Stanford University. EFS 687: American Language and Culture

User Experience:

Self-Designed User Experience Evaluation Test on ETA SPOT app

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Topic Development, Section 6
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1. Introduction:

Nowadays, there are more than 2 billion of smart phones used worldwide (Number of Smartphone, 2017), and the smartphone user penetration takes 30.9% in the total global population (Smartphone user penetration, 2017). In some developed country like the United State, the smartphone penetration rate is even over 80% at the end of 2016 (comScore, Inc, 2017). With a large population base and great potential growing sector, the impact that a mobile application brings is deep. However, nowadays, there are so many existing mobile applications that each of them are hard to be seen. One fact is that there are 3,199,880 apps in Google Play store in August 18, 2017. Another fact is that more than 90,000 apps were published in July 17 to August 17 (App Brain, 2017). In such a large pool of apps, the way to motivate users to download an app and to refrain users from deleting an app are important. On a basis of a recent article online, Daniel finds in a survey research that the first top reason why the customer delete an app is due to its unusefulness. It means that usability is the most important characteristic of an app (marketingsherpa, 2017).

A successful app is designed for its users not just for designer, and the success of an app depends largely on its usability and user experience design.

The first key element is usability. Usability is a quality attribute evaluating how useful the product or system is. Usability test, one of the concept in user experience evaluation, is an approach to assess the effectiveness, efficiency and satisfaction of a product, a system or a design (Iso.org, 2017). Bad functionality, inconvenient and unusefulness will drive users away. The second element is user experience design. Designs are everywhere in the world. Most of the time, users don't pay attention on the design in their daily life. But when users feel frustrated when using a tool or a product, they come up with an idea: "It is a bad design". Users tend to ignore the design until they figure out the design flaw of a product.

Meeting users' need and building a comfortable environment for them are important to enhance their experience.

The target app in this research is ETA SPOT (Spatial Position on Transit). ETA SPOT is a transportation app providing real-time data of The Stanford Marguerite Shuttle. The Stanford Marguerite Shuttle, free shuttle bus system on Stanford campus, operates more than twenty bus routes. Most of them provide service from Palo Alto Clatrain Station, which is the transit hub for bus and train in Stanford, to multiple locations on campus (Stanford website, 2017).

I am interested in the transportation system in Stanford and Android app development. In this summer research, I combine these two elements with user experience and design the research process to evaluate the target transportation app – ETA SPOT. The main purpose of this research is to evaluate the design and usability of ETA SPOT app using the most effective testing tool. A secondary purpose is to promote this app to those living on campus. This topic is of personal relevant to me because as a member in a transportation app developing team in Taiwan, understanding users' feelings is developer's top priority. Knowing how they feel and what they want to improve in this transportation app are helpful for the future improvement of my current developing app.

The research test is designed to solve three main questions:

1. What is user's first impression about ETA SPOT app?
2. How useful is ETA SPOT app?
3. How do the users think about the overall design of ETA SPOT app after they use this app?

This research test is composed of three minor tests which are Five-second Test, System Usability Scale Test (USU) and Questionnaire Test. The research test is designed into three parts, and each part is responsible for each minor test.

2. Literature review:

Here is the background information about ETA SPOT app, and some definition of key terminologies about user experience.

2.1 ETA SPOT (Spatial Position on Transit)

ETA SPOT (Spatial Position on Transit) is an app designed by ETA transit. The recent version was published on App Store on July May (SPOT and ETA PHI SYSTEMS, 2017) and the Google Play on May 2017 (Play.google.com, 2017). ETA SPOT app is built on open architecture platform, and collect select transit agencies (ETA transit, 2017). Marguerite Shuttle System in Stanford is one of the agencies. The app is designed to provide riders up-to-date information about the current location of buses and estimated arrival time. The app updates the data from automated bus tracker every 10 seconds, 24 hours a day and 7 days a week (Transportation.stanford.edu, 2017).

2.2 User experience

There are two reasons that user experience is hard to give a universal definition. One is that user experience (UX) is associate with a wide range of ambiguous, dynamic concepts and another is that the research is too malleable and fragmented (Law, Roto et la., 2009, p719-728). Garrett, the first person who proposed the elements of user experience design, states that user experience is the experience that outer workings of a product do to the user in the real world (2011, p6). In another journal, Alben defines user experience as “all the aspect of how people use an interactive product.” (1996). Combining these two definition, user experience is the feedback of the user including behavior, emotion, attitude that outer workings of an interactive product do to the user in the real world.

2.3 Usability test

Usability is part of user experience. Usability is objective. Numbers of clicks, execution time are in the category of usability, but not sufficient in user experience. User experience also includes motivation and expectation of users which are more subjective (Doncaster, 2014).

In the handbook of usability testing, Rubin defines usability as "What makes something usable is the absence of frustration in using it." (2008, p4) In the website of International Organization for Standardization (ISO), ISO/IEC 25010:2011, one of the regulation, defines usability as "a subset of quality in use consisting of effectiveness, efficiency and satisfaction, for consistency with its established meaning." (Iso.org, 2017) Research test is designed to evaluate the usability of ETA SPOT in this research, in other word, is to conduct the usability test. Usability test is to test representative participants to evaluate a product, service or design (usability.gov, 2017). International Standard ISO 9241-11 defines usability test as "the extent to which a product can be used by specific users to achieve specific goals with effectiveness, efficiency and satisfaction in a specific context of use." (Iso.org, 2017)

2.4 Five-second test

Five-second test is the first part of the research test. It is a kind of survey methodology that used by the designer to gauge the current opinions about a product, design or a system in first impression (Doncaster, 2014). Five-second test was first designed and mentioned by Christine Prefetti. Just like the literally meaning, the test is to show the participants a content page for five seconds to gather their initial impression (UX Articles by UIE, 2017). Different from normal survey, five-second test requires little prior or fundamental knowledge and everything you think just "in the moment". The advantages include its speed, efficiency, probability and flexibility. The reason why participants are limited to see a design in just five second is that if they view a thing more than 5 seconds, they will move beyond to the perpetual and start to think based on their prior knowledge. The process during the five-

second is separated into five parts: viewing the testing question, testing the finished question, building up short-term knowledge and shifting to explicit memory and decaying of the memory (Doncaster, 2014).

2.5 System Usability Scale test (SUS)

System Usability Scale test is the second part of the research test. Brook creates System Usability Scale (SUS) test and explain it in his journal. SUS test is a Likert scale. It is composed of 10 forced-choice standard questions and each question have a degree of agreement and disagreement ranges from 1 to 5 (1 represents strongly disagree and 5 represents strongly agree.) for participants to choose from (1996). The test has been widely used in many industrial usability evaluations.

To calculate the SUS score, first sum up each score from each question. The score contribution for each question is different. For question 1,3,5,7 and 9, the score contribution is the scale positon minus 1. And for question 2,4,6,8 and 10, the score contribution is five minus the scale position. Multiple the sum of the score with 2.5 and get the answer range from 0 to 100 for the overall usability score (Brook, 1996).

2.6 Laboratory test, field test

During the process of the test, the potential factors that may affect to the test result need to be reduced. There are more usability test problems found in the field test, and the result tend to be more negative in contract to laboratory test (Duh, Tan, 2006, p181 - 186). To the field of the user experience and interface of usability test of a product, laboratory test is sufficient. Nevertheless, it is important to put participants in a natural environment as well (Kaikkonen, Kekäläinen et al, 2005). Other benefits field test brought include the widely distributed customer base and public relations (Rowley, 1994).

3. Methods Section:

The research test is designed in order to solve the following questions:

1. What is user's first impression about ETA SPOT app?
2. How useful is ETA SPOT app?
3. How do the users think about the overall design of ETA SPOT app after they use this app?

` The main design concept of the research test is to guide participants to get acquainted with ETA SPOT app step by step and get the answers of the question above. The research test is divided into three minor-test: Five-second test, System Usability Scale (SUS) test and Questionnaire, and each minor-test is corresponding to each question. Participants in this research are randomly picked. Previous experience about ETA SPOT is not required. Considering the advantages and disadvantages of the field test and the laboratory test, the time test takes and whether there is enough time for participants to think thoroughly, roadside survey is not taken into consideration. Instead, the interview with each participant sitting down inside the building is adopted. One main reason is to ensure the quality of the test; another is to avoid uncertain factors that may have a negative impact to the research result.

In the beginning of the research test, participants will be told the instructions of the research test. Asking question is acceptable during the whole research test.

3.1 Part 1

3.1.1 Process

a. Participants will have time to read the instruction of part 1.
b. Participants will have 5 seconds to look at a page of ETA SPOT in the beginning of each section.

c. After 5 seconds, Participants will be asked some questions without looking at the page.

3.1.2 Design

Five-second test is the minor-test used in the first part of the research test. The questions in this part are designed into three categories: memory dump, target identification and attitudinal test (Doncaster, 2014) in the purpose to find out the most attractive thing of design, what kind of information do they get at first sight and their opinions about the a certain page design. The reason why this method is used in the first part of the research test is that it focuses on the first impression of how users think about a page design and it does not require any prior knowledge. It does not matter whether users have used this app before or not. Question order should be looked at carefully. Target identification first, memory dump second, and attitudinal test the last (Doncaster, 2014). The first part is divided into two sections. Section 1 is corresponding to the route page of the app (see figure 1). Section 2 is corresponding to the detail bus stop information page about each bus line (see figure 2). Qualitative data is collected. The questions are in the Appendix (see Appendix).

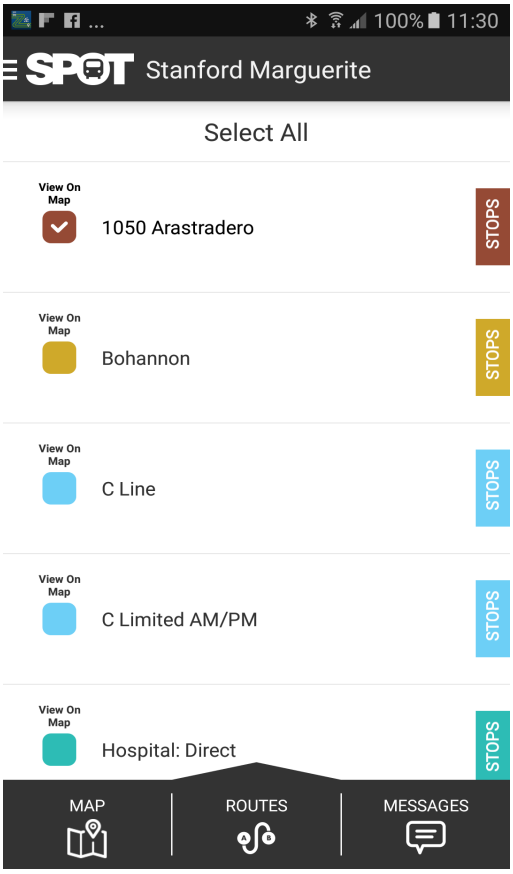

Figure 1. Routes page

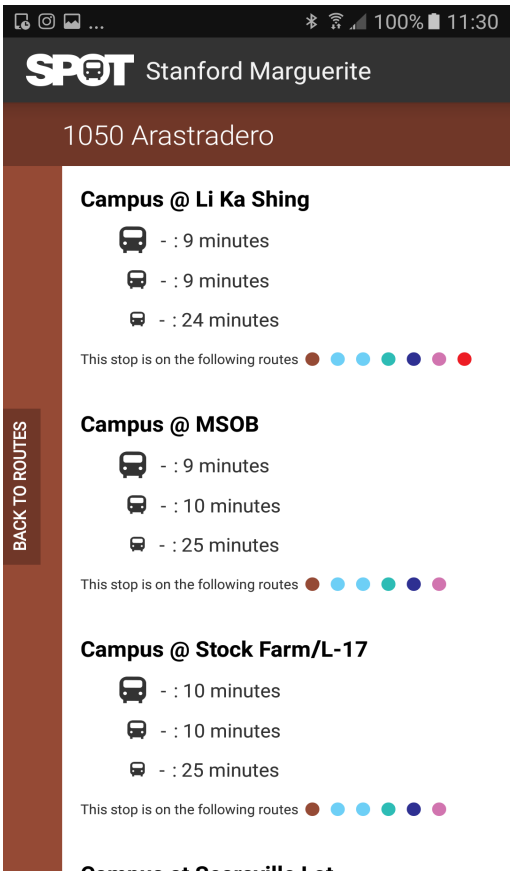

Figure 2. Bus stop information page

3.2 Part 2

3.2.1 Process

a. Participants will have time to read the instruction of part 2.

b. Participants can explore ETA SPOT by themselves. There is no time limitation.

c. There are ten questions to answer. They can decide the answering order by themselves. It is allowed to use ETA SPOT during their answer time.

3.2.2 Design

System Usability Scale test (SUS) is used in the second part of the research test. The standard questionnaire and scoring used in this test are outlined in System Usability Scale (SUS) Template. SUS test has proved to be a valuable, robust and reliable evaluation test (Brook, 1996). The main reason why this method is used in the second part of the research

test is that the most dominant and convenient function about SUS test is it can numeralize product's usability and participants can have time to get acquainted with this app as well as find out what they missed in part 1. Other advantages to use USU is that it is fast and efficient and people can compare totally different things only based on the score of USU. Quantitative data is collected. Questions are in the Appendix.

3.3 Part 3

3.3.1 Process

a. Participants will have time to read the instruction of part 3.

b. Participants will finish 9 questions.

3.3.2 Design

Questionnaire is used in third part of the test. It is designed into 2 section. In section 1, there are one multi-choice question and four binary questions, which are designed for basic information for example sex, age etc. In section 2, there are one semantic question scaling from 1 to 5 to choose from (the meaning of each pair of words is opposite. 1 defines as strongly agree with negative word, and 5 defines as strongly agree with positive word. 3 defines as neutral.) and three open-ended questions which is designed to get more details about how participants think about ETA SPOT. The main reason why this method is used in the third part of the research test is that after using ETA SPOT, participants can give some feedbacks based on its overall design and function by answering the questions. The reason to design open-ended questions rather than multiple-choice questions is that options may affect participants' opinion. Moreover, open-ended questions can get more detail about their user experience. Open-ended responses are collected. Questions are in the Appendix.

4. Result:

4.1 Description of Subjects

In this face-to-face research test, there are 11 participants. 6 of them are males and 5 of them are females. One of the female only took the minor-test in part 1. Her answer is only discussed in part 1, five-second test. In other part of the research test, there are 10 participants in total. Among these 10 participants, 4 of them are from 18 – 23, and 3 of them are from 24 – 30.

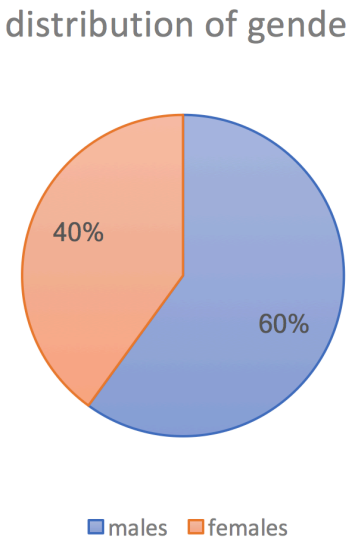

Figure 3. gender

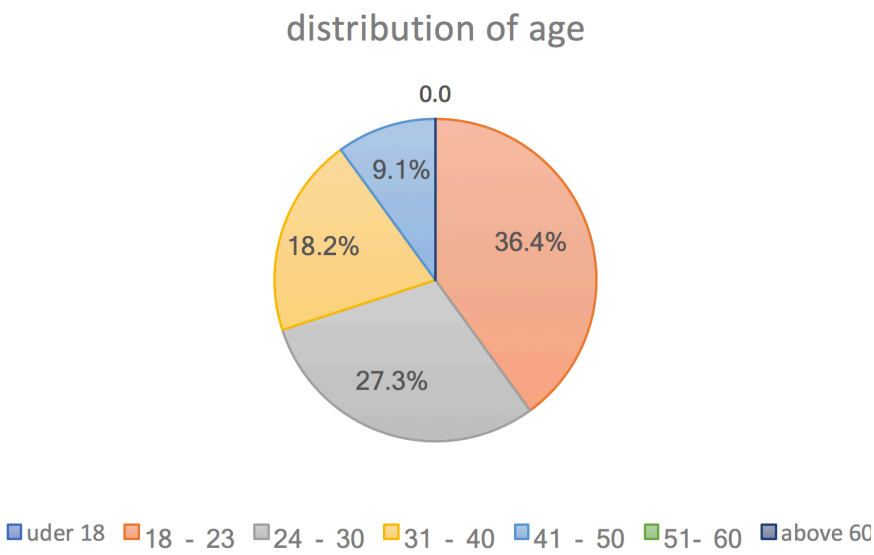

Figure 4. age

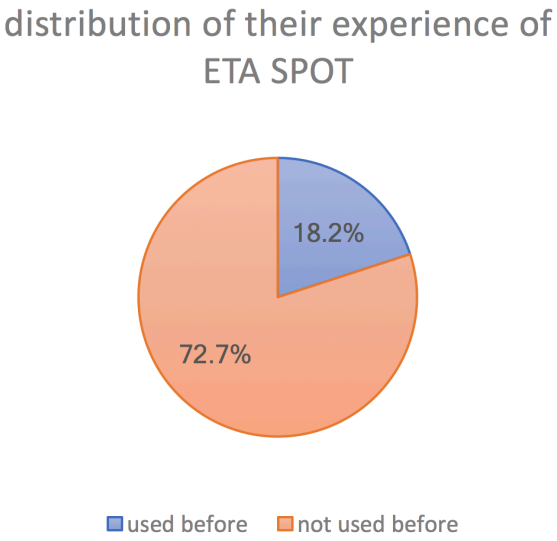

Figure 5. experience

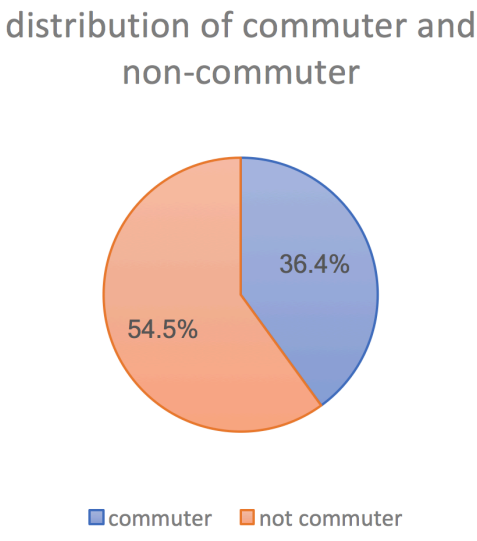

Figure 6. commuter or non-commuter

More than 70 percent of participants have never used ETA SPOT before and more than 50 percent of participants are not commuters (see figure 3, figure4, figure5 and figure 6).

4.2 Data Results

This research test is designed to solve three main questions. Each part in the research test is responsible for each main question. The structure of Data Results is going to be discussed in three parts that divided before: Part 1, Part 2 and Part 3.

4.2.1 Part 1

The result of five-second test:

In Part 1, there are 11 participants in this part. The first impression of the page is discussed in the order of questions designed for each section.

a. Route page:

1. **What are the three main functions of this page?**

The three main functions are map, route, message.

6 out of 11 participants see map. 10 out of 11 participants see route. Other answers include time, checkbox. No one remember the function message (see figure 7).

2. **What do you see at first sight?**

4 out of 11 participants look at the color in the row at first sight. 2 out of 11 participants look at word. 2 out of 11 participants look at checkbox. Other answers include the structure (five rows), the color of bottoms on the left of each row, the color of SPOT logo on top of the page. 6 out of 11 participants (54.6 %) look at things about color at their first sight (see figure 8).

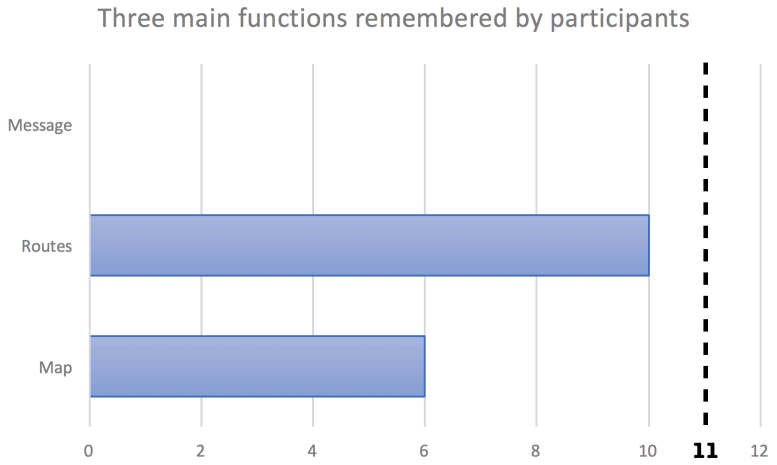

Figure 7. three main functions

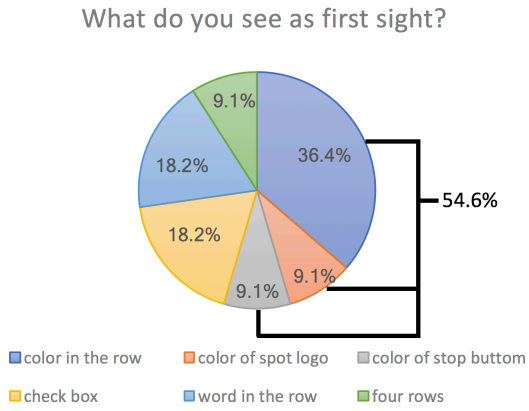

Figure 8. first sight

3. What details do you remember?

Color, bus stop name, view map above the checkbox, three bottom at the below of the screen, five rows, checkbox, SPOT logo on top of the screen, stop button on the left, stop bottom on the left side of each row. 4 out of 11 people remember the color and the checkbox.

4. What is the meaning of each row?

7 out of 11 participants think it is the route of bus stop. 2 out of 11 participants think it is different bus stop. One participant think it is the bus schedule. On participant has no idea (see figure 9).

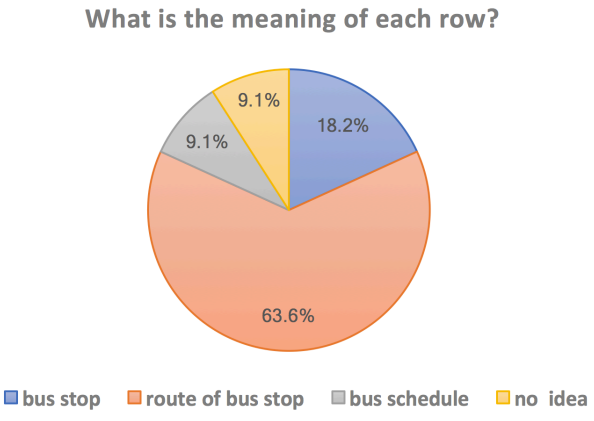

Figure 9. meaning of each row

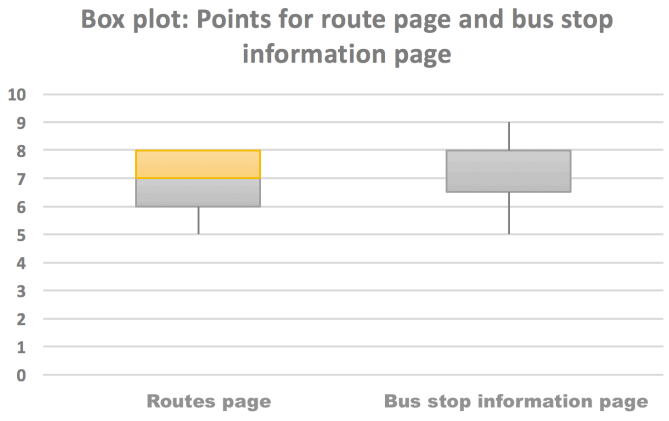

Figure 10. points for two pages

5. Rate the overall visual design on the scale of 1 to 10

The minimum point is 5 and the maximum point is 8. The average point is 6.82 (see figure 10).

b. Bus stop information page:

1. If you want to go back to the previous page, where will you click?

8 out of 11 participants will click on the left top of the page. 2 out of 11 participants will scroll up. One participant will click left side column (see figure 11).

2. What do you see at first sight?

7 out of 11 participants look at the schedule time at first sight. One participant look at the name of the bus stop. 2 out of 11 participants look at the color of the page at first sight. One participant look at the bus icon (see figure 12).

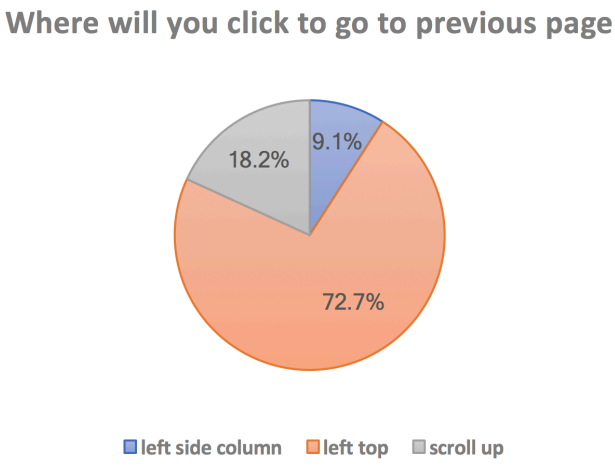

Figure 11. Where to click to previous page

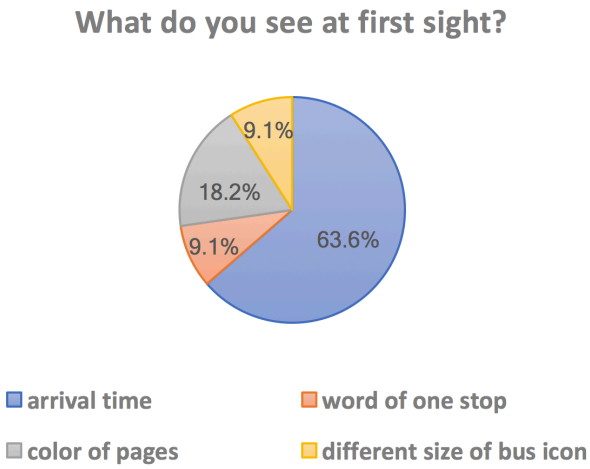

Figure 12. different sizes of buses

3. What details do you remember?

8 out of 11 participants remember the bus stop name. 8 out of 11 participants remember the arrival time. 4 out of 11 participants remember the color of the page. Other answers include schedule, repeating pattern, different sizes of bus icon.

4. What is the meaning of different sizes of bus?

5 out of 11 participants do remember the different sizes of the bus, and all of them think the design is for different arrival time. 6 out of 11 participants do not remember the different sizes of the bus (see figure 13).

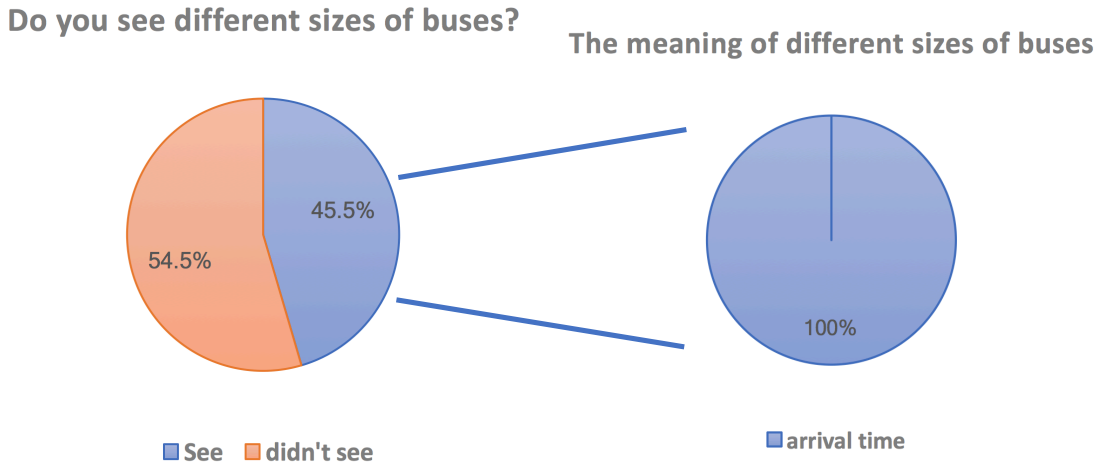

Figure 13. different sizes of buses

5. Rate the overall visual design on the scale of 1 to 10

The minimum point is 5 and the maximum point is 9. The average point is 7.27 (see figure 10).

4.2.2 Part 2

The result of System Usability Scale test (SUS):

In Part 2, there are 10 participants. The SUS score is calculated by the method created by Brook (1996). The minimum score is 50 and the maximum score is 97.5. The distribution of each participant's SUS score is listed below (see table 1). The average score is 72.75 (see figure 14).

Participant	1	2	3	4	5	6	7	8	9	10
SUS score	90	50	97.5	67.5	60	52.5	90	55	87.5	77.5

Table 1. distribution of each participant's SUS score
(first row represents participant's number; second row represents SUS score)

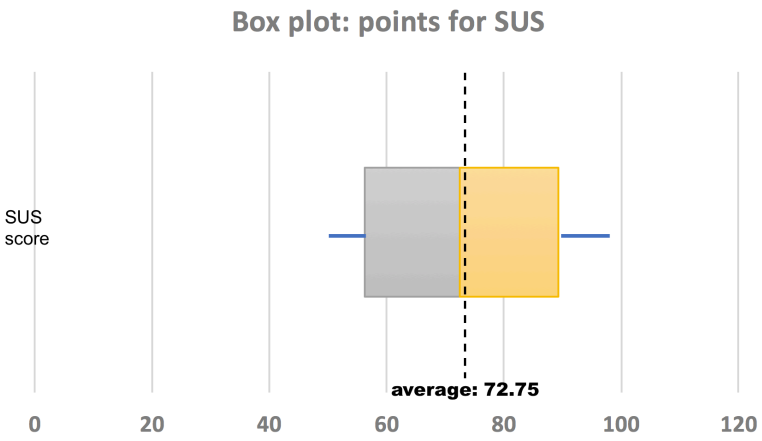

Figure 14. Box plot for SUS score

4.2.3 Part 3

The result of Questionnaire:

In Part 3, there are 10 participants. There are two sections in this part. In Section 1, the basic information is mentioned in 4.1 description of subjects. In Section 2, there is a semantic question and four open-ended questions. Semantic question is discussed in 4.2.3 Part 3. Open-ended questions will be discussed in the 4.3 Discussion.

Semantic question

The average score of each pair of opposite words is listed below (see table 2). The average score of all these words is 3.99.

approachable	*clean*	*clear*	*time-saving*	*trustworthy*	*comfortable*	*useful*
4	4.1	3.9	3.8	4	3.8	4.3
aloof	*messy*	*ambiguous*	*time-consuming*	*doubtful*	*stressful*	*unuseful*

Table 2. average score for each pair of opposite-meaning words

5. Discussion:

5.1 Meaning behind data results

In Discussion, the meaning behind data results and further analysis are discussed.

5.1.1 Part 1

The discussion of five-second test:

a. Routes page

1. What are the three main functions of this page?

Most participants remember the function map and routes, but no on remember the function message. The result of this question shows that putting message as the third main function on the bottom of the page is not noticeable to the user.

2. What do you see at first sight?

Over half of the participants look at the thing about color at their first sight (54.6%). The result of this question shows that color tends to be more attractive when user first look at a design page.

3. What is the meaning of each row?

63.6% of participants get the meaning of each row in their first impression. 27.3% of participants don't get the right answer but their response is related to the bus. The result of this question shows that the function of this page is concerning to bus is obvious.

b. Bus stop information page

1. If you want to go back to the previous page, where will you click?

72.7% of participants want to click on the top left side of the page when they want to go back to the previous page. Only 9.1% of participants notice that there is a long bar on the right side of bus stop information page. The result of this question shows that the long bar on

the right side of the page is not noticeable at first sight. The reason why participants tend to click on the top left side of the page may be affected by prior knowledge.

2. What do you see at first sight?

More than half of participants look at the arrival time at their sight (63.6%). 18.2% of participants look at the color of the page at their first sight. The main purpose of this page is to show the arrival time of buses at each stop in the same route. The result of this question shows that the arrival time is noticeable at first sight and it meets the main purpose of this page. The possible reason why participants look at the arrival time at first sight is that the arrival time is in the middle column of the page.

3. What is the meaning of different sizes of buses?

The result of this question shows that over half of the participants do not remember or see different sizes of bus icons. Nevertheless, participants who remember or see the icons all know that the different sizes represent different arrival times: biggest icon means the arrival time of nearest bus and smallest icon means the arrival time of farthest bus. It shows that the design is easy to understand but the way it shows on the page is not eye-catching at first sight. If the designer of ETA SPOT wants to let user focus on the icons more, adding some color is suggested.

5.1.2 Part 2

The discussion of System Usability Scale test (SUS):

SUS represent the whole overall usability system. Individual items are not meaningful (Brook, 1996). In previous research, it is proved that an adjective-anchored Linker scale scores correlate extremely well with the SUS score (Bangor, Kortum and Miller, 2008). Adjective rating scale is helpful to explain the meaning of SUS score. Figure 15 is from the article ”Determining What Individual SUS Scores Mean: Adding an Adjective Rating Scale” (Bangor, Kortum and Miller, 2008)(see figure 15).

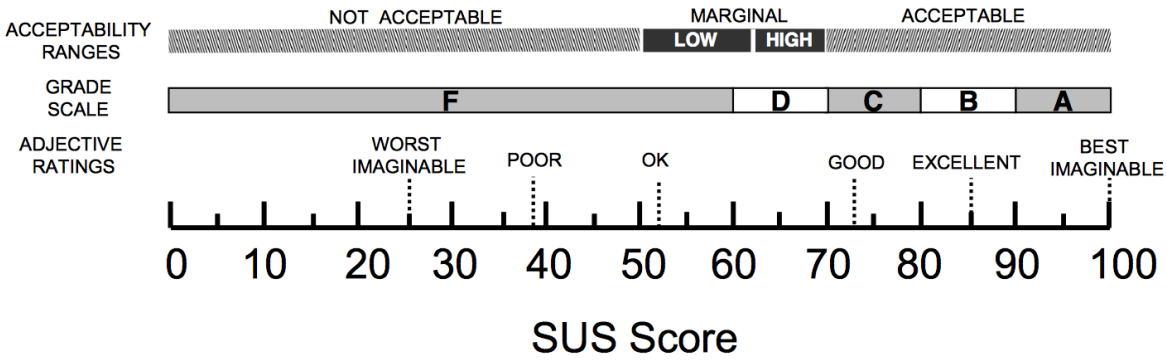

Figure 15. a comparison between adjective rating, school grading scale and acceptability ranges.

In Part 2, the average SUS score is 72.75. In the acceptability ranges, the score is in the range of acceptable; in the school grading scale, the score is in the range of C; in the adjective ratings, the score is in the range of good. We can say that ETA SPOT app is an acceptable, good app.

5.1.3 Part 3

The discussion of Questionnaire:

I. Semantic question

The average score of the overall feeling about ETA SPOT is 3.99 in this question. The score show that participants tend to have positive feelings rather than negative feelings about this app.

II. Open-ended questions

1. What is the most frustrating thing about this app?

4 out of 10 participants don't think there is frustrating thing in ETA SPOT app. 6 out of 10 participants do find some frustrating things in ETA SPOT app. The following are some frustrating things mentioned by participants:

I. "The message function on the bottom of routes page is confusing. I thought its function is to send message to the company at first."

II. "When I am on the routes page, I click the checkbox and nothing happens. It takes me a while to know that clicking the checkbox is to show up the routes on the map because there is no any alert or change until I open the map."

III."Three main functions at the button of the page is confusing. If there was a home page, it would be easier to understand when you first use this app."

IV."It takes too many steps to see the information of a certain bus stop."

V. "The button on the right side of each row in the routes page is too small and hard to click. When I first use it I even don't know it is a button."

2. What do you think is the most important function of this app?

6 out of 10 people think the most important function is the real-time data of the bus's arrival time. 2 out of 10 and another 2 out of 10 participants think that the most important functions are route and map respectively.

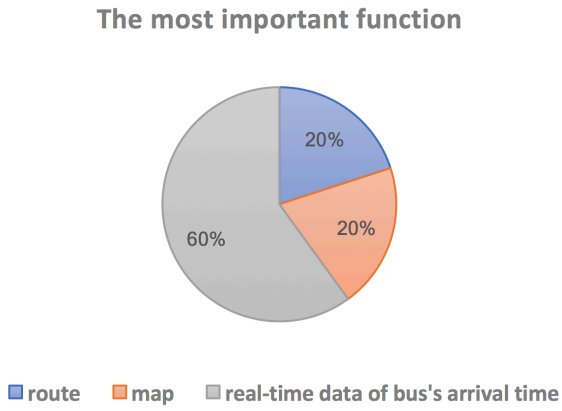

Figure 16. the most important functions

3. Are there any new features that you want to include into this app?

The following are some new features that mentioned by participants:

I. "I want to delete the function of message. It takes too much space."

II. "Change the message to notification. The meaning of Notification is much closer to its function. I want to add a chatting function. I could tell my friends where to meet by sending the location to them."

III."I want to add two functions. I am not familiar with Stanford Campus. If I could just type into the destination, and get the fastest way to go there by bus, it would be

much more convenient. Another function I want to add is getting the information about how crowded the upcoming bus is."

IV. "A home page. Three main functions at bottom is confusing for me at first time."

V. "Change words 'view on map' above the checkbox after I click the checkbox."

VI. "The default clicked route should be determined by the nearest bus stop near me."

5.2 Further analysis

5.2.1 The correlation between SUS score and Semantic question score

The average score in semantic questions of each participant is listed below (see table 3). To find out the relationship between SUS score and semantic question score for each participant, the correlation graph is drawn above. (see figure 17).

Participant	1	2	3	4	5	6	7	8	9	10
Semantic score	4.43	3.29	4.86	3.71	3.71	3.43	4.00	2.86	4.57	5.00

Table 2. average score for each participant

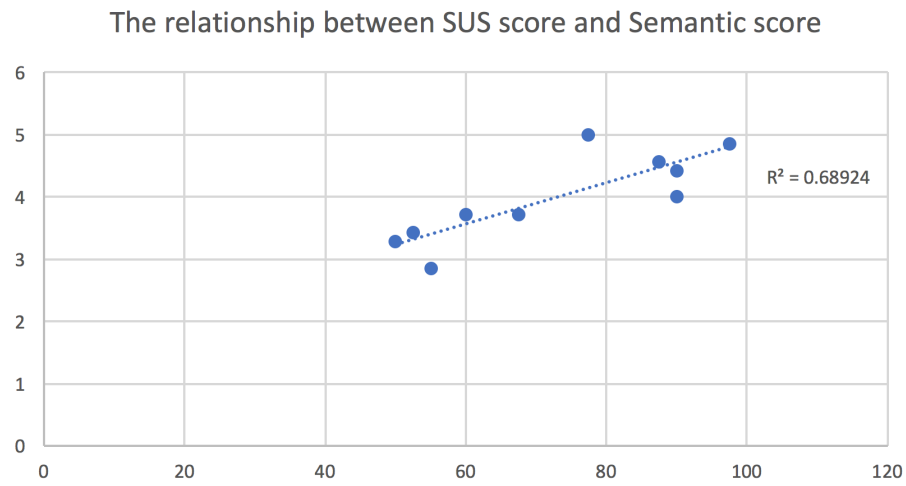

Figure 17. relationship between SUS score and Semantic score

The correlation coefficient of is 0.83. SUS score and semantic question score are high positive correlation.

5.3 Weakness and how to improve

Because of limited time, only ten research tests are conducted. The number of subjects in this research is far from being a formal research paper. Another weakness is the place where I conduct the interview. In the formal user experience lab test, all participants are interviewed in a certain place and the whole process is recorded by a camera. Last but not least, more books and journals about user experience should be read.

6. Conclusion:

The following are the answers to three main questions of this research.

6.1 What is user's first impression about ETA SPOT app?

1. The overall attitude toward routes page and bus stop information page of ETA SPOT app is positive.
2. Some possible reasons that may affect participants' first impression are found.

6.1.1.1 How useful ETA SPOT app is?

ETA SPOT app is an acceptable, good app according to the SUS test.

6.1.1.2 How do the users think about the overall design of ETA SPOT app after they use this app?

1. The overall attitude toward ETA SPOT app is positive.
2. Semantic question score and SUS score are high positive correlation.
3. Some improvements and new functions about ETA SPOT app are suggested by the participants.

There are so many ways to evaluate user experience, and different methods lead to different interpretations of user experience. There is no perfect design, and there is no right or

wrong in design. Different viewpoints, cultures, and expectations turn into different suggestions. This research gives a new perspective to ETA SPOT app.

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Appendix:

Stanford Student Research :

User experience test of SPOT App

Dear participants,

Thank you for participating in this Stanford student research project. Your answers are very valuable. This test is conducted anonymously, and your answers will remain confidential.

Howard Chao

(ck1021051@gmail.com)

Introduction:

1. There are three parts in the User experience test.
2. The test takes about 20 minutes.
3. the purpose of this test is to test the usability of SPOT app.
4. Feel free to ask any question at any time during the test.

Background:

SPOT is a transportation app about Marguerite bus system in Stanford. It was published in May this year.

Stanford Student Research :

Part 1: Five-second test of ETA SPOT

Instruction:

In Part 1, you are going to take a test called five-second test. There are two sections in this part. In each section, you will be showed an interface of SPOT app. You will have 5 seconds to look at it. Afterwards, you will be asked a few questions about the interface you saw. **Don't** scroll or touch the screen. If you have any question, feel free to ask during the test.

Section 1:

1. You have 5 seconds to look at a design. Notify me when you are ready.
2. Answer the questions.

   (participants will not see the questions during the test)

   a. What are the three main functions of this page? (Target identification test)

   b. What do you see at first sight? (Memory dump)

   c. What details do you remember? (Memory dump)

   d. What is the meaning of each row? (Attitudinal test)

   e. Rate the overall visual appeal of the design of on a scale of 1 to 10

   (1 = " not at all interesting " ; 10 = " extremely appealing ") (Attitudinal test)

3. It is the end of section 1.

Section 2:

1. You have 5 seconds to look at a design. Notify me when you are ready.
2. Answer the questions.

   (participants will not see the questions during the test)

   a. If you want to go back to the previous page, where will you click? (Target identification test)
   b. What do you see at first sight? (Memory dump)
   c. What details do you remember? (Memory dump)
   d. What is the meaning of different sizes of bus? (Attitudinal test)
   e. Rate the overall visual appeal of the design of on a scale of 1 to 10

      (1 = " not at all interesting " ; 10 = " extremely appealing ") (Attitudinal test)

3. It is the end of section 2.

It is the end of Part 1

Stanford Student Research :

Part 2: System Usability Scale of ETA SPOT

Instruction:

In Part 2, you are going to take a test called System Usability Scale test. There are ten questions in the test. For each question, you are going to circle a number from 1 to 5.
(1 : strongly disagree ; 2 : slightly disagree ; 3 : neutral ; 4 : slightly agree ; 5 : strongly agree)
Explore SPOT app by yourself and answer the following questions.
You **can't** choose more than one answer. There is no time limit. You **can** explore the app during all the test time.

---

1. I think that I would like to use this system frequently.

   Strongly disagree **1** **2** **3** **4** **5** **Strongly agree**

2. I found the system unnecessarily complex.

   Strongly disagree **1** **2** **3** **4** **5** **Strongly agree**

3. I thought the system was easy to use.

   Strongly disagree **1** **2** **3** **4** **5** **Strongly agree**

4. I think that I would need the support of a technical person to be able to use this system.

   Strongly disagree **1** **2** **3** **4** **5** **Strongly agree**

5. I found the various functions in this system were well integrated.

   Strongly disagree **1** **2** **3** **4** **5** **Strongly agree**

6. I thought there was too much inconsistency in this system.

Strongly disagree	**1**	**2**	**3**	**4**	**5**	**Strongly agree**

7. I would imagine that most people would learn to use this system very quickly.

Strongly disagree	**1**	**2**	**3**	**4**	**5**	**Strongly agree**

8. I found the system very cumbersome to use.

Strongly disagree	**1**	**2**	**3**	**4**	**5**	**Strongly agree**

9. I felt very confident using the system.

Strongly disagree	**1**	**2**	**3**	**4**	**5**	**Strongly agree**

10. I needed to learn a lot of things before I could get going with this system.

Strongly disagree	**1**	**2**	**3**	**4**	**5**	**Strongly agree**

Source: the standard questions were first designed by John Brooke in a journal called "A Quick and Dirty Usability Test"

It is the end of Part 2

Stanford Student Research :

Part 3: Questionnaire of SPOT App

Section 1:

Please circle one appropriate answer:

1. Gender

a. Male **b.** Female

2. Age

a. under 18 **b.** 18 – 23 **c.**24 – 30 **d.** 31 – 40

e. 41 – 50 **f.** 51 – 60 **g.** above 60

3. Are you a commuter in Stanford?

a. Yes **b.** No

4. Have you ever used SPOT app?

a. Yes b. No

5. Would you recommend this app to your friend to due to its usefulness?

a. Yes b. No

Section 2:

1. How would you describe this app? In each pair of opposite words, choose one number that best matches your feeling. (Words on the left are negative. Words on the right are positive. 3 means neutral.)

aloof	**1**	**2**	**3**	**4**	**5**	**approachable**
messy	**1**	**2**	**3**	**4**	**5**	**clean**
ambiguous	**1**	**2**	**3**	**4**	**5**	**clear**
time-consuming	**1**	**2**	**3**	**4**	**5**	**time-saving**
doubtful	**1**	**2**	**3**	**4**	**5**	**trustworthy**
stressful	**1**	**2**	**3**	**4**	**5**	**comfortable**
unuseful	**1**	**2**	**3**	**4**	**5**	**useful**

2. What is the most frustrating thing about this app?
   Ans:

3. What do you think is the most important function of this app?
   Ans:

4. If you were the designer of this app, is there any new features that you want to include into this app?
   Ans:

It is the end of Part 3

Thanks for your cooperation.