childfriendly design for assistive devices



JOIN US CREATING USUALL DESIGN DESIGN USABLE AND LOVED PRODUCTS FOR ALL CHILDREN.

Innovatiefonds zorgverzekeraars O YUMEN

WHY WE DESIGN USUALL PRODUCTS

The amount of available technical and E-health solutions such as AI, smart materials, exoskeletons for people living with a (rare) disease is skyrocketing. However, acceptance of these technologies is still fairly low. Researchers are experiencing difficulties in reaching the often narrow target groups and are hesitant to confront the end user with aspects of their condition, thus running the risk not addressing specific user needs with their technology. Therefore, Usuall is applying a new approach to design assistive technologies for people with neuromuscular diseases (NMD's).

The TAM (1980),ATAUT (2003) and Almere (2019) models all describe factors that influence the acceptance of technical innovations. Overall it is important to take the uers' needs, expectations and context into account when designing acceptable assistive technologies. Without a right match between these factors and the innovation, it will not achieve the intended quality of life improvement. This new design research method by Usuall consortium is applied to gain qualitative data concerning acceptance factors that are developed and validated. It builds on positive design principles, focusing on design for children with rare physical disabilities such as Duchenne muscular dystrophy (DMD). This method includes: Research methods to gain qualitative data, 2 Design methods to translate the data into a valuable design and 3 Design qualities to validate the final design.

One of the tangible outcomes of this research method is an exoskeleton for children with DMD. The next step is to transfer the method to a design research method for adults living with a rare disease.



<u>EXTRA</u> MUSCLES FOR DMD

L. KOOT, P. KLAP

YUMEN BIONICS

The Yumen Arm is a revolutionary solution that supports and monitors arm movement for boys with DMD. This is done by combining three elements: a bodyworn structure, personalized elastomers which provide personalized support and a sensor sysytem which monitors movement. These extra muscles are a result of an intensive and longlasting collaboration between boys with Duchenne, their parents, Duchenne Parent Project the Netherlands, researchers, multiple universities, volunteers and Yumen Bionics

EXAMPLES OF USUALL DESIGN



MINIMIZE STIGMATIZATION OF WHEELCHAIR USERS

Usuall project by Latte van der Jagt: This project aims to figure out what elements of an electrical wheelchair could influence the stigmatization of the child using it. The findings of this research led her to redesign the typical electrical wheelchair. This project illustrates that small, and cheap, changes to a product can substantially improve its appearance without the product losing any of its functionality.

INCLUSIVE BUILDING MATERIALS

Usuall poject by Marinke Callens: This project focuses on improving the ability of children with a physical impairment to go and play outside. She designed Kaboe, a build-and-play set especially tailored to children with muscular dystrophy. Kaboe is made of light materials which can be used to build big structures through light-force-connections. This build-and-play set can stimulate the social interactions of a child in a fun, safe and playful manner.

HOW WE DESIGN USUALL PRODUCTS

Usuall uses a so called iterative **DESIGN PROCESS.** This entails that we create a constant feedback loop with the children during the discovery, shaping and reflection design phases. This allows us to create a clear(er) picture of what a child is like, and therefore to design a product specifically tailored to the child.

Eager to apply Usuall to your project? Take a look at **www.usuall.org**

