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New Usability Concept for Modelling Wizard

(TINF21C, SWE)

Project: Modelling Wizard Improvements

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Change History

Version	Date	Author	Comment
0.1	18.03.2023	Sophie Kirschner	Initial Setup
0.2	19.03.2023	Nils Hoffmann	Revision
0.3	21.03.2023	Sophie Kirschner	Sketch integration

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1. Introduction

The new usability concept is based on the already performed GUI (Graphical User Interface) analysis. It can be viewed with the following link:

https://github.com/users/robinziegler/projects/1?pane=issue&itemId=13232065

In the solution described below, the problems found there are fixed, thus ensuring better usability as well as user experience.

The solution must comply with the applicable guidelines. In this project, we base ourselves on the DIN EN ISO 9241 Guidelines with a special focus on part 110 - "Principles of dialog design". In the following, we will take a closer look at this guideline.

Another important guideline for ensuring usability is the regulation for creating barrier-free information technology. We do not consider the implementation of this to be relevant in the context of the project with regard to the user profile. The purpose of the ordinance is to enable and ensure a comprehensive and fundamentally unrestricted barrier-free design of modern information and communication technology. The implementation is carried out, among other things, with the help of videos with sign language [1]. This is not necessary in the project because, for example, no acoustic signals are sent.

In the individual chapters, the known issues from the analysis are mentioned with the targeted solutions. In order to visualize the new concept, additional design sketches are included, on the basis of which a prototype of the GUI can be made afterwards.

2. Guideline DIN EN ISO 9241-110

In the following, we will take a closer look at the DIN EN ISO 9241 standard. It "describes quality guidelines for ensuring the ergonomics of interactive systems." [2]

The standard is divided into 17 sections, of which Section 110- Principles of Dialog Design is particularly authoritative.

The following is a summary of these principles:

Task appropriateness

A system should support the user in completing his task by basing the functionalities on the characteristic properties of the task rather than on the technology used to complete it. Unnecessary commands, for example, should be hidden and related commands should be grouped together. [3]

Self-descriptiveness

In a dialog, it should be obvious to the user at all times where he is, what actions can be taken and how they will be executed. The user should also be informed about changes in the state and expected inputs. For example, it makes sense to provide the required input format or to display meaningful error messages instead of simple error codes. [3]

Conformity to expectations

A dialog should conform to all foreseeable user concerns and generally accepted conventions from the context of use. This includes common keyboard shortcuts for e.g. copy and paste, as well as the use of commonly known abbreviations. [3]

Controllability

The user should be able to start the program sequence, as well as to influence direction and speed, until the desired goal is reached. Important functions for this are the saving of incomplete processing steps, the possibility of undoing certain steps and the call of old states. [3]

Individualizability

A system is individualizable when users can change the presentation of information to suit their individual abilities and needs, e.g. by using a zoom function. [3]

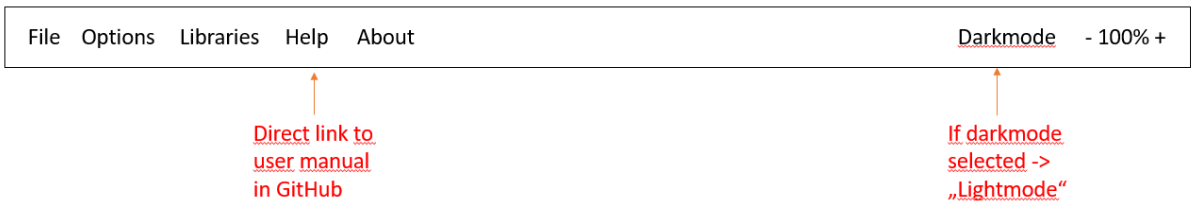
Conduciveness to learning

A dialog should support and guide the user in learning how to use the interactive system. For example, there should be a short explanation for each working step. [3]

Error tolerance

The intended work result should be achieved with either no or minimal correction effort on the part of the user, despite recognizably flawed input. Error tolerance can be achieved by the following means: Error detection and prevention (damage control) e.g., by suggesting corrected input or pointing out any problems; error correction, or error management, to deal with errors that do occur. [3]

3. Navigation Bar



Picture 1: Navigation bar overview

File menu

Issue 1: “Save and Close File” unnecessarily redundant

Solution: Remove the function

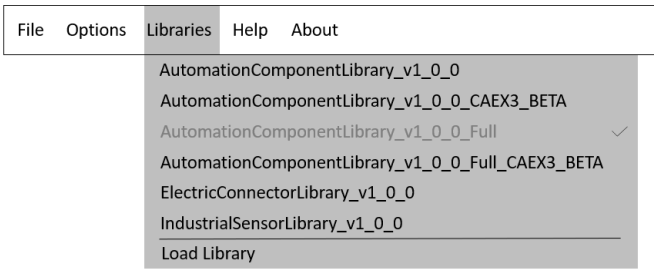
Issue 2: “Open” and „Import” provide the same feature

Solution: Merge into a single function

Issue 3: “Load Library” fits better in “Libraries” menu

Solution: Move to the “Libraries” menu

Picture 2: Navigation bar „File“ menu

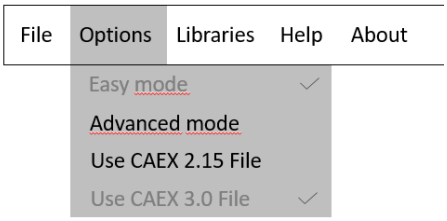


Picture 3 Navigation bar „Libraries“ menu

Options Menu

Issue: No indicator, which mode/file is currently active

Solution: Display of all possible modes, the currently active ones grayed out including an indicator (dot, checkmark or "active" written out in the line)



Picture 4: Navigation bar „Options“ menu

Help menu

Issue: “About” doesn’t suit the term “Help”

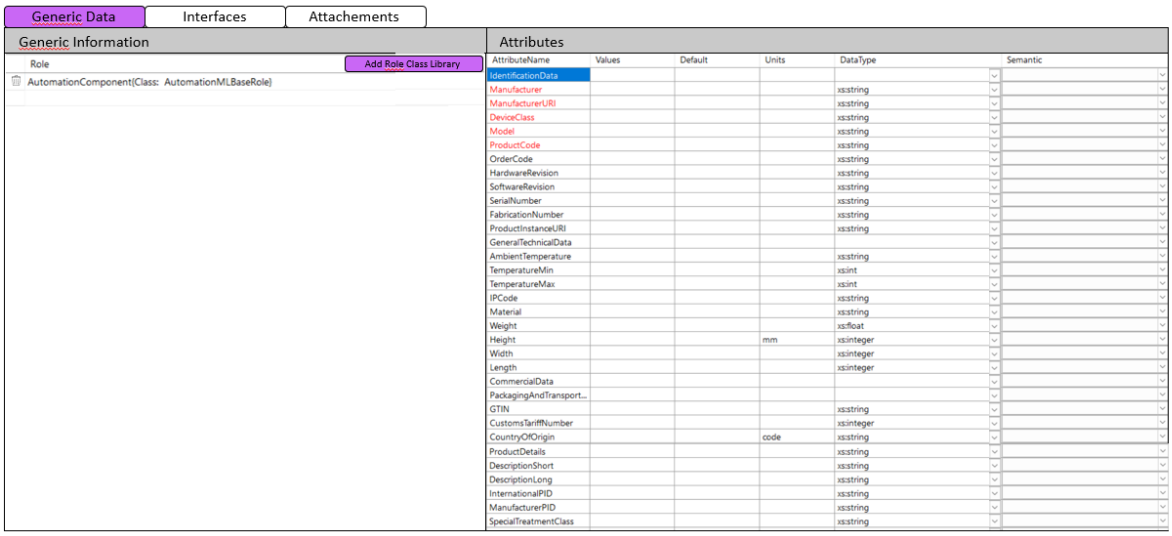
Solution: “Help” -> Direct Link to the Manual, “About” -> Transfer to a separate menu point in the navigation bar (please see at picture 1: Navigation bar overview)

Input fields

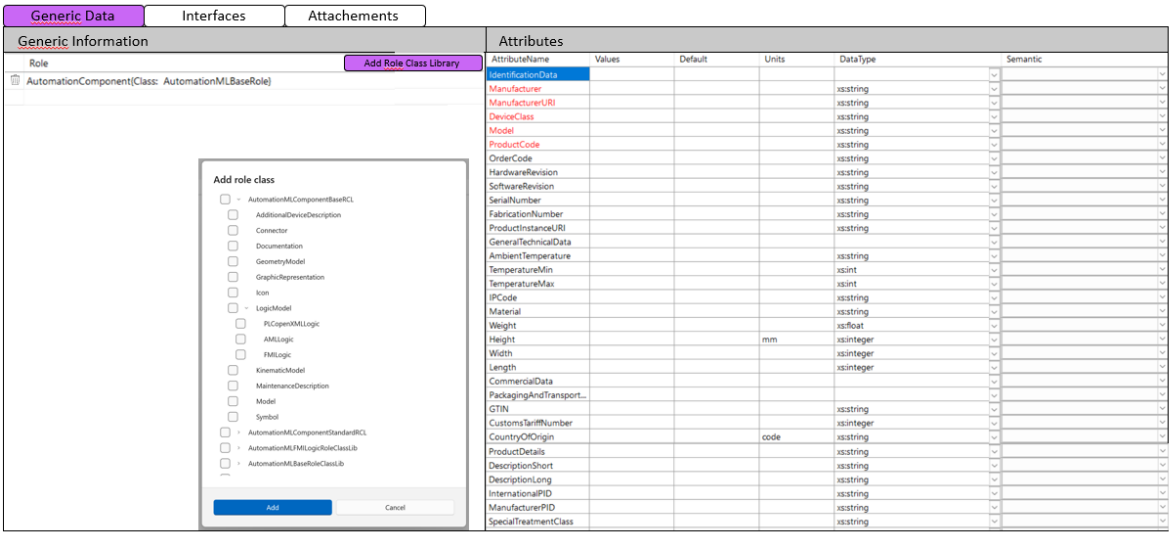
Issue: Unnecessary function in navigation bar; confusing for user

Solution: Remove the function (please see at picture 1: Navigation bar overview)

4. Generic Data



Picture 5: Generic Data tab overview



Picture 6: Generic Data „Add Role Class Library“ button clicked -> Library selection menu

Issue 1: User has to click on additional button to expand prefilled “Attributes” sheet

Solution: Remove the separate button; on clicking the table row, directly open the prefilled “Attributes” sheet

Issue 2: Display of “Role Class Library” unnecessary for basic usage

Solution: Implement it as a fold-out function. If the user clicks somewhere out of the fold-out menu, it automatically folds in

Issue 3: Display of “Interface Class Library” unnecessary for “General Data” tab, because it provides no purpose at this position

Solution: Remove the menu

Issue 4: No explanation on the usage of libraries for unexperienced users

Solution: Remove the drag-and-drop system and replace it with a combination of checkboxes and an “Add” button, enabling the selection of multiple libraries at once

Issue 5: No purpose of first column in “Generic Information” table

Solution: Remove the column

Issue 6: Display of selected table entry below the table unnecessary

Solution: Remove it

Issue 7: “Attributes” sheet in advanced mode: “DataType” unrestricted editing through the user can cause problems

Solution: Dropdown selection menu to limit the User-Input

Additional changes:

- Move the delete button of the added libraries to the individual table rows
- Rename the attribute “Product Code” to “Device Name”

5. Interfaces

Because the “Interfaces” tab is quite similar to the “Generic Data” tab, please see the previous sketch.

Issue 1: User has to click on additional button to expand prefilled “Attributes” sheet

Solution: Remove the separate button; on clicking the table row, directly open the prefilled “Attributes” sheet

Issue 2: Display of “Interface Class Library” unnecessary for basic usage

Solution: Implement it as a fold-out function. If the user clicks somewhere out of the fold-out menu, it automatically folds in

Issue 3: Display of “Role Class Library” unnecessary for “Interfaces” tab, because it provides no purpose at this position

Solution: Remove the menu

Issue 4: No explanation on the usage of libraries for unexperienced users

Solution: Remove the drag-and-drop system and replace it with a combination of checkboxes and an “Add” button, enabling the selection of multiple libraries at once

Issue 5: No purpose of first column in “Interfaces” table

Solution: Remove the column

Issue 6: Display of selected table entry below the table unnecessary

Solution: Remove it

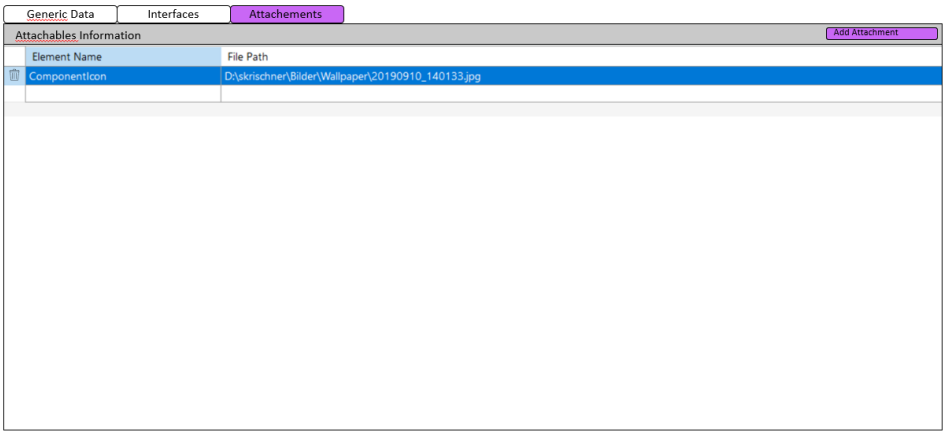
Issue 7: “Attributes” sheet in advanced mode: “DataType” unrestricted editing through the user can cause problems

Solution: Dropdown selection menu to limit the User-Input

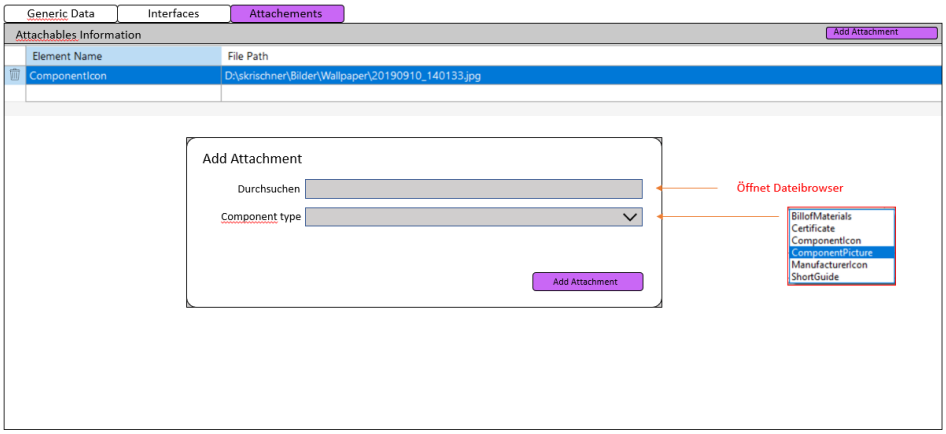
Additional changes:

- Move the delete button of the added libraries to the individual table rows

6. Attachments



Picture 7: Attachments tab overview



Picture 8: Attachments „Add Attachment" button clicked -> Attachment Selection menu

Issue 1: Display of "Role Class Library" and "Interface Class Library" unnecessary for "Attachments" tab, because it provides no purpose at this position

Solution: Remove the menus

Issue 2: The form for adding attachments is not user-friendly. To activate the form, the add button must be pressed, which is not communicated

Solution: Only show the input form when the "add" button is pressed. After successfully adding an attachment, hide the form again

Issue 3: No purpose of first column in table

Solution: Remove the column

Additional changes:

- Move the delete button of the added libraries to the individual table rows

7. General Issues

Issue 1: No dark mode and individual sizing option (no customizability)

Solution: Optional dark mode and sizing function in navigation bar

Issue 2: Unattractive color theme and no clear marking of which tab you are in (Generic Data, Interfaces or Attachments)

Solution: Colored mark of currently used tab

Issue 3: Generally old look and feel

Solution: Usage of WinUI3 for designing the new GUI

Additional changes:

- Show an information tag when hovering over different areas with the cursor to ease the usage

8. Quellen

[1] https://www.gesetze-im-internet.de/bitv_2_0/BJNR184300011.html

[2] https://www.handbuch-usability.de/grundlagen/normen-und-standards/iso-9241/

[3] Sarodnick, F./Brau, H.: Methoden der Usability Evaluation, Wissenschaftliche Grundlagen und praktische Anwendung, 2. Auflage, Bern 2011