OOP Project Report – Group 74

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ABSTRACT

This document is a Heuristic Usability Evaluation Report on the team project of Group 74. The report evaluates the usability of the application 'Talio', based on the project prototype provided by the team. Six computer science students, with relative knowledge in usability testing, were recruited to evaluate the prototype on the basis of Nielsen's usability heuristics[2]. The severity of each issue was rated in a scale of 1 to 5. The results indicated several issues with the prototype, including but not limited to, incorrect placement of objects and lack of error messages. After analysing the results, the team declared the acuteness of each issue based on the number of experts who found them and the average grade of severity they scored on the scale. It is decided that each problem will be tackled with an order of priority. The report concludes with specifications on improving the usability of 'Talio'.

1 INTRODUCTION

We have recruited a group of experts with the task to evaluate our report on our current work. This project is a self-organization app called 'Talio'. The course's requirements are the same for all teams so the experts that evaluated us have also been asked to create a similar App. The fact that they have worked on something similar gives them the experience to see our project from the perspective of impartial observers. We judged that they would be able to spot possible mistakes and suggest improvements for our App's usability.

Their knowledge of Heuristic Usability will be the guide of the evaluation, as well as their understanding of the app's expectations and basic requirements. This will overall help us develop our app to be more user-friendly and professional.

The prototype we have provided is in the form of a video taken from mock-ups we have created. We have also added a written description of the video. The description presents information about the general operating system from the user's perspective, like the different available functions.

2 METHODS

2.1 Experts

Regarding the Heuristic Usability Evaluation, six computer science students were recruited as our experts. The experts have attended lectures that educated them regarding evaluating products, following Nielsen's usability heuristics. They have studied the app's backlog and have attended multiple user Q&A's, which allowed them to give a more accurate evaluation. Due to their occupation, they have not had further experience with the subject.

2.2 Methodology

For the evaluation, the experts were given the prototype that was described, which they could interact with by either viewing the video or viewing the mock-ups. The following document instructions contains the correct order of actions to see all functionality in the mock-ups. They had to examine if there are any issues related to the heuristics rules on Nielsen's theory, which we provided[2]. They were also instructed to rate the impact of the problems from one to five, with number 5 indicating the highest negative impact on the app. The format they had to describe each heuristic on is the following:

(1) Problem description
(2) Likely/Actual Difficulties
(3) Specific contexts
(4) Assumed causes

2.3 Results' format

After inspecting the application individually, the six of them needed to host a meeting, where they discussed their results on their individual evaluation and what issues they had found. In addition, the experts completed a table for each heuristic, which showcased the impact of all the related problems and how many students were able to recognize each issue. Based on this we created the following graph and composed our results.

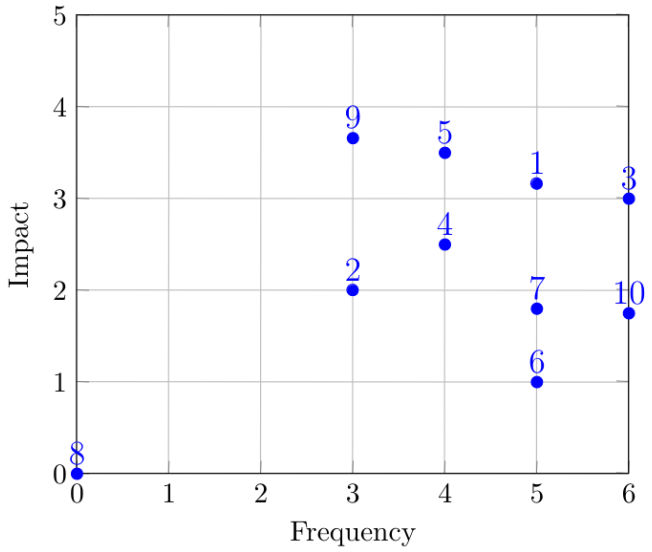

Figure 1: Resulting graph

Its purpose is to know the severity of each problem, in order to prioritize them and spend the appropriate amount

of time and resources on each one. The final format of the review consisted of a list of heuristics, where for each one there was a table included of its impact rates, as well as some descriptions. They included the issues they found, using the format that was described above. The experts provided the team with a document containing their results.

3 RESULTS

Among all of the problems the experts found, the team has selected the most vital ones in each category of the 10 Heuristics. A brief overview regarding the issues, as well as why these were chosen is provided below.

3.1 Heuristic 1 - Visibility of system status

All 6 group members declared that there are problems regarding proper "Visibility of the system status". They specifically noted that this is apparent when connecting to the server, because there is no confirmation whether it was successful. They also mentioned that when adding a card, a list, or joining a board, after filling out the new details there is no evidence that the action has gone through. The experts suggested the addition of such signals to avoid any confusion to the user. The average severity for this issue was rated 3.16, which is quite high.

3.2 Heuristic 2 - Match between system and the real world

3 out of the 6 experts suggested that the IP Address box, that is shown to the user when trying to connect to a specific server, might be a difficult concept to understand. Many users may not have the knowledge of what it means or they could not know the server they should connect to, which could prevent them from using the app. This heuristic is part of matching between system and the real world in Nielsen's theory. The experts rated it an average of 2 regarding the impact, thus the heuristic has a low to medium severity considering only half found the problem.

3.3 Heuristic 3 - User control and freedom

4 out of the 6 experts indicated that the user cannot abort a task creation once they started creating one. This does not provide the intended amount of freedom to the user, as an accidental click on the button forces them to create a new task. This corresponds to the "User Control and Freedom" heuristic in Nielsen's theory. The average severity of this problem, according to the experts, is 3.33 indicating an average importance.

3.4 Heuristic 4 - Consistency and standards

50% of the experts suggested a change in the placement of the buttons. More specifically, there was a unanimity regarding the positioning of the 'delete' and 'add task' buttons. According to the experts, the 'delete' button should be on the bottom of the list whilst the 'add task' button should be at the top of the list. The average user would expect those buttons in the aforementioned locations, so them not being their can create a confusion. This corresponds to the "Consistency and Standards" heuristic in Nielsen's theory. With an average of 2.66 , this problem fluctuates among the mild ones.

3.5 Heuristic 5 - Error prevention

All the experts have raised the issue that there is no confirmation before deleting a card. When a user accidentally clicks the delete button, the card gets deleted immediately, which is irreversible and could lead to trouble. A proposed solution is to add a pop-up that appears and asks for confirmation. A similar approach could be taken for the deletion of a list. - Severity rating of 4.

3.6 Heuristic 6 - Recognition rather than recall

For the heuristic related to minimizing user's memory load by making the elements, actions and options visible, the most common problem (reported by 5/6 experts) was that some buttons are not properly outlined and might cause visibility difficulties for the user(ex: disconnect, go back). Another problem that has been detected by an expert is the fact that the join board by key text field is hardly visible, which might harm the user experience if the user uses it frequently. The experts suggested adding a hovering effect to the buttons, as it might increase their visibility. All these problems have been assigned a low grade of severity.

3.7 Heuristic 7 - Flexibility and efficiency of use

Two experts indicated that it could be more efficient for users to be able to delete a card directly from the board interface, rather than having to enter the card first. If adding a delete button to the created cards is overwhelming the interface with new elements, they could be hidden and displayed in a transition when the pointer hovers over the card (Severity - 4).

3.8 Heuristic 8 - Aesthetic and minimalist design

The team of experts didn't find any issues with respect to the aesthetic and minimalist design heuristic.

3.9 Heuristic 9 - Help users recognize, diagnose, and recover from errors

For the heuristics related to helping users recognise, diagnose and recover from errors, all the experts reported the problem that the prototype that was provided to them didn't contain the errors messages when performing the usual application tasks(ex. invalid server error message) and assigned a high severity problem to this issue(5 - max severity).

3.10 Heuristic 10 - Help and documentation

Regarding help and documentation only 16.5% of the experts found the addition of a help menu a necessity as the app design follows the industry standard guidelines. This would mean that the user has a strong intuition on how everything works based on previous interactions with other similar systems. This is in accordance with the principles described in [2]. The problem identified by one of the experts is the nonexistence of a keymap for users that would like to see all keyboard commands listed in one place. This is a valid concern, as keyboard bindings are much less consistent than the rest of the design, being more case-dependent from one application to another. Adding a visible space to display the existing shortcuts could be beneficial. (Severity - 1)

3.11 Conclusion

Besides the aesthetic and minimalist design of the app, all other heuristics have suggested improvements. There is a lot of capacity for growth, considering that the impact of some of the issues was relatively high, reaching level 5 out of 5 in some cases.

4 CONCLUSIONS AND IMPROVEMENTS

Each of the problems described above are at the top of their respective category. As such, the team has come up with ways to solve the described potential usability hindrances.

4.1 Heuristic 1

In order to secure clear visibility in the system, we will add reassurance messages such as "You have been successfully connected to the server" after the related action has been completed as shown in Figure 1. In case there has been an error we make sure the user knows by another message which explains what the problem is. Also, in order to ensure explicit communication with the user, we will add a spinning wheel for the duration it takes to connect to the server, or to extract data from the database when something new is added or something is deleted. There is an example of that in Figure 2.

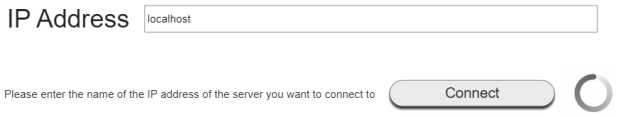

Figure 2: Heuristic 1 - Loading Server Pop-up Message

Figure 3: Heuristic 1 - Pop-up Message

4.2 Heuristic 2

To fix this heuristic, we will add a comment below the IP Address box that educates the user on what it means. It would suggest that the IP Address is the key of the board the users want to connect to and that they should use "localhost", in case they don't know a specific server. This would ensure that no users are confused and that they can successfully and easily log in the app. Despite having low importance, this heuristic is easy to fix, so it is worth the time.

Figure 4: Heuristic 2 - before

Figure 5: Heuristic 2 - after

4.3 Heuristic 3

To fix this issue, a 'cancel' button will be added in the 'add task' interface allowing the user to cancel the creation of the task. This will provide more freedom to the user, since an accidental creation of a task will not have to be completed. Since the severity of this problem is above average and the solution easy to implement, this feature is amongst the priorities.

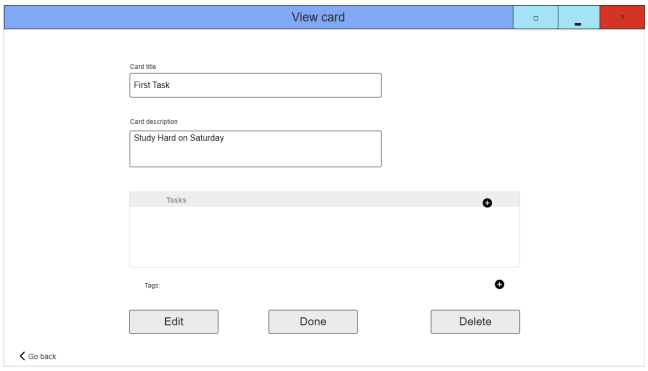

Figure 6: Heuristic 3 - before

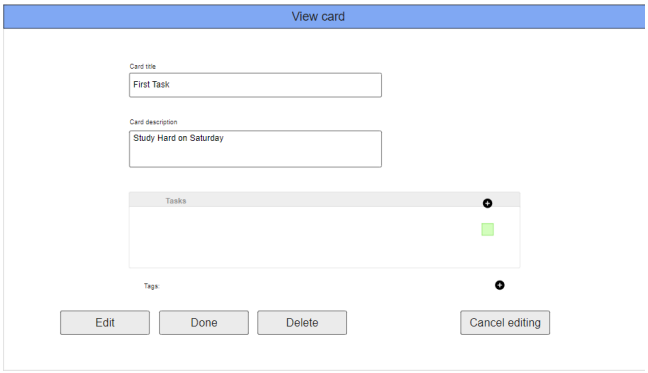

Figure 7: Heuristic 3 - after

4.4 Heuristic 4

To resolve this issue, the location of the 'add task' button will change from under the list to the top of the list. The new placement will be more user friendly as the button will stand out more and will be at the expected location. Even thought the severity is not very high, this feature's implementation is relatively easy.

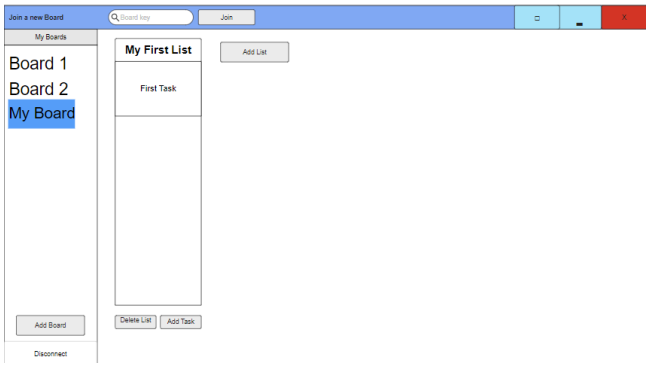

Figure 8: Heuristic 4 - before

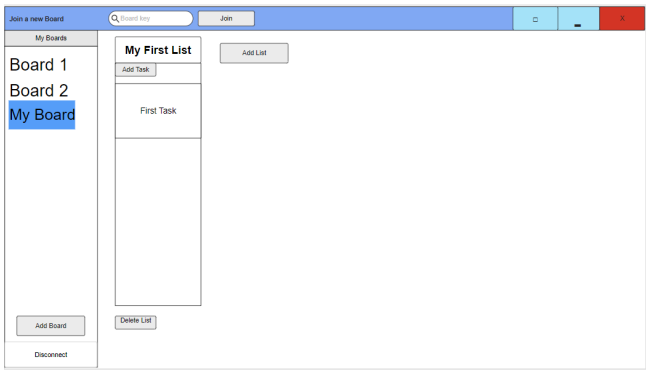

Figure 9: Heuristic 4 - after

4.5 Heuristic 5

To resolve this issue, it is recommended to implement a confirmation message whenever a user attempts to delete a list or a board. This would prevent accidental deletions and provide a better user experience. The severity of this issue is relatively high (avg. 3.5) and its implementation is not burdensome, hence it should be prioritized.

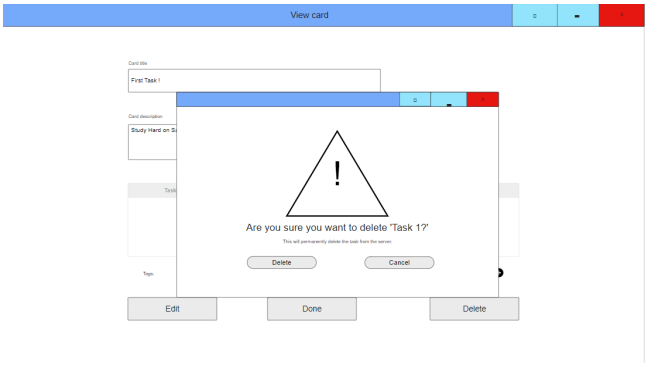

Figure 10: Heuristic 5 - after

4.6 Heuristic 6

The interaction with the buttons, for instance seeing whether they have been pressed, is unclear. To fix this, the color and border of the buttons "Go Back" and "Disconnect" will be changed, becoming more visible to the user. In addition, as one of the experts suggested, a hovering effect will be added to the buttons. *"The join board by key text field is hardly visible, as a text field that you will use a lot i believe it should be bigger"* [2](Heuristic Evaluation) - the team decided to abandon the idea of a text field for the Join-Board functionality.The buttons for joining and adding boards should be close to each other, for more convenient use.

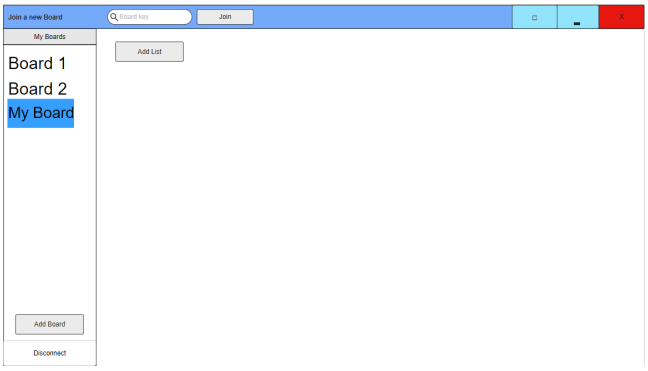

Figure 11: Heuristic 6 - before

Figure 12: Heuristic 6 - after

4.7 Heuristic 7

The implementation of a 'delete' button for every card in the dashboard of the application has a low priority. Having such a great amount of buttons would hinder the user's experience and disrupt the application's simplicity. Henceforth we will focus on more important features.

4.8 Heuristic 8

Regarding the "Aesthetic and minimalist design" heuristic, the experts didn't find any issues.

4.9 Heuristic 9

Although error messages were implemented, the prototype didn't contain them as we didn't think of creating mock ups for the unexpected user behaviour. The team realized that the prototype must have included them as well, as the group of of experts must be able to freely test every possible user behaviour.

Figure 13: Heuristic 9 - after

4.10 Heuristic 10

The implementation of a keymap, although it is a great suggestion, is not of high priority, since there are no key shortcuts implemented yet. When this feature would be in the application, a help menu could be placed in the upper right corner to help the users learn the shortcuts easily and allow more flexibility.

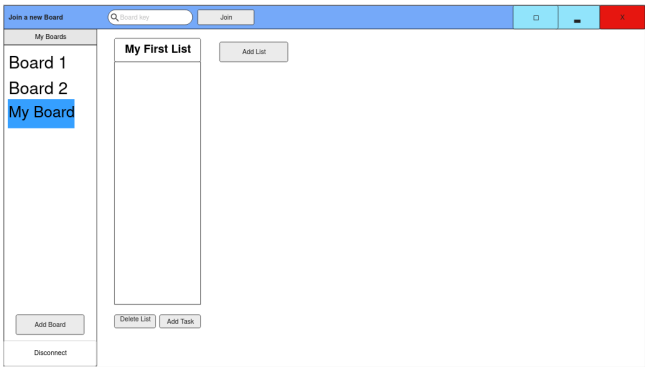

Figure 14: Heuristic 10 - before

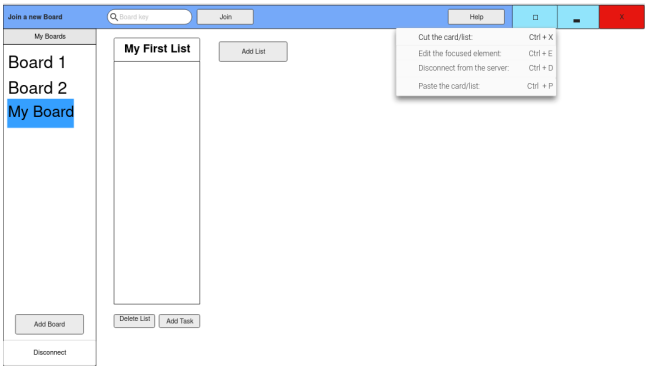

Figure 15: Heuristic 10 - after

4.11 Conclusion

It is clear that the project's strong point was its minimalist design, an area where no problems were found by any of the experts. This can be a great asset for the application: *"The most important advantage provided by beauty is increasing motivation and electiveness. It is a reason for preference between similar products"*[1]. Thus, it was the only part of the application that will not have significant changes. More attention was given to making the app's interface more user-friendly, such as introducing messages informing the user of their actions' status. The team believes that this Heuristic Evaluation identified the biggest flaws in the app's design, allowing them to modify it accordingly and deliver a better product for the end users.

REFERENCES

[1] 2015. USER EXPERIENCE DESIGN: AESTHETICS OR FUNCTIONALITY? (2015). http://www.toknowpress.net/ISBN/978-961-6914-13-0/papers/ML15-111.pdf

[2] Jakob Nielsen. 1995. 10 Usability Heuristics for User Interface Design. *Nielsen Norman Group* (1995). https://www.nngroup.com/articles/ten-usability-heuristics/