can the participants easily access the application?
- 3) Are produced results meaningful and easy to understand?
- 4) Does the downloaded report is in user understandable format?
- 5) Whether the participant is confused and if so, why?

8.3.6 Potential Observations of Participant

- 1) Participant understanding of result interpretation.
- 2) Participant's level of confusion.
- 3) Can the participant be able to understand the downloaded results(Like the report format is user understandable or not?).
- 4) Participant's understanding of the user interface.

8.3.7 Bug Report Form

A Bug report form will be used to indicate functional software problems, including the person reporting the problem, the nature of the problem and instructions for replication. A Bug report form is included in Appendix D.

8.3.8 Post Experiment Questionnaire

After completing all the tasks, the participants will be asked to fill up a post-experiment questionnaire. A post-experiment questionnaire for this scenario is available in Appendix C.

8.3.9 Test Set up Details

We set up and scheduled the zoom meeting for online usability testing. At the very beginning, they should fill out the consent form and Demographic Questionnaire. The instructor and students will run the application on their laptop or mobile (preferred laptop to see the details in

the share screen). Verbal instruction from the explanation parts of the test will be given to participants. During the running time of the application based on each participant's turn, they should share their screen and continue the process. After the test is completed, participants will fill out the Post Experiment Questionnaire.

9 Appendix A - Consent Form

You are being invited to participate in a research study to determine the usefulness and usability of computer user interfaces. This study is being conducted by Dr. Robert Pastel of Michigan Technological University Computer Science Department and students in Dr. Pastel's HumanComputer Interaction (HCI) courses. The students are performing the usability tests as part of their project and to fulfill the HCI course requirements. There are no known risks if you decide to participate in this research study. There are no costs to you for participating in the study. The information you provide and tasks that you will perform will determine the usefulness and usability of user interfaces. The questionnaires and the tasks should take less than an hour to complete. The information collected may not benefit you directly, but the information learned in this study will provide more general benefits. The questionnaires and tests are anonymous. Do not write your name on the survey. No one will be able to identify you or your answers, and no one will know whether or not you participated in the study except for the instructor of the class that is giving you credit for participating. Should the data be published, no individual information will be disclosed. Your participation in this study is voluntary. By completing the questionnaires and performing the tasks, you are voluntarily agreeing to participate. You are free to decline to answer any particular question you do not wish to answer or not to perform a task for any reason. If you have any questions about the study, please contact Dr. Robert Pastel, Assistant Professor, Computer Science Department, Michigan Technological University, Houghton, MI 49931.

The MTU Institutional Review Board has reviewed my request to conduct this project. If you have any concerns about your rights in this study, please contact Joanne Polzien of the MTU-IRB at 906-487-2902 or email jpolzien@mtu.edu.

Participant signature and date:

10 Appendix B - Demographics Questionnaire

1. Age:

2. Gender.

3. How many years have you used a smartphone?

4. Do you have any difficulties with viewing colors, contrast, or fonts on a smartphone or computer screen that you are aware of?

(a) Yes

(b) No

5. I am very interested in the testing of this application.

(a) Strongly agree

(b) Agree

(c) Neutral

(d) Disagree

(e) Strongly disagree

11 Appendix C - Post Experiment Questionnaire

Please indicate your level of agreement to the following statements:

1. Overall, this application was easy to perform the task.

- (a) Strongly agree
- (b) Agree
- (c) Neutral
- (d) Disagree
- (e) Strongly disagree

2. I enjoyed using this application.

- (a) Strongly agree
- (b) Agree
- (c) Neutral
- (d) Disagree
- (e) Strongly disagree

3. The toggle buttons are clear and easily navigable.

- (a) Strongly agree
- (b) Agree
- (c) Neutral
- (d) Disagree
- (e) Strongly disagree

4. The text was easy to read and understand.

- (a) Strongly agree
- (b) Agree
- (c) Neutral
- (d) Disagree
- (e) Strongly disagree

5. I was able to complete my tasks efficiently.

- (a) Strongly agree
- (b) Agree
- (c) Neutral
- (d) Disagree
- (e) Strongly disagree

6. I would use this application again.

- (a) Strongly agree
- (b) Agree
- (c) Neutral
- (d) Disagree
- (e) Strongly disagree

7. What did you like most about this application?

8. Do you have any suggestions for the improvement of this application?

12 Appendix D - Bug Report Form

In order to compare test results across teams, a bug reporting form is being used as part of the usability test. When a bug is first encountered, an asterisk is put by the bug to mark it. If the bug occurs across multiple users or even the same user, you do not put an asterisk by the bug. The test assistants will aid in identifying the bugs throughout the testing session.

App Name: Stream & Trail

Reported By: Naveen Boinapelly

Date: _____

Time: _____

Bug Number	Bug Name	Bug Location	Bug Description (short description of the bug for replication)