

# User Research Methods

Team 7:

Dhankuwar, Ravi, Neel, Tian, Xin and Yafu

Some info links -

<https://www.usability.gov/how-to-and-tools/methods/system-usability-scale.html>

<https://www.usability.gov/how-to-and-tools/methods/parallel-design.html#:~:text=With%20the%20parallel%20design%20technique,her%20concepts%20with%20the%20group.>

<https://www.usability.gov/how-to-and-tools/methods/online-surveys.html>

## **System Usability Scale**

### **Introduction:**

- The System Usability Scale (SUS) provides a “quick and dirty”, reliable tool for measuring the usability.
- It consists of a 10 item questionnaire with five response options for respondents; from Strongly agree to Strongly disagree.
- Originally created by John Brooke in 1986, it allows you to evaluate a wide variety of products and services, including hardware, software, mobile devices, websites and applications.

### **Benefits of using a SUS:**

SUS has become an industry standard, with references in over 1300 articles and publications. The noted benefits of using SUS are :

- Is a very easy scale to administer to participants
- Can be used on small sample sizes with reliable results
- Is valid – it can effectively differentiate between usable and unusable systems

### **Considerations when using a SUS:**

If you are considering using a SUS, keep the following in mind:

- The scoring system is somewhat complex

- There is a temptation, when you look at the scores, since they are on a scale of 0-100, to interpret them as percentages, they are not
- The best way to interpret your results involves “normalizing” the scores to produce a percentile ranking

### **Questionnaire:**

When a SUS is used, participants are asked to score the following 10 items with one of five responses that range from Strongly Agree to Strongly disagree:

1. I think that I would like to use this system frequently.
2. I found the system unnecessarily complex.
3. I thought the system was easy to use.
4. I think that I would need the support of a technical person to be able to use this system.
5. I found the various functions in this system were well integrated.
6. I thought there was too much inconsistency in this system.
7. I would imagine that most people would learn to use this system very quickly.
8. I found the system very cumbersome to use.
9. I felt very confident using the system.
10. I needed to learn a lot of things before I could get going with this system.

### **References -**

<https://usabilitygeek.com/how-to-use-the-system-usability-scale-sus-to-evaluate-the-usability-of-your-website/>

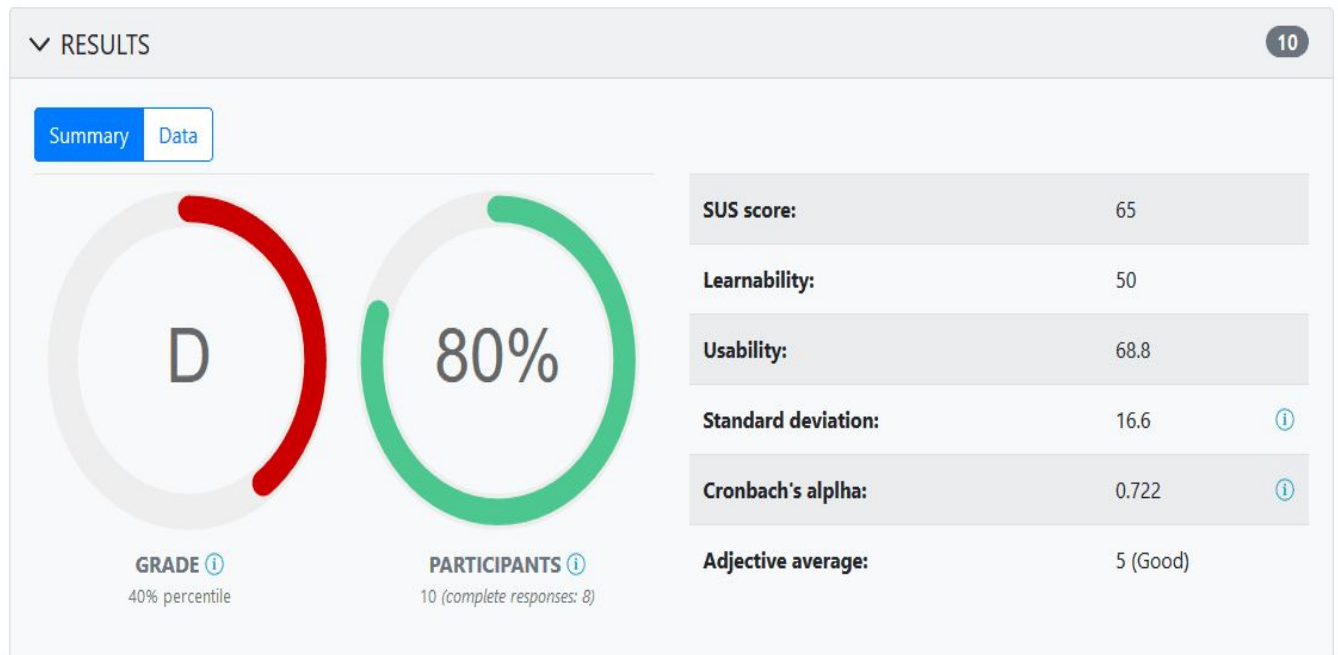
<https://www.usability.gov/how-to-and-tools/methods/system-usability-scale.html>

<https://www.usabilitytest.com/system-usability-scale>

## Interpreting Scores

1. Formula:
  - 1.1 For odd items: subtract one from the user response
  - 1.2 For even-numbered items: subtract the user responses from 5
  - 1.3 This scales all values from 0 to 4 (with four being the most positive response).
  - 1.4 Add up the converted responses for each user and multiply that total by 2.5. This converts the range of possible values from 0 to 100 instead of from 0 to 40
2. US scores can be translated into letter grades

SUS Score	Letter Grade	Adjective Rating
Above 80.3	A	Excellent
Between 68 and 80.3	B	Good
68	C	OK
Between 51 and 67	D	Poor
Below 51	F	Awful



3. In addition, analyzed results produce the report with the following values:

1. Net Promoter Score - This score tells you how willing your customers are to recommend your offering to other people. How satisfied is the user overall with your product on a scale of -100 to 100? This information will tell you how loyal they are to your company's brand

2. Learnability Score - This score represents whether a user would need a technical person's support to be capable of using your offering. The score also represents whether a user would need to learn a large amount of information before starting to use your offering. It should be noted that the learnability score will usually track higher than the usability score

3. Usability Score - This score refers to how easy it is for a user to make use of your tool. How efficiently can users use your offering to accomplish their specific objectives both effectively and satisfactorily?

4. Standard deviation - The standard deviation shows how much variation there is in your score from the average SUS score.

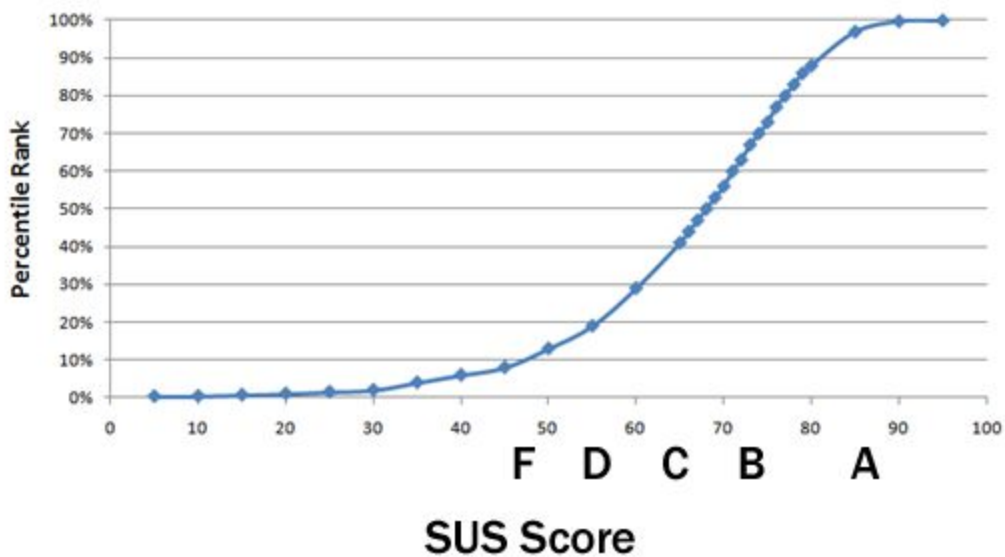
If your standard deviation figure is low, this means that the data are close to the average. Meanwhile, if your standard deviation is high, this means that the values are instead spread out over a much wider range.

5. Cronbach's alpha - This figure refers to how reliable your data are. In other words, it lets you know how much your score will be consistent from one time to the next.

6. Adjective Rating Scale - **Adjective Rating Scale** was added in order to help answer the question: "*What is the absolute usability associated with any individual SUS score?*". It is an optional eleventh question to the SUS.

### What is a Good SUS Score

1. The 68 threshold - A SUS score above a 68 would be considered above average and anything below 68 is below average.
2. Process of normalizing - The best way to interpret your score is to convert it to a percentile rank through a process called normalizing



3. Grading on a curve - This process is similar to "[grading on a curve](#)" based on the distribution of all scores. For example, a raw SUS score of a 74 converts to a percentile rank of 70%. A SUS score of 74 has higher perceived usability than 70% of all products tested. It can be interpreted as a grade of a B-.

## **Online Surveys**



A survey is a set of questions used to collect topic-specific information from a representative sample of your target audience. Since surveys can be relatively inexpensive, executed quickly, and gather a large set of information, they are used to gather information on a wide-range of topics.

A good survey-



In my experience, the most effective surveys are kept short, stay focused on one topic, and contain a mix of closed- and open-ended questions. If a survey has too many closed-ended questions, you may not gather enough context. If it has too many open-ended questions, your participants may tire and abandon it completely.

Surveys consist of majorly two types of questions:

**Closed Questions:** These questions get the quantitative data from the users. It doesn't tell us about the context, the motivation, the cause for the response. These questions are accompanied with the checkbox, radio buttons. The data obtained can be easily visualized with the help of graphical representations.

**Open Questions:** Open Questions are the qualitative data about a user's behavior, action. It tells us how the user thinks about a problem. These questions required a text box to explain the cause. The Qualitative responses tend to take a lot longer to analyze.

### Benefits of Surveys

Unlike traditional surveys, online surveys offer companies a way to collect information from a broad audience for very little cost. When conducting an online survey, you have an opportunity to learn:

- Who your users are;
- What your users want;
- What they purchase;
- Where they shop;
- What they own; and
- What they think of your brand or product.

Surveys can benefit and inform the design process by:

- Providing information to better understand end users to design better products;
- Mitigating risk of designing the wrong, or a poor, solution for users;
- Providing stakeholders with confidence that a design is, or will be effective. Gathering larger sample sizes, [in comparison to qualitative research](#), often speaks the language of business stakeholders. Whether we like it or not, there is often a perception when it comes to research that more is more.



## Tools for an Online Survey

- Survey Monkey
- Survey Gizmo
- Wufoo

**Parallel design**

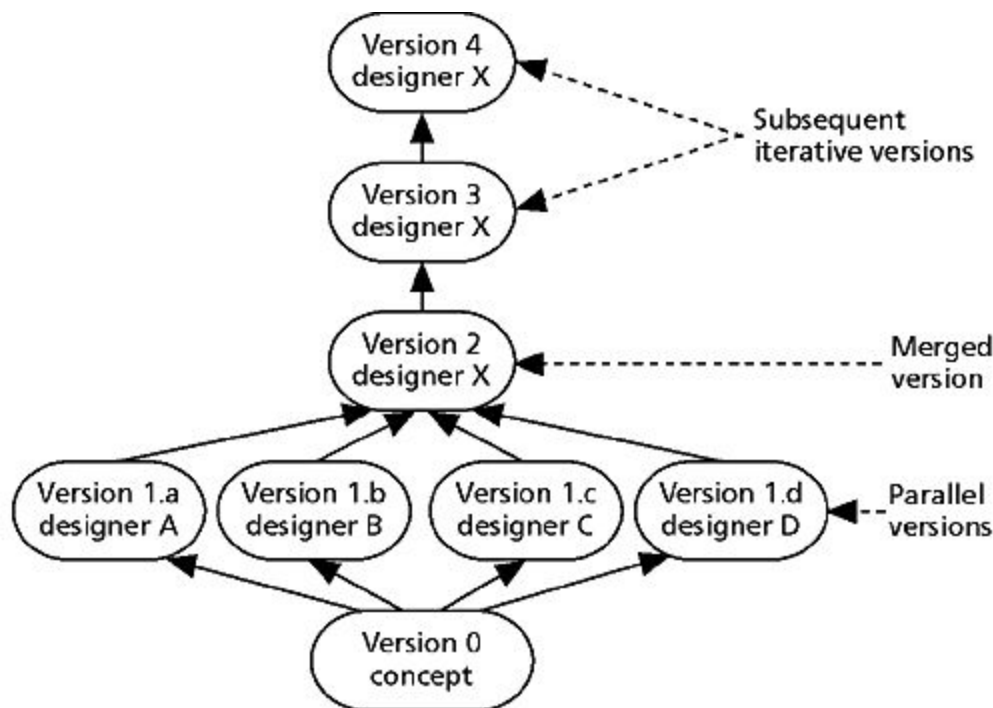
- What is parallel design

Traditionally we are used to iterative design, in which the whole design group works on one sketched wireframe, and step by step improve it until a fully functional product is completed.

Instead of the whole team working on one certain design from the start, parallel design requires members in the group to work individually first.

With the parallel design technique, several people create an initial design from the same set of requirements. Each designer works independently and, when finished, shares his or her concepts with the group. Then, the design team considers each solution, and each designer uses the best ideas to further improve their own solution. This process repeats until finally a merged version is created.

- Basic process of parallel design



The figure shows the parallel design project model. Basically there are following steps:

1. **Invite designers to a design session.**

The number of participants is also an important factor to be considered. Although there's not an optimal number of designers for all projects, the group size should make sure that there's

enough people to get a good cross-section of ideas, but still should be small enough to keep things moving along at a good pace.

**2. Explain the requirements to the designers.**

This step is to make sure that each designers are clear about the goals of the system, the tasks the system should perform and typical usage scenarios

**3. Ask the designers to design prototypes.**

This is the most typical step of parallel design. It's important to make sure that each designer designs independently. Parallel design process focuses on harvesting the ideas of individuals, so Designers should not discuss their designs with each other before the session is complete.

Another point designers should note is that there is no need to create very detailed designs of every page or screen or very sophisticated prototypes, just the most important elements. The point is to broaden the ideas, explore more alternatives and inspire the team as much as possible.

**4. Carry out user testing for each design.**

The next step is to test the usability of each design. This can be done in one session, ask each participant to test 2-3 versions, more than that is likely to make them tired. It is important to ensure that the participants test designs in a random order, since they become more familiar with the product with each version tested.

**5. Interpret the results.**

The point is to see which parts of each design worked well, which caused problems. We don't need to identify the best design at this step, just see what is the best in each of them. This is to prepare for the merged version.

**6. Create a single merged design based on the findings of the previous step.**

**7. Proceed with iterative design.**

- Iterative vs Parallel design

Traditionally, designers use iterative methods during production. For example, they create a prototype, evaluate it through testing, and then make improvements based on the results of the evaluation. This process is repeated multiple times called iteration. Conversely, parallel prototyping is another design method, which involves creating multiple designs at the same time and realizing as many possibilities as possible before testing.

In contrast, parallel design is a better design method and it is also the most frequently adopted. There are three reasons for it.

1) Better usability in a short time

The designers started to work at the same time but designed independently. In this way, parallel design could combine the advantages. In addition, work efficiency will increase.

2) Embrace diversity to find the best

Brainstorming can help come up with as many ideas as possible. The more diverse the design ideas, the more likely it is to produce better solutions. One disadvantage of iterative design is that it forces designers to move in a better direction with only one design, rather than considering more possibilities. On the other hand, parallel design encourages designers to explore all possibilities and helps designers find the optimal value

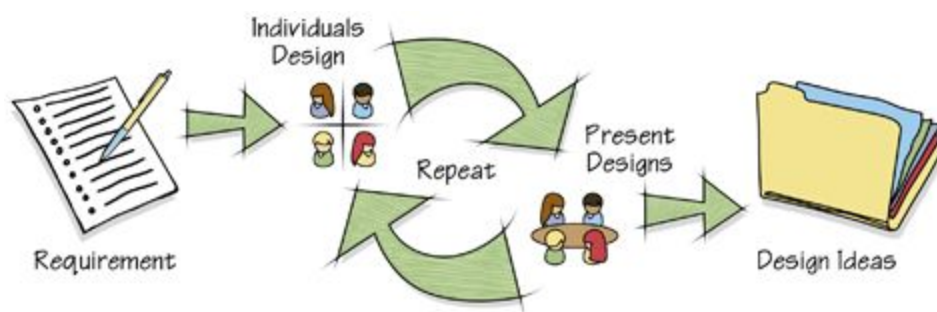
3) More objective evaluation without subjective orientation.

Parallel design can also help designers accept comments more objectively. In a study, most of the designers involved in iterative design had a negative reaction to expert criticism, while participants in parallel design almost all accepted criticism. Because designers in parallel design are less invested in any single idea, so they are more receptive to suggestions.

- Make parallel design more collaborative

The genetic inheritance model used in collaborative parallel design is a powerful mechanism to achieve collaboration and promote consensus. It ensures that everyone involved in the meeting is listening, understanding, absorbing and using other people's ideas, because the process forces them to incorporate other people's ideas into their own designs.

Collaborative concurrent design allows stakeholders to participate in the design process by requiring stakeholders to participate in the design, rather than just informing them. It provides support to non-designers and inspires UX professionals.



1. One team, multiple meetings—On the same day, the team will have 4 hours of meetings every day within a few days, allowing them to complete more rounds of design and presentations.
2. Multiple teams, focusing on the same problem—more parallel design meetings, but using the same requirements. Because they may have completely different ideas.
3. Multiple teams, based on previous results—first, a concurrent design meeting for collaboration with one team. Then, have a meeting with another team to share the findings of the previous team in order to discover the best ideas. Repeat this process many times to find the best idea. This allows the process to retain the results of previous work and still introduce new ideas from other participants.
4. Concurrency, Collaborative Parallel Design Conference—Multiple teams composed of multiple people participate in independent, collaborative parallel design conferences at the same time, focusing on different components of the same problem.