

# Designing an efficient storage solution that improves the user experience for a storage unit.

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## Designing a smart storage solution that focusses on improving the user experience for a storage unit.

Salland Storage is a company that provides outside self-storage to their customers. When a storage unit is first rented out to the customer, they open a completely empty storage unit. It is up to the customer how they fill their storage unit with their stored goods. The storage units are located in a specially designed Z-Box storage container, that can be subdivided into smaller compartments (storage units). There are six different Z-Box models that are all subdivided in a different ways. The Z-Box containers can be subdivided in up to eight different compartments. Currently, customers have no opportunity to store their goods in a way that they are all easily accessible. With a low number of goods stored, this is not always a problem. But when the storage unit is filled from up to 60% to 80%, some goods become very difficult to immediately access. Requiring the user to (partially) empty their storage unit to access these goods. Salland Storage aims to improve this user experience. Based on this goal to improve the user experience, the following research question was formulated:

“How can the way that Salland Storage customers store their goods be efficiently improved?”

## Thesis Approach

The thesis starts with the research phase, which was subdivided into three smaller components. The first component focussed on mapping out the current situation. Showing what opportunities for mounting a solution are currently available in the Z-Box concept. The main finding for this phase was that the model 6 Z-Box would create problems housing a potential solution. However, the other 5 models would house plenty of opportunities for a potential solution to be stored. The second research component aimed to give insight into comparable solutions that are already available on the market. In this component, several solutions were found and compared. Giving insight into idea directions that could be explored during the design phase. Finally, the third research component focussed on gaining information on the current customer behaviour and preference. This component gave valuable insight into how customers currently look and use their Z-Box models and what potential solutions had already been tried. Based on this research phase, a list of requirements and wishes was formulated. This list would be the basis for the second phase.

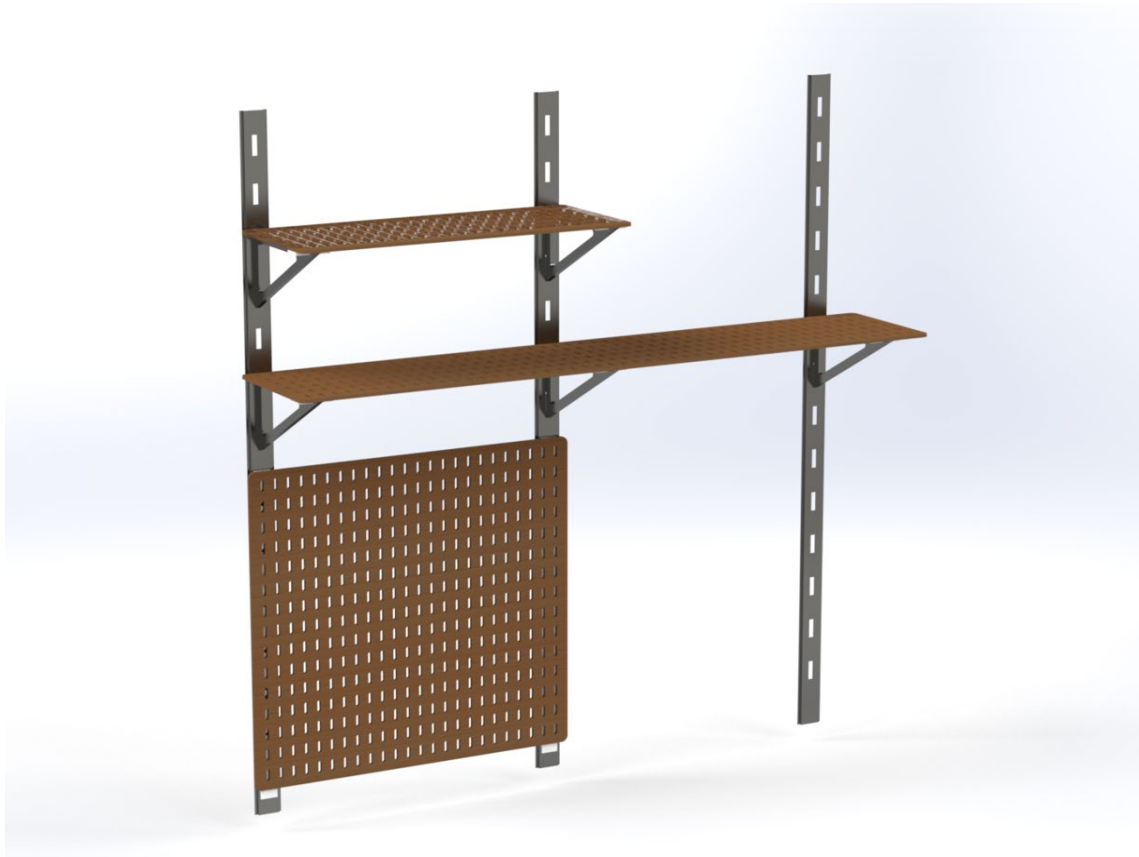
The second part of the thesis discusses the design phase. In this design phase, three different concepts were discussed that were designed based on the list of requirements. The concepts were split up into two smaller design problems: designing a solution to efficiently increase effective storage space in the container. And second, designing a solution to mount the effective storage solution to the internals of the container without permanently damaging the container. The three different concepts are then compared based on selection criteria derived from the list of requirements, and one concept was selected to continue with.

Finally, in the detailing phase, several points of improvement were identified. These were points that required extra detailing for the solution to properly function and work conform the previously stated list of requirements. Next to this, a costs estimation was performed, together with material analysis. Finally, the concept was prototyped and tested for the user experience.

## Thesis results

The previously described approach resulted in a final design. This design uses two or more e-tracks that can be mounted to the inner wall of the Z-Box container. To these e-tracks, of which two are always placed inside the storage units, customers can choose to attach two different storage solutions. The first storage solution is a simple shelf, that uses two support hooks to be mounted to the e-tracks.

The second solution consists of a pegboard that can be mounted to attachment brackets. These brackets can then be placed onto the e-track. With this system, the customer can individually configure their own storage solution to fit their personal needs. Shown below is a render of how a configured solution could look like.



## Conclusion

This thesis concludes that the user experience of the Salland Storage customer can be improved by increasing the effective storage area that is available to the customer in their storage unit. This could be done by introducing a system that allows the user to individually hang shelves or pegboards to the wall of the container.

## Recommendations

Recommendations on improvements and further detailing are:

- Further optimization and reducing the "overengineering" of some components.
- Exploration on the use of different attachments to the e-tracks.
- Detailed user and durability testing.
- Plan for introducing the storage solution to the customers.