

## **Methodology:**

Usability: Testing prototype and think out loud session.

1. **Participants:** A total of 14 participants were recruited for the study, with a demographic distribution representative of the target user group of the museum. They were recruited through a convenience sample since preference is given to internal validity when testing for usability. Participants were provided with a brief description of the museum's digital collection and the purpose of the study before their participation.
2. **Prototype:** The prototype of the digital collection was developed by the research team. The prototype consisted of a user interface (UI) for browsing the collection through filters and discovering new art through a recommendation system.
3. **Open-ended task:** Participants were asked to use the UI to find art that appeals to them and to verbalize their thoughts and actions while doing so. This open-ended task allowed us to understand the user's experience with the UI and identify potential usability issues.
4. **Semi-structured interviews:** Following the open-ended task, participants were interviewed using a semi-structured interview protocol. The interviews aimed to elicit feedback on the UI and functionality, as well as the participant's overall experience with the digital collection.
5. **System Usability Scale (SUS):** Participants were asked to complete the SUS questionnaire, which is a widely used tool for measuring the perceived usability of a system. The SUS consists of 10 statements that participants rate on a 5-point scale, providing a total score for the system's perceived usability. **Survey instrument:** A survey instrument was administered to participants to assess their experience with the digital collection. Participants were asked to rate their experience on a 5-point scale for several items, such as ease of use, overall satisfaction, and relevance of the recommendations.
6. **Data Analysis:** The data collected from the open-ended task, interviews, SUS questionnaire, and survey instrument was analysed qualitatively and quantitatively to identify patterns and trends. The data was analysed to identify the strengths and weaknesses of the UI and functionality, as well as the participant's overall experience with the digital collection.

This methodology allowed us to gather both quantitative and qualitative data on the user's experience with the digital collection and to assess the perceived usability of the prototype. The results of the study will inform future design and development efforts aimed at improving the digital collection for museum visitors.

## **Participant 1**

## **Page 1**

I like the filtering option to access the collection. I am a bit confused how to select everything. Had to click through the two options a bit.

## **Page 2**

I love the collection, but the layout is a bit cramped. The paintings are difficult to see without scrolling.

## **Page 3 & Recommendations**

Okay, I clicked on this painting and it's giving me some information about the artist and the history. There's similar images below?, but it's not immediately clear to me that I have to scroll down to see it. I think it would be helpful to have it all at one page.

## **Participant 2**

### **Page 1**

Filtering options are good as I wouldn't know what search either way. Could be better presented. I do like the general look and feel of the page. Seems to fit the museum.

### **Page 2**

Good variety of high-end paintings. I like the resolution; but the selection seems limited. Also, there is no information about the paintings. At least a name would be good.

### **Page 3 & Recommendations**

"I see the recommended similar images, but I'm not sure why it's showing me dissimilar images. It's confusing.

## **Participant 3**

### **Page 1**

Too few filtering options but I get the idea. At first it ain't clear what the boxes are. The color scheme is a bit off-putting tho. But the general idea is there.

### **Page 2**

The collection is relevant to the filter, but the layout is clustered. Its cramped that the paintings are difficult to see. Scroll doesn't work on the page but only if the cursor is in the painting which is weird a bit. Takes away from the experience a bit.

### **Page 3 & Recommendations**

I like the similar images, but I'm not a fan of the swiping. It would be easier if I could just scroll through them. The swiping seems like an unnecessary extra step."

## **Participant 4**

### **Page 1**

There is too much text on the two filter boxes. Would be better if it would show me a random collection of painting and in the page to the left display the filtering options. It's a bit confusing that I have to click on the boxes and only then see what options I can select art work on. If the options would be displayed under the 'heading' (e.g. [heading]: Century; [visibly underneath]: options) that would be much more intuitive.

### **Page 2**

Cool, but I only see half of the images. There's not a lot of content about them. The fact that I can click on the paintings is not really clear. I thought this was supposed to give me a collage of some sort.

### **Page 3 & Recommendations**

I'm not sure what the difference is between the similar and dissimilar images. Maybe if they were organized differently, it would be clearer to me.

## **Participant 5**

### **Page 1**

First clicking on the 'info' logo on next to the title I understand that this is some sort of classifier for art images? I don't really understand what the rest means. Seems a bit complicated, but do I even need to know that?

Ok, so I can't search for artist I can just select art based on two criteria? I get it now. There seem to be a bit too few filtering criteria and options. Could be expanded a bit more. Also, why does the search happen as soon as I select only one option? I thought I would select both century and artist and then it displays art?

## **Page 2**

The page is too small and the paintings too large. The art is relevant to the artist at least, but I can't confirm it since I don't see additional info. It's not clear that I can click on them or what the next thing should be? I thought, 'is this it?'

## **Page 3 & Recommendations**

I like how it shows similar and dissimilar images, but it's not clear to me why it's there? What am I supposed to take away from this? This feels like I'm solving a task, but I don't know the objective.

## **Participant 6**

### **Page 1**

The filter options on Page 1 feel limiting. I was hoping to have more options to narrow down my search, like filter by medium or subject. I had to go to the another page to even see the options, which was a bit frustrating.

### **Page 2**

Relevant collage of paintings to the filter, but the page should be larger. Having to scroll right and left, up and down ruins the experience. One painting doesn't fit in the window.

### **Page 3 & Recommendations**

I think the related paintings are useful, but the swiping is confusing. I'm not sure if I'm supposed to swipe through the similar or dissimilar images, or if I'm supposed to swipe through both.

## **Recommendation System**

### **SUS rating**

## **Participant 7**

### **Page 1**

The UI of Page 1 is clean and simple. The two filter boxes for Artist and Century are easy to understand and use. They could look a bit better and be better positioned. I do like the explanations although a bit long.

## **Page 2**

Spot on filter, but I don't really see a 'collection' so to say. There are only a few. Also, what do I do with this now?

## **Page 3 & Recommendations**

I'm not sure why some of the images are labeled as dissimilar. It seems like a strange choice to me. Maybe it would be better to group the images by theme

## **Participant 8**

### **Page 1**

Its nice to filter through a collection but Its not clear at first second that this is about filtering art. I do like the filter boxes prominently displayed, but maybe there could be more than 2? Maybe instead of century call it time period? Seems more relevant for a museum.

### **Page 2**

The images are weirdly cropped and some of them are unresponsive. Its clear that im supposed to check them out in more detail.

### **Page 3 & Recommendations**

I like the similar and dissimilar option. The latter exposes you to more diversity, but I think the swiping is confusing. Maybe if the images were all in one window, it would be easier to browse through them.

## **Recommendation System**

## **SUS rating**

## **Participant 9**

### **Page 1**

The filter boxes on Page 1 are a great start, but I think it would be helpful to have a preview of how many results will show for each selection. Also, how do I apply both filters, or do I need to go back once I select one? It seems that the filtering happens as soon as I select either one of the two, but I cant figure out how to select both. I do like that the homepage features the main painting of the Rijksmuseum.

## **Page 2**

Unique collection. I see the idea behind what you're trying to do here and I think it would work well with a larger dataset. The images could be presented in a better way. Maybe a feature to zoom in or out.

## **Page 3 & Recommendations**

Nice touch with the recommended paintings. I'm not sure why the dissimilar images are labeled that way. It's confusing to me. Maybe if they were organized differently, it would be clearer. For me this raises expectations as if there is something beyond this. Clicking on any image brings me to an information page and again recommendations in the same style. Does this achieve what you want it?

## **Participant 10**

### **Page 1**

I find the first page confusing. It's not really clear what this is about nor that those two boxes are filter options. I get directed to another page as soon as I apply a filter but I wasn't finished yet. Also, there should be some kind of indicator that I actually have to click on the big boxes.

### **Page 2**

### **Page 3 & Recommendations**

The swiping is unnecessary. This doesn't feel like a collection but more like an app where you select what you like more or less.

## **Recommendation System**

### **SUS rating**

## **Participant 11**

### **Page 1**

Clean and simple design, it looks neat. Two filter boxes are easy to understand and good that you provide an explanation. Boxes are labeled clearly, so there's no guesswork. The filtering is straightforward.

## **Page 2**

Seems to work good but I'm confused as to how this is sorted? If there were more paintings, I would love to have a sort option.

## **Page 3 & Recommendations**

I think the dissimilar images are confusing. Maybe if there was some text explaining why they are being shown, it would be clearer.

## **Participant 12**

### **Page 1**

While the filter boxes on Page 1 seem like a good idea, I found them to be somewhat limiting. I would like to see more filter options. Page looks a bit lonely, but for a basic prototype its ok.

### **Page 2**

Curation is good for the limited filtering options. I cant really appreciate the art since the font sizes don't match.

### **Page 3 & Recommendations**

I'm not sure if I like the fact that it shows both similar and dissimilar images. It's confusing to me. Maybe if there was an option to only show similar images all at once. This feels like a filtering system. Imagine if this was like the YouTube homepage, just showing stuff to your interest. That would be more along the lines of what I would expect.

## **Participant 13**

### **Page 1**

I found the filter boxes on Page 1 to be quite confusing. The labelling is not clear, and I had to spend a lot of time trying to figure out what the boxes were for. The site would benefit from better guidance.

### **Page 2**

Its cluttered. The paintings are difficult to see without scrolling. I didn't understand that you can click on them.

### **Page 3 & Recommendations**

All the similar images are relevant to my previous choice. The dissimilar I would not know how to assess. It is not immediately clear that I can click on them. I think having all those sites I went through as one page would be better for exploration.

## **Participant 14**

### **Page 1**

I am a bit puzzled about what I need to do here. This does not feel nor look like a site to go through art.

### **Page 2**

The navigation could be more intuitive. Swiping through this window is rather aesthetically unpleasant.

### **Page 3 & Recommendations**

I like the recommendation system, but I'm not sure why some of the images are labeled as dissimilar. It seems like a strange choice to me.

## **SUS RANKING**

### **Code            Item**

*[Complex] I found the system unnecessarily complex.*

*[ease] I thought the system was easy to use.*

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

*[integration] I found the various functions in this system were well integrated.*

*[inconsistency] I thought there was too much inconsistency in this system.*

*[quick] I would imagine that most people would learn to use this system very quickly.*

*[confidence] I felt very confident using the system.*

*[background] I needed to learn a lot of things before I could get going with this system.*

*[relevance] The related/recommended art-work that the system gave me was relevant for me.*

*Scale: 1 [Completely Disagree] - 2 [Disagree] - 3 [Neutral] - 4 [Agree] - 5 [Completely Agree]*

P1 - P14

Complex: 2

ease: 3



support: 3  
integration: 4  
inconsistency: 2  
quick: 3  
confidence: 2  
background: 4  
relevance: 4

Complex: 3  
ease: 2  
support: 2  
integration: 3  
inconsistency: 3  
quick: 4  
confidence: 4  
background: 2  
relevance: 5

Complex: 4  
ease: 2  
support: 2  
integration: 4  
inconsistency: 2  
quick: 2  
confidence: 3  
background: 3  
relevance: 3

Complex: 2

ease: 4

support: 4

integration: 5

inconsistency: 1

quick: 5

confidence: 4

background: 1

relevance: 4

Complex: 3

ease: 3

support: 4

integration: 4

inconsistency: 2

quick: 3

confidence: 3

background: 3

relevance: 4

Complex: 4

ease: 1

support: 1

integration: 2

inconsistency: 4

quick: 1

confidence: 1

background: 4

relevance: 2

Complex: 3

ease: 2

support: 3

integration: 3

inconsistency: 3

quick: 2

confidence: 2

background: 4

relevance: 4

Complex: 2

ease: 5

support: 5

integration: 5

inconsistency: 1

quick: 5

confidence: 5

background: 1

relevance: 5

Complex: 4

ease: 2  
support: 2  
integration: 2  
inconsistency: 4  
quick: 2  
confidence: 2  
background: 4  
relevance: 2

Complex: 3  
ease: 3  
support: 3  
integration: 3  
inconsistency: 3  
quick: 3  
confidence: 3  
background: 3  
relevance: 3

Complex: 2  
ease: 4  
support: 4  
integration: 5  
inconsistency: 1  
quick: 5  
confidence: 4  
background: 2

relevance: 4

Complex: 4

ease: 1

support: 1

integration: 2

inconsistency: 4

quick: 1

confidence: 1

background: 5

relevance: 2

Complex: 2

ease: 5

support: 4

integration: 5

inconsistency: 1

quick: 5

confidence: 4

background: 2

relevance: 5

Complex: 3

ease: 3

support: 3

integration: 4

inconsistency: 2

quick: 4

confidence: 3

background: 3

relevance: 4

