Deep Learning for Engineering Intelligence

FROM FUNCTIONAL REQUIREMENTS TO GROUNDBREAKING PRODUCT DESIGNS

Neural Concept

Deep Learning for Engineering Intelligence

Overview

- **Pioneers & Leaders** in Deep Learning for Engineering since 2018
- First to come on the market with 3D DL Surrogates and Generative models
- Technology spin-off from **EPFL**
- Team of **65 and growing**

Strong sectors

- Automotive OEMs. 50% of Japanese OEMs, 50% of German OEMs as customers
- Automotive suppliers. 35% of top 30 suppliers as customers
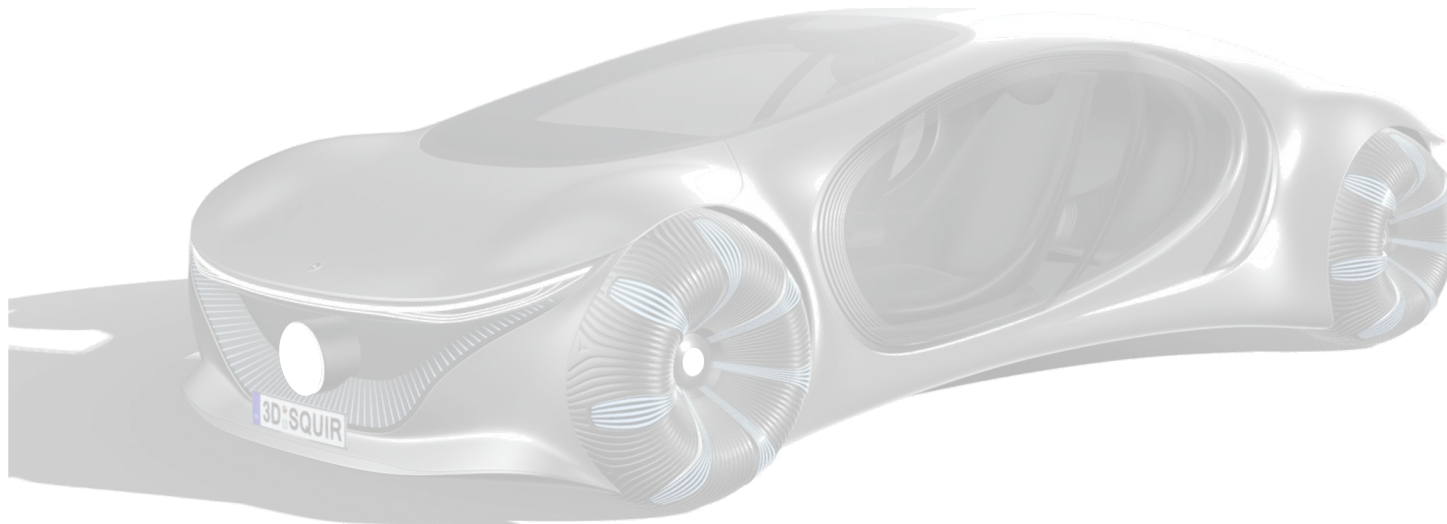- Other relevant markets: Tech, Aerospace, Micro-Electronics.

Engineering companies are facing unprecedented challenges

Design faster and innovate better

Industrial companies need
to keep up with **accelerating technological innovation and growing competition.**

Need to **develop hardware at the pace of software** (3x faster) to beat the competition

↓

Shorten design cycles

Increase performance

↑

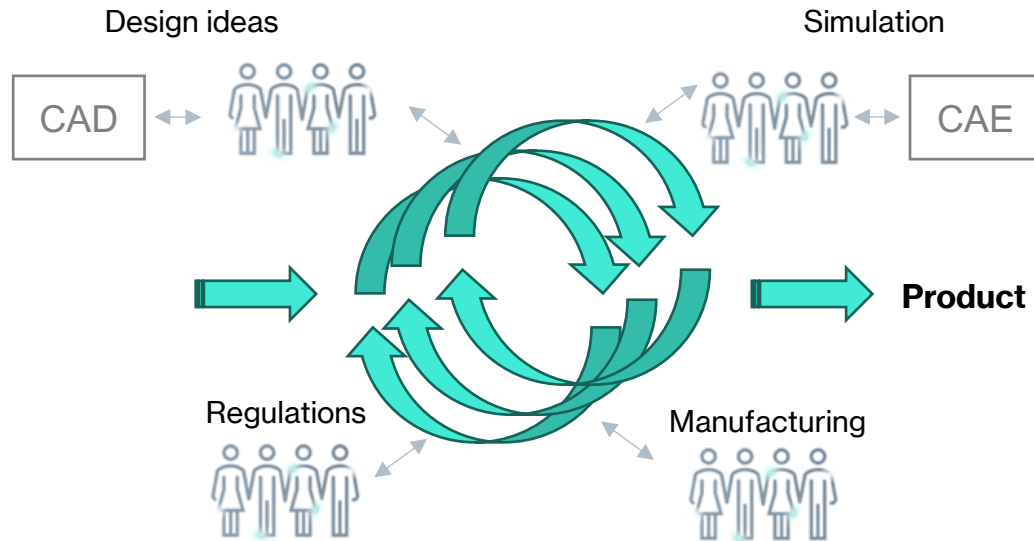Need to invent new technologies to **solve societal and environmental challenges**

Industrial companies need to keep up with accelerating technological innovation and growing competition
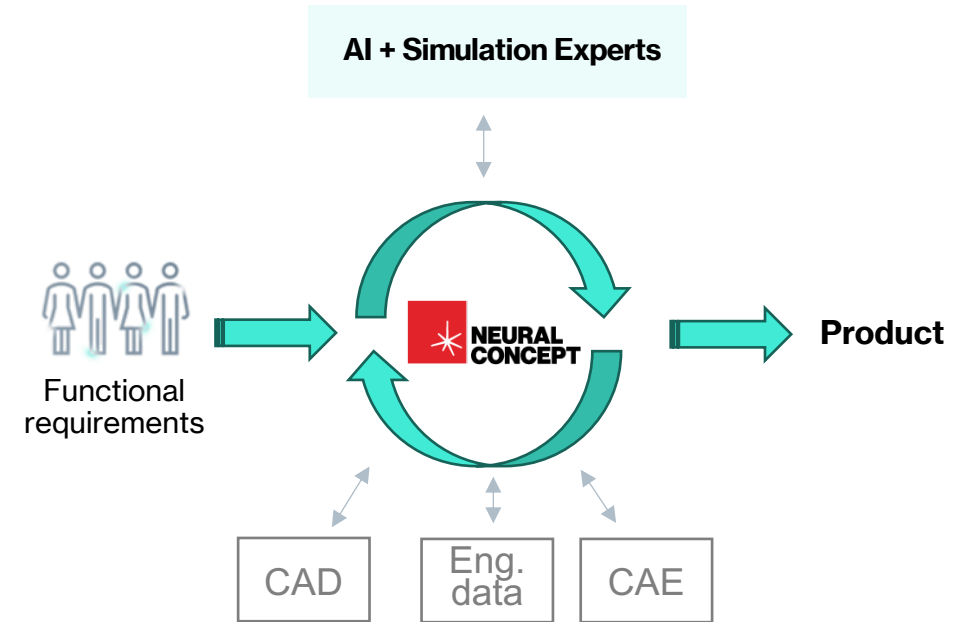
Only one way to achieve this transformation

From product requirements to groundbreaking product designs with AI

Before Engineering Intelligence
Detailed Design in **weeks**

Design ideas

CAD

Simulation

CAE

Product

Regulations

Manufacturing

With Engineering Intelligence
Detailed Design in **minutes**

AI + Simulation Experts

Functional requirements
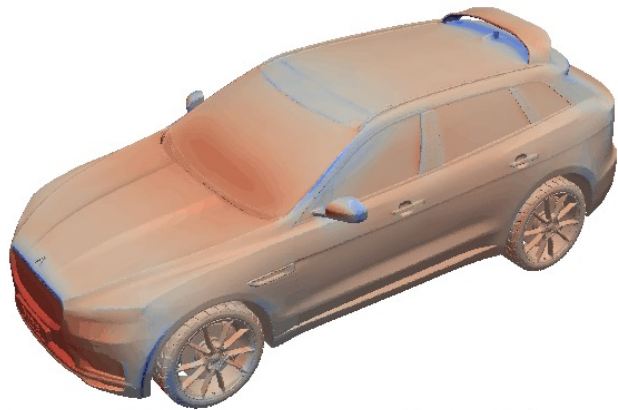
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Product

CAD

Eng. data

CAE

Endless iterations between designer and simulation teams for component designs are delegated to intelligent algorithms driving CAD/CAE/PLM autonomously
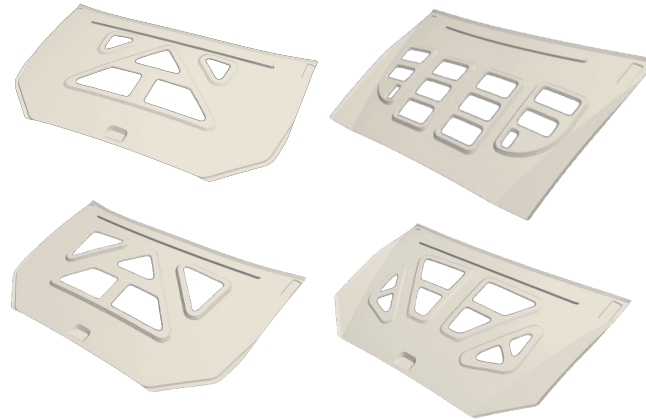
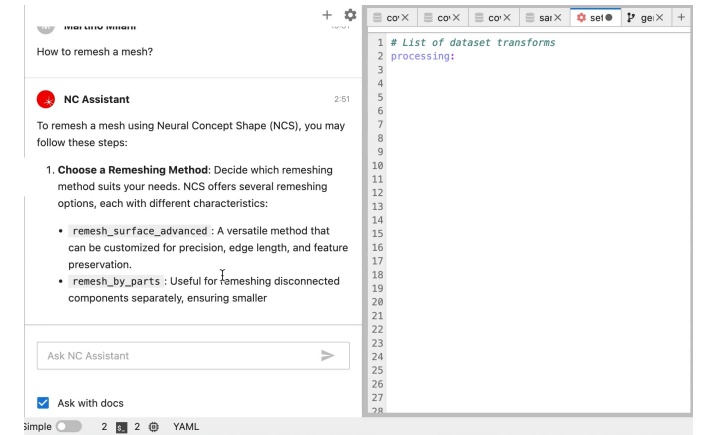# Made possible by recent technology breakthrough

Combining engineering data with deep-learning opens incredible technological possibilities

Physics-based predictive models allow to simulate **10 to 10'000 times faster, directly from 3D CAD**

Deep Generative models output plausible and innovative geometries at **100/min rate**

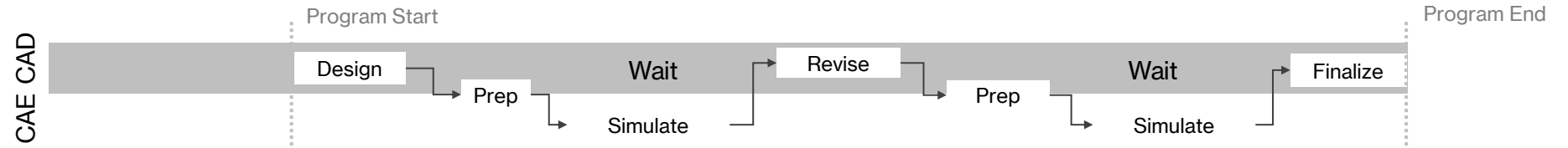Large Language Models are redefining the **CAD and CAE User Experience**

These technological evolutions are bringing a paradigm shift in engineering

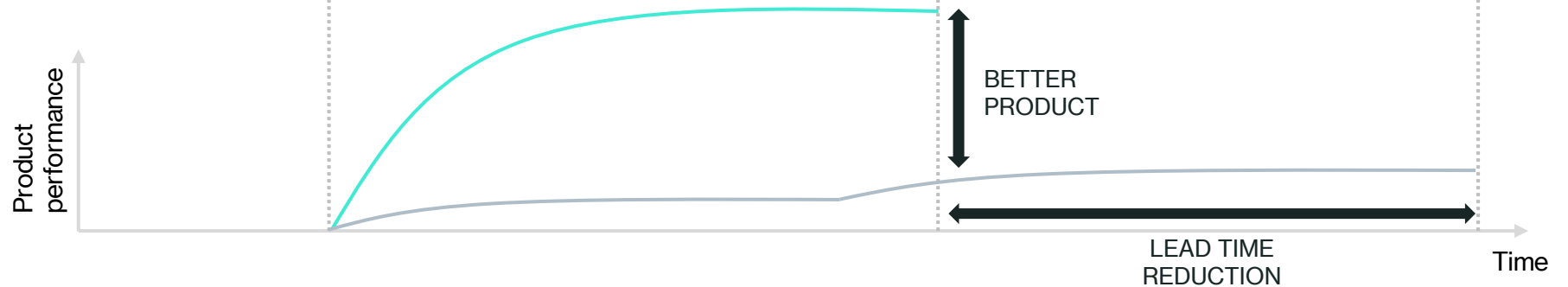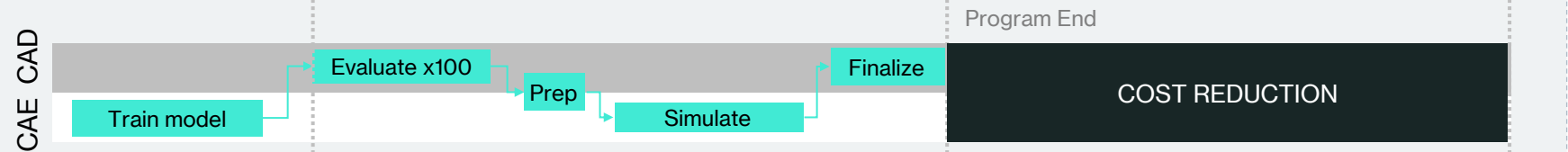and opening the road to Engineering Intelligence

Better product and much faster time to market

Anticipate RFQs or project starts by bringing AI work upstream

Traditional workflow
2 designs explored in a week

NCS workflow
100+ designs explored in 3 days

Program Start

Program End

CAE CAD

Design
Prep
Wait
Simulate
Revise
Prep
Wait
Simulate
Finalize

Program End

CAE CAD

Train model
Evaluate x100
Prep
Simulate
Finalize

COST REDUCTION

Product performance

BETTER PRODUCT

LEAD TIME REDUCTION

Time

Thank you!

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