

# Cowspace | Project Description

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Cowspace, emerged from a captivating 4-month long Master project at the Royal Danish Academy. It is a strategic solution that reimagines sustainable coexistence between humans and plastics. Our journey involved design development, research, and prototyping. We developed a platform connecting product developers with suppliers, offering alternatives to virgin plastic. Developers upload 3D files, define attributes and carbon footprint preferences, and receive material suggestions. Cowspace addresses consumer demand and legislative push for low-carbon products. With verified suppliers, we streamline the transition to virgin-plastic-free solutions, reducing CO<sub>2</sub>e emissions. Transform ideas into sustainable realities effortlessly with Cowspace.

cowspace

Plastic Pavilion Student Awards | 2023 | ISAC LINDBERG & EMMA BONDESON



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# Project Description

**CowSpace emerged from a captivating 4-month long Master project at the Royal Danish Academy, driven by a bold mission: to develop a strategic solution to address the pervasive use of plastics. While the original objective called for envisioning a world without plastics, our project transformed into a thrilling challenge—to reimagine a world where humans and plastics can coexist sustainably.**

Through a process of strategic design development, prototyping, and final mockups, our team embarked on a creative journey. Delving deep into extensive research, we sought to comprehend the diverse applications of plastics and the complex challenges they present.

## BACKGROUND

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- Problem statement
- The hero and the villain
- Importance of sustainable product design

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## BUSINESS PLAN

- Unique Selling Point
- Supplier and material verification
- Market analysis
- Next steps
- Vision
- Team

**PLAST  
INDUSTRIEN**  
The Danish Plastics Federation



# Problem statement

**Our excessive plastic use and design choices have caused serious environmental problems.**

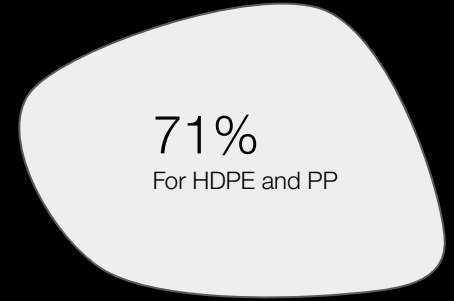
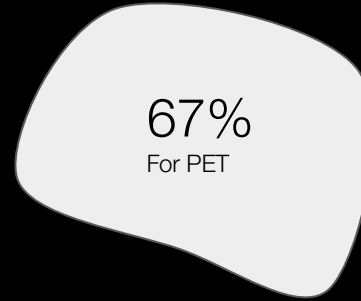
Plastic takes a long time to break down, leading to pollution in oceans and landfills. The convenience-focused design of plastic products is harmful. It's crucial to find sustainable alternatives with lower CO<sub>2</sub>e that prioritize both sustainability and convenience without harming the environment.

## 460 million tons of plastic waste by 2030

United Nations Environment Programme (UNEP) reports that around 299 million tons of plastic waste was generated in 2019 alone. This number is expected to rise to around 460 million tons by 2030 if no action is taken to address the issue.



A study done by Franklin Associates, with a focus on North America, showed that recycled plastic cut emissions over virgin material by



## The hero and the villain

Plastic, a double-edged sword in our modern world. It revolutionizes industries with versatility, affordability, and durability, enabling medical advancements, food safety, and transportation. However, its non-biodegradability and excessive production cause pollution, litter, and harm to wildlife.

**So, can we strike a balance between plastic's benefits and drawbacks for a sustainable future?**

## Virgin plastic production

When 1 kilogramme (kg) virgin fossil-based plastic product comes onto the market, it has already caused at least 2.9 kg of greenhouse gas emissions. Moreover, the same product will cause a further 2.7 kg of emissions when it is discarded and if it is incinerated.

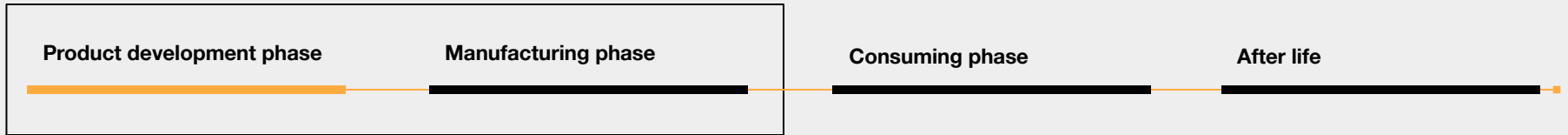
**Instead of inviting more virgin plastic to our world, why not make it easier to reuse what we already have?**

# Importance of sustainable product design

**Product developers play a vital role in reducing the environmental impact of products through sustainable design.**

This includes using recycled materials, extending product lifespans, and enabling easy recycling. Designing with plastics in mind safeguards ecosystems and secures a sustainable future. **The product development and manufacturing phases greatly affect a product's carbon footprint.**

## Product lifecycle



## What

**A platform that assists product developers in selecting an alternative to virgin plastic and connect them to suppliers.**

## How

**The product developer uploads a 3D file and defines attributes, manufacturing locations, and desired carbon footprint. Based on this information, the platform suggests materials with low or no virgin plastic and adjusts the 3D file to fit the materials properties.**

## Why

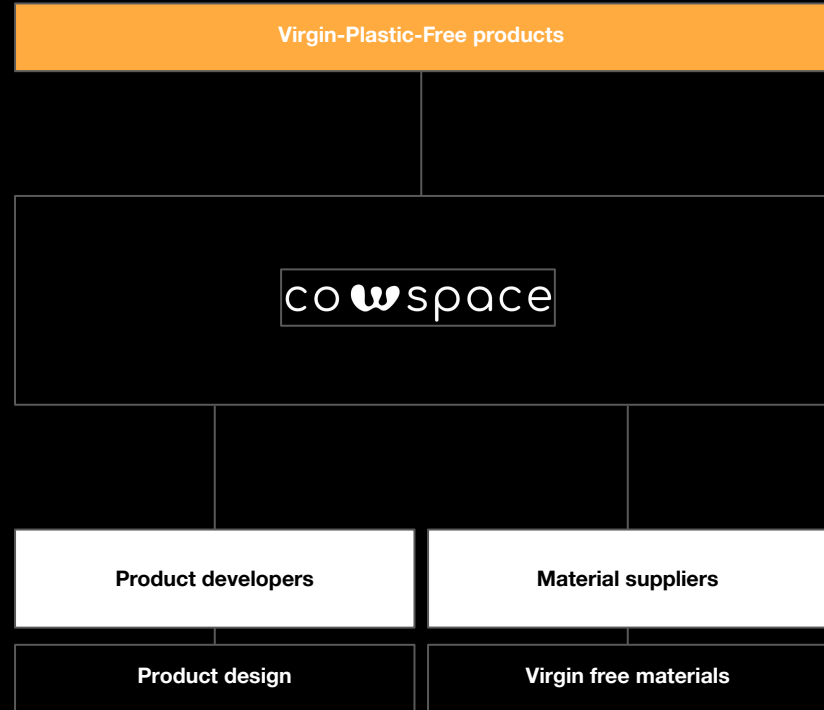
**With increasing consumer demand for products with low-carbon footprint and politicians pushing new legislations, designers need to prioritize virgin-free materials.**



## Facilitating Virgin-Plastic-Free products

**CowSpace is a platform that connects product developers and suppliers, making the transition to low virgin-plastic-free products easier.**

By providing a network of verified suppliers, we streamline the journey towards solutions with low CO<sub>2</sub>e emissions. With CowSpace, product developers can transform their ideas into sustainable realities effortlessly.



# Target customers

Cowspace caters to two primary target customer groups, each with their own subcategories. Although the platform has the potential to serve a wide range of users, our initial approach is to narrow our focus and conduct targeted user studies to develop a platform that meets specific needs within a niche market.

## **Product developers** (Consumer products)

Region: Nordic countries

Size: Small-medium enterprises

Sustainably conscious but wants to develop products for a reasonable price

## **Material Suppliers**

Region: Nordic countries

Size: No limits

Sustainably conscious suppliers

### **Design agencies**

Persona example:

Cph-based design agency with 7 in-house designers specializing in consumer electronics

### **Entrepreneurs**

Persona example:

Aarhus-based entrepreneur developing and selling headphones

### **Low virgin material suppliers**

Persona example:

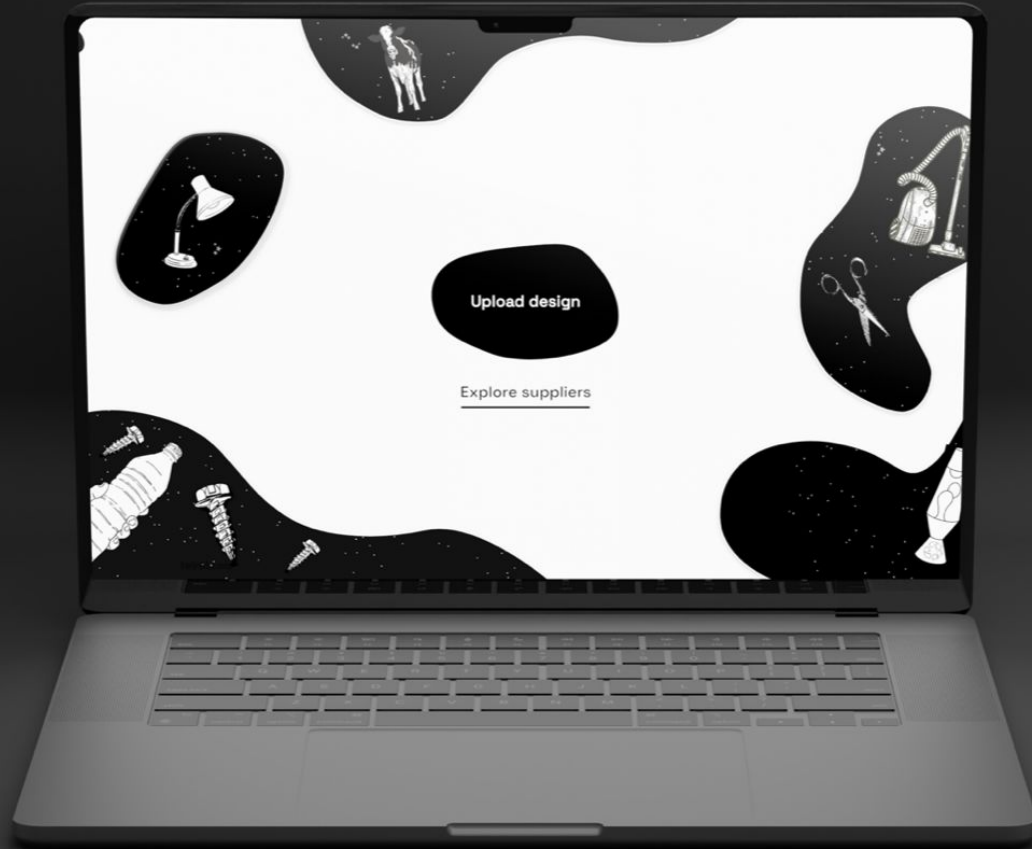
Stockholm-based supplier providing base material with 80% recycled PLA.

### **Innovation suppliers**

Persona example:

Helsinki-based supplier offering algae bioplastic, an innovative material with low CO<sub>2</sub>e emissions.

## The platform



For a comprehensive walkthrough of Cowspace, please click the following link:

<https://youtu.be/umBtoq6MbUI>

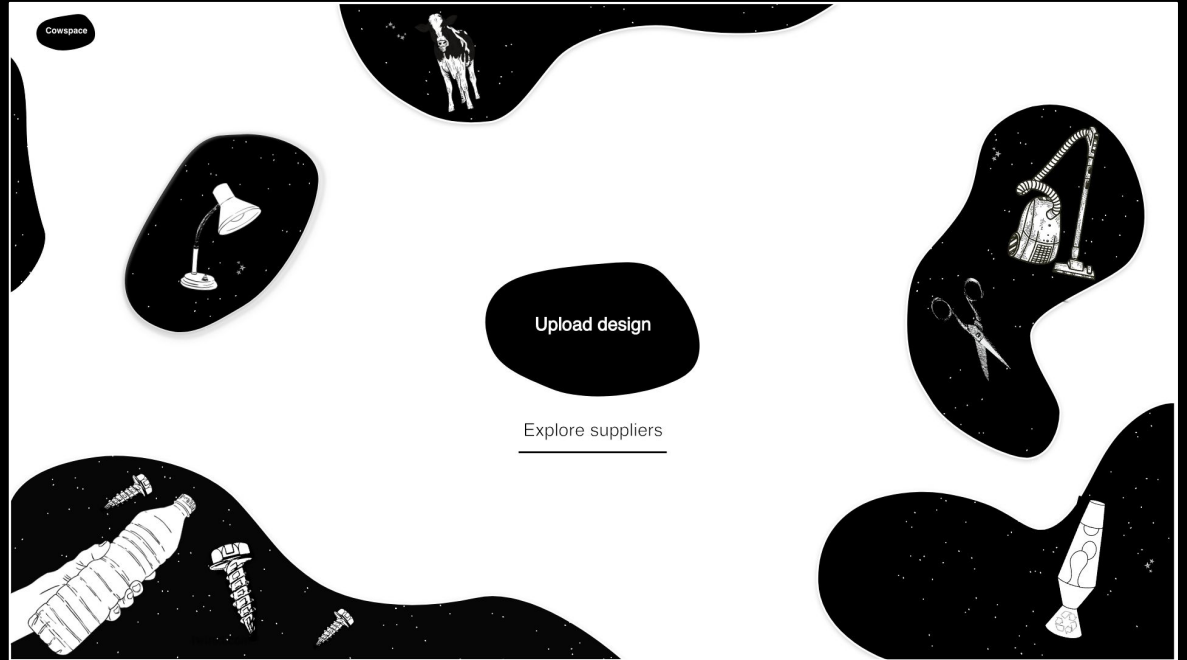
## Start page

The platform is divided into two separate categories: Product developer and supplier.



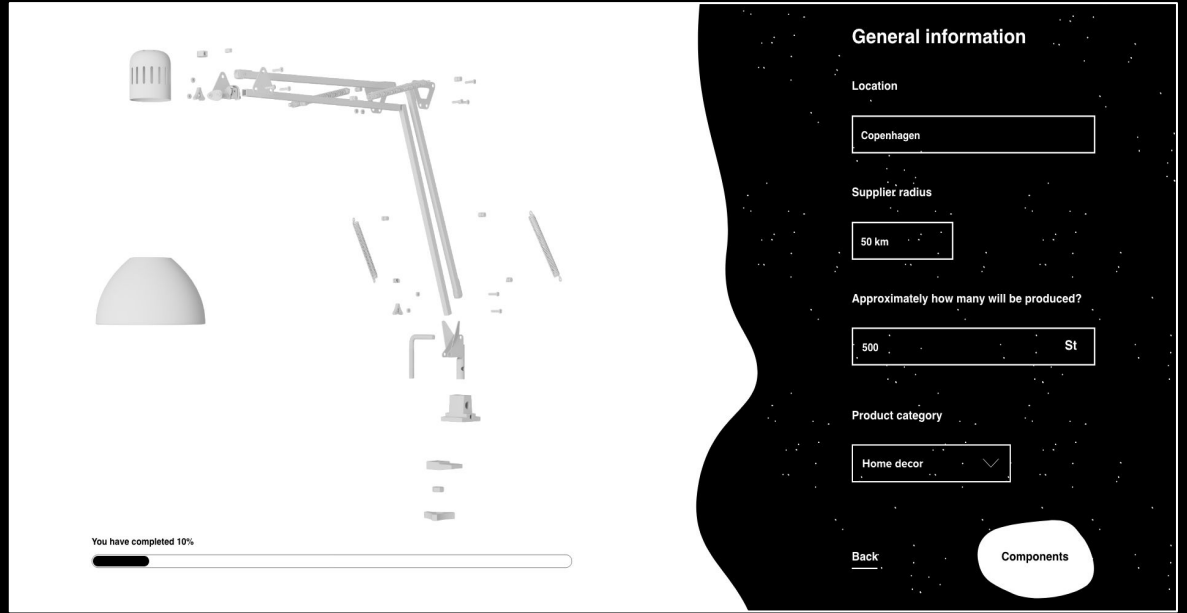
## Upload Design

The first step for the product developer is to upload their 3D model of their design.



## Data input

In order to calculate emissions and find a suitable supplier, each components needs to be defined.



**General information**

Location  
Copenhagen

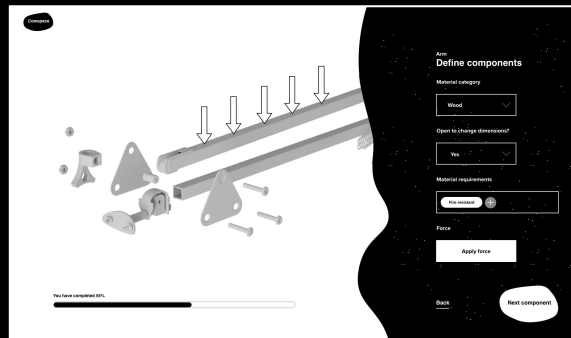
Supplier radius  
50 km

Approximately how many will be produced?  
500 St

Product category  
Home decor

You have completed 10%

Back Components



**Define components**

Material category  
Wood

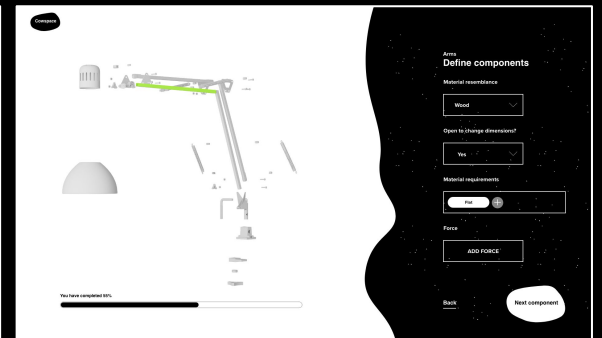
Open to change dimensions?  
Yes

Material requirements  
No texture

Force  
Apply force

You have completed 10%

Back Next component



**Define components**

Material category  
Wood

Open to change dimensions?  
Yes

Material requirements  
No texture

Force  
Add force

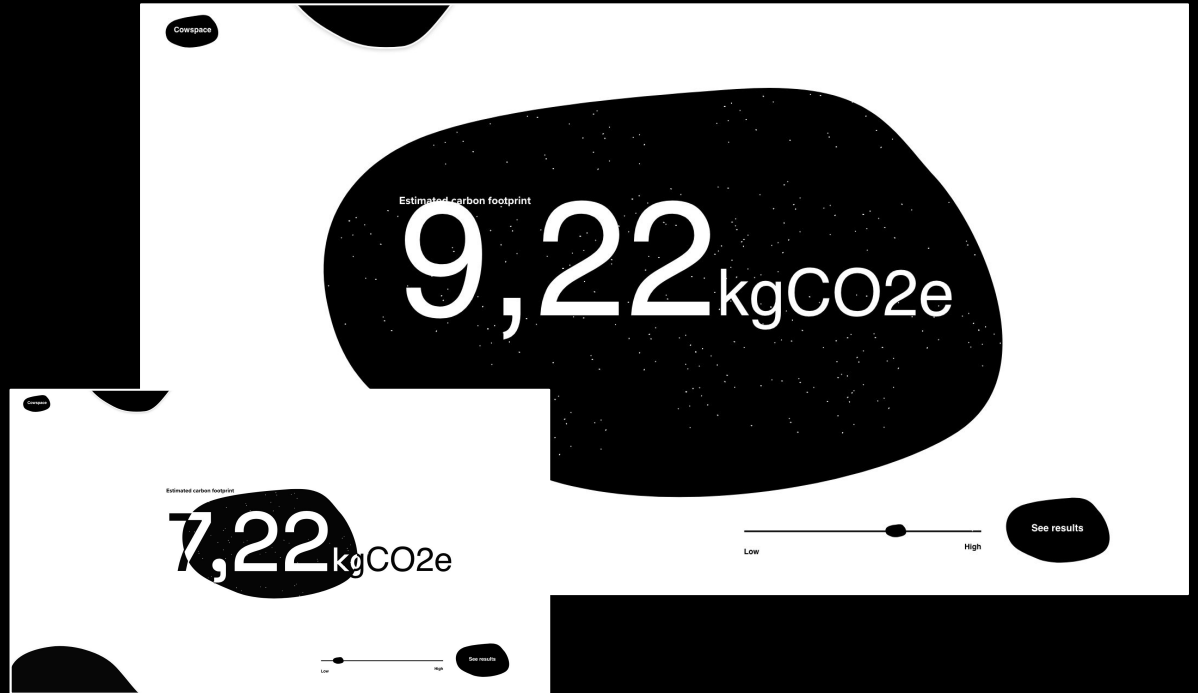
You have completed 10%

Back Next component

## CO2 Emission calculator

Based on the given information, Cowspace will estimate the products carbon footprint.

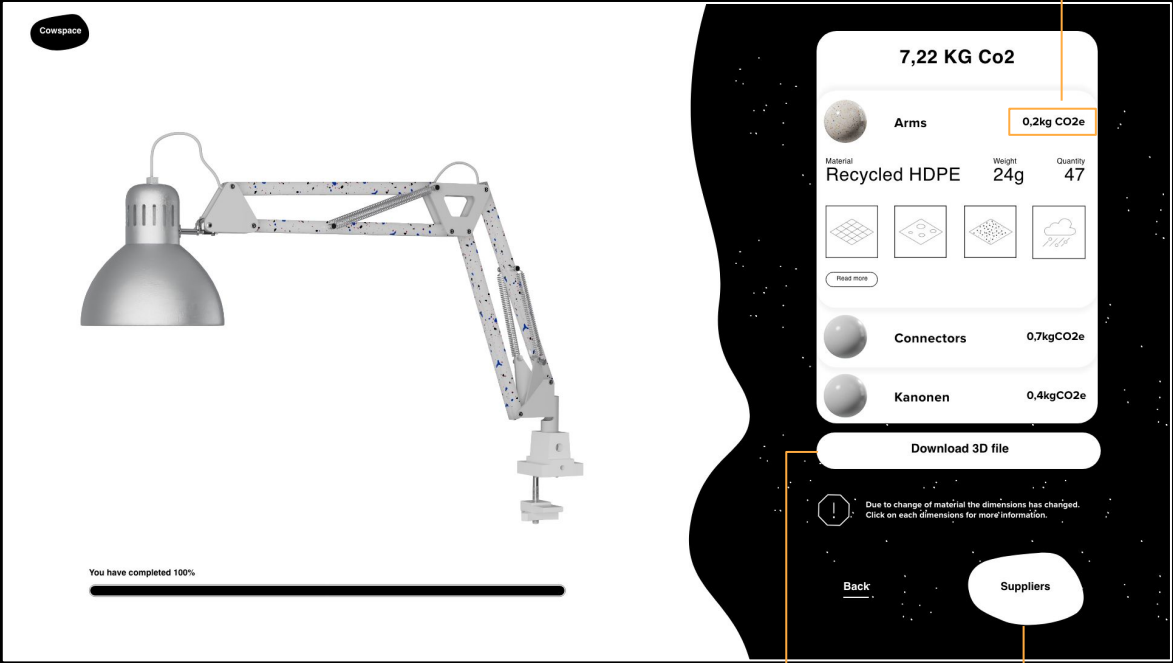
This can be modified to meet the desired carbon footprint. Depending on the amount accepted, will determine the materials suggested in the following step.



### Material and design suggestion

Once Cowspace has all the necessary information, it will suggest materials that meets the criterias set by the product attributes and desired carbon footprint.

At this stage there are two different options; to download a 3D file of the new design and explore suppliers who provide the materials needed.



Download new 3D file

Explorer suppliers



## Suppliers

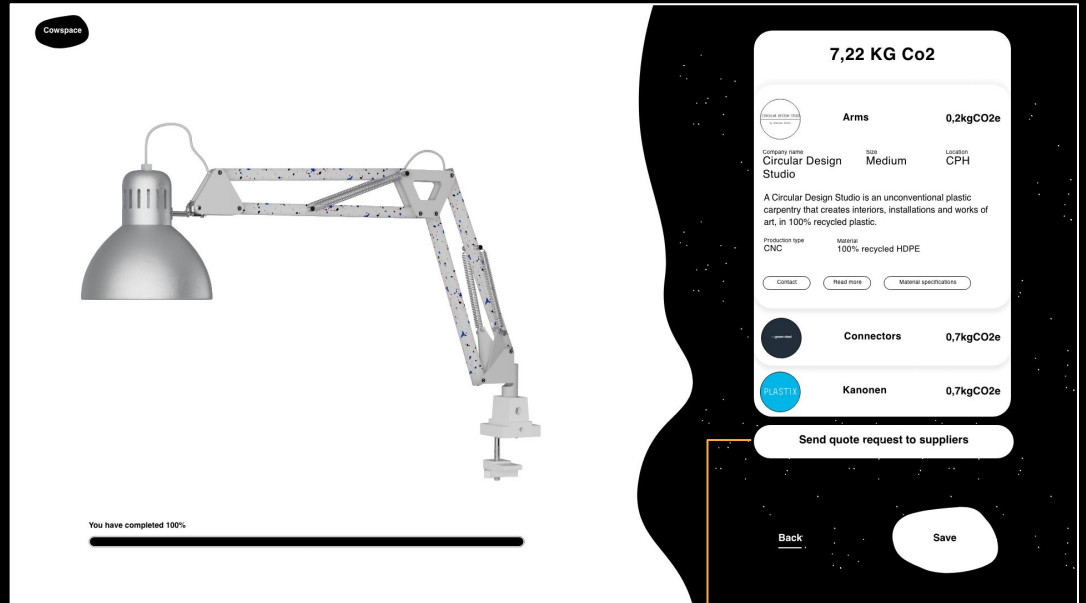
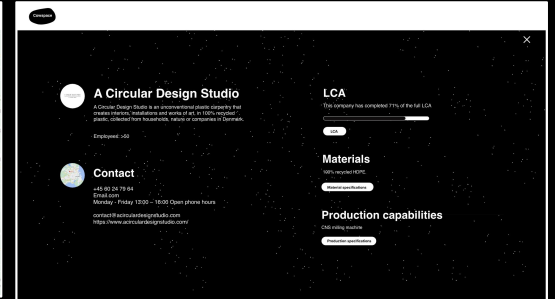
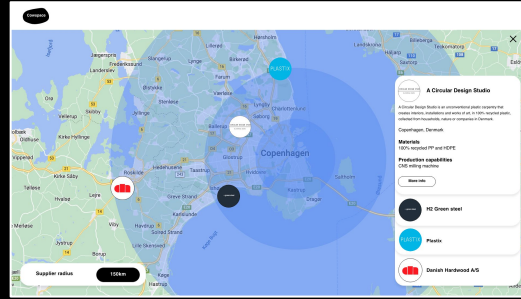
For each component, a local supplier will be suggested based on the desired manufacturing location.

The product developer is presented with a comprehensive overview of the supplier network.

## Supplier profile

Direct contact possibility to streamline the production process

Access to company LCA and manufacture process.



Send direct quote to suppliers simultaneously

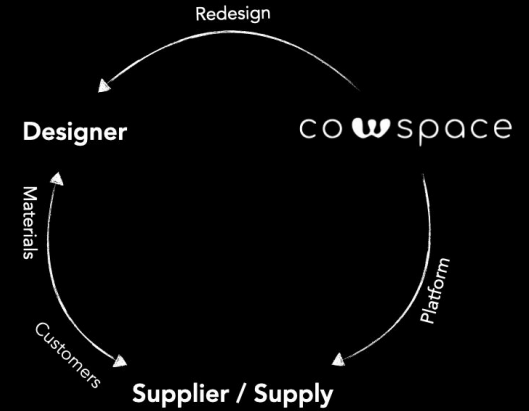
cow space



# Think like the tool

Using the IKEA Tertial lamp as a reference, we developed a prototype that demonstrated how the tool could display various design dimensions based on the suggested material. This process provided us with valuable insights into the tool's possibilities and limitations.

**The objective was to discover alternative materials for the lamp that possess similar qualities, maintain the design dimensions with minimal alterations, and emit lower levels of CO<sub>2</sub>e.**



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## Product developers responsibility

Calculate transportation emissions.

Manufacturing process

Final design choices

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## Suppliers responsibility

Contribute with transparent data

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## CowSpace's responsibility

Suggest materials that have a lower CO<sub>2</sub>e emission

Show local verified suppliers

We utilized the Ikea Tertial lamp as a visual demonstration to showcase the theoretical functionality of our platform. This lamp served as a representation of how our platform would operate in practice.

**55 components**

**7.22kr CO<sub>2</sub>e**



**Scale x2**  
3D printed: Kanonen



**Original**  
Upper lamp part



**4mm offset**  
3D printed: Upper lamp part



**Original**  
Big lamp head



**Original dimensions**  
3D printed: Big lamp head



**Longer versions**  
Screws



**Scale x2**  
3D printed: Klossen



**Original dimensions**  
3D printed: Kanonen



**Original**  
Kanonen



### Original lamp

ABS, aluminum, steel  
10 mm x 10 mm x 340  
mm

7.22kg CO<sub>2</sub>e

### Prototype 2

Recycled HDPE, PP and PLA,  
ABS, aluminum, steel  
10 mm x 10 mm x 240 mm

Structure: Fragile

### Prototype 3

Recycled HDPE, PP and  
PLA, ABS, aluminum,  
steel

15 mm x 15 mm x 240  
mm

4.24kg CO<sub>2</sub>e

### Prototype 4

Wood, ABS, recycled  
PLA, aluminum, steel  
15 mm x 15 mm x 270  
mm

Structure: Stable

4.22kg CO<sub>2</sub>e

### Prototype 5

Recycled HDPE, PP and  
PLA, ABS, aluminum,  
steel  
20 mm x 20 mm x 270  
mm

Structure: Extremely  
stable. Significant  
change in design.

23%

smaller footprint

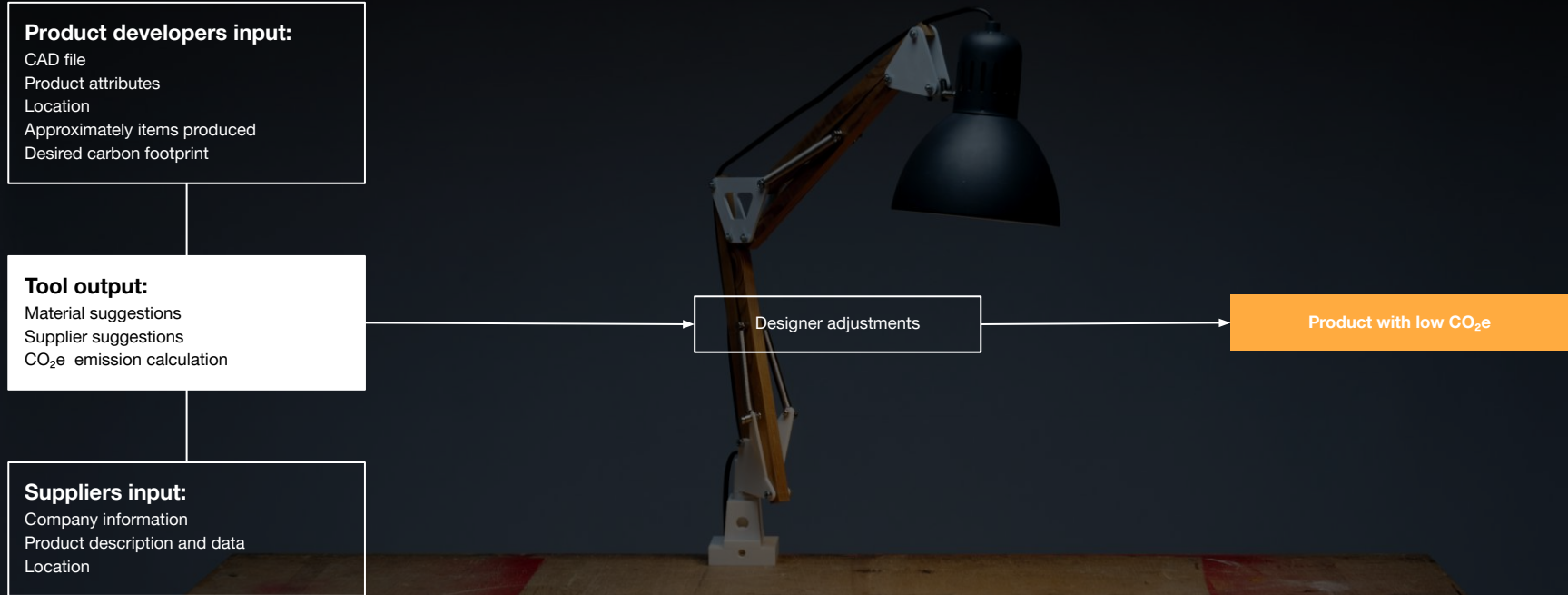
After our efforts to reduce the CO<sub>2</sub>e emissions of the Ikea Tertilal Lamp, we succeeded in achieving a 23% smaller footprint.

After thorough prototyping, **Prototype 4** emerged as a potential design generated by our tool. This lamp maintains similar dimensions but incorporates local wood, recycled plastics, and steel in its construction.



23%  
smaller footprint

# Product development cycle



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## Unique selling points

- > Send quotes simultaneously.
- > User-friendliness.
- > Compare CO2 emissions.
- > Adapt design/dimensions based on material.
- > Keep communication in one place.

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## Material Suppliers benefits

- > Expanded market reach for suppliers.
- > Increased visibility among environmentally conscious designers.
- > Positioning as leaders in sustainable practices.
- > Streamlined communication and collaboration.
- > Access to innovative projects and ideas.
- > Competitive advantage through sustainable offerings.

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## Product developers benefits

- > Saves time and resources by streamlining the design process.
- > Raises awareness of different materials and their CO<sub>2</sub>e emissions
- > Empowers designers to prioritize sustainability without compromising creativity.
- > Simplifies the access to local suppliers for sustainable sourcing.



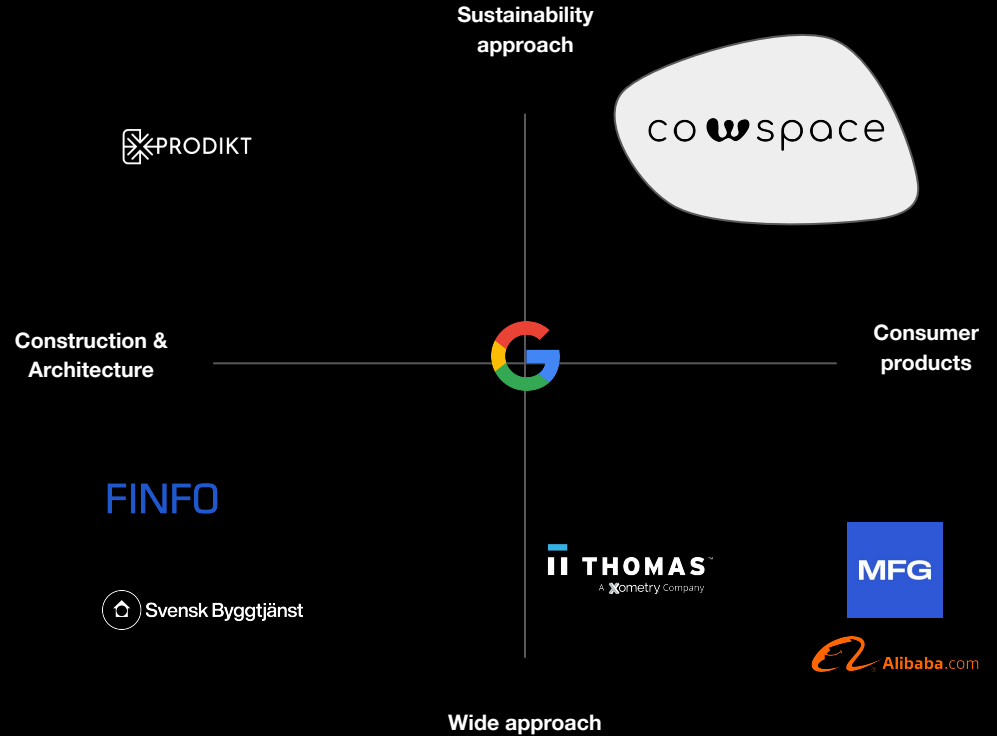
## Supplier verification process

In order to ensure and maintain high quality standards, each company needs to provide transparent information to be accepted to the platform. This process involves conducting thorough assessments to ensure the reliability and quality of the materials provided.



# Market analysis

Product developers now heavily rely on Google for supplier searches and word-of-mouth recommendations. However, while certain agencies offer sustainability-focused guidance in architecture, construction, and textiles, **sustainability is often overlooked in product development.**



## Next steps

### > Growth and strategic partnership

We've expanded our team with a talented business developer, Elsa, to drive our growth and strategic partnerships.

### > Platform and tool development

We're actively developing the platform and testing a prototype that integrates design, sustainability, and user-centricity for the Cowspace platform. Through user feedback, we ensure a seamless integration of these elements

### > User testing

The next step is user testing to gather valuable feedback from suppliers and product developers. This will help us refine and enhance the Cowspace platform based on their needs and expectations.



**Our mission,** provide essential resources for sustainable consumer product development.

**Our vision,** empower sustainable product development.



# Team



**Emma Bondeson**

Specializing in sport product development and sustainable design

BA - Industrial Design  
MA - Strategic Design and Entrepreneurship



**Isac Lindberg**

Specializing in digital tools such as 3D modeling and Virtual Reality.

BA - Industrial Design  
MA - Strategic Design and Entrepreneurship



**Elsa Sidemo**

Specializing in management and business model innovation within tech

BA - International Management  
MSc in Business and Management



A photograph of a desk lamp on a wooden table. The lamp has a white base, a wooden arm, and a black shade. The text 'cow space' is overlaid in white, lowercase letters. The 'o' and 'w' are stylized, with the 'w' having a white heart shape inside it. The background is a dark blue gradient.

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