

CASE STUDY



HELPING VISUALLY IMPAIRED AND
BLIND PEOPLE TO BETTER PERCEIVE
THEIR ENVIRONMENT

SENGNE CHALLENGE

• 1

Improve resolution and rendering to convey information more accurately.

• 2

Optimize the product with a more comfortable and discreet design and material.

• 3

Easily develop different iterations, and produce quickly.

Main information

Company	Artha France
Industry	Personal aid / Medical
Product	Sensory lumbar belt
Technology	Multi Jet Fusion
Material	Ultrasint® TPU01
Finishing options	None
Challenge	Create a lumbar belt to improve proprioception for visually impaired and blind people.



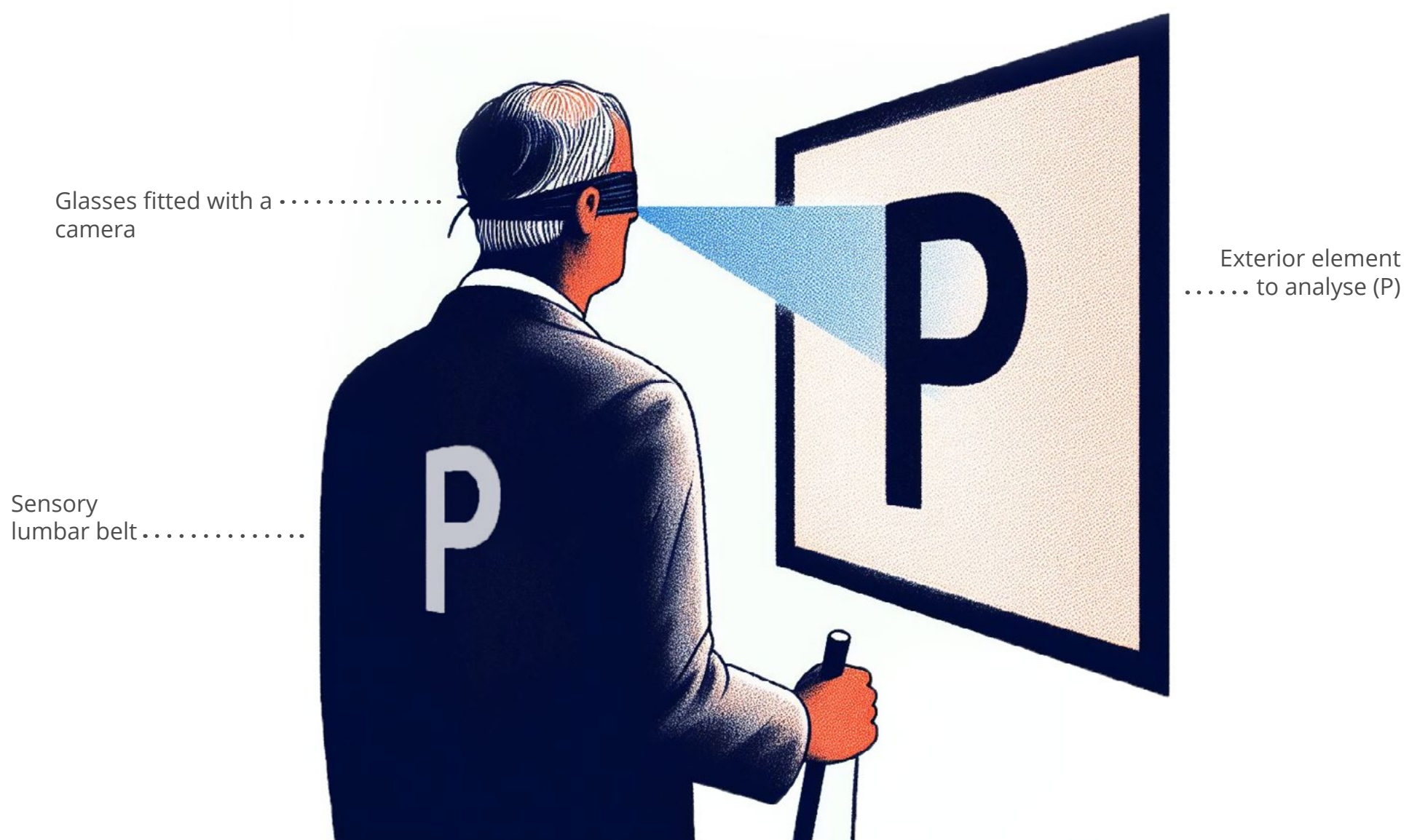
ABOUT THE COMPANY:

Artha France was founded in 2018 in the Paris region. Artha's proposition is to offer greater autonomy to the visually impaired and blind, thanks to a device that enables them to develop a completely new perception of their environment.

CONCEPT PRESENTATION:

In the device designed by Artha, a mini-camera, mounted on glasses, films the person's immediate environment. The information captured by the camera is transmitted, in real time, to a lumbar belt device worn by the person.

This lumbar belt acts as a kind of mechanical screen on the wearer's back, transmitting the information captured by the camera in the form of small pressures. In this way, the wearer can intuitively decode stimuli corresponding to his or her immediate environment through touch.

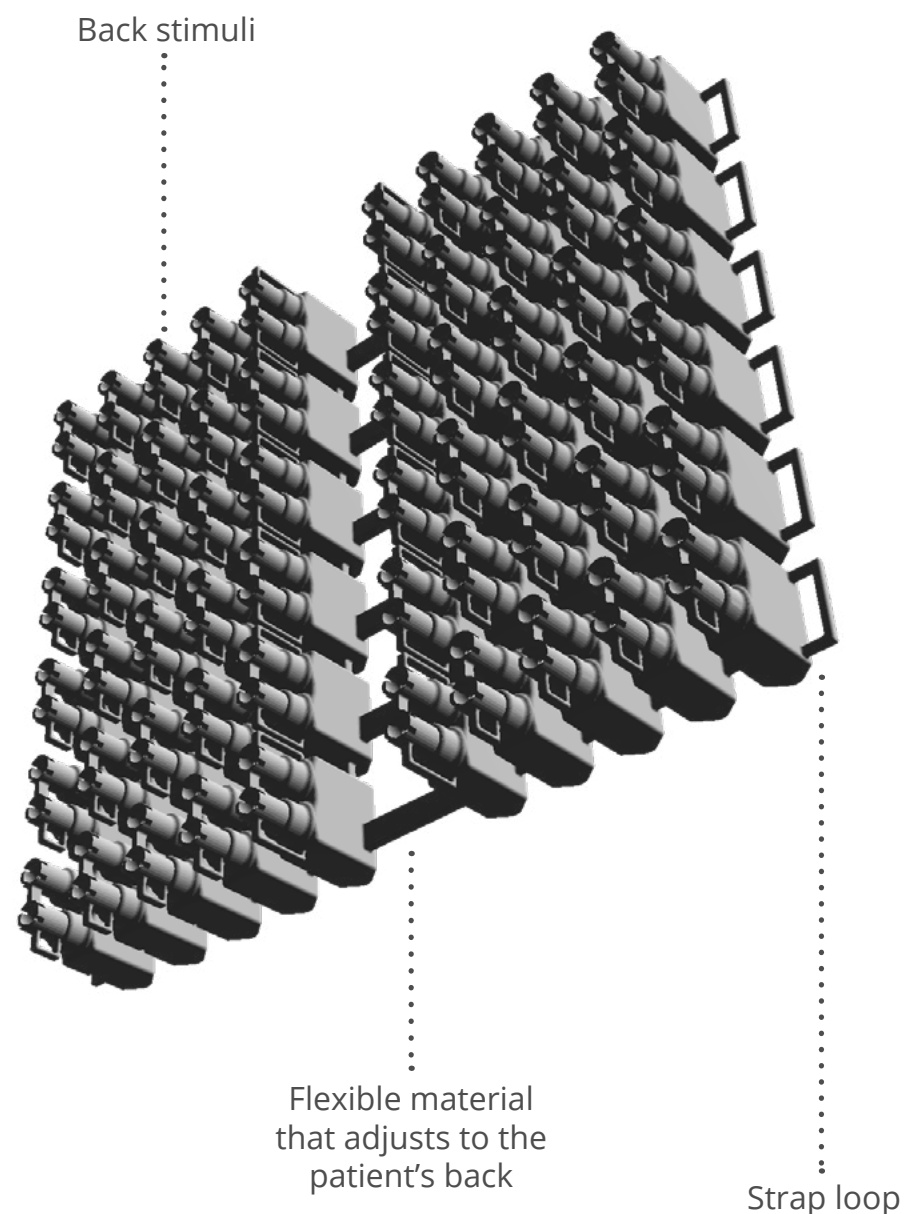


ABOUT THE PROJECT:

Like sight, touch is one of the senses that enables the human body to situate itself in space. It is also one of the quickest for the brain to interpret.

That's why Artha has chosen to use the sense of touch in order to communicate to the wearer information that would usually be transmitted by sight.

Thanks to this device, people can sense their immediate surroundings, and any obstacles or objects they encounter, and move accordingly. This device also enables wearers to perform actions previously unthinkable for a visually impaired person, such as playing video games.



THE QUESTIONS:

a What has your **experience** been **working with Sculpteo**?



"I am blown away by the quality and speed of Sculpteo's 3D printing service. The online quote system was so convenient, and I received my custom parts in no time. The knowledge of Sculpteo's engineers really helped us perfect our project. This service truly exceeded my expectations!"

b What was **the problem you wanted to solve** when you turned to 3D printing?

For this project, our aim was to manufacture a flexible lumbar belt, enabling us to integrate all the electronic parts needed for our mechanical display device, such as batteries.

Initially, Artha's lumbar belt was designed in several parts, with hinges that were 3D printed using a Fused Deposition Modeling printer.

120 hinges were printed and clipped together, which meant long assembly and production times.

Because of this particular design, the belt had a limited lifespan, due to the various rubs and twists of the parts, sometimes causing discomfort to our users.



By changing the design of these clip-on hinges to a single printed part, and choosing a material that was more comfortable to wear, we were able to improve our design, and make it more durable.



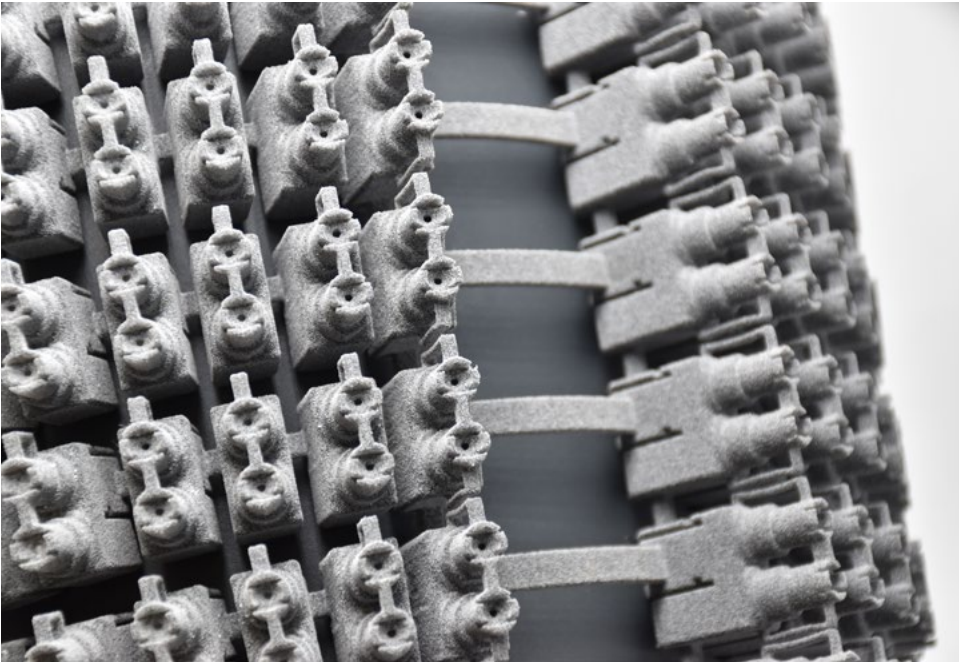
Thanks to the help of Sculpteo Studio's designers and engineers, we were able to get assistance with the design of our TPU model, and speed up the time it took to produce it. Once the model was ready for production, the speed of manufacture was equally as impressive.

INSTANT QUOTE:

c What were the **advantages** of using 3D printing for your project?

The use of 3D printing enabled us to carry out different iterations quickly, and thus to shorten our development times.

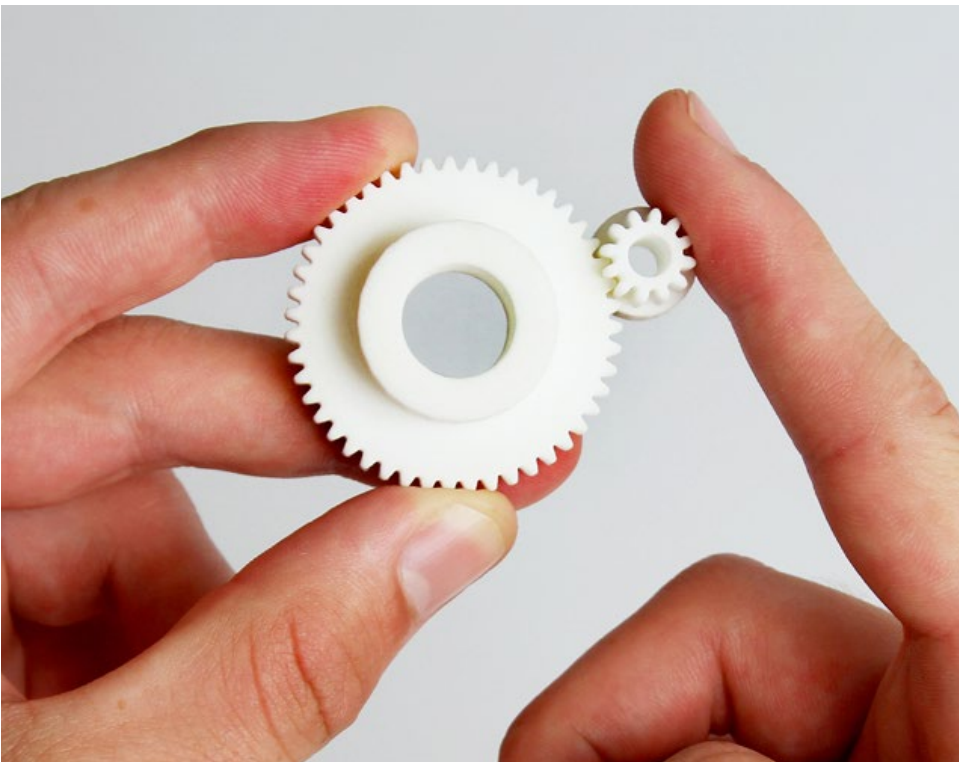
d What **technologies** and **materials** did you use for your project and why?



For versatility, we used MJF Ultrasint® TPU 01. Thanks to its flexibility, this material allows the belt to adapt to the user's back.

The part was printed in one go, for greater robustness than a rigid articulated part made up of many small parts.

e How has **3D printing concretely improved** this project?



Our first models were produced using Fused Deposition Modeling.

By reworking our project with Sculpteo, we were able to switch to Multi Jet Fusion technology, which greatly improved the resolution of our parts, and therefore the quality of the information transcribed onto the user's back.

f Which **Sculpteo services** have you used?

We used Sculpteo's printing service, as well as the Studio's design services.

"The online quote system was so convenient, and I received my custom parts in no time."



<https://www.arthafrance.com/en/>

Address:

Sculpteo
10 Rue Auguste Perret
94800 Villejuif, France

Website:

www.sculpteo.com

Phone number:

+33 1 83 64 11 22

