

Heuristic Usability Evaluation - Team 11

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1 INTRODUCTION

The objective of this evaluation for the task managing application “Talio” is to assess the current design for the user interface based on a set of established usability principles and heuristics. This evaluation aims to identify potential usability issues and areas for improvement in the application’s interface design. By using heuristics, the evaluation can be conducted without involving actual users. The evaluation results will be used to refine the design of the application to ensure that it is easy to use, efficient, and meets the needs of its users.

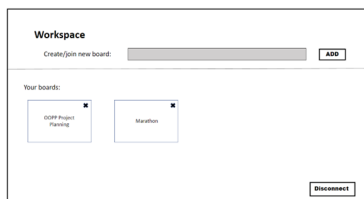
The prototype which has been evaluated consists of digital images of the GUI for the application, created on PowerPoint, representing how the final product will look like. The prototype consists of multiple scenes of the application, each depicting a different view of the application, allowing the user to see how the application will work in various scenarios they might encounter while using it. The images in the prototype show different elements of the application, such as the board overview, the possibilities for customisation, and how to add tasks which they can organize.

The prototype that the evaluators interacted with for this evaluations is depicted below:

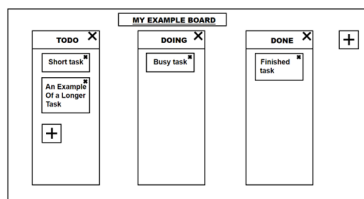
1.1 Client Connect



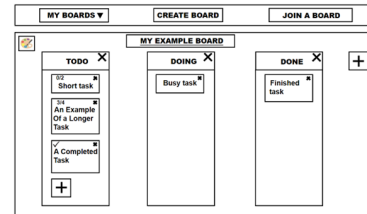
1.2 Workspace



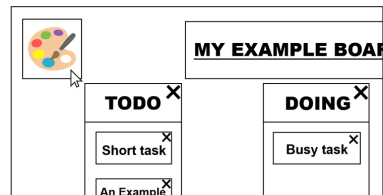
1.3 Board Overview (minimal application)



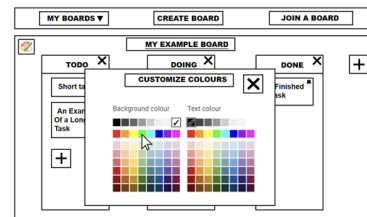
1.4 Board Overview (with additional features)



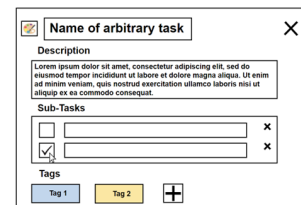
1.5 Customization Button



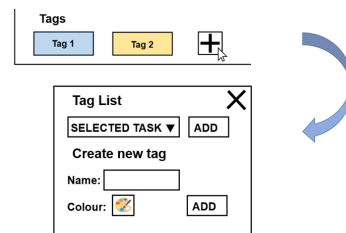
1.6 Customization Page



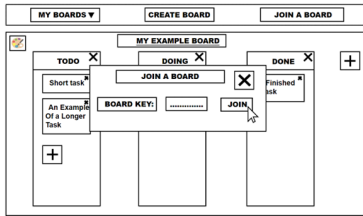
1.7 Task Details



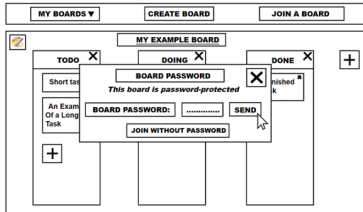
1.8 Add Tags



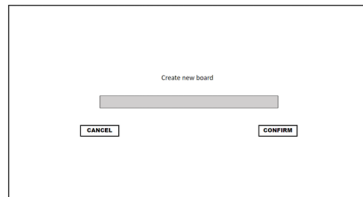
1.9 Join Board



1.10 Password Protection



1.11 Create Board



2 METHODS

2.1 Experts

To conduct the evaluation of our prototype, we enlisted the help of a group of 6 experts. These experts are students who are currently enrolled in the 1st year of Computer Science at TU Delft. Their level of expertise in the field of computer science is at a proficient level, evidenced by the course they are enrolled in. Additionally, they are currently working on a similar project, which gives them a deeper understanding of the domain and the nuances involved in designing and using such an application. This background knowledge and experience make them ideally suited to identify any subtle issues or problems with the prototype during their evaluation.

2.2 Procedure

To conduct the evaluation, a list of common user actions were presented to the group of six experts, which would be performed within the task management application. These actions include the following:

- (1) Connecting to a server
- (2) Viewing a board
- (3) Adding a new list or card
- (4) Editing list or card names
- (5) Deleting lists or cards
- (6) Changing board backgrounds
- (7) Adding tags and subtasks to cards
- (8) Creating new boards
- (9) Joining boards

- (10) Changing servers
- (11) Editing board names.

The experts were then shown the prototype of the application's graphical user interface and instructed to perform these actions on the prototype as if they were using the real application. To increase the chances of identifying potential problems, they repeated the process 4 times.

During the evaluation process, the experts assessed the prototype based on the ten Nielsen's Heuristics, which are a set of principles that are used to evaluate the usability of user interfaces:

- (1) Visibility of system status
- (2) Match between system and the real world
- (3) User control and freedom
- (4) Consistency and standards
- (5) Error prevention
- (6) Recognition rather than recall
- (7) Flexibility and efficiency of use
- (8) Aesthetic and minimalist design
- (9) Help users recognize, diagnose and recover from errors
- (10) Help and documentation

The evaluation was performed individually by each expert, with each of them documenting their findings per heuristic, if there were any. During the evaluation, a member of the team was present as an observer, to take notes on the experts' behavior and provide and gather additional feedback from them if needed.

After the above mentioned was completed, a short debriefing session was held with 3 of the experts, for additional design advice. The results were then combined, and the team prioritized the issues that needed addressing based on the severity of the problems identified by the experts.

2.3 Measures

To assess the design flaws in the application, the experts were instructed to report any issues they encountered while executing the actions provided in the task list using the prototype. The experts reported their findings in the form of concise descriptions organized into bullet points. Furthermore, the experts were requested to determine the heuristic that each issue pertains to, wherever possible, and provide further context to understand the problem. These measures make it possible to collect detailed and structured data on the issues identified during the evaluation procedure.

Each expert performing the evaluation procedure 4 times was useful for improving the accuracy, objectivity, and validity of the results, leading to more effective recommendations for improving the design of the application. By having each expert go through the application multiple times, they can identify potential design flaws that may not be immediately apparent during the first evaluation round. Going through the application multiple times allows the experts to observe how the application performs under different circumstances and how users might interact with it in various usage scenarios. This process can reveal issues that may not have been apparent during a single evaluation. In addition, repeating the evaluation process multiple times can help to reduce the impact of personal biases and preferences of individual experts. By having each expert perform the evaluation multiple times, they can identify and separate their personal biases from actual design flaws in the

application. Finally, repeating the evaluation process multiple times can also help to validate the results obtained from each evaluation round. By comparing the results obtained from multiple rounds, the team can identify patterns and trends in the issues identified, which can help to confirm the validity of the results and determine which issues are most critical and require immediate attention.

The observer's role during the evaluation process was to provide assistance to the experts in operating the interface and offering helpful hints whenever they encountered any difficulty. Moreover, the observer ensured that the experts didn't overlook any crucial details of the procedure by gently reminding them when necessary. In order to maintain the integrity and impartiality of the results, the observer refrained from interpreting the experts' comments and instead simply documented them.

To complement the initial evaluation, a debriefing session was conducted after the final evaluation session. This session involved 3 evaluators, the observer and members from the design team. The primary objective of this session was to stimulate discussions and brainstorm possible redesigns to address the most significant usability issues and general problematic aspects of the interface.

The results were recorded by collecting the experts' reports and organizing them according to the specific heuristic that each issue corresponds to. This information was used to generate a report outlining the major design flaws in the application, as well as recommendations for improving the application's design, which are thoroughly elaborated later on.

The measures taken ensure that the evaluation procedure can be replicated in the future for several reasons. First, a clear and comprehensive list of actions is provided that users would perform while using the task management application. Second, a prototype of the application's graphical user interface is provided, ensuring that future evaluators have the same visual representation of the application. Third, the well-established ten Nielsen's Heuristics are used to evaluate the usability of the user interface. Fourth, the experts perform the evaluation individually and document their findings per heuristic, ensuring that each evaluation is independent and objective. Fifth, a template for reporting findings is provided, in the form of small descriptions grouped in bullet points, making it easy to combine and prioritize the issues identified by the experts.

3 RESULTS

The experts found some issues with the application. The most important ones are that there is no safety measure for accidentally deleting or editing lists, boards and cards. In the mocks there was also no clear distinction between password protected boards and normal boards without a password. And finally, a few users found the design visually overwhelming because there were a lot of rectangles with bolded and full-capital text inside. Now we will describe all the smaller issues per heuristic.

3.1 Visibility of system status

The application doesn't show all information that a user might need. Information about what tags are applied to a task and the board key are not visible to the user. This is information which is necessary for the user to be able to use all the features of the

application. Also there is no visible feedback when connecting to a server.

3.2 Match between system and the real world

According to the experts it is not entirely clear how joining a board works when it comes to passwords. "Join without password" doesn't tell the users which rights the user has. It could mean only viewing rights, or it could mean that the user could still for instance add cards to the board. There are also some fields on the mock which aren't worded intuitively like "Send" on mock 7 and "confirm" on mock 8.

3.3 User control and freedom

The application's biggest issue was that there is no undo in the system at the moment. So if a user accidentally removes a card, list, or even worse a board, then this item is deleted and the user can't reverse this action. There are some other things which aren't clear, for instance it is not clear how to add a subtask or disconnect from a server. The experts also pointed out that it is hard to combine a single-click and double-click action on the same button for the second mock.

3.4 Consistency and standards

The system presents some usability issues such as double-clicking a task that opens different functionalities in different contexts. Additionally, the system lacks filtering options for tags and customization features for cards and lists, leading to the user having a hard time using it. A minor inconsistency is the presence of an "Add a Card" button in the first list but not in the other two. There are no options to customize the background and font colors for cards and lists. Moreover, there is no functionality to set a password for boards. The screen for joining a password-protected board is confusing, as it displays a button to join without a password, contradicting the information on the screen. Lastly, the naming conventions for menu elements and buttons are inconsistent and could cause confusion for users.

3.5 Error prevention

The system wrongly allows users to create a new board when attempting to connect to an existing one from their workspace. Additionally, there is no validation process in place when creating a new board with a duplicate name.

3.6 Recognition rather than recall

The experts found some when it comes to recognition. Some features are a little bit hidden from the user like modifying tasks and adding tasks, so these can be a bit challenging to find. The experts also pointed out that users must navigate to the workspace to edit or delete a board or to disconnect from the server. This could lead to that users can't find these features if they forgot where they are situated in the application.

3.7 Flexibility and efficiency of use

If users want to create the cards in the lists on the board in detail, they can specify the details from the task details section while creating the card or after creating it. But if users want to exit without

saving the changes, there is no option for that. Whatever they do has to be saved because there is only a save changes and quit button. Instead, there should be a quit and not save changes button, so that the user should be able to give up after making changes if he wishes. In addition, there is no button to delete the added card tags in the task details section. Once the tag is added, the card is not deleted again. This restricts the user. Since some boards will be encrypted and other users will need a password to connect to this board, users who use the board must know the password. Although they forgot the password, there should be a button on the board showing the password. Finally, the UI currently doesn't have enough keyboard shortcuts, which can slow things down.

3.8 Aesthetic and minimalist design

The design appears visually overwhelming due to the multitude of rectangles containing bolded, all-capital letters. This design choice creates confusion regarding which elements are clickable buttons and which ones are simply labels. Moreover, it is unclear how the color palette changes while in use, which adds to the confusion.

3.9 Help users recognize, diagnose and recover from errors

The system lacks error messages that would alert the user when they enter an incorrect board name or password, therefore the user will not know why he is not able to join a board. Additionally, it fails to notify them when they enter a name for a new board that is already in use for a different board, which leads to the same problem. Furthermore, if a user accidentally deletes a list, there is no way for them to recover it. Another issue is that the system does not set a limit on the number of attempts a user can make to enter their password. Even if they surpass the maximum attempts, the system does not display a screen to notify them.

3.10 Help and documentation

Upon examining the prototype, there seems to be no help button to guide users when utilizing the application. Additionally, there seems to be some ambiguity regarding the formatting of the server address, which could lead to confusion.

4 CONCLUSIONS IMPROVEMENTS

Based on the identified usability issues, the following flaws are the most important to address from highest to lowest priority: The application should include safety measures to prevent accidental deletion or editing of lists, boards, and cards. This could be done by adding a confirmation prompt before deleting or editing a list, board, or card. The following picture shows the confirmation prompt:

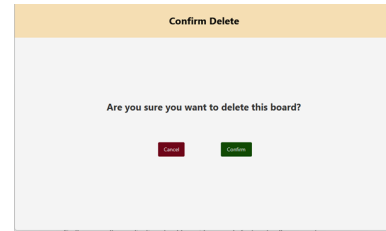


Figure 1: Confirm Delete

In terms of design, the application should be improved by reducing the use of bolded and full-capital text, which can be visually overwhelming. The developers should consider using a more minimalist design approach to make the application less cluttered.

Regarding the visibility of system status: The application should provide all necessary information to the user, such as tags applied to a task and the board key. Additionally, the application should provide visible feedback when connecting to a server:



Figure 2: Connect to Server

Furthermore, the application should provide an undo feature to allow users to reverse actions such as accidentally removing a card, list, or board. The application should also make it clear how to add a subtask or disconnect from a server:

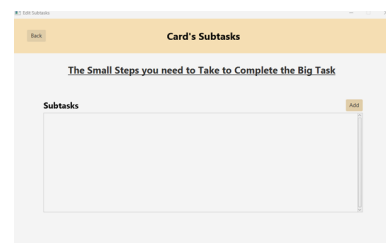


Figure 3: Subtasks

In addition, the application should be consistent in its design and functionality, with double-clicking a task opening the same functionality in different contexts. The application should also provide filtering options for tags and customization features for cards and lists. The application should provide error prevention measures, such as clear wording and prompts for fields such as "Send" and "Confirm". The following pictures show all the improvements made:

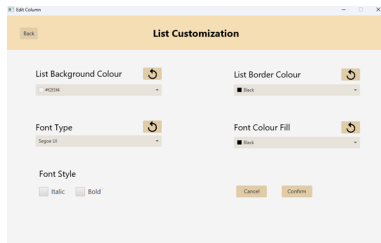


Figure 4: Customization List

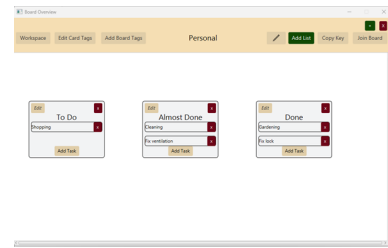


Figure 5: Board Overview

In conclusion, the evaluation results were used to refine the design of the application to ensure that it is easy to use, efficient, and meets the needs of its users. By addressing the identified usability issues, the developers have created an application that provides an improved user experience and meets the needs of its users.