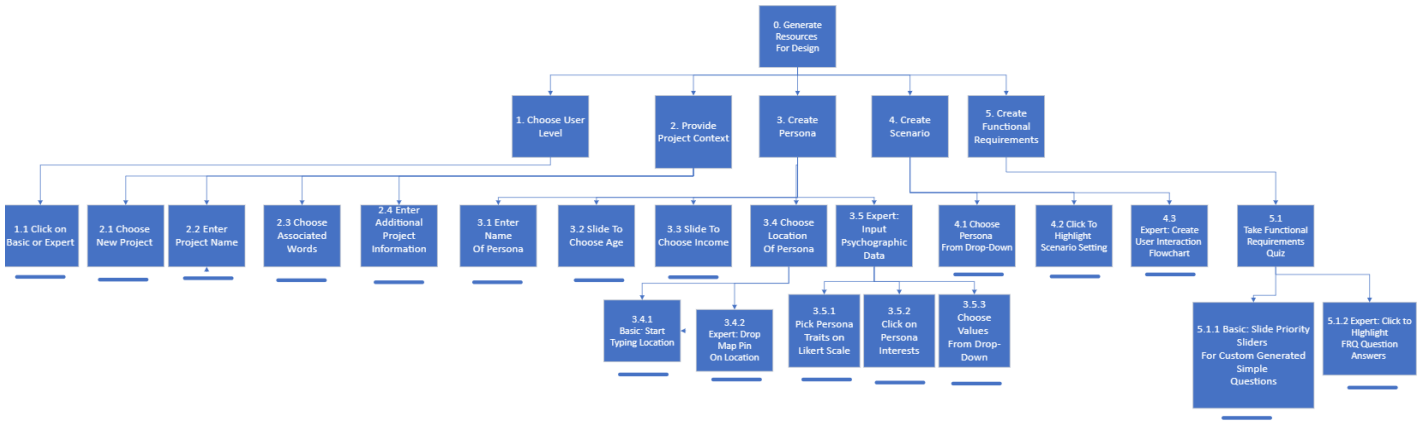
Coursework– CSC3731 – Human Computer Interaction: Interaction Design

Justin Owen Firth

210286171

Group 12

Hierarchical Task Analysis (HTA) diagram



0. In order to generate resources for design.
- **1.** Choose User Level
  - 1.1 Click on Basic or Expert User
- **2.** Provide Project Context
  - 2.1 Choose New Project
  - 2.2 Enter Project Name
  - 2.3 Choose Associated Words
  - 2.4 Enter Additional Project Information
- **3.** Create Persona
  - 3.1 Enter Name of Persona
  - 3.2 Slide to Choose Age
  - 3.3 Slide to Choose Income
  - 3.4 Choose location of persona
    - 3.4.1 Basic: Start Typing Location
    - 3.4.2 Expert: Drop Map Pin on Location
  - 3.5 Expert: Input Psychographic Data
    - 3.5.1 Pick Persona Traits on Likert Scale
    - 3.5.2 Click on Persona Interests
    - 3.5.3 Choose Values from Drop-Down
- **4.** Create Scenario
  - 4.1 Choose Persona from Drop-Down
  - 4.2 Click to Highlight Scenario Setting
  - 4.3 Expert: Create User Interaction Flowchart
- **5.** Create Functional Requirements
  - 5.1 Take Functional Requirements Quiz
    - 5.1.1 Basic: Slide Priority Sliders for Custom Generated Questions
    - 5.1.2 Expert: Click to Highlight Answer of FRQ Questions.

Plan 0: Generate Resources for Design
- Do 1: Pick User Level
- Do 2: Give Context
- Do 3: Create Persona
- Do 4: Create Scenario
- Do 5: Make Functional Requirements

Plan 1: Choose User Level
Do 1.1

Plan 2: Provide Project Context
Do 2.1-2.3
and if needed 2.4

Plan 3: Create Persona
do 3.1-3.2-3.3

then do 3.4
if basic do 3.4.1
if expert 3.4.2

and
if expert do 3.5
by doing 3.5.1-3.5.2-3.5.3

Plan 4: Create Scenario
Do 4.1-4.2-4.3

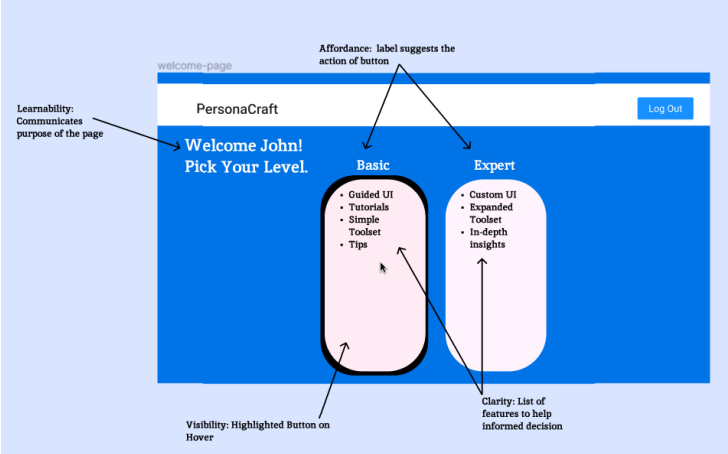
Plan 5: Create Functional Requirements
do 5.1
if basic do 5.1.1
if expert do 5.1.2

Design explanation

In crafting the design for this generative AI-powered web tool, I adopted a guided wizard mental model [1]. I wanted to pick a mental model that most people are familiar with and the brief states that this tool is suitable for inexperienced users. The tool's interface is structured to guide users seamlessly through the key tasks identified in the HTA, adopting a cognitive design approach. The annotated screenshots provided are in order from process start to finish to illustrate the intuitive flow of the guided wizard.

1. **Choosing User Level**

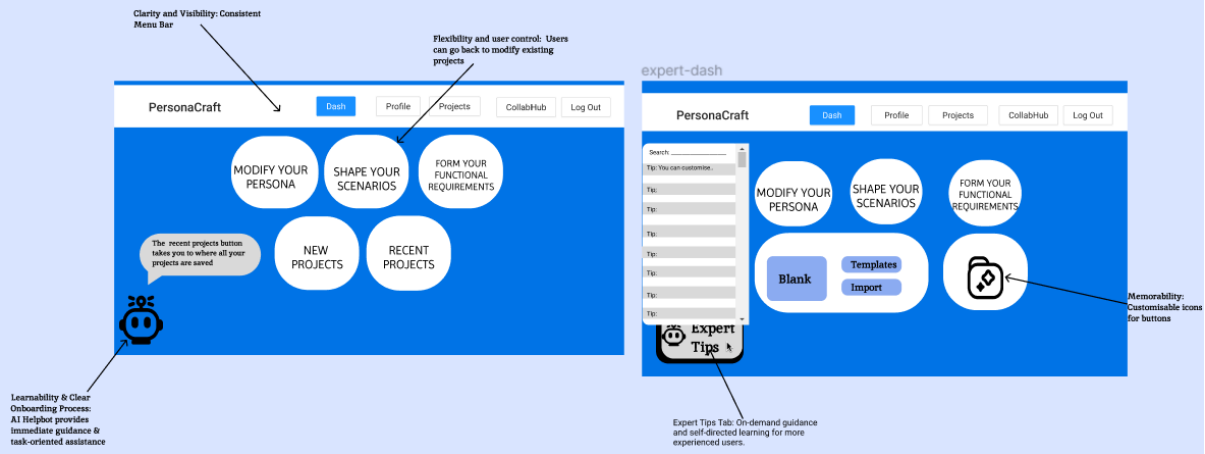
In designing the user level selection page, I prioritized affordance, learnability, visibility, and clarity. The two user level buttons labelled 'basic' and 'expert', employ clear visual cues and hover effects to afford users a straightforward choice. The welcome message enhances learnability by telling the user to pick their level. This guides them through the decision-making process. It also has a very minimalistic design, to focus on the key elements as not to overwhelm the users in the early stages of this process.



Menu

There are two different dashboards for basic and expert user level. The most important feature for the basic user level was a clear onboarding process [2]. I used clear labels for the buttons and added an AI Help Bot that provides task-oriented assistance to avoid the user becoming overwhelmed by features. There is also a menu bar that appears on both dashboards, which provides clarity and visibility to the user.

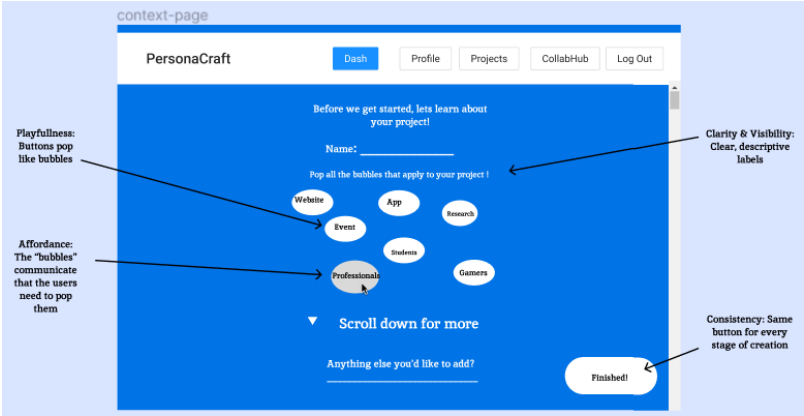
On the expert dashboard, there is a tips button that brings up a tab with complex tips. Experienced users may not want continuous guidance throughout the creation process, this allows for on-demand guidance & self-directed learning. Buttons can be customised by adding icons, adding memorability to the dashboard, letting users pick the icon that they associate with the action.



2. Providing Project Context

As the first step, the project context page is the same for both user levels. Playfulness [3] is introduced in the form of interactive buttons that can be popped if the word in the bubble applies to their project. This also has an element of affordance, as the bubble element communicates to the user that they need to be popped by clicking on them.

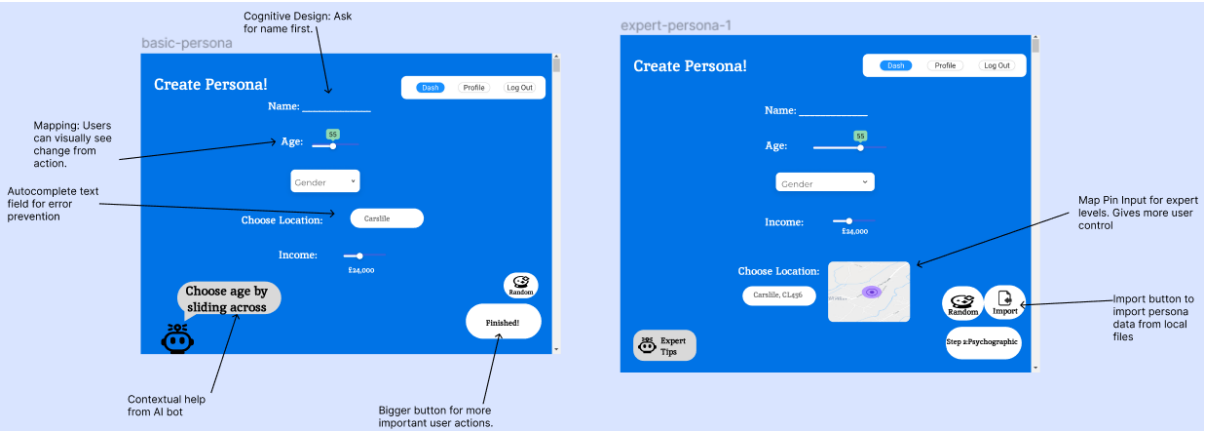
During the end of every creation phase, a button labelled “Finished!” will appear at the bottom of the page. This is for consistency [4] purposes, the user will notice that this button appears in the same spot and expect it to be there during the later stages of creation.



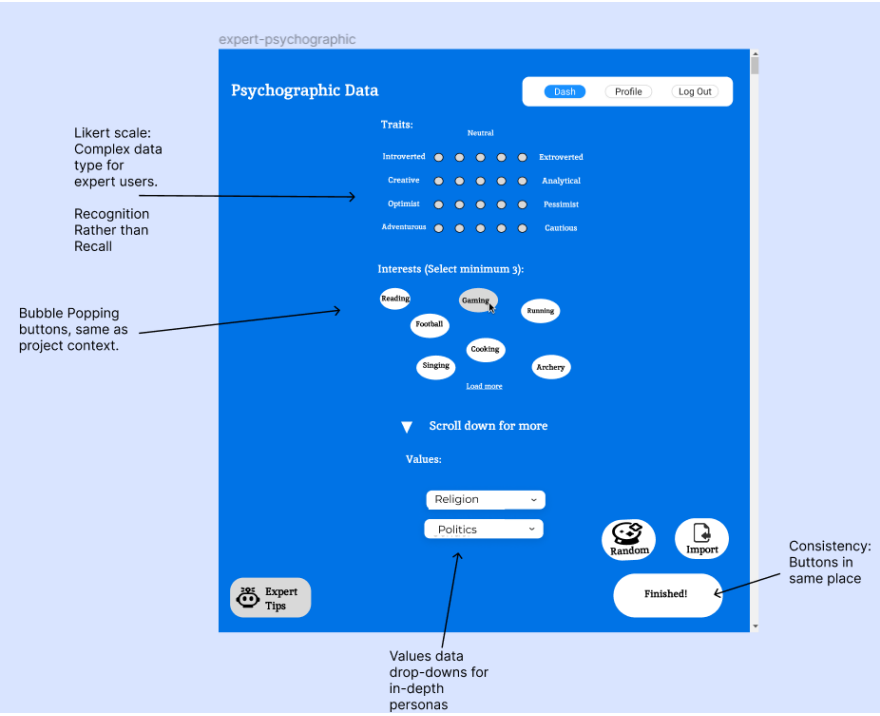
3. Create Personas

I wanted to consider the users thought process to make a cognitive design for persona creation. The input fields that the user encounters mirror the typical order in which an individual provides information. For example, the basic user level starts with an input field for the personas name, information one would typically want out of a first encounter. Then there is a slider for age, aligning with the concept of mapping. The user can see the value increase as the input field is slid across. Next, the user can type a location, which has an autocomplete feature, this is for visibility and error prevention purposes, as it gives users correct options to choose from.

The design for the expert user level has more complex features. The ‘choose location’ is a map pin drop. The user can now choose specifics, by dropping it on a country, or zooming in and dropping the pin on a house.

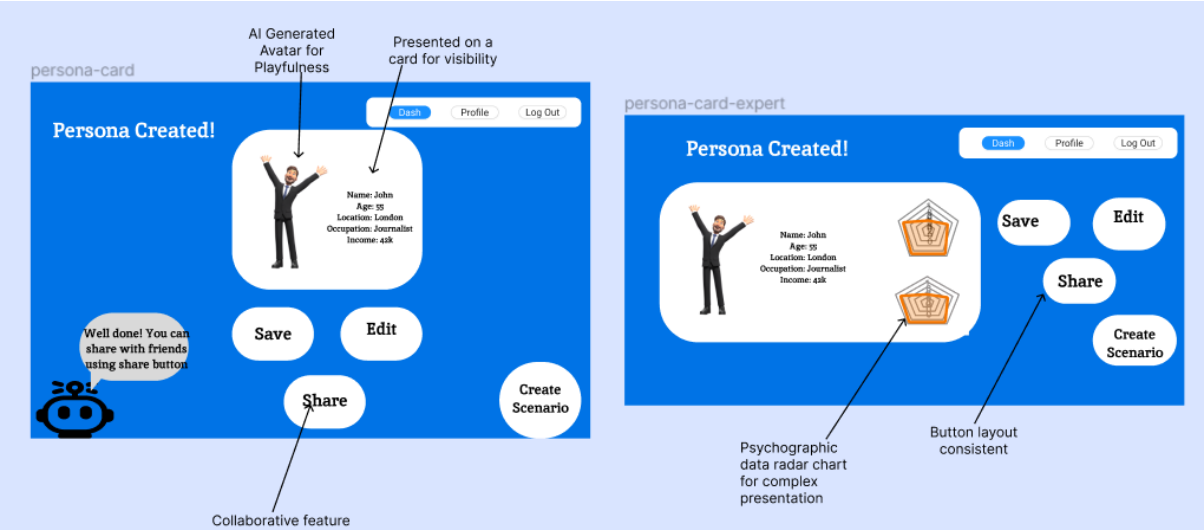


The psychographic data [5] stage introduces a Likert scale which follows the principle of 'Recognition rather than recall,' [6] lowering the user's cognitive load. Next there is a bubble popping input field, drawing from the project concept page. To complete the stage, two drop down menus for religious beliefs and political background were added to create a more in-depth persona for the expert user level. The 'finished' button is in the same place.



To present this data, I wanted playfulness. Individualised AI generated avatars are displayed on the persona card, enhancing visibility, and providing personalization and uniqueness to the users' persona. An added feature for the expert user level is a set of radar charts, displaying the psychographic data. These complex data presentation methods might overwhelm basic users and

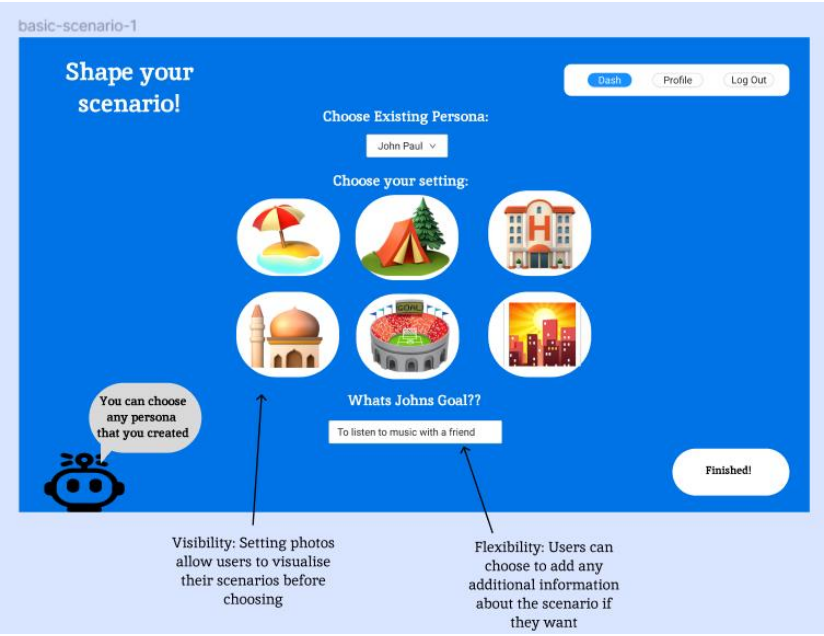
were omitted until the user feels ready to move on to the next level.



Included are four new buttons, a save button which saves the persona to 'my projects', and an edit button which gives user empowerment with the ability to make modifications and/or correct mistakes on their persona card. There's also a share button, that they can share with friends on the collab hub page, and a button to move on to the next stage.

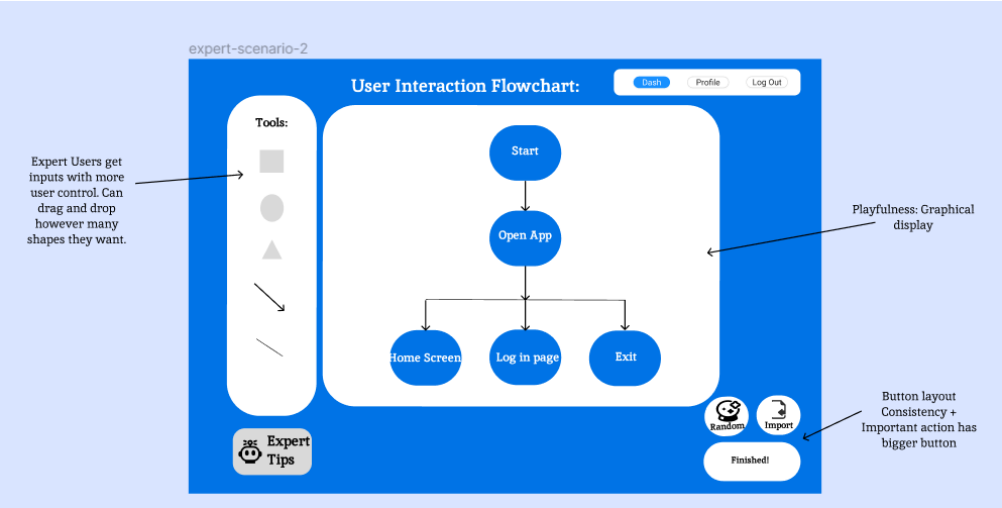
4. Create Scenario

The first step of scenario creation is to choose an existing persona. Then, users must choose a setting for their scenario from six interactive photos. This adds visibility, as users can identify the option they want. Then, a text field where the users can add what their persona's goal is for the scenario is included. I did not want to use text fields, but I believed it to be the most suitable option as it provides input flexibility.

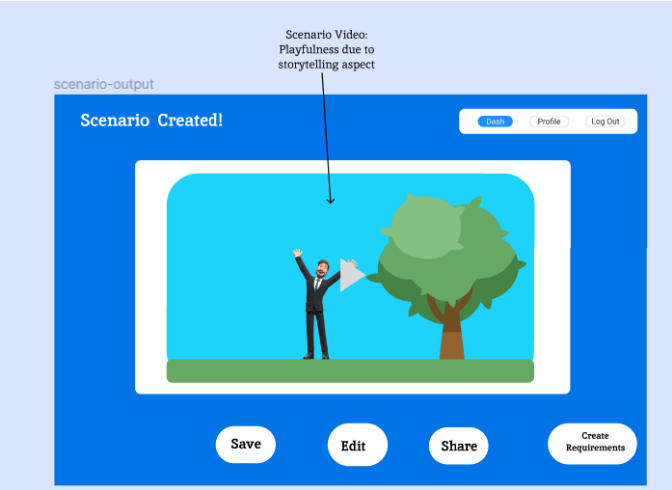


There is a user interaction flowchart added to the expert user level. I thought this would be a unique way to incorporate complete user control [7] over what happens in the scenario, which effectively

allows the users to use their expertise. Its graphical display also adds playfulness, as users can utilise different possibilities.

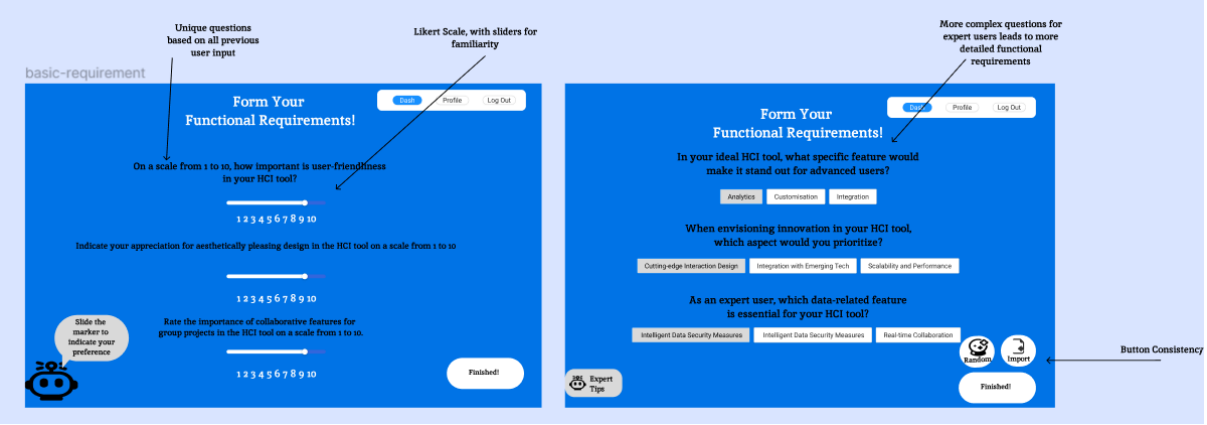


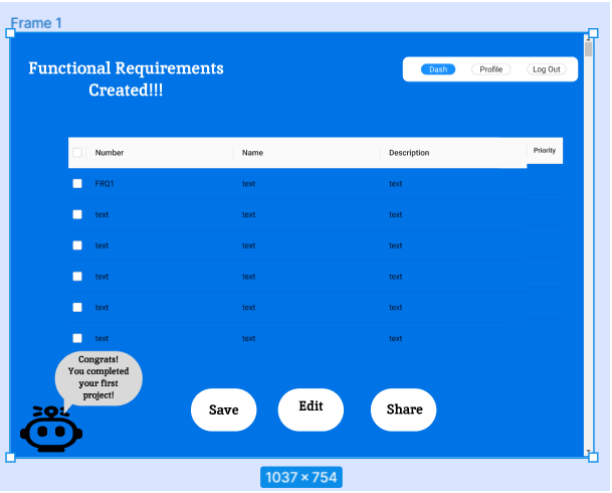
The data is presented similarly to the create personas, on a scenario card with an AI generated scenario video. This provides playfulness as it adds a storytelling aspect to the process.



5. Create Functional Requirements.

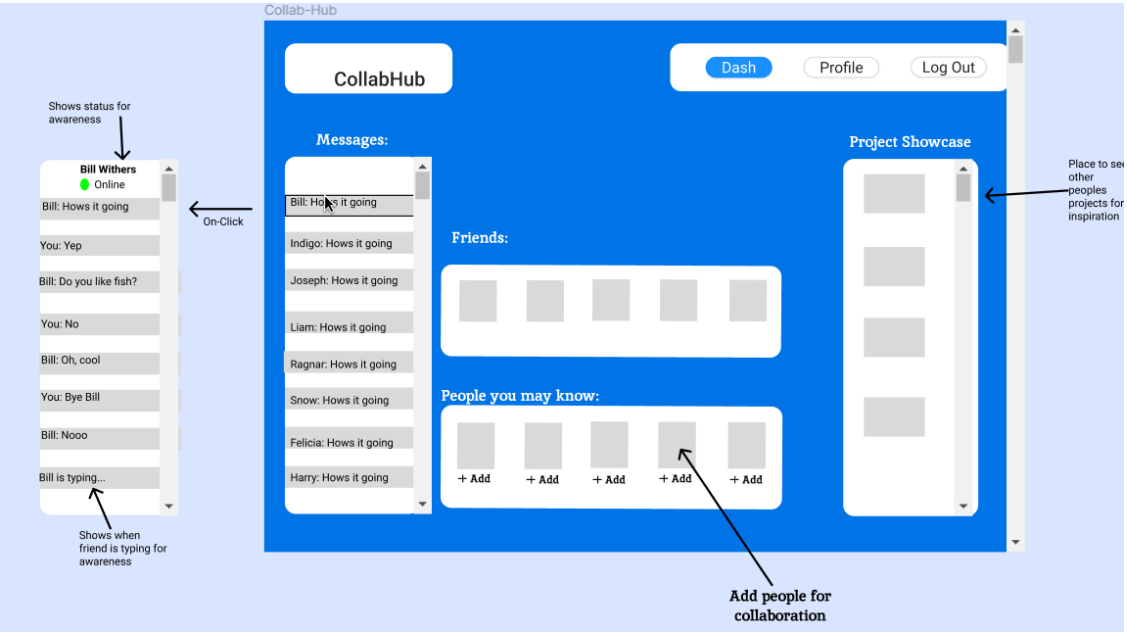
To create a good user-specific set of functional requirements, I believed there needed to be a final individualised quiz, with questions generated by AI to fill in the blanks on what information the user had not provided. As this is the final stage, I wanted to challenge the user, introducing a more complex input field, the Likert scale. I hoped this would complete the onboarding strategy that I implemented and prepare the user for the transition to expert user level, without overwhelming them. One thing I included to achieve this was make the input field a slider from range 1-10, which is something they should be familiar with by now as it was introduced in the first stages of creation.





To finish off the creation process, the functional requirements are displayed in a neat table, which can store a large amount of data effectively without overwhelming the user.

Bonus Feature – CollabHub



References

[1] Lengyel, Denise. 2023. “Week 2 - Mental models, human factors, and requirements”. Practical presented at Newcastle University, Newcastle, October 2.

[2] Wikipedia contributors. 2023. “User Onboarding.” Wikipedia. https://en.wikipedia.org/wiki/User_onboarding (Accessed November 18, 2023)

[3] Lambton-Howard, Daniel. 2023. “Designing for Play”. Lecture presented at Newcastle University, Newcastle, November 13.

[4] Wong, Euphemia. 2020. "Shneiderman’s Eight Golden Rules Will Help You Design Better Interfaces." Interaction Design Foundation. https://www.interaction-design.org/literature/article/shneiderman-s-eight-golden-rules-will-help-you-design-better-interfaces. (Accessed November 19, 2023)

[5] Wells, Jessica. 2022. “5 Persona Examples You Can Use in Any Industry.” Brafton. 5 Persona Examples You Can Use in Any Industry [+ Free Persona Template] | Brafton. (Accessed November 20, 2023)

[6] Kharrufa, Ahmed. 2023. “Understanding Users Part 2”. Lecture presented at Newcastle University, Newcastle, September 25.

[7] Nielsen, Jakob. 1994. “10 Usability Heuristics for User Interface Design.” Nielsen Norman Group. https://www.nngroup.com/articles/ten-usability-heuristics. (Accessed November 20, 2023)

Reflective Log

Entry 1 - Week 4 - Design Rules

During this topic, I was introduced to two design rules that I was not familiar with, ‘Schneiderman’s Eight Golden Rules’ and ‘Norman’s Seven Principles’. I applied a lot of these rules and principles to my design, and I believe it to have been a great help in making a user-friendly experience. Some examples of my use of the golden rules are:

- I strived for consistency through the usage of the same menu bar, and buttons were deliberately placed in the same spot for every step of creation, i.e. the ‘finished’ button.
- An ‘edit’ button was added so that users could go back to edit their personas or scenarios after they finished them. This applied the rule of permitting easy reversal of actions.
- I also believe my design offered informative feedback through the AI help bot, which gives contextual feedback based on what the user is trying to achieve.

Also, some examples of Norman’s seven principles include:

- Mapping, I was not previously familiar with this term, but this topic enabled me to apply mapping to my design using slider input fields.
- Constraint was also applied to my design well by taking away some options in the standard menu bar when they weren’t necessary, such as taking away the dash button when choosing a user level.

- Finally, this topic educated me on how to apply affordance, and I did so by having hover effects on my buttons so that users know what it is.

In conclusion, this topic aided me in applying a range of design rules that I was previously unfamiliar with, and as a result my design became more user-friendly.

Entry 2 - Week 7 - Designing for Play

Before this topic, I had not considered how important it is to consider playfulness when designing a web application. Previously I had the mindset of 'as long as it does what it needs to do then it's fine', but what I learned is that for users to come back, you need them to have a memorable and pleasurable experience. Playfulness is the perfect way of doing this.

There are multiple examples of an attempt to implement playfulness into my design at various stages of the design process. My first use of playfulness presented itself in the 'bubble popping' buttons that users click to pop during the project context phase. These buttons encouraged user engagement as an interactive experience. It also had a sense of novelty, as users do not typically come across this experience during a standard input form.

The user interaction flowchart was designed deliberately with object play in mind. I could have easily provided the user with bullet points for users to input a step by step of user interactions, but I wanted the user to be able to build something themselves from scratch using the tools provided so that they could explore all the possibilities of user interaction in a visually pleasing way.

Finally, the AI generated scenario video was designed in an imaginative way. I hoped this feature would allow the user to see their standard inputs be brought to life, rather than just being displayed in text.

Overall, this topic provided me with a lot of design ideas and allowed me to create a more memorable experience for the user.

Entry 3 - Week 2 - User Requirements

While I was comfortable with the persona and scenario creation phase of this assignment, I was unsure on how exactly the inputs from those two phases would enable AI to output a set of useful functional requirements. This was partly due to me not being entirely aware of the differences between functional and non-functional requirements. Understanding the distinction, between non-functional requirements being constraint, and functional requirements being what the system should do, allowed me to design the requirement creation phase so that there would be sufficient user input to create a useful set of functional requirements.

Up to that point, all the inputs were not exactly user specific, they applied to any HCI project, therefore it was my goal for the last phase to use all the information previously gathered, and have the tool generate a user-specific quiz. For example, the quiz would have questions such as "Rate the importance of collaborative features for your HCI project,'' which would only appear for users who have expressed some interest in collaborative features during the creation phase. In turn, these questions provide some final clarity for the AI tool to ensure that the functional requirements are what the user needs.

In conclusion this topic was vital in providing clarity between functional and non-functional requirements and enabling me to design the final phase so that the AI has sufficient detail to generate a good set of functional requirements at the end of the creation process.

Entry 4 - Week 7 - Designing for User Experience

This topic opened my eyes to the concept that experience is dynamic. As I previously stated, When designing websites or programs in the past, I always had the mindset of 'as long as it works, it's fine.' Learning about the 'peak-end' rule and how humans tend to remember what happened at the end the most, altered my thinking when designing the AI tool.

For the basic user, I wanted them to feel a sense of achievement in the end and give them confidence going forward from that. To do this, I designed the tool in such a way that each phase would gradually introduce them to more and more complex features, for example during persona creation they only had to worry about drop downs and sliders, then in scenario creation they were introduced to icon buttons. The final stage would introduce them to an expert user level input, the Likert scale. On completion of using the Likert scale, the user should feel the achievement of not only having finished the creation process, but also being able to use some expert user level features. In theory, this should make the memory of using the tool a more positive one.

Entry 5 - Week 8 – Social Interactions

This topic helped me directly in creating the collab hub page. Initially, I had thought of having a basic messaging feature where a user can send messages to their friends, and when the friend receives the message, a notification would appear. However, the lectured mentioned that it is good to have awareness for such features. Therefore, I decided to implement a couple more features that would let the user feel the presence of their friend as they are messaging them. For example, I added a 'typing…' message when the other person is typing. This lets the user know that the friend is on their phone at that moment and lets the user know what the friend is doing. I also added a status feature at the top of the messaging page, which would appear with 'online' if user is using the collab hub, and 'last active {time of last activity}' if the user is not. This leads to more awareness for the user, as it lets the user know when the friend was last online, and when the friend is online, it lets the user know that they are currently using the collab hub. This will lead to better social interactions, as not only will it lead to better awareness, but it will also lead to more efficient and effective conversations, users can pick an appropriate time to message their friend when both are online and will not be sat waiting for a message if they can see that their friend has gone offline.