

REDESIGN OF THE SLIDES

Bachelor Assignment Industrial Design

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Wood & Washi is a pioneer in the Netherlands with the development of window coverings with Japanese paper: washi. They have been working on creating innovative products with this material and the Japanese aesthetics it brings. A few years ago, a new product was added to their range, a new version of window slats, called Slides. Contrary to other window slat systems, every "slide" in this new product can be angled individually, without fiddly cords or ladder tape.

Unfortunately, the Slides product is not completely finished, as the company would like to see it. Even though the product was brought to the market in 2019, quite a few problems still exist within it. This project aims to find the issues that different stakeholders see in the product, and then redesign it in such a way that these issues are resolved. This redesigned product will be subjected to usability tests to determine if it is successful in solving the current problems.

Phases

The project was executed in different phases: the analysis phase, the ideation phase, the conceptualization phase, the finalization phase, the prototyping phase and the reflection phase. Most of the phases took place more or less chronologically, but some where (partially) simultaneous. In the analysis phase, the problems that the product currently has were pinpointed by seeing what each stakeholder thinks the problems are. An FMEA was used to determine the severity of the problems.

The most important problems that were found in the analysis either had to do with the supports of the Slides or the rings. The current supports don't work as intended, creating a big chance of failure and damage to the product or its surrounding. While the rings do work as intended while assembled, they are difficult to add to the product and may cause damage to the product. Another big problem is that there is currently no way do "clear" the product from the window, for example for cleaning. These problems, combined with the requirements from the company and the possibilities stakeholders see, were used to create a programme of requirements for the redesigned Slides product.

In the analysis phase, research was done as well, about the translation of intangible aspects to material requirements to be able to choose materials for the redesigned product in the later phase. This was done because stakeholders mentioned that the currently used materials did not always fit the perception the company and others would have of Wood&Washi products.

In the ideation phase, different types of ideation were used to generate ideas for the redesigned product and its parts. Existing solutions were researched as inspiration for the redesigned product. Together with the company as well as some peers, brainstorming was held to generate more ideas and get more information on existing systems that could be applied in the Slides' redesigned parts.

After the ideation, different ideas were used to create concepts for the parts of the slides that would be redesigned. The mechanical solutions were tested using 3D-printed prototypes, and compared using short test checklists. The aesthetic solutions were put into different detail studies, where minor changes in the small parts could be compared. Together with the company, the decision was made on which solutions to move forward with for the final redesign.

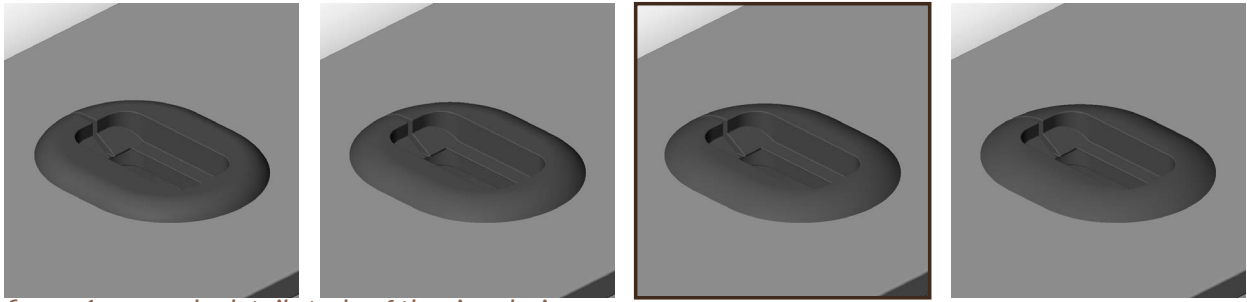


figure 1: example detail study of the ring design

In the finalization phase, the chosen concepts were all combined into one redesigned product, and any necessary changes and additions were made to finish the redesign. These redesigned parts were then prototyped using the 3D-printer, and made into two different prototypes, prototype “wood” and prototype “washi”. These prototypes were used to execute a few usability tests for the redesigned product. Due to limited time and resources, only limited testing with these prototypes could be done.



figure 2: prototype versions of the redesigned parts

Conclusion

Following this redesign process, it is recommended to execute more tests on the redesigned product. Some design steps might also still be necessary, it is recommended that the company looks at the different redesigned parts with manufacturing experts. The lifting system should also be tested more to determine if there’s still any issues that require (design) solutions within the current system.

Overall, the final design is successful in completing the challenges that came with the project. The supports are now able to hold the system up without fear of cutting the ropes. The supports also fulfil the wish of being able to set the depth of the system. The rings were divided up into two symmetrical parts, eliminating the danger of upside down assembly. The specific design form of the ring makes the assembly much easier. The solution was achieved without adding multiple different components. The redesigned product now also has a solution for potential customers to clean their windows using the added lifting system.



figure 3: “wood” prototype being used by a test subject