OOP Project Report – Group 51

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1 INTRODUCTION

This report facilitates the creation of Talio, an application similar to a Scrum board on which a team can organize post-it notes that describe the contents of a sprint. Our objective is to make the application as accessible and user-friendly as possible by identifying any potential issues as well as ways of improving said issues. This report presents these findings as well as our own conclusions and improvements.

The evaluation was conducted with the help of a team of experts that used a set of recognized usability heuristics, more specifically Nielsen's ten heuristics for user interface design. They evaluated a prototype of the app that describes and shows our current view of what our final product should look like.

At the start of the application the user is prompted with a welcome screen where they can input the address of the server.(Fig. 1)

Figure 1: Welcoming screen

Once logged in, the user is now able to see their board. On the side-menu, the user can select one of the boards in their workspace. Here the user can create new lists and new cards on a list. If a board is password protected, the user can input the password to unlock it.(Fig. 2)

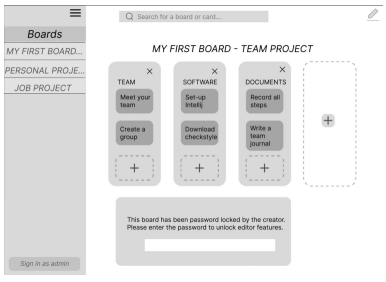

Figure 2: Board view screen

When attempting to add a board, list or card, the user will be prompted with a pop-up where they can input the title of the new element similar to the mocks in the following figures.(Fig. 3)

Figure 3: Adding board and card screens

Adding a tag is done similarly but in the pop-up the user can see all of the tag created, they can delete a tag and can also create a new tag that will take the name written in the text field.(Fig. 4)

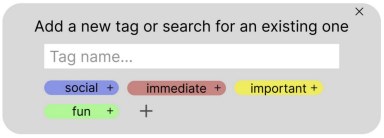

Figure 4: Adding a tag

Once a card is created, the user can open up a detailed view for the card where they can add a description, subtasks and tags to the card. (Fig. 5)

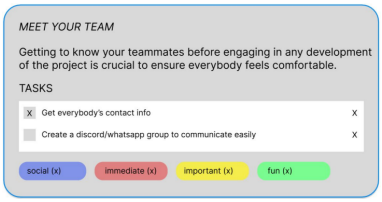

Figure 5: Detailed card view

Additionally, the user is able to change the theme of the board by selecting one of the predefined themes that suits their aesthetic needs.

Figure 6: Board theme selection

This report is meant to provide insights that we can act upon such that we can improve the usability of our app. We are also pursuing the increase of user engagement and the enhancement of the user experience. By highlighting the key issues found during the evaluation and providing suggestions regarding their fixing process, this report aids the development process greatly.

2 METHODS

In order to conduct the evaluation, we needed a significant number of experts that would each assess our prototype in order to identify potential issues related to efficiency, memorability, errors, or user satisfaction, as well as provide relevant suggestions.

2.1 Experts

We recruited 6 experts, all six of them being members of Team 68 of the OOPP course. Regarding the level of expertise, they are all students with little to no prior experience working on such an app. However, as Computer Science students, they are all technologically savvy, being comfortable using and interacting with applications and websites, and they also possess a higher understanding of both hardware and software. Moreover, they are all familiar with Nielsen's Heuristics. Thus, their level of expertise qualifies them for this evaluation.

2.2 Procedure

We sent the experts the prototype as well as a set of instructions. We described to them the main focus of our application and asked them to identify issues/problems regarding our User Interface. The experts were given a format for reporting a problem that contained five main points:

(1) A description of the encountered problem
(2) A scenario that describes the context in which a user might encounter said problem.
(3) A description regarding the disruption of the workflow caused by the problem.
(4) Workarounds for said problem.
(5) Suggestions that would solve this problem.

The experts were advised to think from a user's perspective and to simulate the use of the application at least 3 times. Each of them was given multiple usage scenarios that included specific instructions that had to be followed by the experts. A typical example of such a scenario is the following:

(1) Open the application and connect using your local IP address.
(2) Create two or three boards, rename them.
(3) Create some lists and cards for those lists, naming them.
(4) Drag and drop cards to other lists, or to the same list on different positions.
(5) Try logging in as an admin.
(6) Delete a board and leave a board.
(7) Disconnect from the client to connect to a different server.

There were two observers carefully analyzing the experts' navigation of the application and writing down their observations. In the cases where a bottleneck was reached or questions were asked by the experts, the observers were present to give out hints in order to advance the experts' progress. After identifying a potential problem, the experts were instructed to document the issue and provide not only its description, but also a context of encountering the issue, as well as a suggestion with regards to the problem.

The process of identifying and solving issues was aided by a set of widely recognized usability heuristics, namely Nielsen's 10 heuristics for User Interface Design [2]. We will proceed by going through each of the 10 heuristics in order to demonstrate the role of these rules in evaluating and improving our User Interface.

- **Visibility of the system status** - This heuristic helps us assess whether any action is taken without the user's notice. The feedback of the actions should be immediate, meaning that in the case of a wrong input or illegal action a user should be shown an error describing the user's mistake.
- **Match between system and the real world** - Checking the overall language and terms used in our app helps us keep in touch with our users and also keeps the user-experience intuitive and simple.
- **User control and freedom** - This heuristic helps us make sure that the users always have a "quick way out" in the case of them making unwanted actions, whether in the form of "Back" or "Cancel" buttons or just shortcuts that provide the functionality of undoing a previous action.
- **Consistency and standards** - Adhering to industry standards with regards to the app's design and functions improve our user experience by following Jakob's law [1].
- **Error prevention** - Instead of error messages, our focus must be on error prevention. Whether that means more instructions or clarifications for the users, or a well-crafted User Interface, reducing the possibility of an error happening improves our app's overall efficiency as well as the user's experience.
- **Recognition rather than recall** - This heuristic makes us prioritize keeping the user's options as visible as possible instead of relying on their memory to make an action.
- **Flexibility and efficiency** - Shortcuts and keyboard bindings are important as they speed up interactions. Moreover, customization also greatly improves the user's experience.
- **Aesthetic and minimalist design** - Keeping every view as simple as possible, without any irrelevant information is one of our main objectives. This improves the user's experience vastly as the focus is on the essential parts of the User Interface.
- **Help users recognize, diagnose, and recover from errors** - Error messages should be as simple and suggestive as possible so that the user is able to solve their problems without needing to ask for additional help.
- **Help and documentation** We need to be able to provide the user with the help they need in the case of them encountering any problem. The documentation/help should also be as accessible and as easy to read as possible to ensure an easy interaction.

2.3 Measures

This process is meant to help the development of the design of the User Interface. Thus, the experts were instructed to highlight any issues regarding the style, flow and readability of the interface. Using a table of 5 columns, the experts would have to describe a problem they encountered, giving as much insight into what the problem entails by answering the following questions: "What is the problem?", "How did you encounter the problem?", "How did it impact your workflow?", "How could you overcome the issue (in a possibly uncomfortable way)?" and "How can the problem be

circumvented by the design team?". After describing each of the problems found throughout their testing procedure, the experts were asked to write some overall impressions to give the team some outline of their work so far and how to continue.

3 RESULTS

After carefully reviewing the input received from the experts, we will succinctly present their findings. Based on the feedback, the main issues of Talio are the constraints surrounding the details of cards and card lists. Moreover, the User Interface seems to fail in readability in certain aspects, for instance the editing button. Another problem found by the experts is the inconsistency of the User Interface, which is not unified between certain scenes with somewhat similar functionality. Even though most of the experts agreed that the application is flexible and intuitive, there are quite a few places where improvements could be made.

One of the most impeding problems found was the lack of details available to edit when creating a card. The way a user would have to add a description or a tag is by first creating the card and then selecting the card to enable a more thorough editing view. This makes it so that there are multiple seemingly unnecessary clicks for achieving the basic goal of creating a detailed card. This can become quite annoying for the user, especially if working with a larger number of cards. This can be easily improved by making the view for adding a new card similar to the more complex view when editing.

The experts also informatively touched upon the User Interface design, mainly on that for the board overview which is one of the most prominent scenes of the application. One observation made was that there is some unused space that can help with spacing out some of the elements in the scene. Based on an expert's estimation, there is around 20% of the scene which is not used. This way, the overview becomes more readable with much less crowding. To achieve this, the elements can be resized dynamically based on the available space, creating an open design which is more comfortable to understand for the user.

The edit button was another main concern for the experts, as some were confused about their abilities to modify the board. Some points that where brought up show signs of uncertainty, for instance, one expert wrote: "I am not sure if I can edit the name of a board I have created", another expert similarly said: "I can't tell what the pencil icon button does." The first expert's problem is certainly not because the user is unable to edit the title, but because the user was unaware of the fact that the option existed. The User Interface needs to be transparent to the user about the facilities the application provides, which in this case it definitely has failed. The editing feature should be highlighted better, whether that is by having the option closer to the element it affects or by having a more intuitive method of editing. Undoubtedly though, the user needs to be notified of this feature.

The evaluation has proved to be incredibly insightful for the design of our application. To sum up, the basic prototype of our design is sufficient in functionality and intuition, though it could use some polishing. Some key points to keep in mind when developing the User Interface would be to arrange the elements such that the design is airy and easy to read, to make sure that the features of the application are transparent and the user is easily notified of them and that the creation of different parts of the board (i.e. cards and card lists) can be done with minimum effort.

4 CONCLUSIONS AND IMPROVEMENTS

Taking into consideration all aspects pointed by the group of experts employed by our team to have a glimpse at our proposed material and pinpoint any bug they could dig, the team has achieved a satisfactory project status in the end. We have concluded that, especially knowing how much time we had left and the effort it would take to successfully finish the application, we had to step up our working ethic.

We built a strong connection between the three of us, took notice from every possible feedback we have been given during these times of exchanging ideas and strive to put together the structure for a well-built application. The evaluation came at just the right time to motivate all three of us towards a final product that will speak for itself in terms of quality and hours-allocated.

We believe we expanded the vision we had at first, which our initial prototype conveyed, therefore letting our creativity turn to reality whilst having a fixed objective. The welcoming pop-up (Fig. 7) remained just as aesthetic and minimalist, in accordance to Nielsen's principle, as it was proposed at first.

Figure 7: Welcoming screen

The experts' words really came into play when designing the User Interface for the "Board" (Fig. 8), where we intended to create a vibrant workspace that would encourage the user to navigate through their lists and make additions.

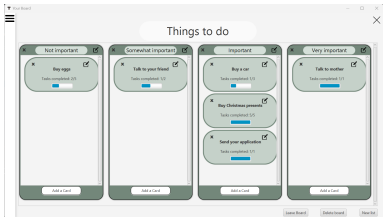

Figure 8: Board overview

Afterwards, we added even more editing functionalities that indicate cards, card lists, boards and sub-tasks are up for editing. Just as the experts and Nielsen's points make it clear, for an application to manage to grasp a user's interest, it has to have a certain flow and an airy design and it has to be self-explanatory which our primary

concept greatly lacked. This is what we achieved by spacing out elements, splitting them into individual boxes and creating the desired "Detailed Card View" (Fig. 9).

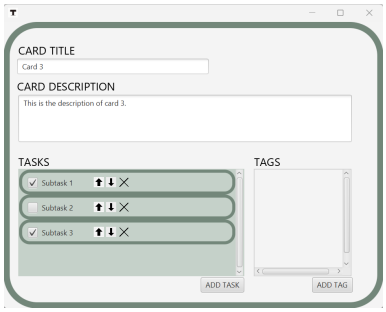

Figure 9: Detailed Card View

Multi-boarding (Fig. 10) was also a necessity, which our team fully covered a few days after the meeting took place and, therefore, completed the first advanced feature that launched even more possibilities of project expansion.

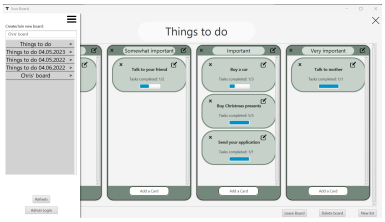

Figure 10: Multi-boarding

The team also felt the need to follow the crucial principle of "Error prevention", aspect which was previously mentioned amongst Nielsen's 10, and created alerts for all additions and deletions of content. This is an implementation that we all felt would eventually turn into a workload savior.

Overall, such an evaluation was of crucial importance because it accounted for the first real interaction we had with a possible user who was actually aware of the complex process behind and what each modification entailed in terms of coding struggles.

In conclusion, this paper accounts for the documentation of our team's work flow and ethic, together with all the challenges and changes of thoughts that lead to the creation of our final product. We recognize and feel grateful for the impact the open analysis received from the experts had on bringing the state of the application to new heights.

5 CITATIONS

REFERENCES

[1] [n.d.]. Jakob's law. https://lawsofux.com/jakobs-law/
[2] Jakob Nielsen and Robert L. Mack. 1994. Usability Inspection Methods. In *Usability Inspection Methods.*