

Designing a wheelchair tray tablet mount for people with multiple disabilities

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The objective of this project was to design a system which fixes a tablet to a wheelchair tray for multiple disabled people. The question arose from 's Heeren Loo Apeldoorn's innovation centre. 'S Heeren Loo is an institute that supports people with a mild to severe intellectual disability or other disability, of all ages, in almost all of the Netherlands. At 's Heeren Loo, location Apeldoorn, lives a client who would benefit from being more independent with the use of her tablet, currently there is no product on the market which suits the needs of this client.

When receiving the project brief there was no information about the problem that needed to be solved, there was only stated a demand of a product. However, in order to design the optimal solution a deep understanding of the underlying problems was needed. Therefore, this project was attacked in a systematic order, starting with an elaborate analysis of the background and the problems the client experiences. This was done by means of several interviews with the caregivers and therapists of the client. The result was a problem statement that defined the core problem to be a need of expression for the client. However, in consultation with the innovation coordinator of 's Heeren Loo is was chosen to focus on the practical need of a tablet wheelchair tray mount for this project.

In addition to designing for the specific client a wider target group was explored. Designing for multiple clients instead of one will result in the creation of more value and is therefore a preferred design goal. A target group analysis and a market analysis was performed. A larger potential for this product was recognized and the aim to design for multiple users was added to the project goal. This was mainly reflected in a aim for an widely adaptable and compatible device

Before the design process could begin the design requirement were set through an elaborate analysis of several factors including: Cost, production, laws and regulations, ergonomics, user scenarios, and extreme situations.

After the list of requirement was finalized, several concept ideas were generated, elaborated and evaluated. There was chosen to generate separate ideas for the different functions. These different functions were: The main structure, the tray attachment, the tilt system and the tablet attachment. Subsequently these separate concept where combined with the help of a morphological scheme. From the combined concept three final concept were chosen and discussed with the stakeholders.

The final concept was one that makes use of a magnet connection. This allows the mount to be easily removed, yet also provides a firm connection. This concept was develop into a

design with the goal to be product as one one-off production for low costs. The development phase resulted in a redesign of the support with intergraded electromagnets. This gives the users the option to fully secure the mount on the wheelchair tray, or to immediatly release the mount with the switch of a button.

