FOWLER

Transforming Disability.

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01

The Problem

If a person is both disabled and incontinent, they needed a carer to help them once they need the bathroom. This is fine at home but when out in the public, they need a disabled toilet. Once inside its impossible to change them in a standard wheelchair, so they must resort to the only flat surface available,

the floor.

MY BROTHER

About Him.

My younger brother was born with a rare chromosome disorder called Tetrasomy 18p. This has left him intellectually and physically disabled. Because of this, he and my mother (his full-time carer) struggle when changing in public bathrooms outside of the home.

As I experienced changing him on the cold bathroom floors first hand, it formed the catalyst to want to solve this problem.

MARKET ANALYSIS

Market Size

Wheelchair market set to rise to an estimate $7.5 Million by 2024.

Market Gap

Only 25 Specially designed WC's in Ireland for these people

Problem size

Over a quarter of a million people in the UK cannot use standard access toilets (0.4%)

World Wide Effect

over 30 million people With this issue - Based on 0.4% of UK population

My Process

What's in store

PHASE 1

Initial ethnography & high level research to gather insighs

PHASE 2

Discover and ideate ways to solve the issues within my insights

PHASE 3

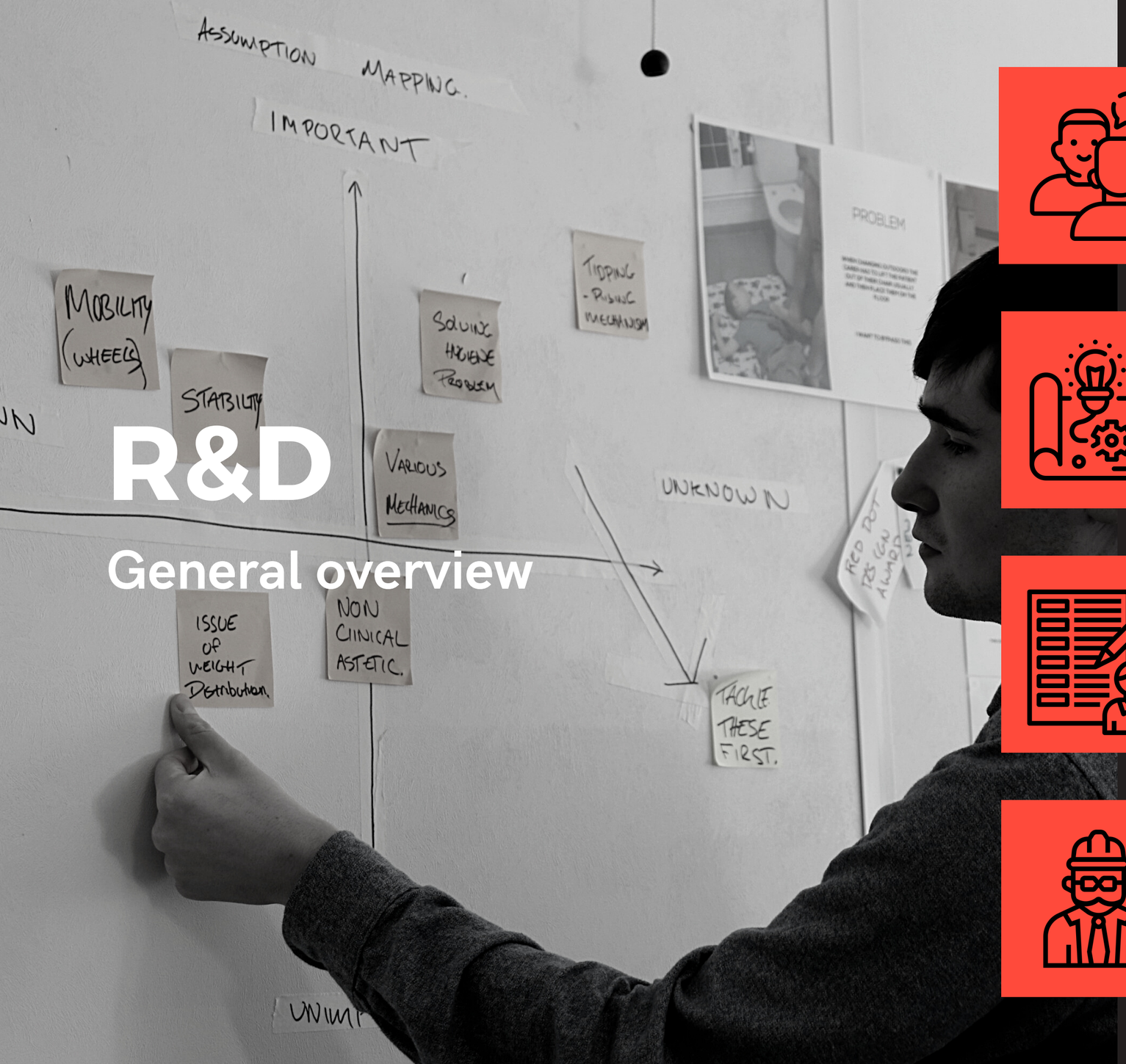
Prototype and iterate my design features

PHASE 4

Test my design with my target user group

R&D

General overview



- Interviews & Surveys
- Prototypes & Product Itererations
- User testing Sessions
- Discussions with Industry Professionals

Info Gathering

SURVEY

The process began with a ten question, 30 participant survey comprised of carers and patients.

FACE-TO-FACE INTERVIEWS

Were done with parent carers, professional carers, a special needs school principal & an occupational therapist.

OBSERVATION

I oversaw how a carer typically changes their disabled child when in a public restroom

INSIGHTS

LACK OF FREEDOM

People are forced to never leave their home due to its difficulty.

PHYSICAL RESTRAINS

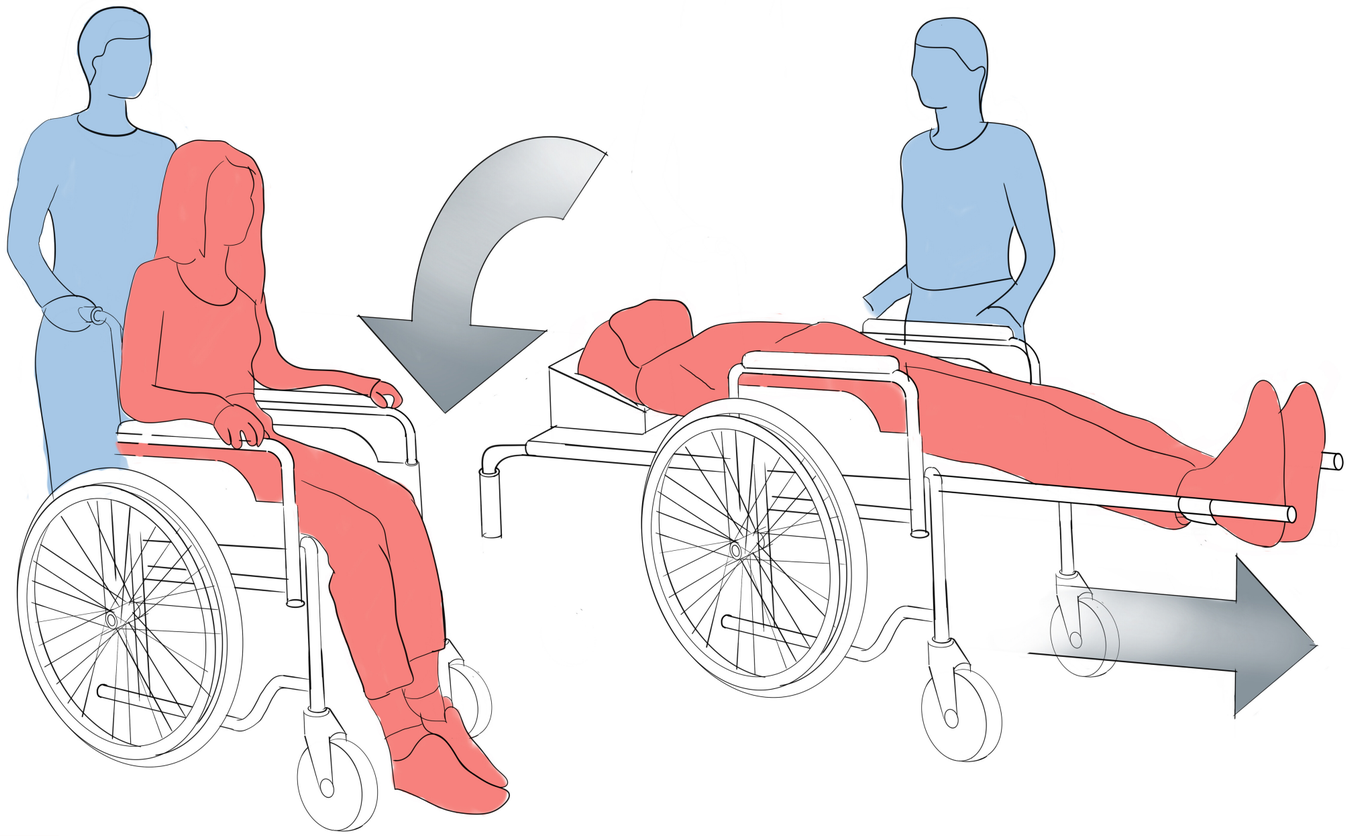
The current way of changing in public is unsafe and tasking on both parties

LACKING COMPETITION

None of my parent interviewees had even heard of the term "changing place"

PRODUCT POSSIBLITIES

The wider scope of problems Fowler could solve is more than just changing in public restrooms



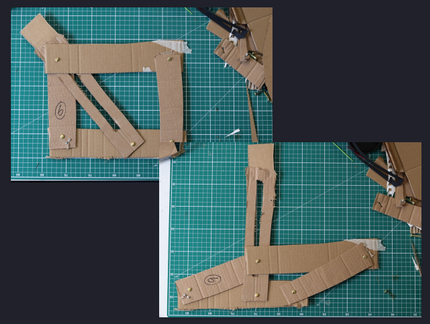
Product Premise

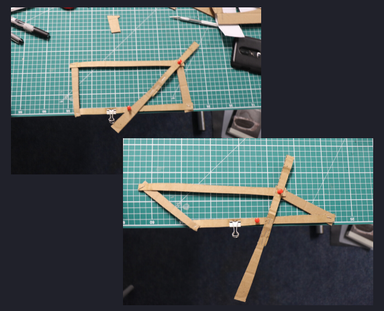
When reviewing my insights and observations I had gathered, I realised, most of the issues I want to tackle stem from lifting the patient in and out of the wheelchair and then placing them on the floor.

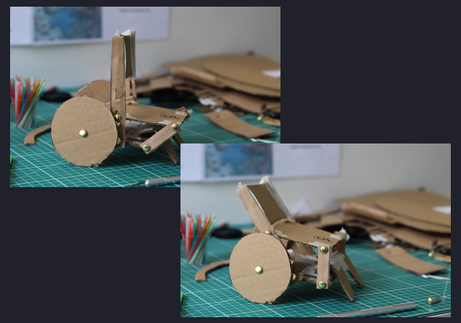
If I were to remove the need to ever take the patient from the chair and allow the chair to facilitate changing I could solve this issues.

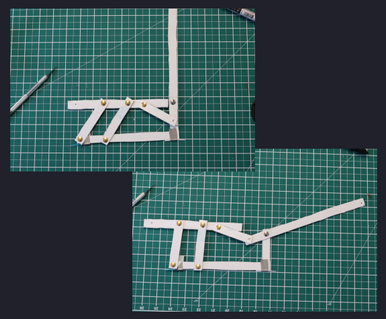
Mechanism Prototyping

One key feature to design was the mechanism of Fowler. In one smooth motion, I needed the chair to rotate the seat backwards and move the seat upwards.

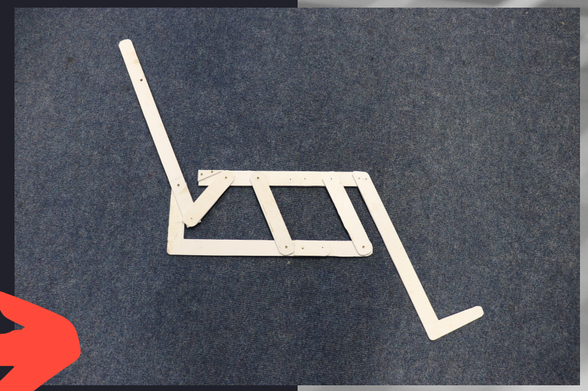


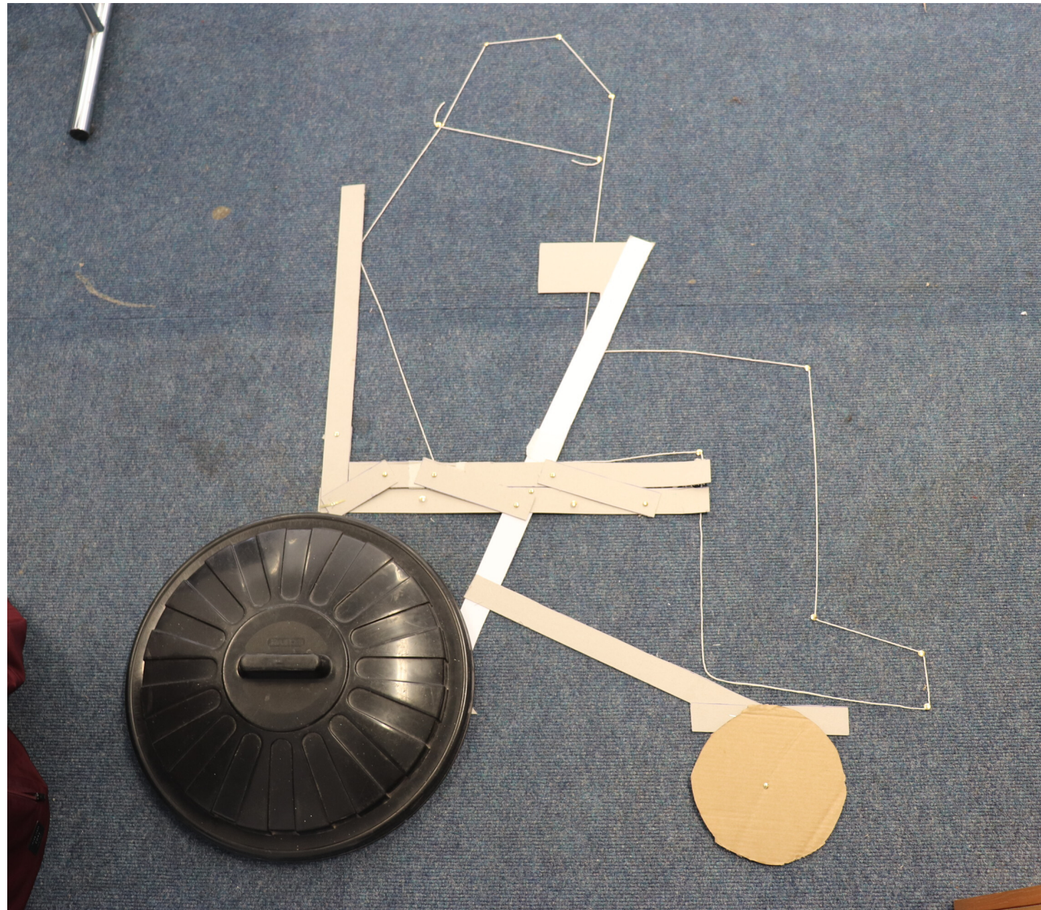






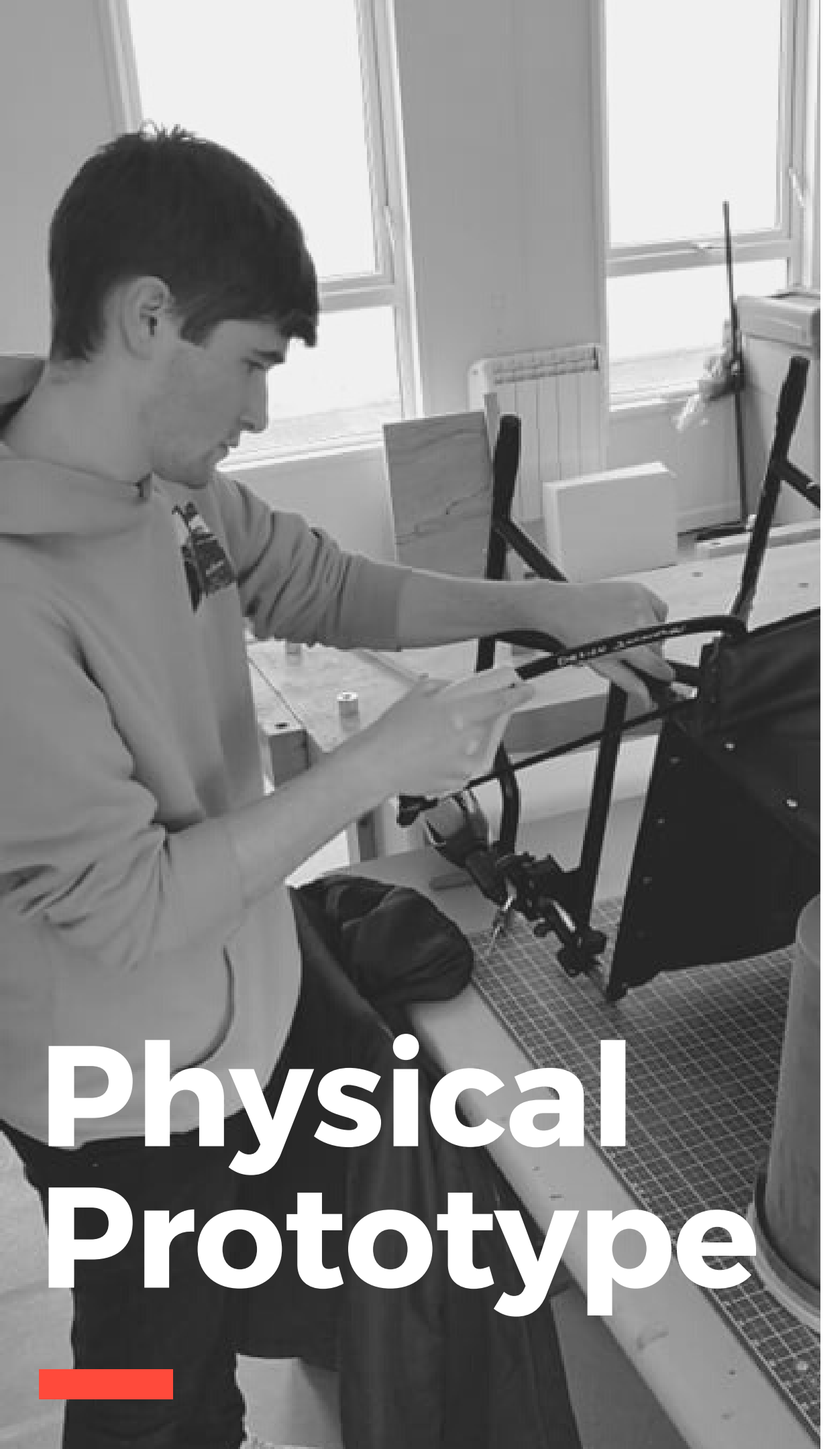
After countless iterations, I discovered this mechanism with a good ratio of rotation and lift





Time to bring things to

Scale...



Physical Prototype

When prototyping, I started by converting a disused wheelchair. This gave me a base to start from and sped up the prototyping phase.

My aim was to alter this wheelchair so it would have all the features my intended final product would have.

This too gave me an ideal tool to use when testing Hypotheses in user testing sessions


BRUSHLESS
MOTOR

User Testing

User testing with my target demographic was one of the most usefull tools in my products solution development.

User Testing session

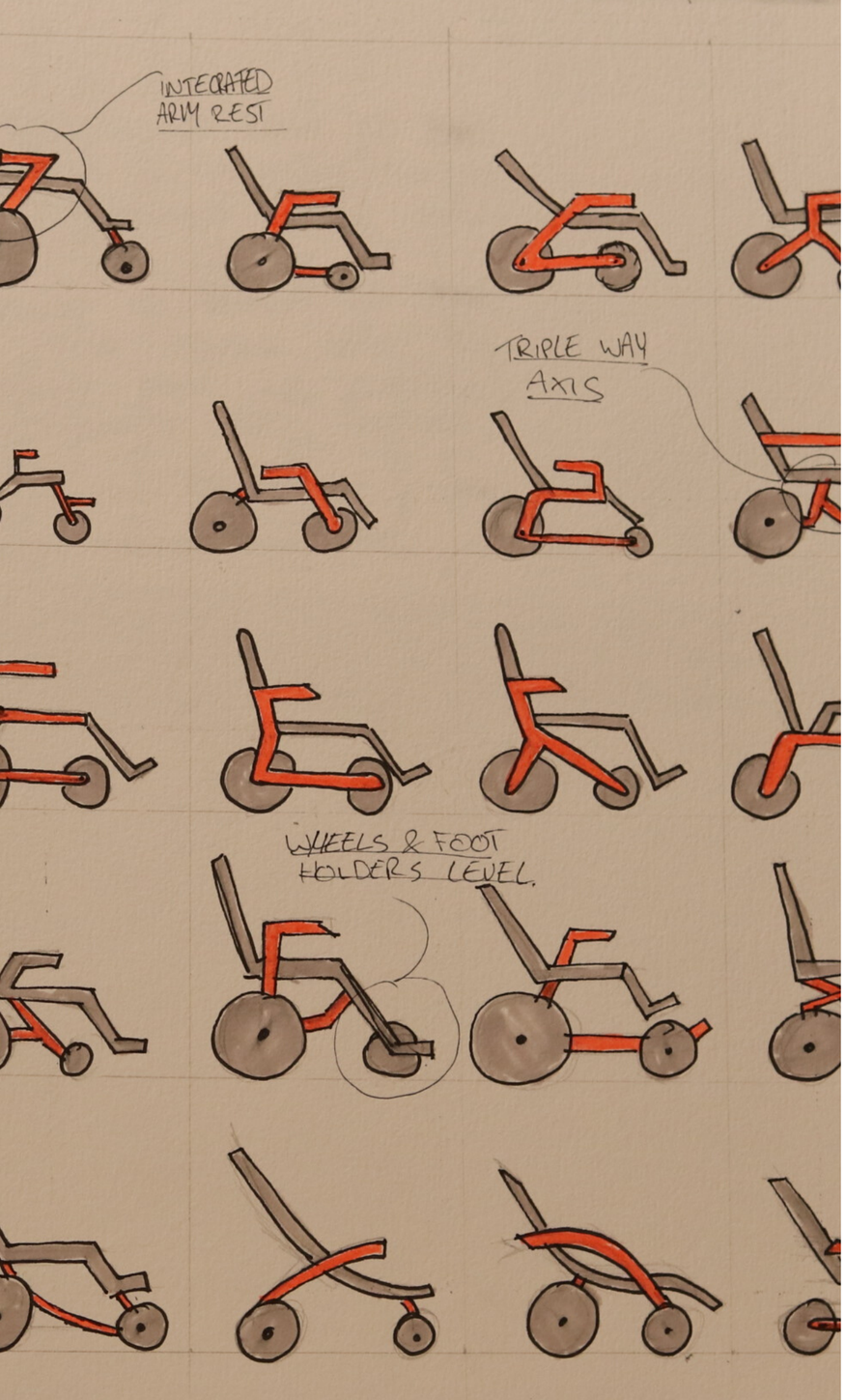
Product Validation Test

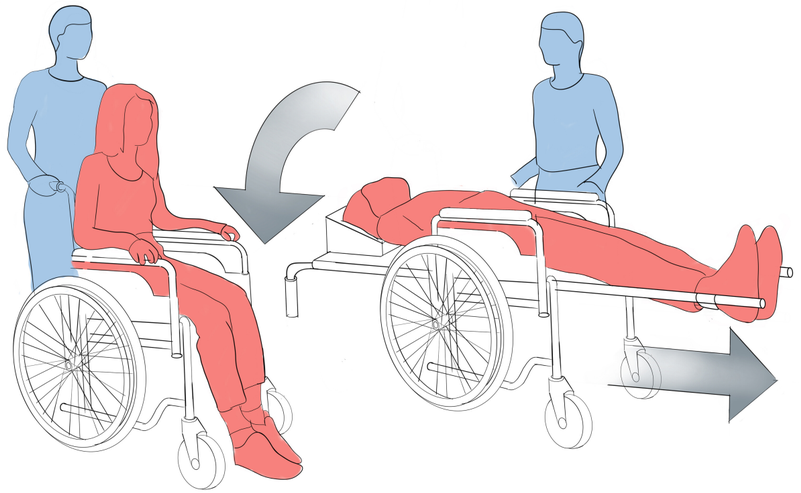
To test the how well the product functioned I tested the prototype against the old standard method (changing on the bathroom floor).

A. *Control changing time: 4.27 sec*

B. *Fowler changing time: 2.43 sec*

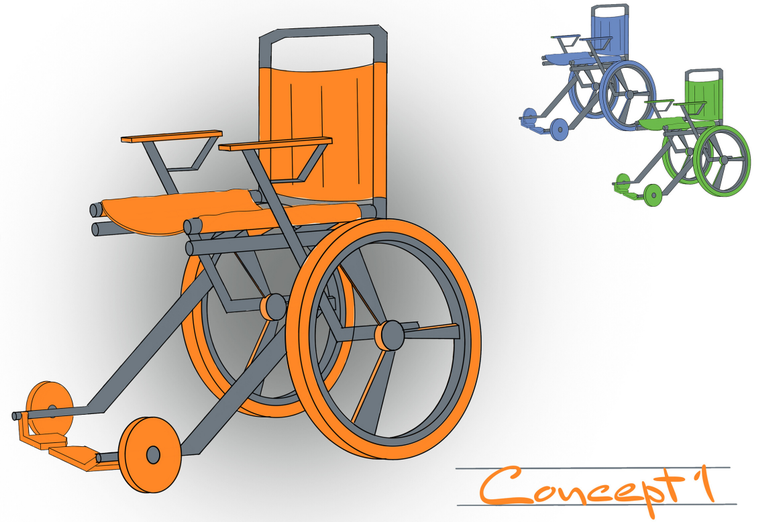
Fowler is 43% faster than the control



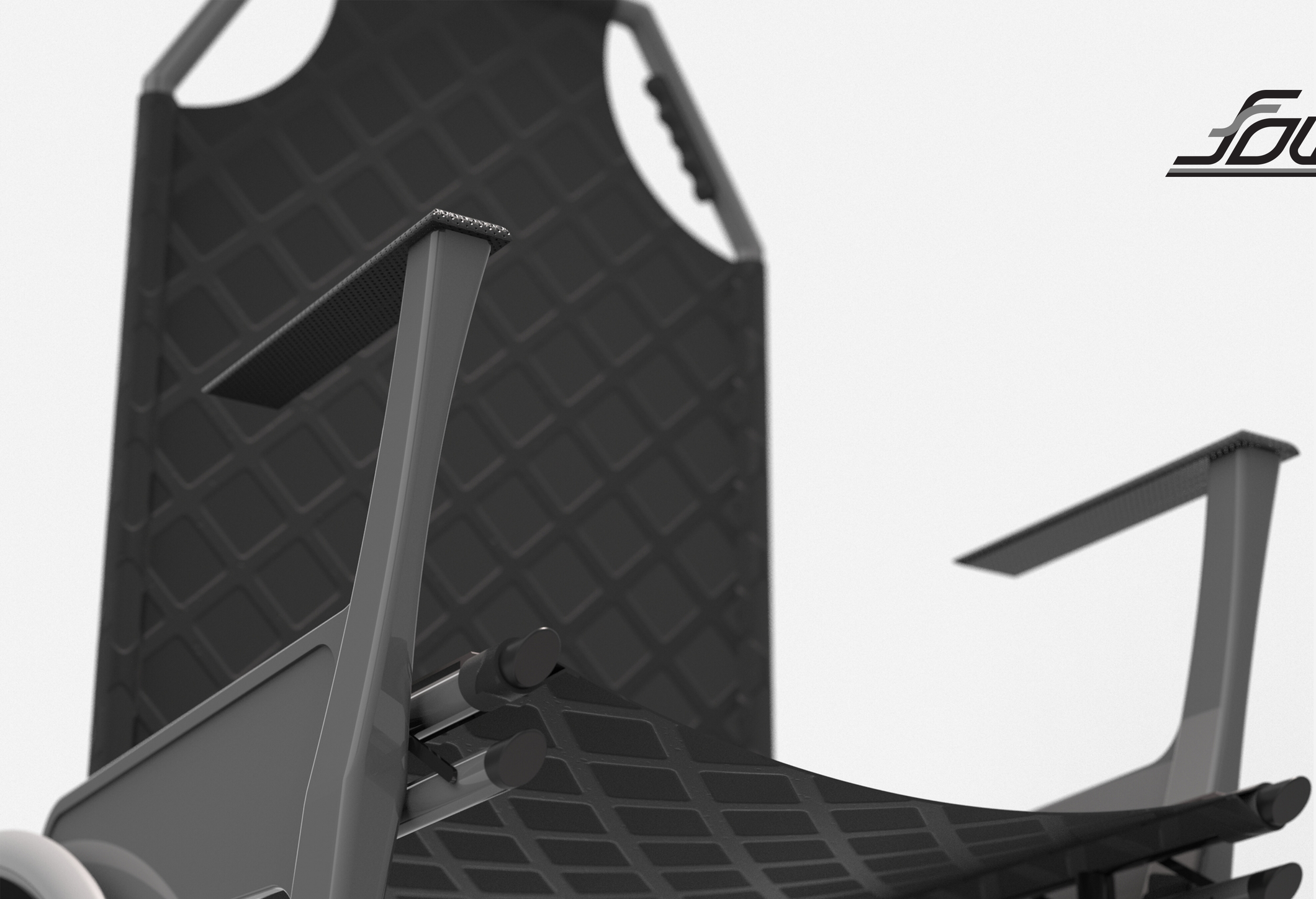


While sketching did not play as big of a role as prototyping was to Fowler's development, it still was used heavily to conceptualise the look and style of the product.

After gathering advice and inspiration from leaders in the industry, I aimed to make Fowler minimal and as "non-clinical" as I could while still being functional



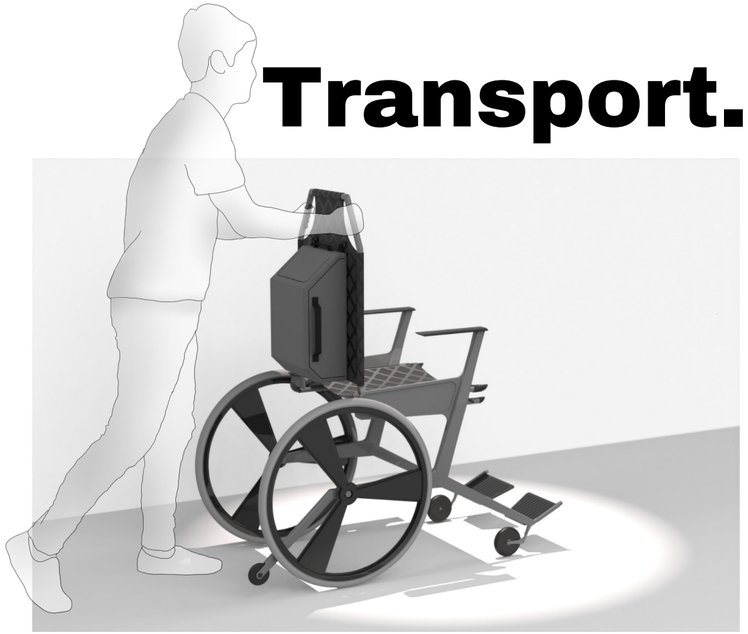
Product Aesthetic exploration



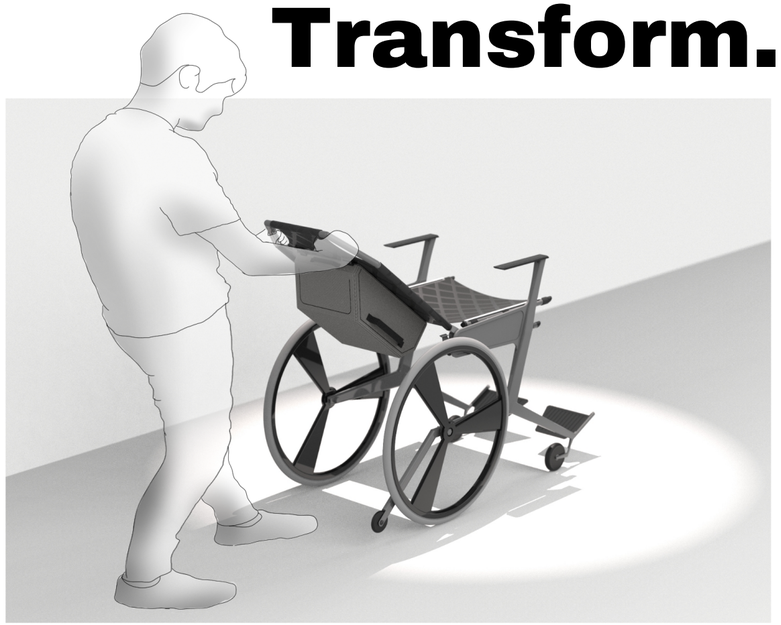
FOWLER

Fowler's Story

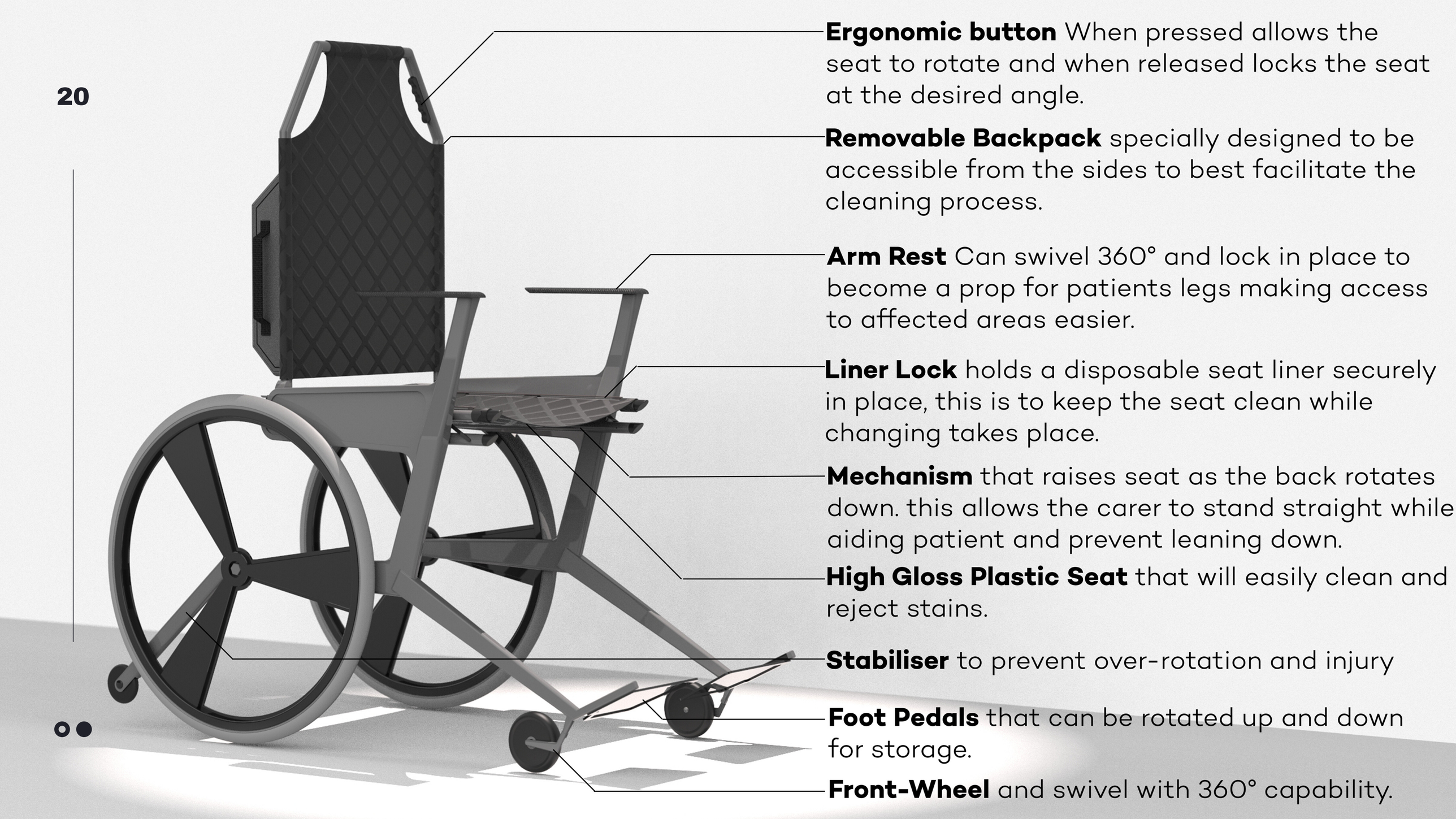
Transport.



Transform.



Treat.



Ergonomic button When pressed allows the seat to rotate and when released locks the seat at the desired angle.

Removable Backpack specially designed to be accessible from the sides to best facilitate the cleaning process.

Arm Rest Can swivel 360° and lock in place to become a prop for patients legs making access to affected areas easier.

Liner Lock holds a disposable seat liner securely in place, this is to keep the seat clean while changing takes place.

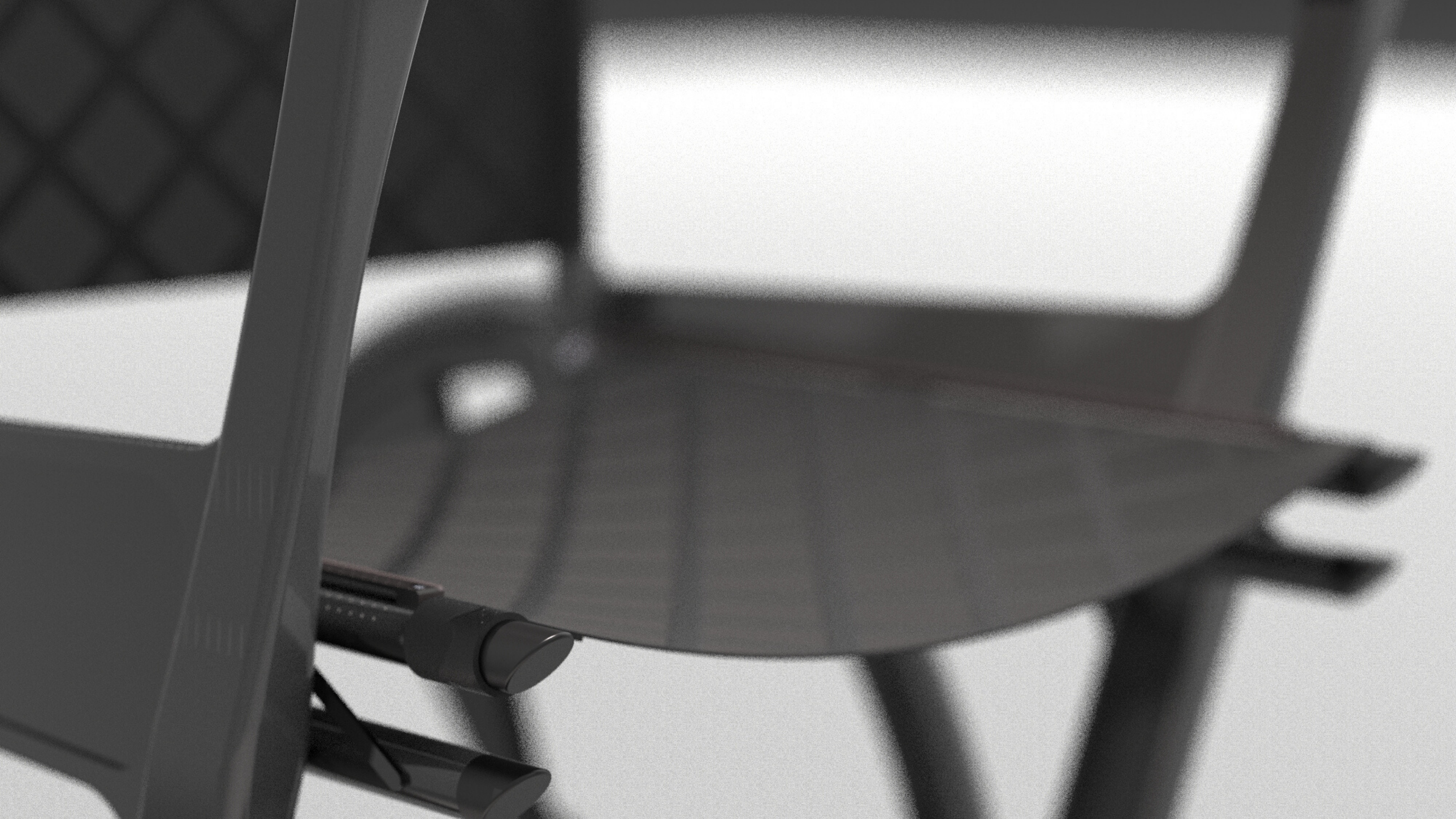
Mechanism that raises seat as the back rotates down. this allows the carer to stand straight while aiding patient and prevent leaning down.

High Gloss Plastic Seat that will easily clean and reject stains.

Stabiliser to prevent over-rotation and injury

Foot Pedals that can be rotated up and down for storage.

Front-Wheel and swivel with 360° capability.



Inside the Bag.

When changing in a public bathroom a carer must bring an assortment of items to change the user, such as:

- Gloves
- Diapers
- Baby Wipes

And more

To aid this, I designed a customisable bag that opens from the sides as well as the top, this allows the carer to access the items inside once Fowler is flipped

The Liner.

As hygiene is so vital in this project, disposable liners cover the seat. These are held in place by long clips on both sides of the seat that clamp down on the liner before the patient takes their seat.

If soiled they are simple removed and disposed of.

i&p ideas & pitch

The Eden ideas and pitch Competition is a university-wide entrepreneurial competition where students pitch their ideas for a service or product.
This has the draw of expert advise and a €5,000 cash prize for the victor.

After part – taking in the final of the competition it was announced that Fowler had placed first in the competition.

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