

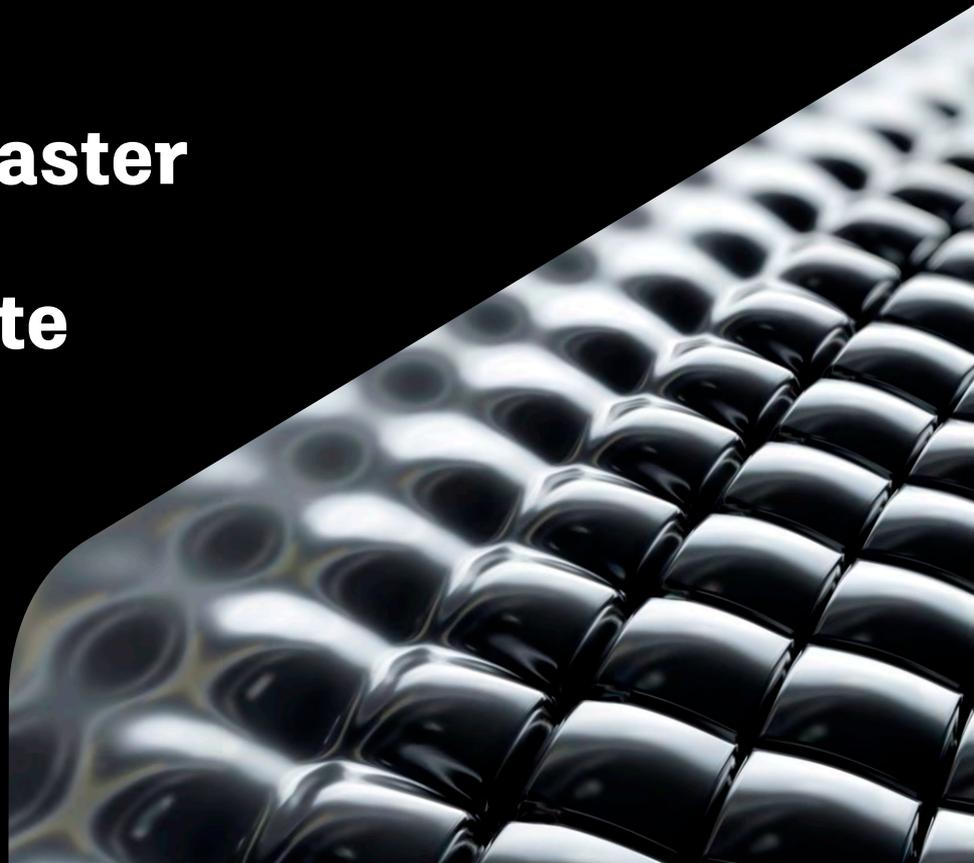


# Building more sustainable products, faster with Fusion 360 and Makersite

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# Class Agenda



**Why does sustainability matter? And how to tackle it in product design?**



**Our Makersite – Autodesk Partnership**



**Live Demo with PEMBREE**

# The Class Objectives



Understand how to manage the impacts of a product through design decisions



Discover how Makersite and Autodesk are partnering to bring sustainability insights into early product-design phases



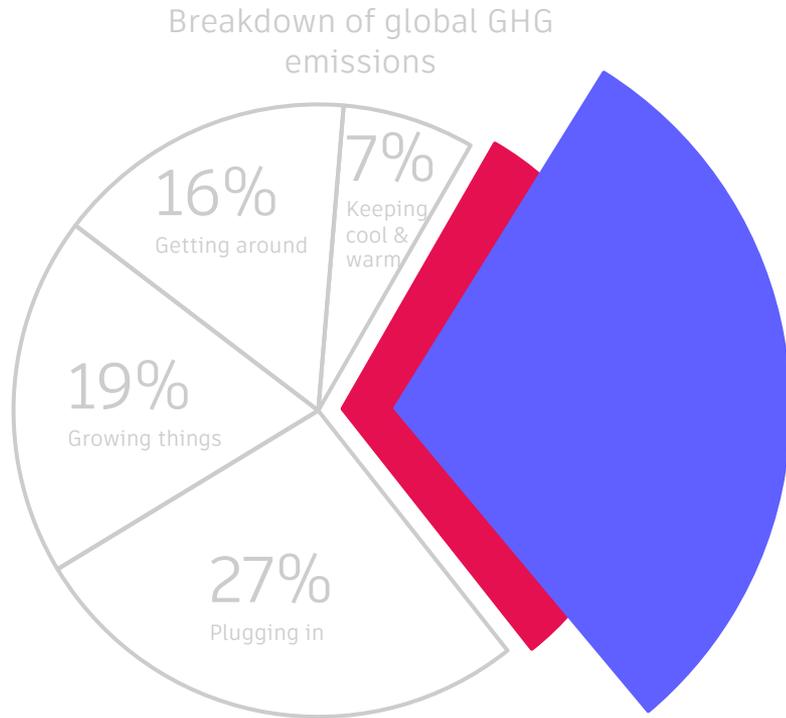
Feel empowered and able to make a difference with the new Autodesk Fusion 360 Makersite plug-in



# **Why does sustainability matter?**

And how to tackle it in product  
design?

# What We Make Has The Biggest Impact



31%

of total greenhouse gas emissions come from what we make

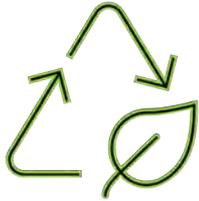
80%

of greenhouse gas emissions are embedded at design stage

Source:

- Gates, B. (2021). How to avoid a climate disaster: The solutions we have and the breakthroughs we need. Allen Lane.
- McKinsey (2020) 'Design cost-effective, carbon-abated products with resource cleansheets'

# How We Make It (Design) Can Be Challenging



As designers, you feel responsible for the sustainability of our products



Product innovation is slow, and as designers you are dependent on others for data to influence your design choices



There is a lack of appropriate tools to empower you to take fast and meaningful design decisions

“

Twenty years ago, a designer would only think about the head of the product: How do we produce it? How can we sell it? How will people use it?

I think more and **more designers now look at the tail of the product, how will it be thrown away and what's going to happen after that.**

-Sept 2019

**OKI SATO**

Head of Design

n e n d o



“

Decision makers are head of functions or teams from Innovation, Design, R&D, Procurement, IT etc. **For big companies it can be a pretty complicated process**, especially when the company business covers industrialization, production and manufacture and overall cost, service and training, hardware and software, and maintenance etc.

Designer @ Philips

**PHILIPS**





We desperately need tools using AI to make indications quickly **on materials and how to make things more circular**. It's just too complex for our human brain.

-April 2020

TIM BROWN  
Chair



# Sustainable Design Principles exist as a tool to help

However, those lack the rigor of quantitative assessment

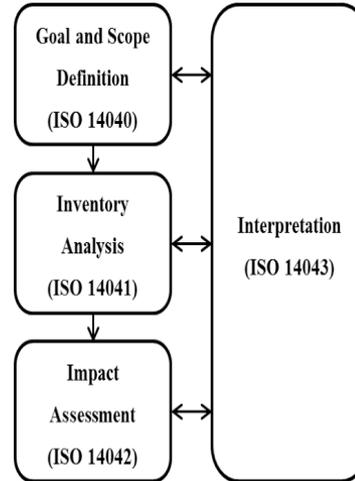


# Lifecycle Assessment (LCA) adds the quantitative rigor

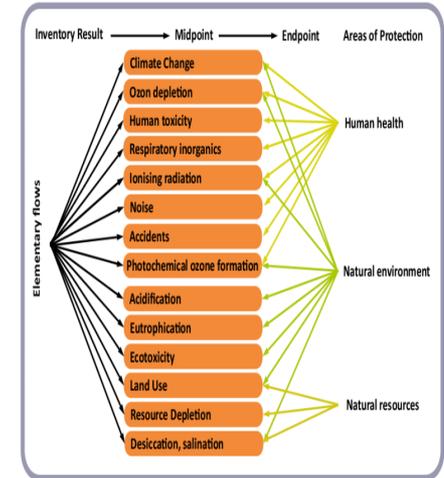
The “golden standard” of impact measurement



Lifecycle



LCA phased and standards



Typical mid and end-point impact categories

# But LCA comes with its challenges too



Complex –  
requires LCA  
experts



Disconnected  
from the product  
design process  
and designers



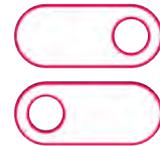
Done too late in the  
product  
development  
process



Lacking data to  
be accurate and  
actionable



Often expensive,  
long, hard to do



Disconnected to  
other type of  
assessment (cost,  
compliance, etc.)



# **Our Partnership**

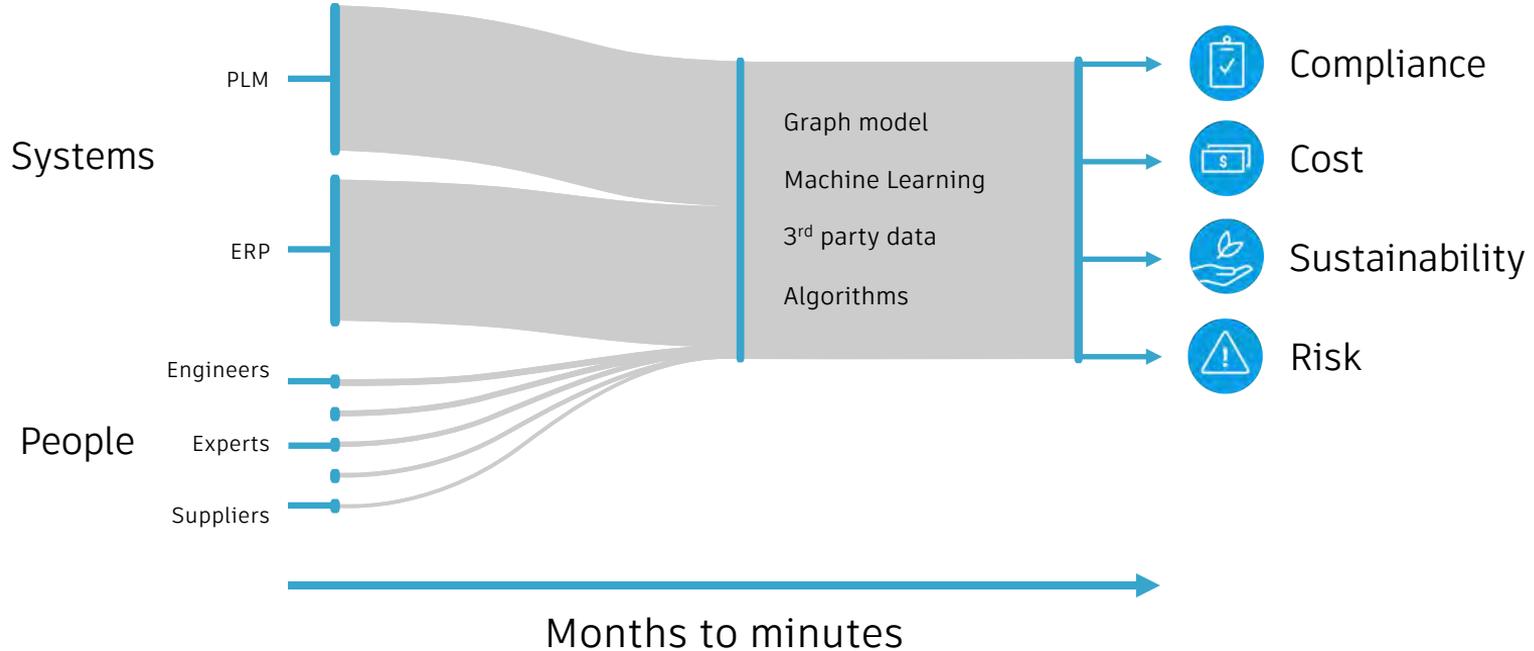
Makersite - Autodesk



A software-as-a-service provider based in Germany  
Delivering AI, data and apps  
To power sustainable product and supply chain  
decisions



# Solution: digital twins of how stuff is made



# We started in 2018, and since then....

15+ Awards



35 Enterprise Customers



75+ years experience



Founder



Services & Data



Engineering

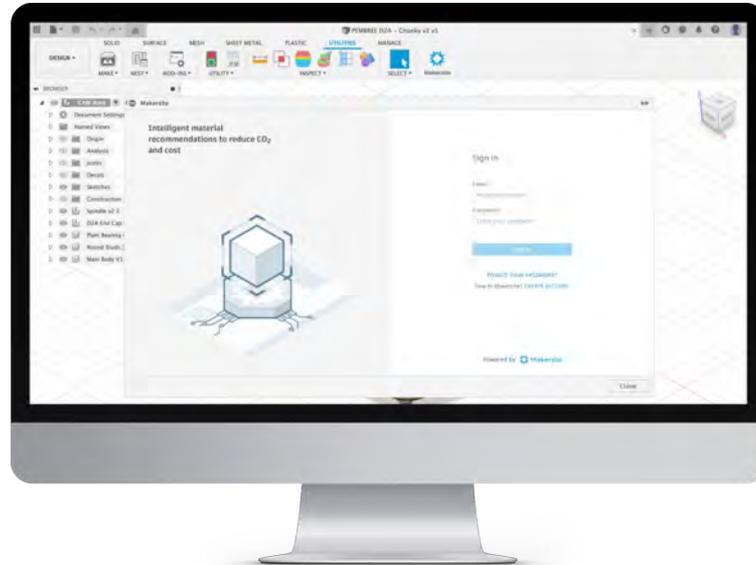


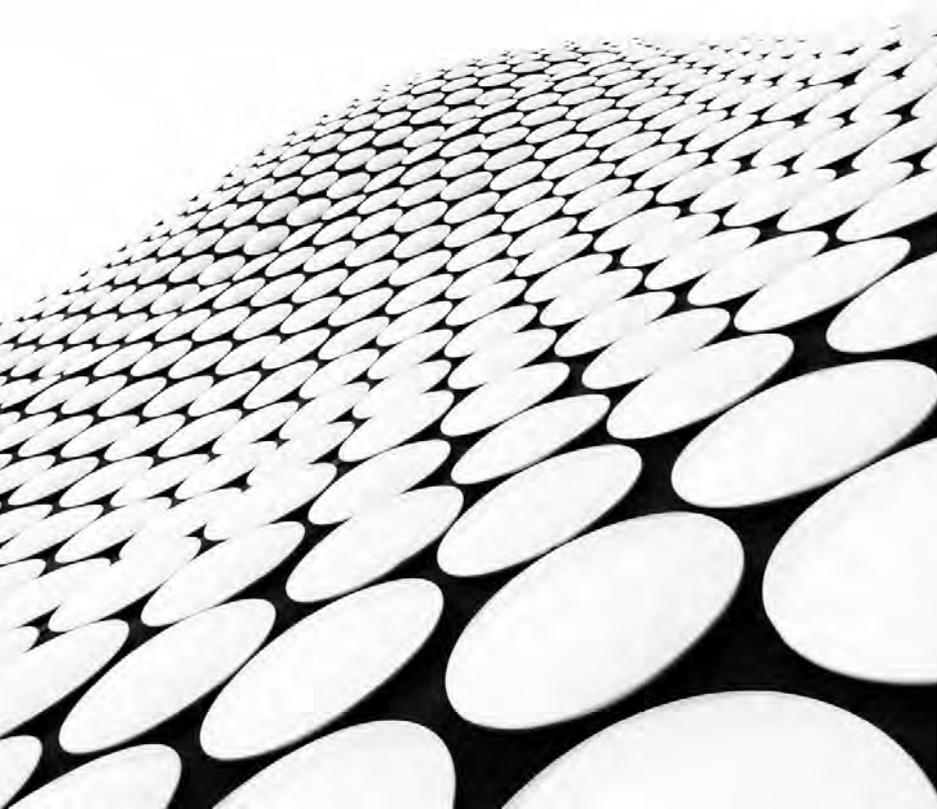
Sales & Marketing



Operations

# Our Partnership





# Our Shared Vision



Engineers hold the keys to solving our sustainability problem



Life Cycle Approach is key to making the right decisions about products and supply chains



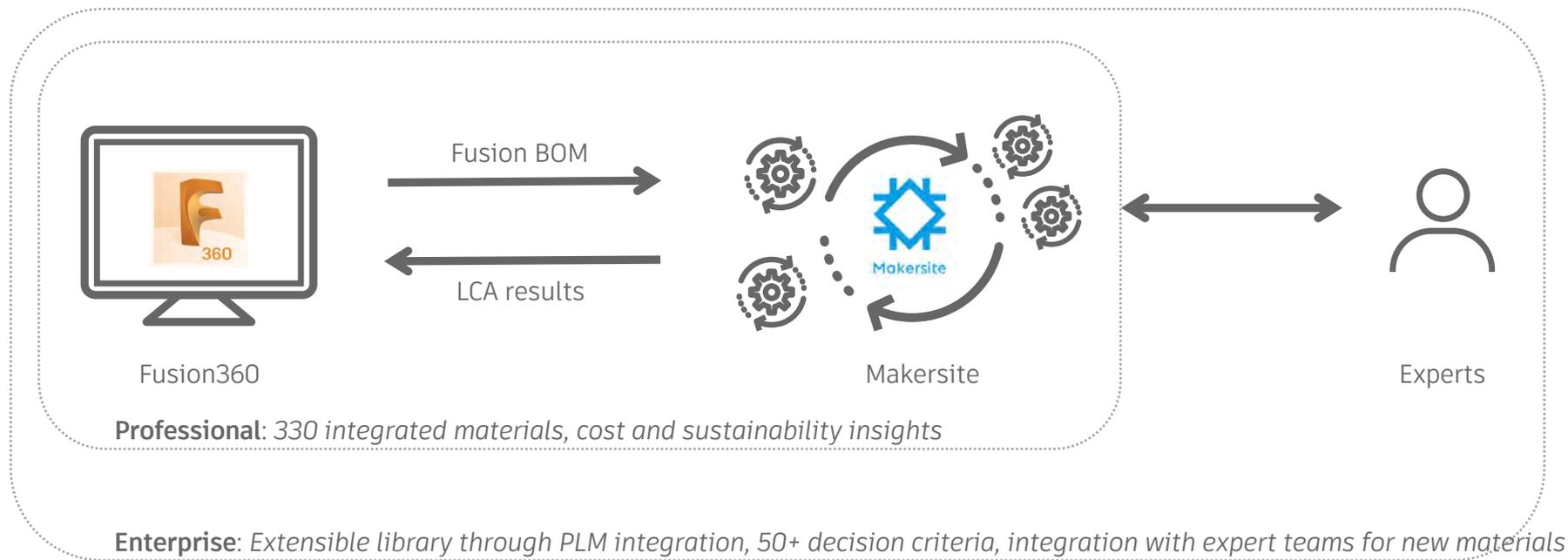
CAD is the best environment to enable those decisions about product designs

# Our Mission

To enable every product designer to make high-conviction decisions based on a broad set of criteria, in real-time by leveraging the synergy between Autodesk's leadership in Design and Makersite's leadership in data & insights



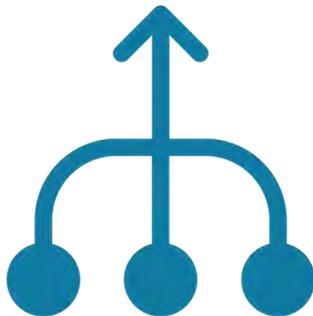
# Our Vision



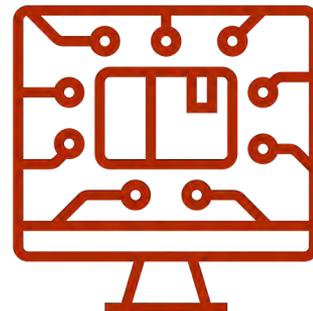
# Our Ultimate Outcomes



Enabling engineers to  
build more sustainable  
products faster



Connecting disjointed  
workflows, people &  
expertise



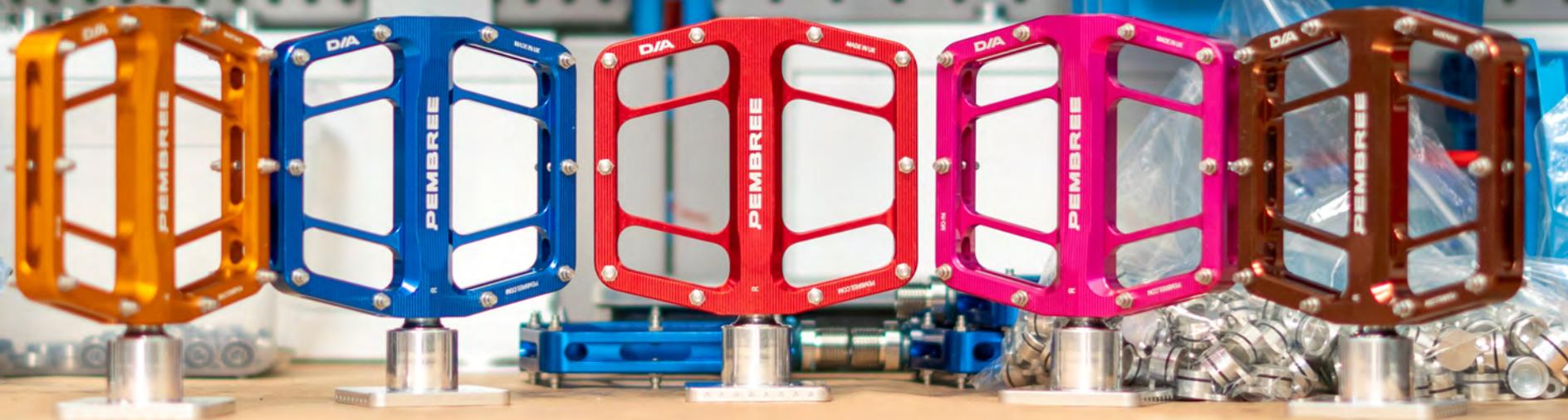
Making digital product  
passport the new norm



**Live demo with  
PEMBREE**

## Who is PEMBREE?

—  
We are a UK based manufacturer of high-performance mountain bike components that don't cost the earth.



# OUR MISSION



To become a global leader  
in ethical, transparent and  
ecologically sustainable  
manufacturing





## Our Approach

—  
Passively influence the mountain bike industry with products that are high performing, sustainable, durable, locally manufactured, and sensibly priced.





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Passively influence the mountain bike industry with products that are high performing, sustainable, durable, locally manufactured, and sensibly priced.

Our  
Partners

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# Our Lifecycle Analysis

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Extraction  
of raw  
material

---



Manufacture of  
raw material

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Manufacture of  
parts at PEMBREE/  
supplying partners

---



Transport to  
customer

---



Use & Servicing

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Recycling at  
end of life

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Why this  
approach?

# THE FUTURE



**Let's see the Fusion360  
Makersite Plug-in  
in action**

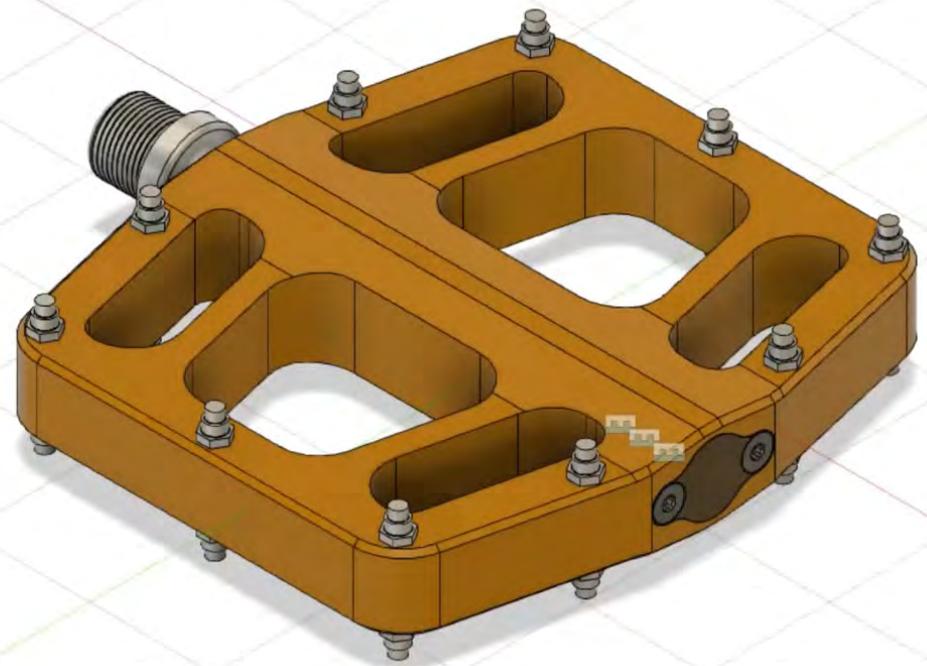
DESIGN ▾

SOLID SURFACE MESH SHEET METAL PLASTIC UTILITIES MANAGE

MAKE ▾ NEST ▾ ADD-INS ▾ UTILITY ▾ INSPECT ▾ SELECT ▾ Makersite

BROWSER

- CAM Root
- Document Settings
- Named Views
- Origin
- Analysis
- Joints
- Decals
- Sketches
- Construction
- Spindle v2:1
- D2A End Cap v1:1
- Plain Bearing v1:1
- Round Studs:1
- Main Body V1:1



COMMENTS

Navigation icons: pan, rotate, zoom, and other view controls.

Bottom status bar with various application icons and a progress indicator.

# The benefits



Getting immediate  
feedback on design, at  
the fingertip



Understanding &  
prioritizing hot spots to  
tackle



Explore alternatives and  
open discussions with  
suppliers



**What's next ?**

# Learn more!

- You are interested in learning more?
  - Scan this QR code and fill up this form and we will keep you up to date!
- The beta version of the Fusion360 Makersite plug-in will be soon available to a limited number of users
- During AU, go to the Factory Live Event to see the plug-in in action



URL: <https://makersite.io/autodesk-powered-by-makersite/>

**What's the largest  
impact you can  
make?**



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