

Evaluation Assignment 6

Usability Test Report

Team 5: iPatts

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Introduction

Description of User Interface

Individual Person Activity-Travel System (iPatts) is a web application that allows users to track and record their travel activity. Through smart phone's web browser, and by registering a new user on the app, users can access to iPatts where they can log multi-day travel data. iPatts allows users to provide more information about their travels. This information includes activity types or travel purpose (e.g. work, school, shopping activity, etc.). Users may either use GPS function (to use their current location) or use the map to log their activity location information. It is worth mentioning that, added trips can be viewed and edited by the users through "Edit trip" page. Data can be filtered and viewed by dates. In addition, users can download CSV and document their travel activity. The resulting data provides scientists with spatially and temporally distributed trips from different origins and destinations which, above all, helps them to understand travel demand and behavior for planning transportation infrastructure systems. Please refer to [the developers' group page](#) and the [latest design documents](#) for more information.

Test goals

The usability test is conducted to identify usability any issues related to the developed application. In addition, the test is conducted to evaluate the application's UI for ease of use. The evaluation is performed under different case studies. It is worth mentioning that, users' feedback, which is received during the experiment would be helpful to further improve the developed application.

Test Description

Usability tests took place in Rekhi 217 and Computer Science lounge. In each one-hour session, three observers were presented, one UX expert and two developers. Prior to the test, each participant was asked to read and sign the consent form. In addition, pre-test questions were provided to the participant. Also, the purpose of the usability test and the purpose of the application were described. Afterwards, the participant was provided with four different scenarios, one at a time. Finally, the participants were asked to complete the post-test questions. After each test, the observers had a brief discussion about the testing process.

Test Plan

Test Scenario 1: Create and login to new account

Test Goals for the scenario

The main goal of this test scenario is to determine whether the user can smoothly create and login a new account in iPATTS, the developed application. In other words, we would like to observe that how smoothly can users successfully login to the iPATTS. To do so, the users are asked to open iPATTS from a web browser on a smart phone, create and login to a new account. Besides, the average time required for the users to complete the given tasks can be determined, and possible bugs can be identified.

Quantitative measurement list

- The time it takes to create and login to the app.
- Total number of non-fatal user errors. (Recover without any assistances)
- Total number of fatal user errors. (Recover with assistance)
- Total number of the times user asked for help
- Total time required to recover from an error

Scenario description

General info: Before starting the experiment, let me provide with a brief description of the developed application and its main objectives. iPATTS, can collect activity-travel dynamics of an individual person in 24-hours over many days. This application will track individual traveler's daily activity to help us understand travel behavior and forecast travel demand for planning transportation infrastructure systems. To collect such data, each user should open iPATTS from a web browser on his/her smart phone, login to the app and log each trip properly.

At this point, you will be provided with several scenarios. Your job is to act as a user and complete the given tasks appropriately. Please feel free to ask for further clarifications, if required. Also, please speak out loud while you are performing the tasks. This helps us to pursue your actions.

For this task, imagine that you are taking a transportation course offered by the civil engineering department at MTU. The professor gives you an assignment that requires to track and record your trips. The professor provides you with the iPATTS which, helps you can do so. To begin with, you are required to create an account and login to the application.

Task list

- Open iPATTS from a web browser on a smart phone
- Click on “Sign up here” on the home screen
- Enter in the required information
- Create a password and click on “Sign up” button
- Login with the created account

Qualitative measurement list

Confusion, if any, through facial expression and listening while speaking out loud

Frustration, if any, through facial expression and interests in completing the task

Potential observations of participant

Participant may become confused about buttons due to their size or colors

Participant may face difficulties in reading the texts due to the size of the fonts

Participant may enter incorrect/invalid information (e.g. DoB 2020)

Test Scenario 2: Add a new trip

Test Goals for the scenario

The main goal of this test scenario is to determine whether the user can successfully add a trip in his account. To accomplish this goal, the user is asked to log a tip by going to the trip page of iPATTS.

Quantitative measurement list

- The time it takes to find the appropriate page
- The time required to enter the required information (i.e. Origin, destination, details, etc.).
- Total number of non-fatal user errors. (Recover without any assistances)
- Total number of fatal user errors. (Recover with assistance)
- Total number of the times user asked for help
- Total time required to recover from an error

Scenario description

For this task, imagine that you are taking a short trip from your home to the campus. Please go to the appropriate page “trip page” in the app, once you are in your account, and add your trip properly

by entering the required information. Imagine that your class is finished and you would like to go to a friend's house. Please add this trip to your app. as well!

Task list

- Go to the trip page
- Click on “Add a trip” on the page
- Enter in the required information
- Enter additional information on trip details
- Click on “Save trip” button
- Add another trip by clicking on “Add a trip”, and repeat the mentioned steps

Qualitative measurement list

Confusion, if any, through facial expression and listening while speaking out loud

Frustration, if any, through facial expression and interests in completing the task

Potential observations of participant

Participant may become confused about buttons due to their size or colors

Participant may face difficulties in reading the texts due to the size of the fonts

Participant may enter incorrect/invalid date (e.g. future time and date 2020)

Test Scenario 3: View and edit a trip and observe the update

Test Goals for the scenario

The main goal of this test scenario is to determine if the user can smoothly view and edit the trips he/she added earlier. To do so, the user is asked to view the added trips and edit a trip by clicking on the trip. Also, the user is asked to confirm that the trip information has been changed after he edited it.

Quantitative measurement list

- The time it takes to find the appropriate page to view the trips
- The time required to reread and edit the information
- The time required to confirm the changes
- Total number of non-fatal user errors. (Recover without any assistances)
- Total number of fatal user errors. (Recover with assistance)
- Total number of the times user asked for help

- Total time required to recover from an error

Scenario description

From “viewing trip” page where you can observe your added trips, you realize that you accidentally entered a wrong information. In this case, imagine that you selected “School” for the purpose of your trip while you were going to “work”. Therefore, you would like to edit the trip information. To do so, you may click on the added trip and edit it as desired. You may check if your trip has been updated.

Task list

- Go to the viewing trip page
- Click on the trip that needs to be edited
- Re-enter the information
- Click on “Save trip” button
- Go to viewing trip page to confirm that the trip has been updated

Qualitative measurement list

Confusion, if any, through facial expression and listening while speaking out loud

Frustration, if any, through facial expression and interests in completing the task

Potential observations of participant

Participant may become confused about buttons due to their size or colors

Participant may face difficulties in reading the texts due to the size of the fonts

Participant may enter incorrect/invalid date (e.g. 2020)

Test Scenario 4: Downloading Data

Test Goals for the scenario

The main goal of this test scenario is to determine if the user can easily download the added trips, and view it in Microsoft Excel. To do so, the user is asked to find the download button on the trip page, and once downloaded, open the file through Microsoft Excel. The user is also asked to verify the data.

Quantitative measurement list

- The time required to download the data
- The time required to verify the data
- Total number of non-fatal user errors. (Recover without any assistances)

- Total number of fatal user errors. (Recover with assistance)
- Total number of the times user asked for help
- Total time required to recover from an error

Scenario description

Let us assume that you added all your trip activities and you would like to document your data. To do so, you need to download your trip from the app. Once you downloaded the data, you should be able to open it through Microsoft Excel. Now that you have your data on your personal computer, you would like to check whether all logged trips are correct.

Task list

- Go to the trip page
- Click on the download button
- Open the file via Microsoft Excel
- Verification

Qualitative measurement list

Confusion, if any, through facial expression and listening while speaking out loud

Frustration, if any, through facial expression and interests in completing the task

Potential observations of participant

Participant may become confused about buttons due to their size or colors

Participant may face difficulties in reading the texts due to the size of the fonts

Participant may be confused about the “view” format in downloaded file

Results

3.1 Pre-test questions results

In this usability test, five individuals (80% men, 20% women, age range: 18-22 years) were participated. All the participants have used the Internet for more than 5 years; thus, they had no difficulty with using a web based application like iPatts. Figure 1 depicts the participants' experience in using a smart phone. We have witnessed that the majority of the participants had used a smart phone for more than 2 years. The results show that 40% of them have used a smart

phone for over 4 years. Therefore, the participants in this usability test had enough knowledge about a smart phone.

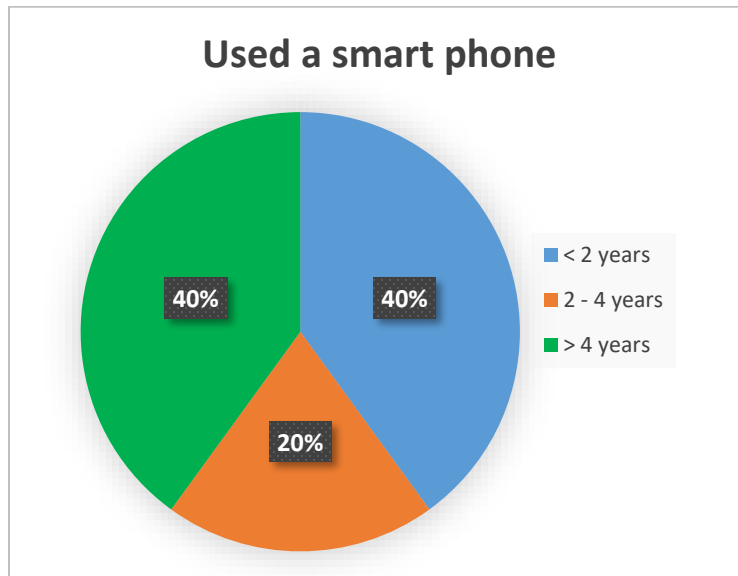


Figure 1. The years that users have used a smart phone

Figure 2 also shows that all the participants spend at least 10 hours per week on the Internet. It has been found that, 40% of the participants use the Internet for over 20 hours per week. This result may reveal the periods that people at this age are connected to the Internet. In other words, participant's access to the Internet may increase the accuracy of the results obtained by iPatts. Indeed, iPatts, although does not require the users to be connected to the Internet, but to keep track on the real-time individual's travel activity, Internet connection might be helpful.

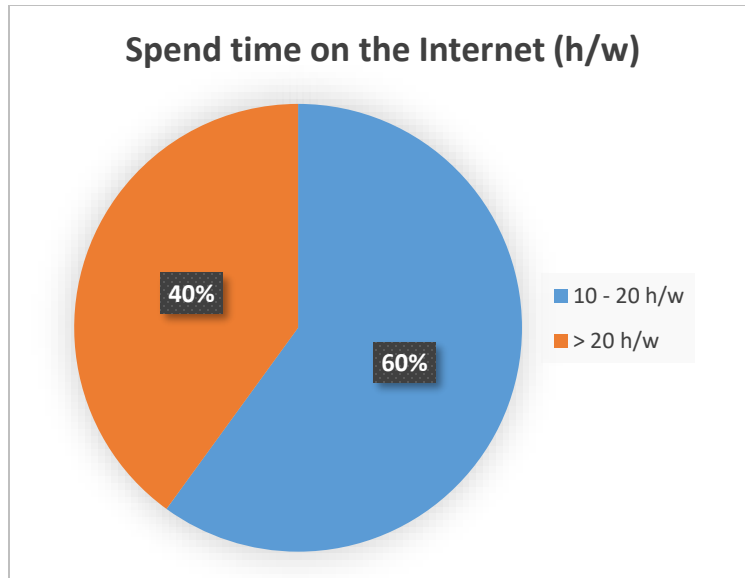


Figure 2. Hours per week that participants use the Internet

Figure 2 shows the level of participants' interests in the usability tests. Although 40% mentioned that they were neutral, the majority (60%) of the participants were interested in performing the tests. Therefore, such level of interests may have negligible impact, if any at all, on our results.

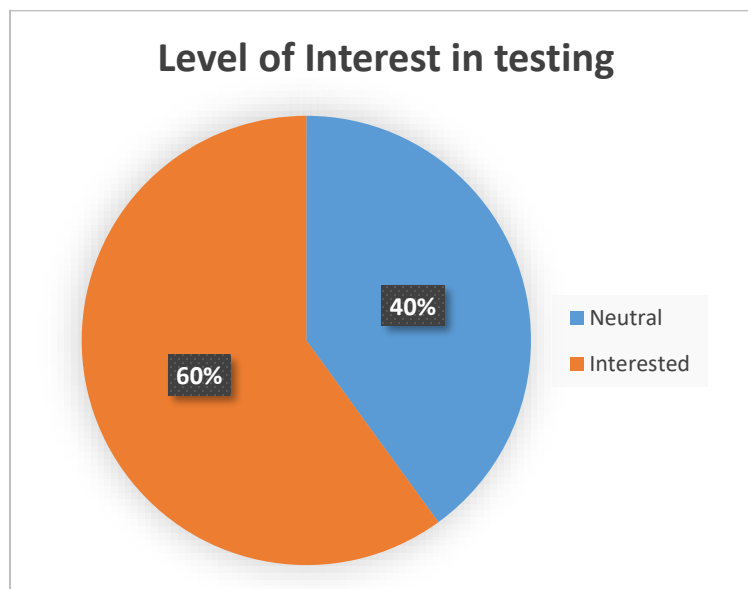


Figure 3. Participants' level of interests in the testing

3.2 Post-test questions results

Figure 4 depicts that all the participants found the application easy to perform. Among them, 20% agreed that it is very easy to use the iPatts. It is worth mentioning that, this figure only shows the overall performance of the application; while, figure 5 illustrates the degree of difficulty in each given scenario (from very easy to very hard, 1 to 5). As aforementioned earlier, iPatts is evaluated under four different scenarios, each of which assessed an iPatts feature. These scenarios include: Creating an account and signing to iPatts, adding and viewing trips, editing an added trip, and downloading the data. We observe that participant No. 1 found all the given tasks but number 3 (editing an added trip) very easy to use. According to the participant, editing a trip was “normal” in terms of difficulty due to the missing edit button. As the figure shows, Participants No. 2 found all the tasks, scenarios, very easy to complete. The next participant, No. 3, also had no issue with completing the tasks. As we have witnessed, the degree of difficulty of the last three scenarios from the participant’s perspective were easy while he found the first task very easy to complete. In addition, participants No. 4 found scenarios number 1 and 4 very easy; while, scenario 2 and 3 easy to complete. Finally, as the figure illustrates, the last participant found scenario 1, 2, and scenario 3, 4 easy and very easy, respectively.

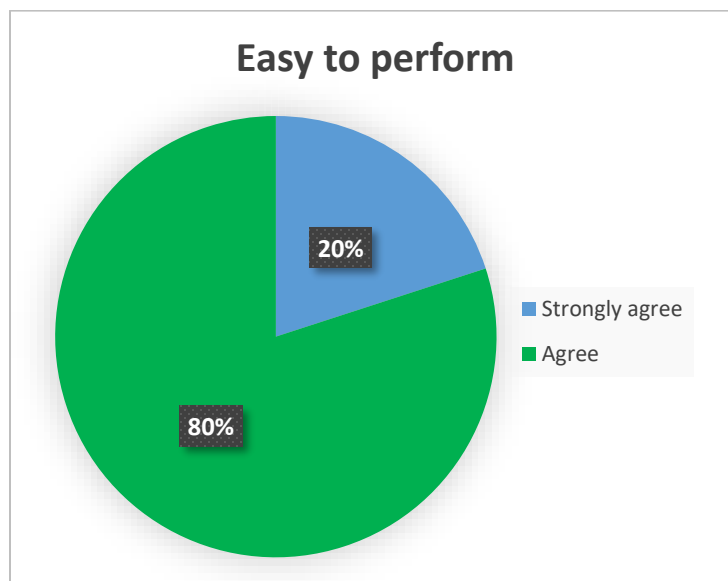


Figure 4. Was the application easy to perform?

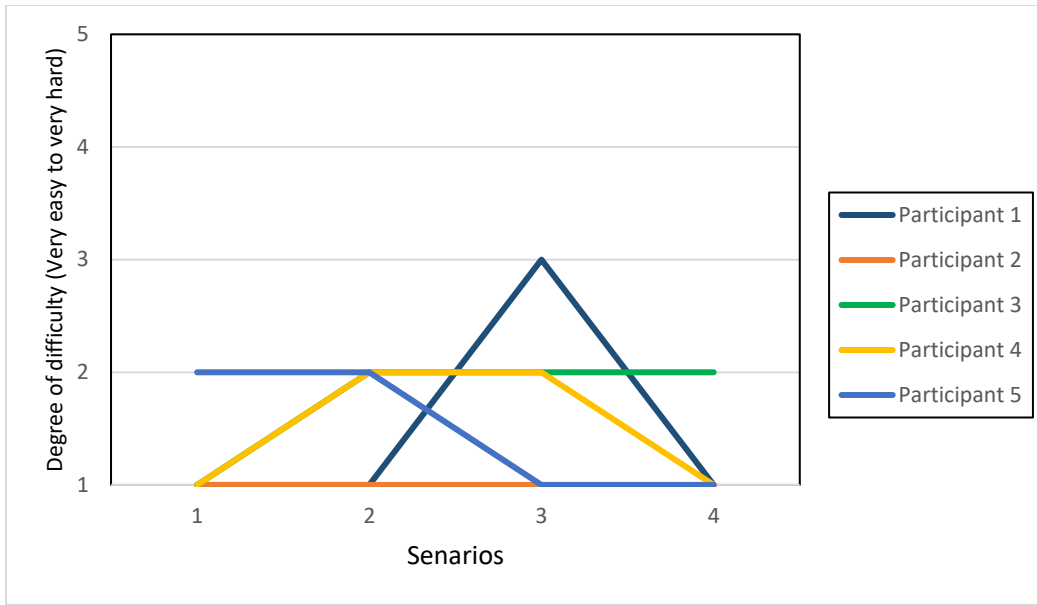


Figure 5. Degree of difficulty in each scenario, where 1: very easy, 2: easy, 3: normal, 4: hard and 5: very hard

Figure 6 depicts that only 20% of the participants enjoyed using the app while 20% were neutral. The rationale behind this level of happiness might be related to the purpose of their participation, achieving extra credits. Therefore, this level of happiness might not reflect the actual users' view.

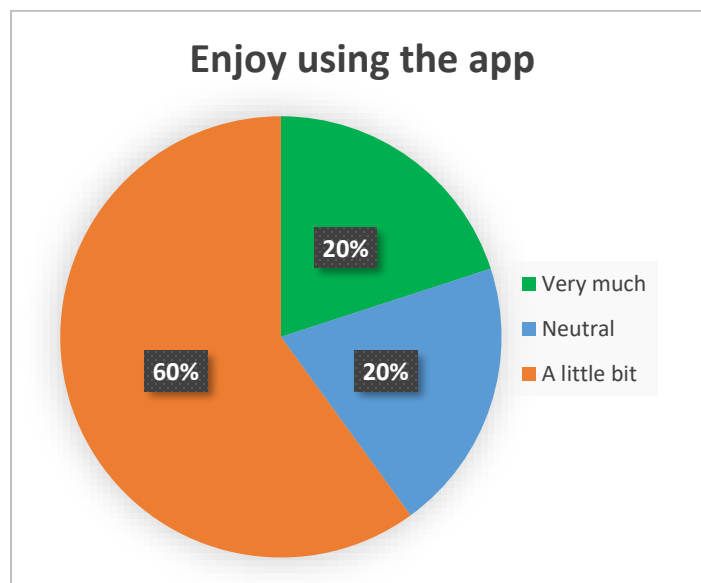


Figure 6. Level of participants' happiness using the application

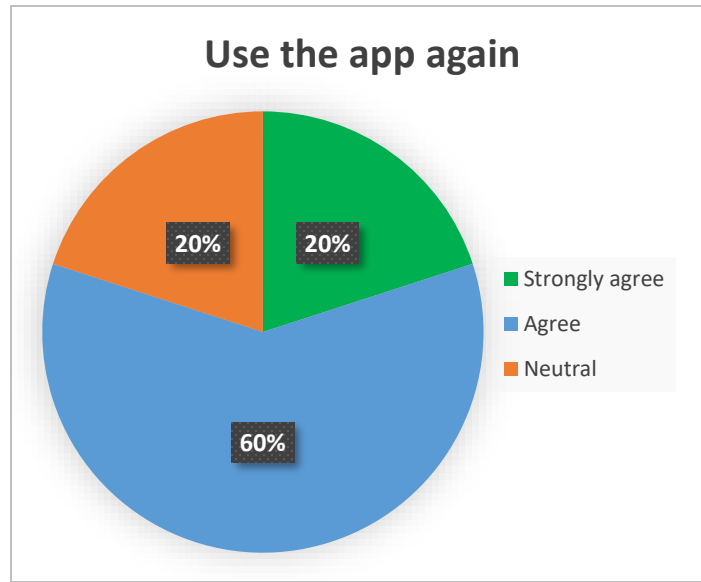


Figure 7. Percentage of the participants that are willing to utilize the app again

Figure 7 illustrates that at least 80% of the participants are willing to use the application again. In addition, 20% of the participants are strongly agreed to use iPatts. This may show the performance and the efficiency of the UI of the application.

3.3 Quantitative results

Table 1 demonstrates the quantitative results.

Scenario NO.	Scenario description	Time on average (min)	Number of non-fatal error	Number of fatal error	Number of help needed	Time to recover error
1	Create and log in	< 2	2	0	2	< 1
2	Add and view trips	< 1	2	1	2	< 1
3	Edit a trip and confirm changes	< 1	0	1	1	< 1
4	Download the data	< 1	0	0	0	-

3.4 Qualitative results

Based on the participants' facial expression, they were neutral to interested in completing the given tasks. In general, the participants were attentive in testing process; however, they sometimes seemed reluctant to read the instructions provided in the app. In addition, the participants were comfortable during the experiment.

Conclusion

This report evaluated and demonstrated the findings of a usability test of iPatts. According to the test results, the participants completed all the given tasks without a major usability bug. It has been found that, iPatts is easy to utilize and navigate. In general, there is no major issue with the application's performance; however, we observed some inconsistencies during the experiments. To solve this problem, the bugs that are highlighted in the Bug report's table in "Appendix B" should be fixed. In addition, the following recommendations intend to address the issues that confused some users during the tests. Indeed, by taking these recommendations into consideration, the application could be utilized in a more efficient fashion.

Nothing on the editing trip page indicates that the trip was being edited/updated. It is suggested to inform the users when the trip is successfully updated. In addition, it is recommended to add an edit button in the editing trip page; thus, users can easily find a proper way to edit the added trips. Moreover, in the sign-up page, users do not receive an error immediately after they enter an invalid password (e.g. insufficient length). In other words, users only receive error when they click on the sign-up button. Finally, it is suggested to utilize auto form fill feature so users do not need to re-enter all the information after receiving an error for any reasons.

Appendix A: Undergraduate Attendance

Date	Day	Time	Undergraduate 1		Undergraduate 2	
			Name	Attended	Name	Attended
4/10/17	Monday	10-11 AM	Justin Cain	NO	Brad Turner	YES
4/10/17	Monday	11-12 AM	Justin Cain	NO	Nick Lindsley	YES
4/14/17	Friday	10-11 AM	Justin Cain	YES	Nick Thomas	YES
4/14/17	Friday	11-12 AM	Nick Lindsley	YES	Nick Thomas	YES
4/14/17	Friday	12-1 PM	Duncan Fox	YES	Nick Thomas	YES
4/14/17	Friday	1-2 PM	Duncan Fox	YES	Nick Thomas	YES

Appendix B: Bug Reports

Bug number	Bug name	Location	Description	Servitiy of bugs
1	Styling bug	View trip	The added information was not in their proper position on the page	Low
2	Update	Edit	Time updated to the current time automatically when a trip edited. This may impact the results' accuracy. Also, after editing a trip information, some info have not been updated. For instance, when the user changed the trip's purpose from "work" to "school", the purpose remained the same on the view trip page	High
3	Styling bug	Download	Entered data in the time fields were misplaced.	Low