

# OOP Project Report – Group 17

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## 1 INTRODUCTION

This is a Heuristic Usability Evaluation report on our application Talio. A Heuristic Usability Evaluation report is a report where a design is evaluated alongside a set of heuristics. The objective of this evaluation is to improve the current design of our application *talio*. We're doing this by investigating our current design, finding out where it can be improved and make the necessary changes.

Talio will be an application to manage tasks. It contains boards and on each board the user can add lists with tasks. The idea is that the user adds tasks and moves them between lists as they're working on them. One might have 3 lists: to-do, doing, and done. However, it's also possible to add a lot more lists. The application is supposed to be flexible to use and is aimed at both basic and advanced users.

The application does not have a finished product yet. Therefore the evaluation will be based upon a prototype consisting of images showing the design and visually describing features of the application. The design we're evaluating is a digital prototype. It consists partially of screenshots of the actual implementation and partially of designs made in paint.NET[3], an image editing program.

The prototype only consists of the basic requirements from the backlog[2] plus the ability for every card to have a description. The description was added to prevent needing to making major revisions to the UI later on as a lot of other features only required additional interfaces, whereas this significantly impacts how the UI looks and feels.

## 2 METHODS

### 2.1 The experts

The experts are 6 young adults who are undergraduate students at the Computer Science & Engineering Course of the TU Delft. They have received one lecture on heuristic usability evaluations but apart from that they have not received any related training. These experts are independently working on their own implementation of TALIO. They are familiar with the requirements; but since they worked independently, they may have had a different outlook on how the application should be designed. Thus, their opinions can highlight both good aspects of our design as well as aspects that can be improved. The experts performed this evaluation in return for us evaluating their design. It may therefore be important to note that we had access to their design, which was more focused on colour. This may have in turn impacted the results of this evaluation as all experts likely had the same bias towards design, stemming from working on the same project.

### 2.2 The visuals

The experts were sent a link to a Google Docs document. Each page of this document shows a specific part of our design - one page shows how one can add a list, another shows how to edit a card, et cetera. The design elements were showcased by screenshots

of our current implementation as well as digital drawings of the interface. Some feature were more difficult to demonstrate with merely static images (e.g. the ability to drag and drop cards). In these cases, a description in the form of text was added below the image to provide clarification. In addition, the functionality of every button is described and, if applicable, a hyperlink to the relevant page in our prototype was provided in the description. This allowed the experts to actively explore the interface and provided a demonstration of how users would experience different features of the application.

In figure 2, the first page of the prototype can be seen. This is the interface to connect to the server. From here, the user can enter the host name and press 'connect' to go to the board overview (figure 3). Here it is shown how the overview of boards would look like. It also demonstrates that cards are drag-able. Experts can click the button 'edit' on one of the cards, in which case they will see figure 4. The user can change the card title from here. They can choose to either cancel or save their changes by clicking on the respective button. There is also the option to delete the card, which prompts a confirmation pop-up (again shown in figure 11).

From the board overview (figure 3), the user can also add a new card by pressing the plus button next to the title of a list; this will show a popup to add a card (see figure 5). This pop-up has a cancel and apply button which go back to the board and create a new card with the provided title respectively.

Similarly to editing and creating a card, the user can edit the title of a list by clicking on the edit button next to the list title and they can add a list by pressing the green "add list" button in the top-right corner. The user will see figure 6 and figure 7 respectively. These interfaces are identical to the one for the card, except they're for the list.

The prototype was designed with only the basic requirements of the backlog in mind. Advanced features like having multiple boards are not present. Additionally error messages were also not provided to the experts during the evaluation.

### 2.3 The task of the experts

The experts needed to individually evaluate the prototype based on the 10 heuristics listed in section 2.4. The experts were first asked to explore our prototype. Then they were expected to perform many different tasks and note down any comments they might have in respect to the design (using heuristics in section 2.4).

We expected them to add a card, change the detail of a card and move it to a different list. We also expected them to add a new list, delete card, rename a list and delete a list. The experts were also free to try to perform any other task that they believed were reasonable to be able to do given the application, allowing them to identify issues that might not have been identified otherwise.

They were told they may go over the prototype as many times as they deemed necessary, and were encouraged to explore all the hyperlinks that demonstrated the different features. The exact

process the experts were encouraged to follow was to start with the server connection (Figure 1), go to board overview (Figure 8), and explore each button one by one.

The experts were asked to make a list with every problem they identified, where each problem was expected to be structured in the following manner; problem description, difficulties encountered, specific contexts, assumed causes. This format comes from Cockton, Woolrych, Hall, Hindmarch, 2003[5].

## 2.4 The heuristics

The experts were asked to consider the following ten heuristics:

- Visibility of system status. [1]
- Match between system and the real world. [1]
- User control and freedom. [1]
- Consistency and standards. [1]
- Error prevention. [1]
- Recognition rather than recall. [1]
- Flexibility and efficiency of use. [1]
- Aesthetic and minimalist design. [1]
- Help users recognize, diagnose, and recover from errors. [1]
- Help and documentation. [1]

These heuristics come from Nielsen, 1994[4].

## 2.5 Measurements

We are measuring our TALIO application against the heuristics. The experts should give a detailed evaluation containing a list of problems, each with a description, scene, and corresponding heuristic. A problem is defined as something that is a missing feature, according to the user stories, or something which does not align with any of the heuristics. A description should describe what the problem is, and the scene should describe when this problem occurs.

# 3 RESULTS

## 3.1 Raw results

Unfortunately, only 3 out of 6 experts followed the format from section 2.3. This can likely be attributed to bad communication through WhatsApp. In the future, we would attach a preface to our prototype explaining what format we expect. Having a template for the experts to fill in and/or an example may also be helpful in the future.

However, due to the experts attending the heuristics evaluation lecture mentioned before in section 2.1, the structure of their findings was none the less similar to that outlined in the instructions (section 2.3).

## 3.2 Results summarized

We grouped the problem into 2 categories. Problems with features and problems with design. If multiple people found the same problem, we added a counter to the issue (e.g. (3x) )

### 3.2.1 Feature problems.

- You can't disconnect from the server (3x)
- No way for the admin to sign in
- You can't edit the board name

- There isn't an error dialog for connecting to the server - you should distinguish between a malfunction and a mistake
- Edit card should have the option to change the description

3.2.2 *Design problems.* By aggregating the raw reports, we've come up with the following problems:

- 4 - It's unclear if you can drag items between lists (3x).
- 6 - it's unclear that the edit button is for the whole card and not only the title
- 6 - Add list button shouldn't be in the same box as the board name
- Bad visual hierarchy in board overview
- 8 - Board overview doesn't have enough contrast, there should be more different colors (2x)
- 5 - The user should be warned if they add a card or list with the same name as an already existing one.
- 5 - Color schema doesn't work (delete button doesn't go well with background)
- 8 - Three buttons on top of the popup to edit cards are confusing since there are already buttons on the bottom.
- 4 - There shouldn't be scrollbars if you can't scroll down (i.e. everything is in view)
- 4 - Buttons don't all follow the same format so users might be confused about whether something is a button. (some are grey, some green)
- 4 - Titles don't follow conventions, they should be bigger than other text and centered.
- 4 - Unrelated buttons shouldn't be grouped together. Right now add card and edit list are next to each other. This is confusing.
- 1 - When adding a card or list, it isn't clear what happens if you don't fill in a title. It should either be pre-filled with something like 'untitled' or the apply button should be impossible to click before inputting something.
- 8 - editing inputs are too small

# 4 CONCLUSIONS & IMPROVEMENTS

From the results we found that we are missing a couple of features of the application, and the majority of issues are design related problems.

The most commonly reported issues on the feature side were related to how the user cannot disconnect and connect to another server and that there should be an error message signaling whether the address is wrong or if the current address does not exist. There is no distinction between connecting as admin and connecting as user. The rest of the data refers to minor inconveniences such as the size of editing inputs and changing other elements of the board/cards.

On the design side the most common problems were the drag and drop functionality that seemed to be unclear for the users, and there were also some problems with our colour scheme of choice that confused the users. The lack of colour contrast could make it hard to distinguish the different elements in the window and the colour coding was not consistent for all the elements. The rest of the feedback includes emitting error messages or warnings when things with the same names are added, and more general text conventions like text size/positioning and button placement and grouping in the page. The most important functionality that will be implemented

is to make sure the client can successfully connect and disconnect to different servers including visible errors and warnings for better user experience.

## 4.1 Improvements

Below, you can find the improvements we're performing. Not all problems have been improved on, since 4 feature problems were not a requirement for our prototype and 11 design problems were a personal preference of the expert or the expert misunderstood some drawing in the prototype. For instance, a few didn't find it clear that you could move cards between lists. This was the intended behaviour but we only showed moving cards within a list itself.

### 4.1.1 Features.

- Disconnect
- Server address incorrect / error

### 4.1.2 Design.

- Buttons in pop up windows do not mix well with background
- Standard button format
- Default new list/card names in add windows, you can't add the card if it doesn't have a name

## 4.2 The new and improved GUI

We've redesigned and/or improved the following interfaces:

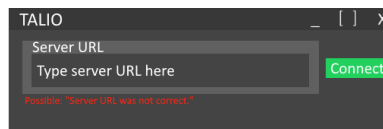
**4.2.1 The connect window.** The connect window now has a completely new UI design, along with space for an error message.

**4.2.2 The board overview.** The board overview now has a disconnect button in the top left. Instead of boardName, it now has TALIO in the top. As our application cannot yet have multiple boards.

**4.2.3 The add/edit list/card windows.** These now have a standard button design, similar to the board overview. The colors have also been adjusted. The add card/list windows now have sample text in the title area.

## REFERENCES

- [1] 2023. Heuristic Usability Evaluation - Video slides.
- [2] 2023. Talio backlog. <https://se.ewi.tudelft.nl/oopp/grading/oopp23-talio-backlog.pdf> Last accessed 06 April 2023.
- [3] Rick Brewster. [n.d.]. Paint.net - free software for digital photo editing. <https://www.getpaint.net/>
- [4] Jacob Nielsen. 1994. <https://www.nngroup.com/articles/ten-usability-heuristics/>
- [5] Alan Woolrych, Gilbert Cockton, Lynne Hall, and Mark Hindmarch. 2003. Changing Analysts' Tunes: The Surprising Impact of a New Instrument for Usability Inspection Method Assessment. (2003).



**Figure 1: New connect window with a possible error message**

When you open the app for the first time, you get the following screen:

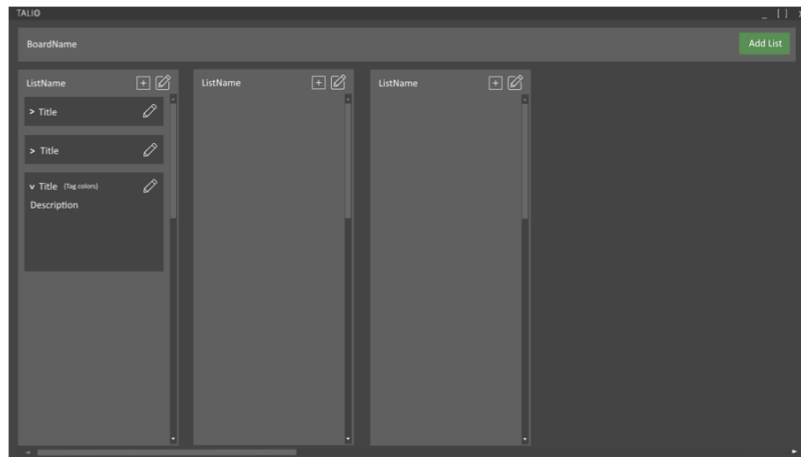


Pressing connect should make you go to [the board overview](#)

**Figure 2: First page of our prototype. This page shows the interface for connecting to the server.**

## Board Overview

After entering the hostname and after pressing connect you'll get to the following interface:



All changes are reflected in real time on other user's displays.



You can drag cards.

Pressing the edit button of one card (right of list title) makes you go to the [edit card interface](#)

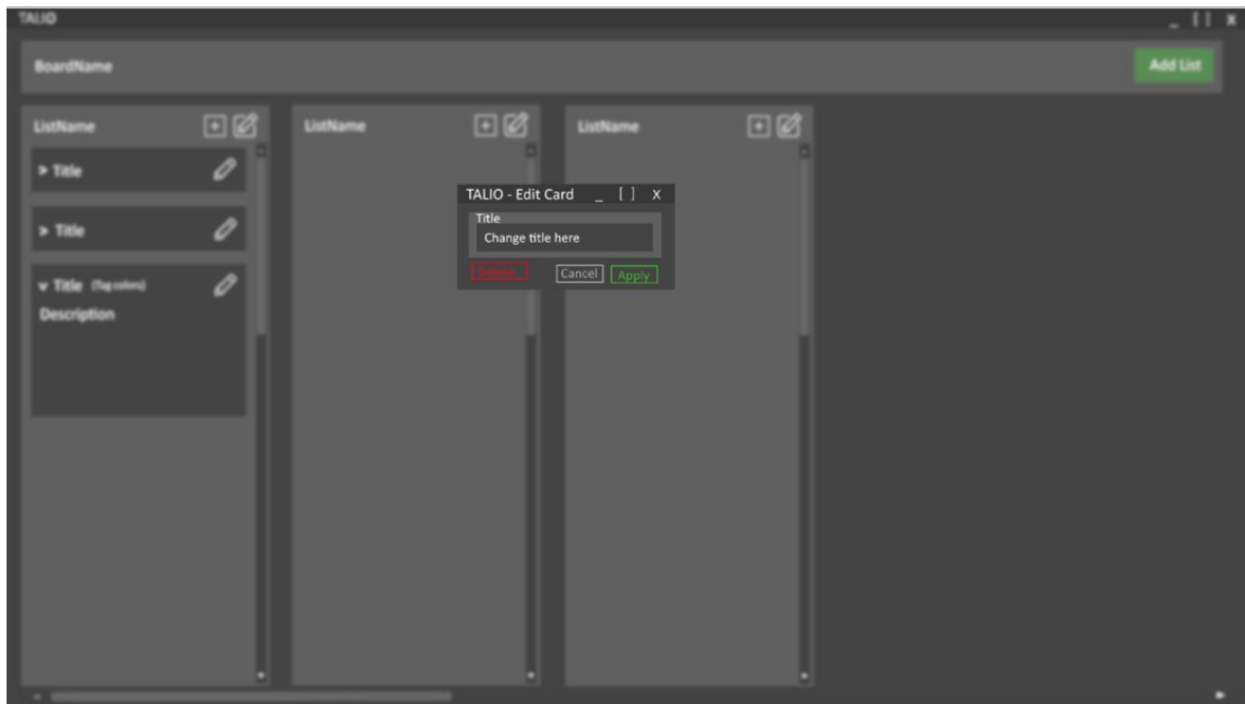
Pressing the plus button next to the title of a list makes you go to the [add card interface](#)

Pressing the edit button next to the title of a list makes you go to the [edit list interface](#)

Pressing the green add list button makes you go to the [add list interface](#)

**Figure 3: Second page of our prototype. It shows how the board looks. The bottom image also shows how you can drag cards.**

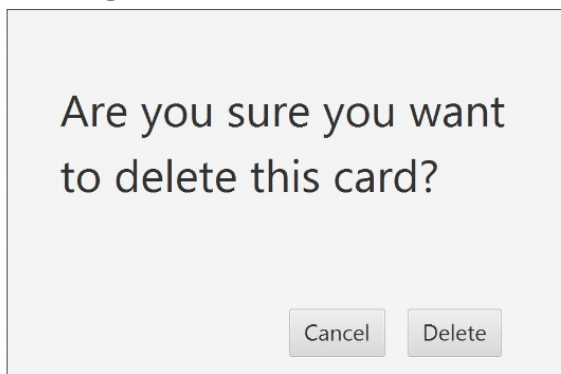
## Edit card



Pressing cancel makes you return to the [board overview](#)

Pressing the apply button makes you go back to the [board overview](#) with the changes made

Pressing the delete buttons show the following popup:



Pressing cancel makes you go back the edit card interface.

Pressing delete deletes the card and makes you go back to [board overview](#)

Figure 4: This page shows how the popup to edit a card looks. The bottom image is the popup that confirms if you want to delete a card

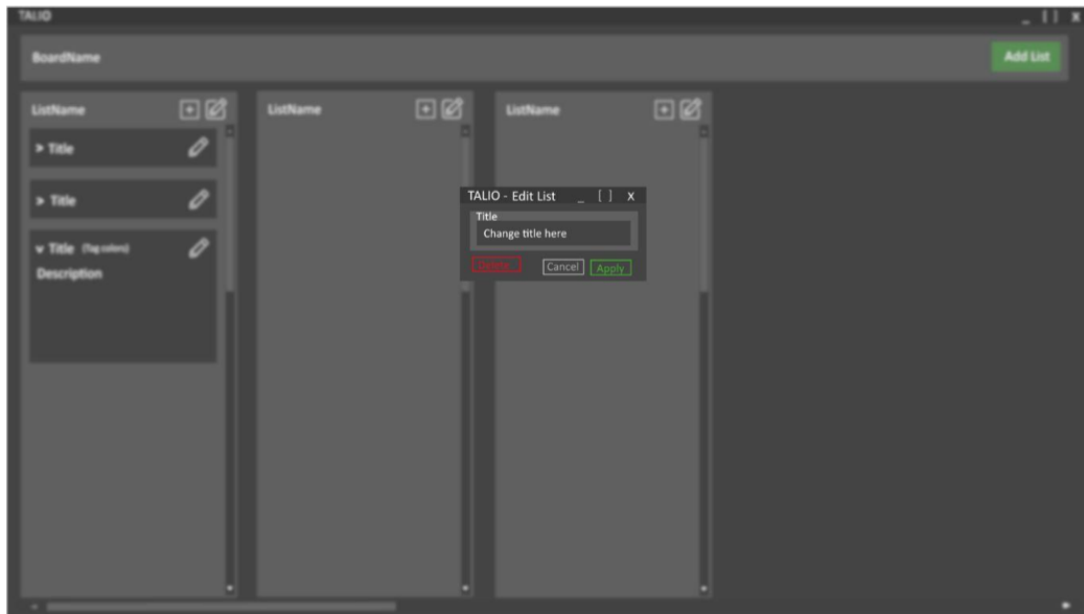
## Add card



Pressing the gray cancel makes you return to the [board overview](#)  
Pressing the green apply button makes you go back to the [board overview](#) with the card added

Figure 5: This page shows how the popup to add a card looks.

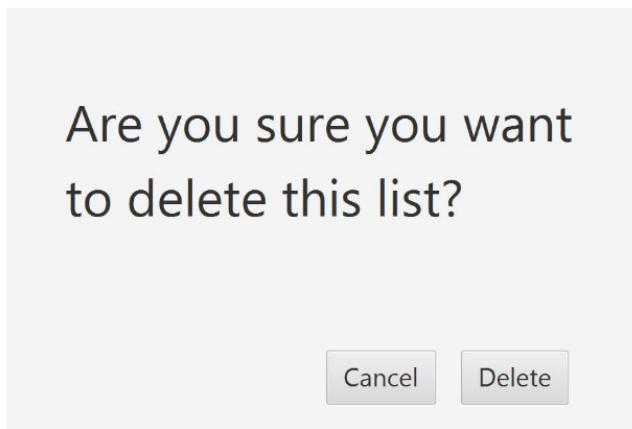
## Edit list interface



Pressing cancel makes you return to the [board overview](#)

Pressing save makes you go back to the [board overview](#) with the changes made

Pressing delete shows the following pop-up:



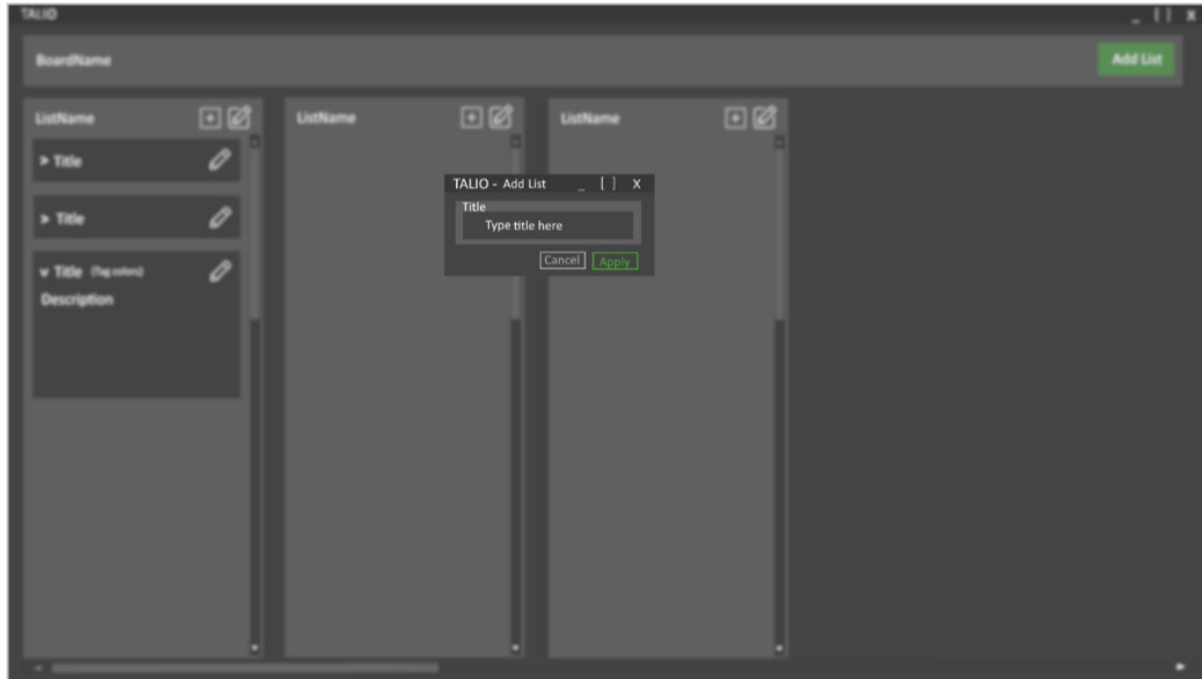
Pressing cancel makes you go back to the edit list interface.

Pressing delete deletes the list and makes you go back to [board overview](#)

Figure 6: This page shows the interface for editing a list. You can change the title and delete the list.



## Add list

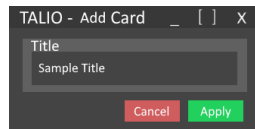


Pressing the gray cancel makes you return to the [board overview](#)  
 Pressing the green apply button makes you go back to the [board overview](#) with the list added

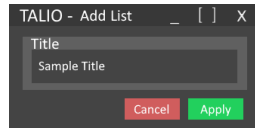
Figure 7: One of the pages in our prototype. This page shows the interface for adding a new list.



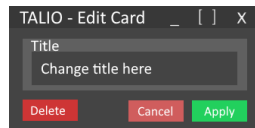
Figure 8: Board overview with new title and a disconnect button



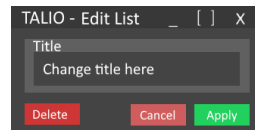
**Figure 9: Add card window with new button and sample title**



**Figure 10: Add list window with new button and sample title**



**Figure 11: Edit card window with new buttons**



**Figure 12: Edit list window with new buttons**