CASE STUDY

DEVELOPING OPTIMIZED PRODUCTS AND GAINING ADAPTABILITY THANKS TO ADDITIVE MANUFACTURING

sculpteo x Conscience

A brand of BASF - We create chemistry

Make Robots useful

CHALLENGES

• 1

Save time between the design and the first series to meet market demands.

• 2

Optimize their product thanks to better designs and adapted material options.

• 3

Find more sustainable prototyping techniques.

Main information

Company	Conscience Robotics
Industry	Robotics
Product	Prototypes, robots skins and pre-marking modules
Technology	Multi Jet Fusion
Material	HP 3D High Reusability PP enabled by BASF and Multijet Fusion PA12
Finishing options	None
Challenge	Save time between the design and the first series, optimize their product and find a more sustainable prototyping technique.

ABOUT THE COMPANY:

Conscience Robotics was created in 2017 by **Ilies ZAOUI**. They design a **universal Artificial Intelligence for any type of robot**: robotic arm, flying drone, humanoid, multiped or wheeled vehicle. The robot becomes aware of its physical capacities and takes advantage of it autonomously.

It is able to move in its environment in an autonomous and optimized way. The company has also created other products to show how challenging its **IA** can be on real robots. In fact, they offer diverse products such as robotic arms, autonomous alert detection, sequencing tools, telemedicine robots, video surveillance, wheeled vehicle, or humanoid multifunction robots.

THE BERING PROJECT:

Conscience Robotics developed a project called Bering, a discreet, intelligent, and useful **marking robot**.

These robots developed by Conscience Robotics become **aware of their physical capacities** and take advantage of them. These intelligent robots are able to move in their environment in an autonomous and optimized way. Thanks to a mobile or web application, the user can easily interact with the robot.

ABOUT BERING:

With its user-friendly interface, Bering can be used easily and without training. Bering is adaptable to different grounds and has three interchangeable systems: **aerosol sprays**, **liquid**, and **high-pressure**. This robot has already been used in different fields, such as construction, road marking, or sports fields.

? ***DID YOU KNOW?***

84%

3D PRINT

of 3D printing users attest that 3D printing had a positive impact on their lead time.

3D PRINTING SOLUTION:

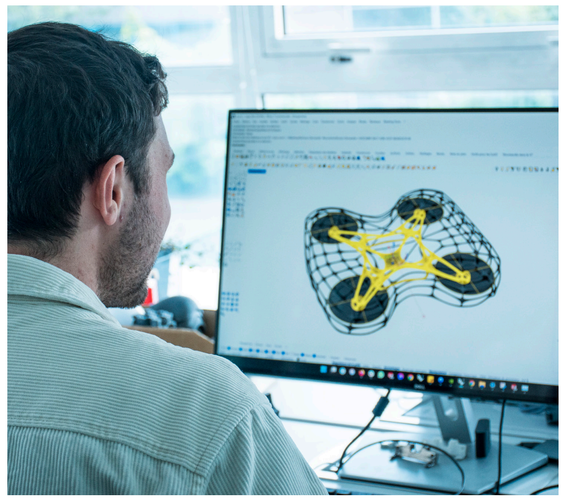
In terms of speed and quality, 3D printing appeared to be the best manufacturing process to meet Conscience Robotics' needs. In order to **stay reactive to the market's demand** and adapt to new trends, additive manufacturing gave them the flexibility and reactivity needed by shortening the time between the computer-assisted design (CAD) and the production of a first series.

Source: The State of 3D printing 2022

ROBOT PRODUCTION:

The creation of functional prototypes is one of the great advantages of 3D printing: **iteration is made easier, and the whole product development is accelerated.** Conscience Robotics quickly understood this and first used Sculpteo's 3D printing service to make prototypes, iterate, and test the applications of the robot.

But additive manufacturing is not only a prototyping technique. Thanks to more advanced materials, it is becoming a great alternative to traditional manufacturing techniques for production. The company also decided to use additive manufacturing for their first series and ordered **10 robot skins** as well as 10 pre-marking modules.



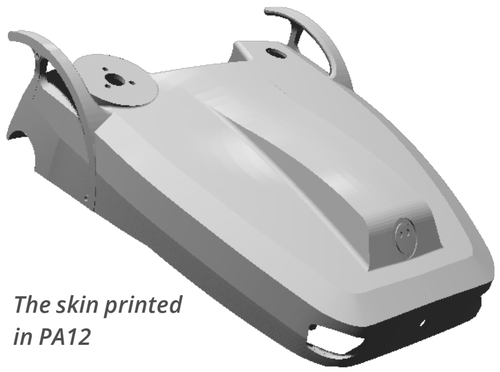
SCULPTEO STUDIO:

With the help of Sculpteo's design team (Sculpteo Studio), Conscience Robotics developed a **resistant** and **easy-to-print** design. Design for Additive Manufacturing is a great ally to optimize and strengthen your products! Here, 3D printing has improved this project because it was a fast process, and the parts were good-looking, strong, and light enough.

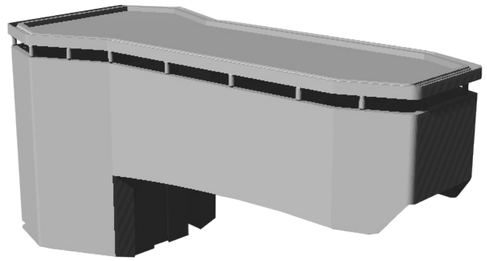
ADAPTED MATERIAL:

Conscience Robotics used **PA12** for the skin of their Bering robot for different reasons, this PA12 material is heat, weather, and shock resistant. It is also **light enough** and offers the possibility to print big parts.
Conscience Robotics also used **HP 3D High Reusability PP** enabled by BASF (or Polypropylene) for their tank, mainly because this material is resistant to corrosive products and allows for cleaning the paint inside the tank easily.

This is a well-known material in industrial manufacturing due to its good chemical **(good resistance to solvents)** properties, its water-tightness is a great asset to make reservoirs. With its low density, this material is the perfect choice for lightweight applications like this one.



The skin printed in PA12



The tank printed in Polypropylene (PP)

SUSTAINABILITY:

Sustainability is important for Conscience Robotics, as more companies are now looking for more sustainable manufacturing solutions. With additive manufacturing, less waste is produced during the prototyping process, as the additive process allows the use of the exact amount of material needed to produce the part.
For Conscience Robotics, 3D printing appeared to be one of the most ecological ways to prototype, using the minimum amount of material possible while maintaining the quality of the product.

Local production as well as material that can be easily recycled, like **Polypropylene**, are also important aspects for companies willing to implement more sustainability in their production. That's why choosing Sculpteo to produce their parts locally, in France, allowed them to be perfectly aligned with their values.

MATERIAL CHOICE & SUSTAINABILITY

MATERIAL ADVANTAGES:

The Multijet Fusion PA12 (or MJF PA12) is a great **versatile plastic**. This material is used to produce objects for many different industries using polyamide powder.
MJF PA12 has a high degree of impact resistance and good flexibility, which is perfectly adapted for creating the outer shell of a robot.

HP 3D High Reusability PP enabled by BASF is perfect for industrial uses, from pipes to machinery, but also to create reservoirs due to its great chemical resistance and water-tightness properties. Utilizing this material for additive printing is now opening up a plethora of new options and hastening many companies' transition to digital production. Designers, engineers, and enterprises can use PP to create complex 3D printed prototypes as well as finished items thanks to a low cost per part.

? DID YOU KNOW?

94%

3D PRINT

of the 3D printing users attest that 3D printing is an ally in improving sustainability

Source: The State of 3D printing 2022

“Working with Sculpteo was a very good experience. The team was reactive and available to answer any of our questions. We will certainly reorder new products there”

Iliès Zaoui - Founder & CEO of Conscience Robotics

Conscience
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