OOP Project Report – Group 5

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ABSTRACT

(TO DO - Towards the end of the paper?)

1 INTRODUCTION

The following report describes the findings of the heuristic evaluation of our developing application, TALIO. Having already worked for quite some time on developing and familiarizing ourselves with the software, we have become oblivious to some otherwise glaring problems or inconveniences which a novice user may encounter. As such, we have decided to conduct an evaluation with reviewers who were previously unfamiliar with the application, with the main objective of collecting feedback on the usability and consistency of the program.

The software we have given our evaluators to review was a “barebones”, yet functional prototype of our future product. The principles behind the prototype were the same as those of the anticipated release. When opening the application you are prompted to choose a server to connect to, a username and an (optional) admin password - this can be seen in figure 1.

The user is then redirected to a "workspace" (figure 2) where they

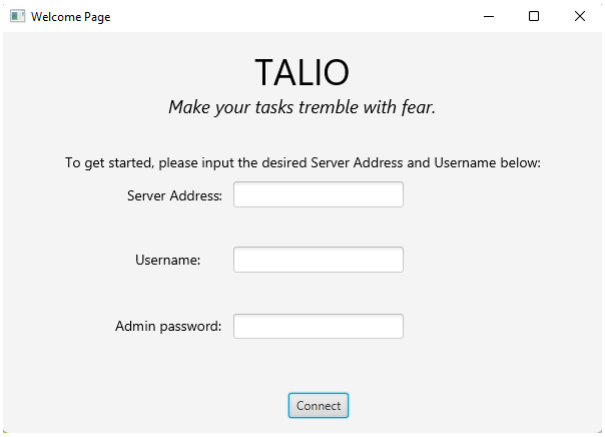

Figure 1: The Welcome Page

can create, join, open and leave boards. This screen also has an option to disconnect, which redirects the user to the previous "welcome" page.

Upon opening a board (figure 3), the user has the option to add, edit and remove lists and cards to their liking. The user will also see any previously created lists and cards when reopening the boards. They also have the possibility of copying an invite code to share with other users so they can also connect to their board.

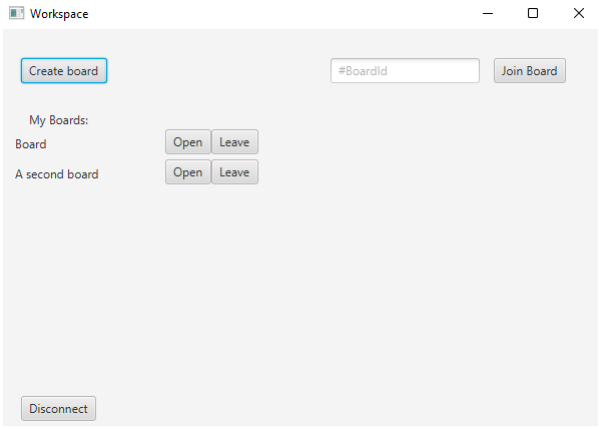

Figure 2: The Workspace

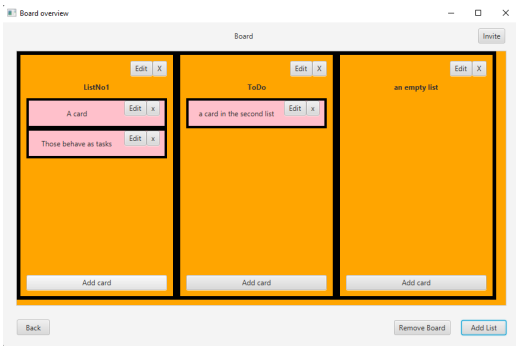

Figure 3: The Board Overview

2 METHODS

To acquire feedback, four experts were recruited. They were emerging software developers, studying computer science at the Technical University of Delft. We set up a meeting where all of them gathered to evaluate the demo of our team’s application. Before the meeting, we informed them that the goal is to gather their evaluation feedback guided by Nielsen’s ten heuristics. Moreover, they were encouraged to get acquainted with them before the meeting.

When we met, before they had started, we informed them that they would get to try our application on their own, but under supervision. Together with the working demo, we provided them with the list of ten heuristics and a text document. The document included a list of questions which were supposed to serve as guidance in their evaluation, besides the list of ten heuristics. The questions were:

(1) Is the UI intuitive - would you know how to use it without help? What needs to be improved?

(2) What functionality would you like to be able to also use / what additions do you expect?
(3) What would you improve about the aesthetics?
(4) Is the experience fluid?
(5) Are there redundancies?
(6) Is the interface consistent throughout?
(7) Does the interface provide clear navigation and a logical flow of tasks?

However, they were told that before or after answering the given questions, they should also add anything they believe is important to note that may violate points from heuristics. They were able to directly type their thoughts and answers to the document while using the application. This way we tried to make sure nothing was forgotten.

During the evaluation, one person from our team was a supervisor. She instructed them to first try to start up the application. After that, she instructed them to perform all tasks our app is capable of, without giving instructions on how to do so. Therefore, the action goals of our evaluators were to start the application with a specific username, try to create a new board, create a list inside the board, create cards inside the list, rename both the list and cards and boards as well. However, the supervisor did not explain to them the logic behind the username, and that one person can start multiple users by typing a different name. Also, they were not told that if somebody types the same username as them, it relates to the same client and they will always see the same thing, including changes from both sides. They were also instructed to try to drag and drop cards inside the board and join other boards. After the instructions, they were left to perform actions on their own, further testing what they did previously.

At the end of the evaluation, we collected their answers and unified them in one document where we performed analysis. The goal was to measure how our application aligns with all of the ten heuristics, as we aim to create user-friendly and intuitive applications. Additionally, we wanted to see what was common among the evaluators. Therefore, we split the answers according to the violated heuristics as we wanted to have a clear understanding of what needs to be improved and what our priorities should be.

3 RESULTS

After conducting a heuristic evaluation of our prototype, we received valuable feedback from the four evaluators. One of the main feedback points we received is that some parts of the system are unintuitive or not well explained. Additionally, some parts of the application are not aesthetically pleasing. These are general problems that we need to look into to ensure that our product is easy to understand and use. The following problems were selected based on how many evaluators noticed them during the heuristics evaluation process – for example, the first and most important problems were found by all four of the four evaluators, and the latter ones were noticed by just one evaluator.

A list overflows when many cards are added to it, and it does not support scrolling. This violates the "Consistency and Standards" principle. Users expect that they can scroll through a list when the number of items exceeds the visible space. Inconsistent behavior can create confusion and frustration for users.

fA mechanism that prevents lists with no names or cards with no names to be created does not exist. This violates "Error Prevention" since without feedback, users may not realize that they have left a required field blank, leading to errors or confusion.

Drag and Drop does not work intuitively enough. The evaluators stated that when trying to drag and drop a card from the middle part – where the title of the card is – some issues would appear. Additionally, when trying to drag and drop a card to a list that is unreachable (because of the scrolling), the app does not support scrolling. This violates the "Consistency and Standards" heuristic since the application should allow the users to manipulate objects (i.e. cards and lists) in a way that is intuitive and easy to understand. Therefore the drag and drop should be consistent and predictable.

The functionality for renaming a board is hard to find. This violates the "Visibility of system status" because the system fails to provide clear information about the board renaming functionality. Therefore, it can lead to wasting time searching for this particular functionality.

There is no label which explicitly says that the admin password is optional. This problem violates "User control and freedom" since the system does not provide the users enough information so that they have full control and freedom over their actions. Users may not know that they don't need to enter the admin password to log in as a normal user.

Joining an existing board is not self-explanatory. "Recognition other than recall" is violated, because the system requires users to remember or figure out how to join a board. Additionally, the 'Invite' button in the board overview is not suggestive enough. The evaluators stated they didn't know the invite was supposed to give the board id since the board id is not visible. This increases frustration and decreases usability and user experience.

The current color palette is not appealing. This violates the heuristic of "Aesthetic and minimalist design" because the system does not present an aesthetically pleasing color scheme.

When editing card details, the old values are not auto-filled, therefore you have to type everything again even for changing one word. "Flexibility and efficiency of use" is violated because it makes the process of editing cards slower and more cumbersome. When editing a large number of cards without the auto-filled old text, you have to retype lots of text which can be difficult and time-consuming.

The client is not responsive when the window size is changed, therefore the buttons get misplaced and the text gets uncentered. This violates "Aesthetic and minimalist design" because it creates a cluttered and disorganized appearance. Therefore, it can lead to discouraging users from using the platform.

The window size changes from scene to scene. "Aesthetic and minimalist design" is violated again in this case, since it leads to a non-consistent and chaotic user experience.

The buttons are not consistent between scenes, therefore when you go from one scene to another, the 'back' button might be in different places, which makes the app very confusing and greatly disrupts the workflow. This violates the "Consistency and standards" heuristic.

The 'join board' field does not get cleared up when disconnecting and connecting again. This violates "Error prevention"

since it can lead to users accidentally joining the wrong board or duplicating boards.

Error messages are not clear enough. For example, when renaming a list with an empty string, the user gets only a 404 Error. Also, when using a wrong 'Join board' input, the error that appears on the screen is not suggestive enough. This violates the "Help users recognize, diagnose and recover from errors" heuristic.

4 CONCLUSIONS AND IMPROVEMENTS

The input that we got from the four experts when doing the heuristics evaluation has been an eye-opening experience for our development team. They helped us reflect on our process and some of the flaws it could have as well as the application itself. The main problems that our evaluators found can be summarized as follows:

(1) **Some parts of the application are not intuitive and lack explanation.** This problem, in our opinion, partially stems from the backlog being too specific on some occasions and too general on others. We are trying to follow it as closely as possible even if we agree that some of the features are not intuitive (like double-clicking to edit). The admin and password functionalities on the other hand lack some context so we ended up improvising and getting a lackluster result that is hard to use. We as developers spent a lot of time discussing our features. Therefore, we rarely find them hard to use since we have mutually agreed on how they should work. However, for a random user, it could be a daunting task to work with our app.

(2) **The application is not aesthetic.** The sources of problem number two are some of our coding and testing practices. The orange color, which was disliked by experts, was supposed to be there just for testing but it stuck there as a part of the product in the end. All layout-related issues are a result of us developing the interface in a rush, focusing more on functionality. And finally, errors being displayed in different and sometimes unhelpful ways happened because it was never discussed how the user should be notified of errors and everyone put in whatever they found fitting.

Concerning **the former issue**, the team has decided to implement the following changes concerning the heuristics and the results from the evaluation. Firstly, a scrollbar will be added to each list of tasks since the evaluators reported difficulties when adding multiple cards. This is going to bring the application more in line with the heuristic *"Visibility of system status"* and will allow users to have a greater number of tasks for a specific list. Secondly, the team will add labels containing warnings, e.g. "List name cannot be left blank.", which will indicate to the user that it is required to fill in a certain field. As a result, there would be less ambiguity when using the application and the *"Error Prevention"* heuristic will be better enforced. Thirdly, a feature is going to be implemented such that the mouse cursor will change when hovering over the name of a board as it is currently challenging to identify how to use the rename functionality. This will assist future users in working with the application more easily and it will improve the *"Visibility of system status"* heuristic. Additionally, more descriptive text will be added to the welcome page as the evaluators reported that it is not properly relayed which fields are mandatory. Confusion regarding input will be minimized and the *"User control and freedom"* heuristic will be followed in a better manner. With **second order**

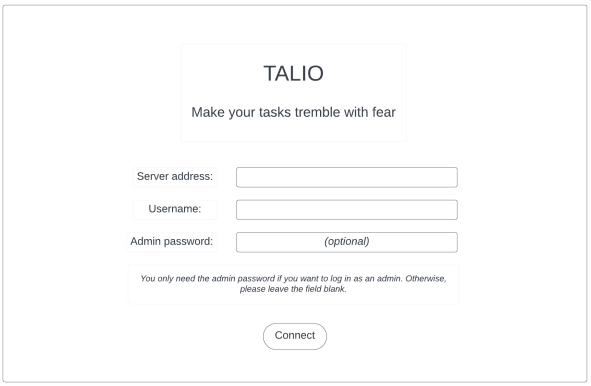

Figure 4: Improved connect page

of priority, the developers will append the full board name and id to the invite text label since currently too much is expected of the user to utilize the functionality. This would abide by the *"Recognition other than recall"* heuristic and allow for the user to have an overall more pleasant experience. Furthermore, the team is going to create a more visually attractive design for the application as the present version was considered displeasing. As a result, the *"Aesthetic and minimalist design"* heuristic will be improved upon and users will enjoy engaging with the product more. Next, a card's previously stored title and description will be automatically filled in the corresponding input fields inside the "edit card" scene since it is not user-friendly to ask users to provide the whole text, especially for small changes. This would align the application better with the *"Flexibility and efficiency of use"* heuristic and would simplify users' workload. Finally, it has been decided that the application will not

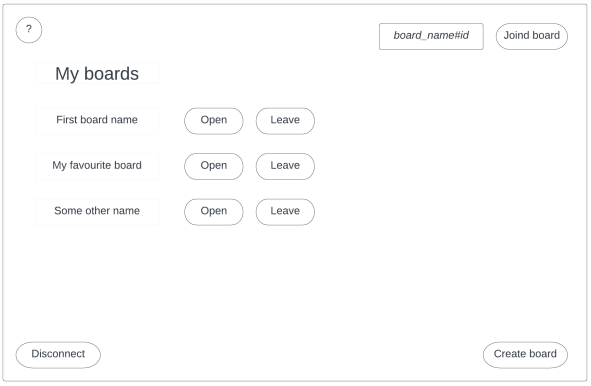

Figure 5: Improved Workspace

be resizable in the future and that the size of the window for each separate scene will stay consistent. The *"Aesthetic and minimalist design"* heuristic will be more properly upheld and users view the product as more visually pleasing while working. Moreover,

specific buttons, e.g. "cancel", "back", and "save", are going to stay in the same positions, when appropriate, relative to the different windows. This strongly enforces the *"Consistency and standards"* heuristic and will reduce potential frustration for users. Then, the team is going to implement a way for text fields to be cleared when changing scenes as currently, it could lead to undesired results. Consequently, the *"Error prevention"* heuristic would be improved upon and the chance of users making mistakes would decrease. Lastly, the evaluators reported that error messages are not helpful enough, which is going to be addressed by describing in greater detail the potential issues a user might encounter. Naturally, the application would resonate more with the "Help users recognize, diagnose and recover from errors" heuristic and would provide a more pleasant experience to users in general. Figures 2-4 reference our updated vision for the application's interface and functionality, taking into account all of the planned improvements.

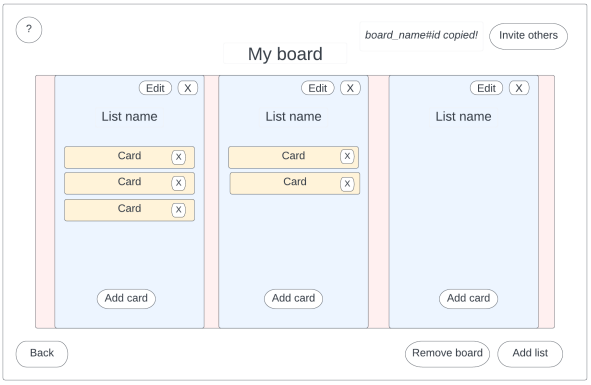

Figure 6: Improved Board Overview

Overall, the heuristic evaluation of our team's Talio prototype has highlighted some key areas for improvement. It is essential that we prioritize the identified issues to ensure that our application is intuitive to use, efficient and aesthetically pleasing.