MIMER
AI FACTORY

From idea to industrial impact

MIMER makes AI accessible for Swedish industry

Benedikt Neyses

MIMER – Materials Science, RISE Component Casting

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Benedikt Neyses

- Senior researcher in applied AI
- Working for RISE and MIMER
- B.Eng. mechanical engineering
- M.Sc. And PhD in wood technology
- AI generalist
- Focus on vision/image/X-ray/CT

MIMER – The Swedish AI Factory

PART OF EUROPE

1 of 19

AI Factories across the EU

Sweden's node in the €200B European push to keep AI capability inside Europe. Run by RISE & NAISS.

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OUR OFFER

FREE

for SMEs, startups, public sector & research

Large enterprises can engage too, typically in exchange for open-sourcing the methods we develop together – or pay for our services.

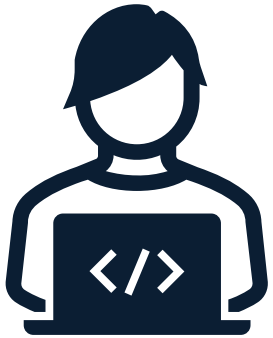
TIMESCALE

WEEKS

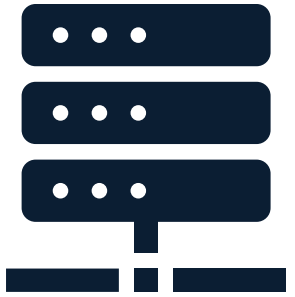
not years

Typical project: 40-80 hours of MIMER staff time. One scoping call, one well-defined problem, deliver, hand over.

We offer help in AI development!



Technical expertise
Guidance
Support



Access to computing resources, your data stays in Europe

FREE for AI startups, SMEs, public sector and research

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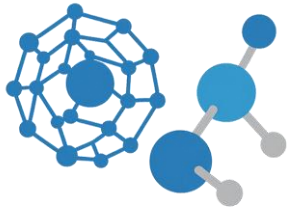
MIMER – Materials Science

STEEL & ALLOYS

Product Design
Advanced Manufacturing
Sustainable Construction

ADVANCED MATERIALS



Material Discovery & Design
Synthesis Optimization
Molecular Simulation

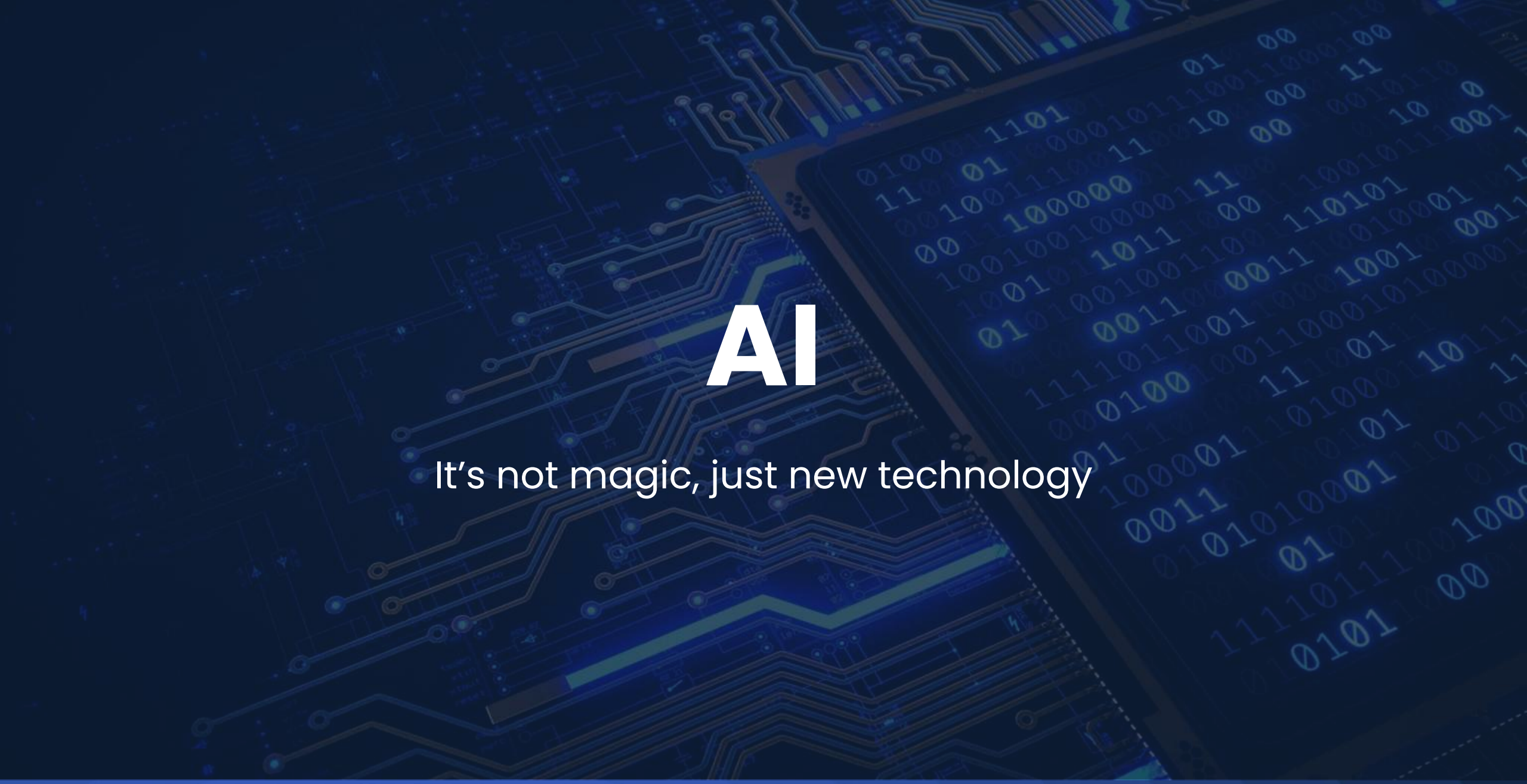
WOOD & FOREST

Defect Detection
Growth Prediction
Bio-based products

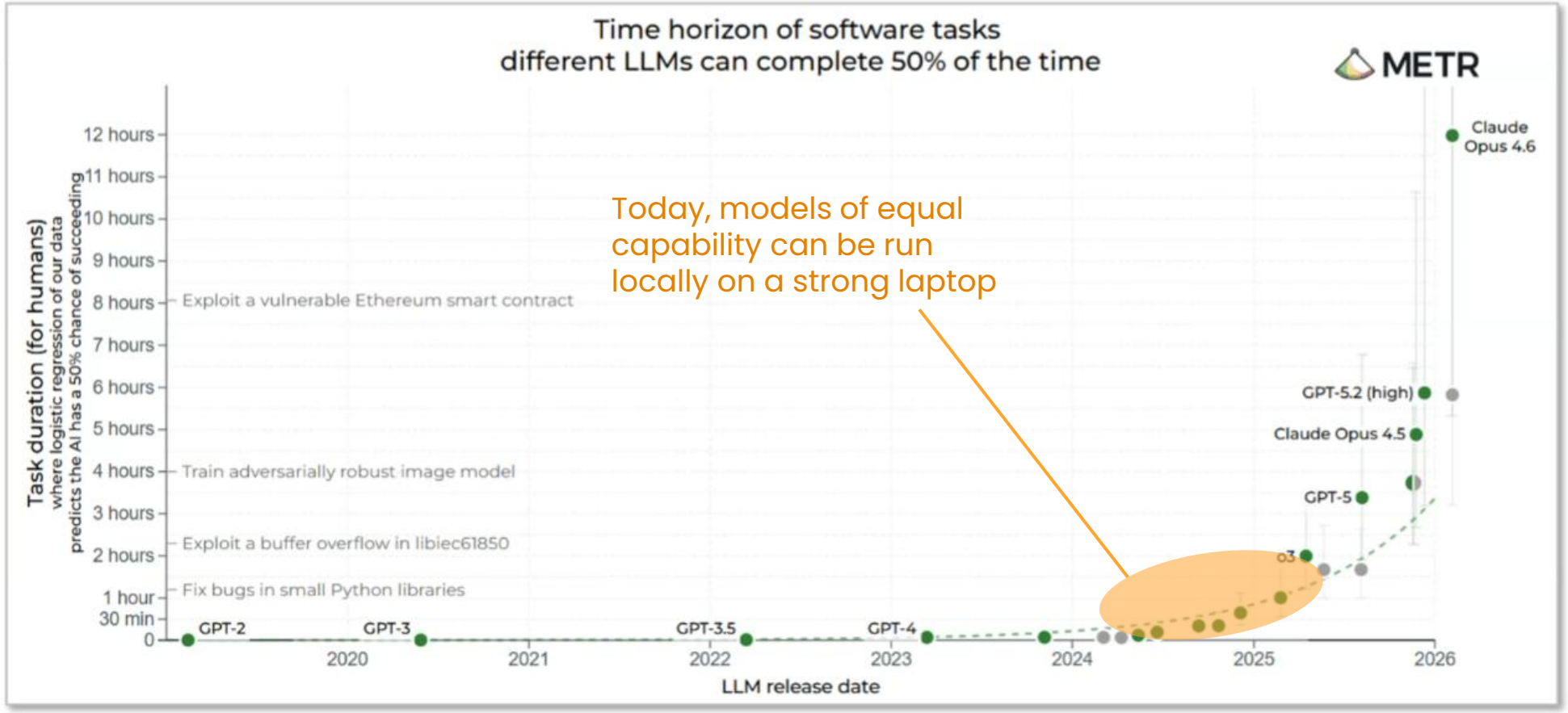
ENERGY MATERIALS

Smart Energy Solutions
Green Energy

We are 10 people working in the materials science group + all the other experts in MIMER


AI
It’s not magic, just new technology

The Rapid pace of AI development



Source: https://metr.org/time-horizons/

Demis Hassabis, CEO Google Deepmind, has expressed this about the potential of artificial intelligence:
"It'll be 10 times bigger than the Industrial Revolution – and maybe 10 times faster" (August, 2025)

What is AI actually?

TRADITIONAL SOFTWARE

You write the rules.

A senior engineer writes a manual:

- *“If the weld bead is wider than X mm”*
- *“or has a crack longer than Y mm*
- *“and the cracks are within Z mm…”*
- *…*
- *… 247 rules later*

The computer just follows the rules…
… but it quickly becomes very complicated!

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AI / MACHINE LEARNING

The computer learns the rules.

You show it a few hundred welds you've already labelled "good" or "bad".

It figures out the pattern itself.

You inspect new welds it has never seen — and it tells you which are bad.

Three kinds of AI relevant for your company

ML/deep learning

PREDICTS

Finds patterns in your existing data and predicts what comes next.

Example:
- *Predicting when a bearing will fail from vibration data.*
- *Detecting defective parts from camera images.*

Highest ROI for most SMEs today.

Generative AI

GENERATES

Produces text, images, code or designs from a prompt.

Example:
- *Drafting an inspection report.*
- *Proposing candidate CAD designs.*
- *Generating synthetic data*

Fast-moving. Great drafter, dangerous final decision-maker.

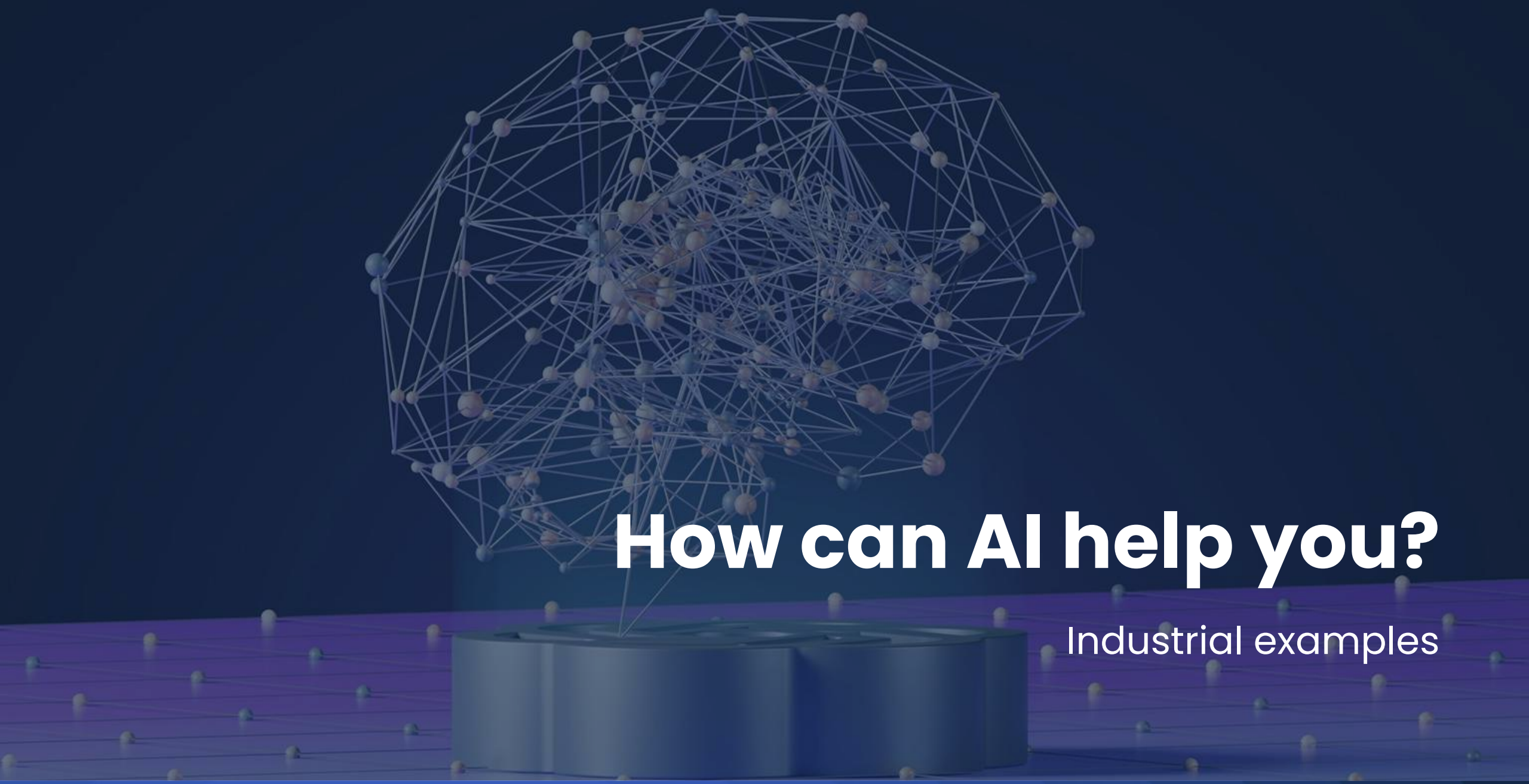
Agentic AI

ORCHESTRATES

Plans, uses tools, decides what to do next — on its own.

Examples:
- *An autonomous planner that reschedules the line when a machine goes down.*
- *Automation of reporting and documentation*

Really powerful. Highest risk profile. Pilot carefully.



How can AI help you?

Industrial examples

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DynaSty – 50% less CO_2 from case hardening

Swerim, Sandvik, Bodycote, Volvo, Bulten · funded by Vinnova

−50%

CO_2 in the case-hardening furnace

Shorter cycle. Same quality.

Running in production at Bodycote today.

THE PROBLEM

Case hardening is one of the most carbon-intensive steps in steel manufacturing. In most cases, we end up over-hardening.

WHAT WE DID

A self-learning ML model controls furnace atmosphere dynamically. Designed jointly with deep process expertise.

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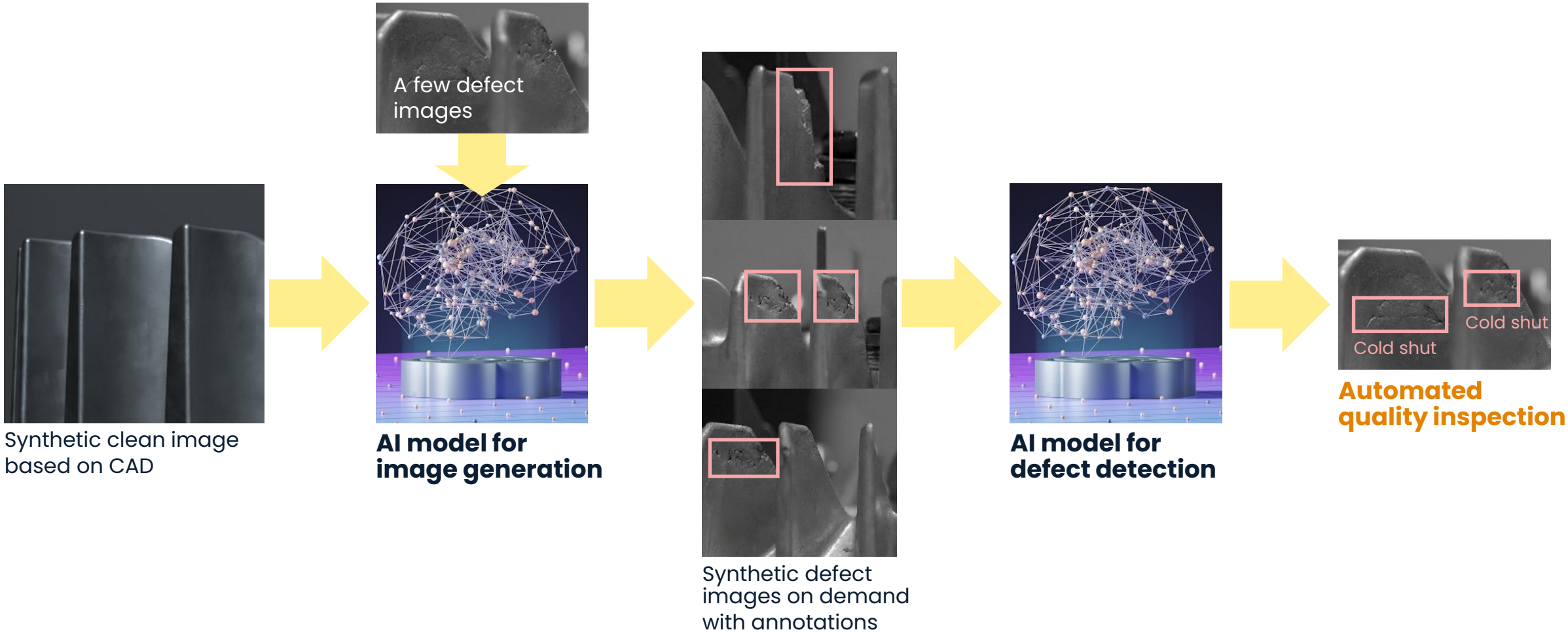
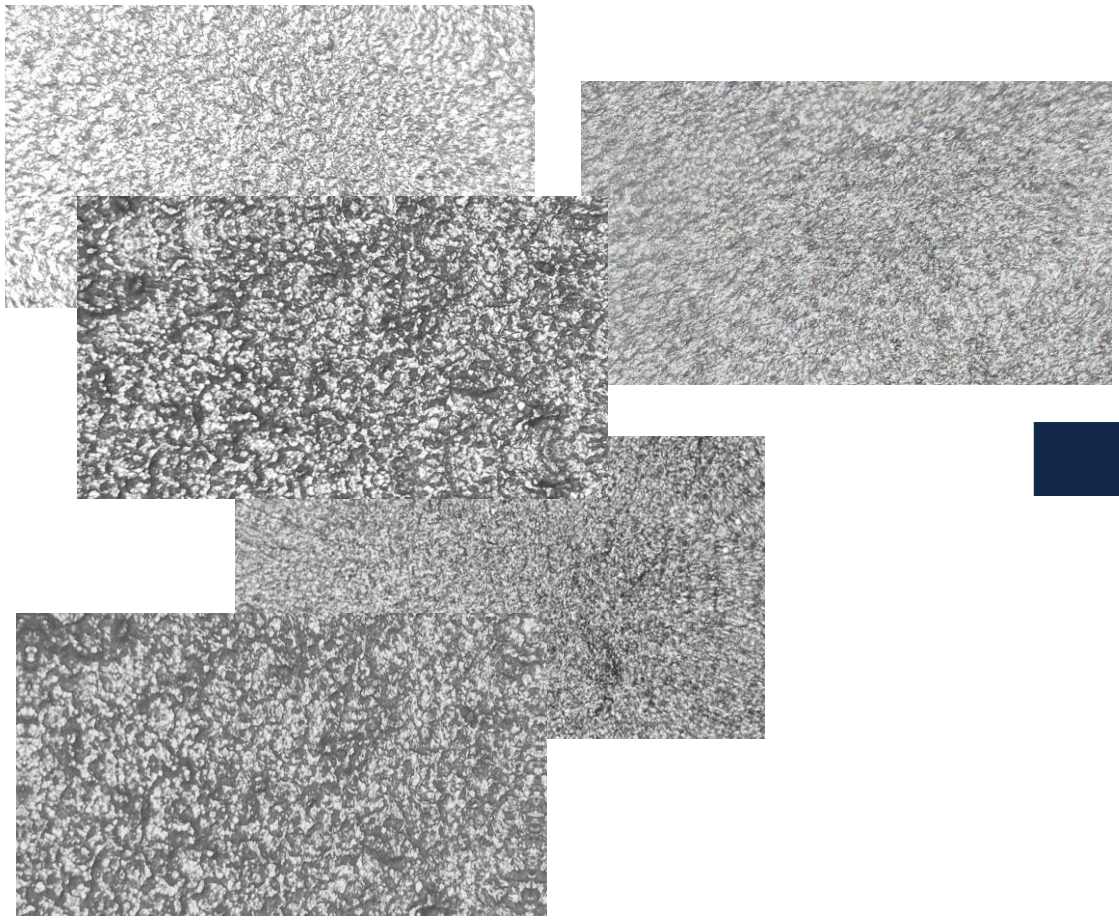
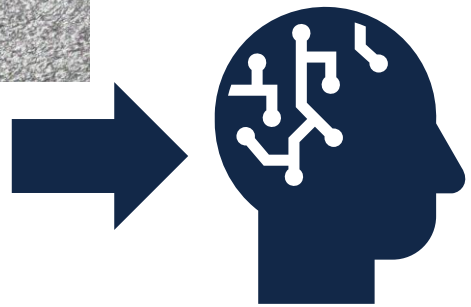
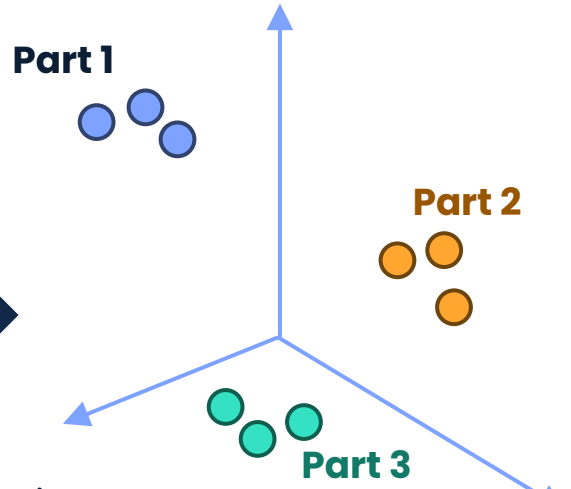
Metal casting: adaptable defect detection



Fingerprint tracing based on texture







AI model transforms the images so that images from the same part have similar descriptions.

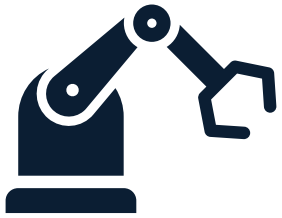
We can re-identify the same component among hundreds or thousands!

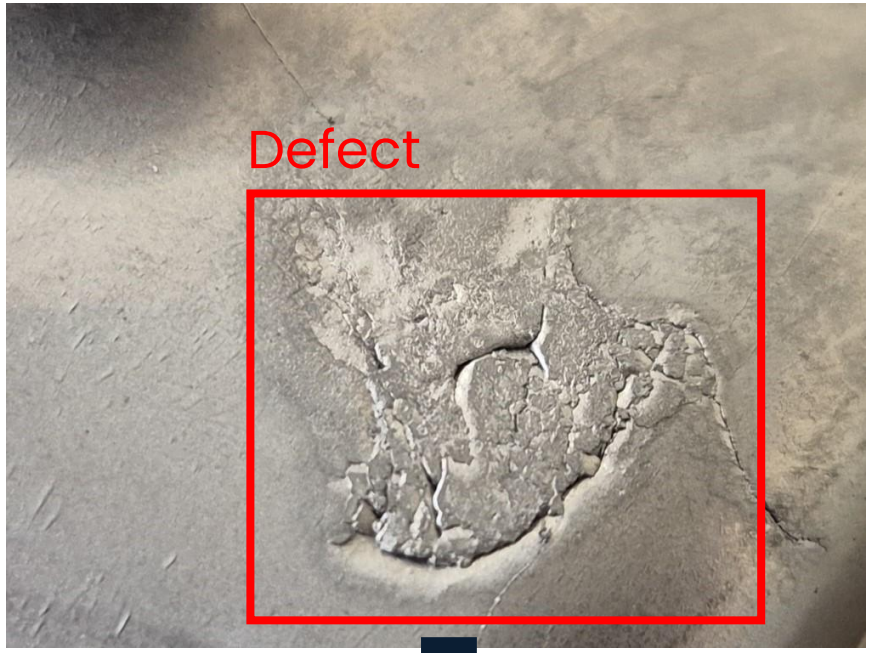
Fingerprint tracing based on texture

Design

Planning

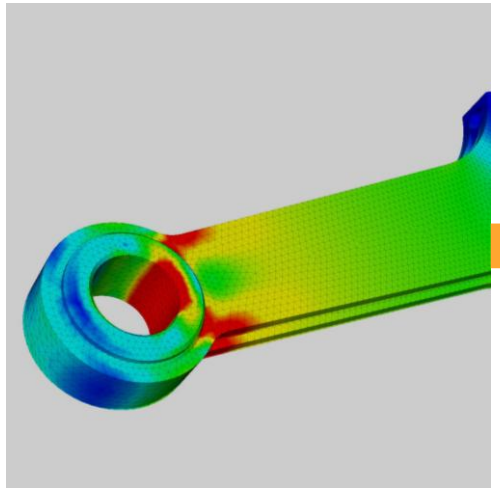
Production



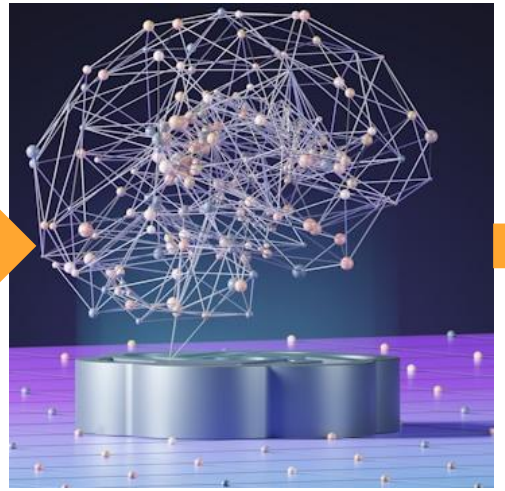


Connect the data and apply AI to find the root cause (repeatable & systematic)

Replacing time-consuming simulations with AI



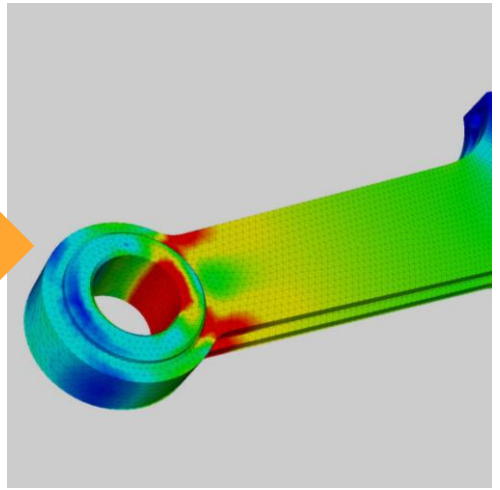
Run numerical simulations on several cases (e.g. 10).



Train a **physics-informed AI model** on the simulations.

Run fast AI-based simulations, e.g. to explore and optimise many design variants.

One AI-based simulation takes seconds!



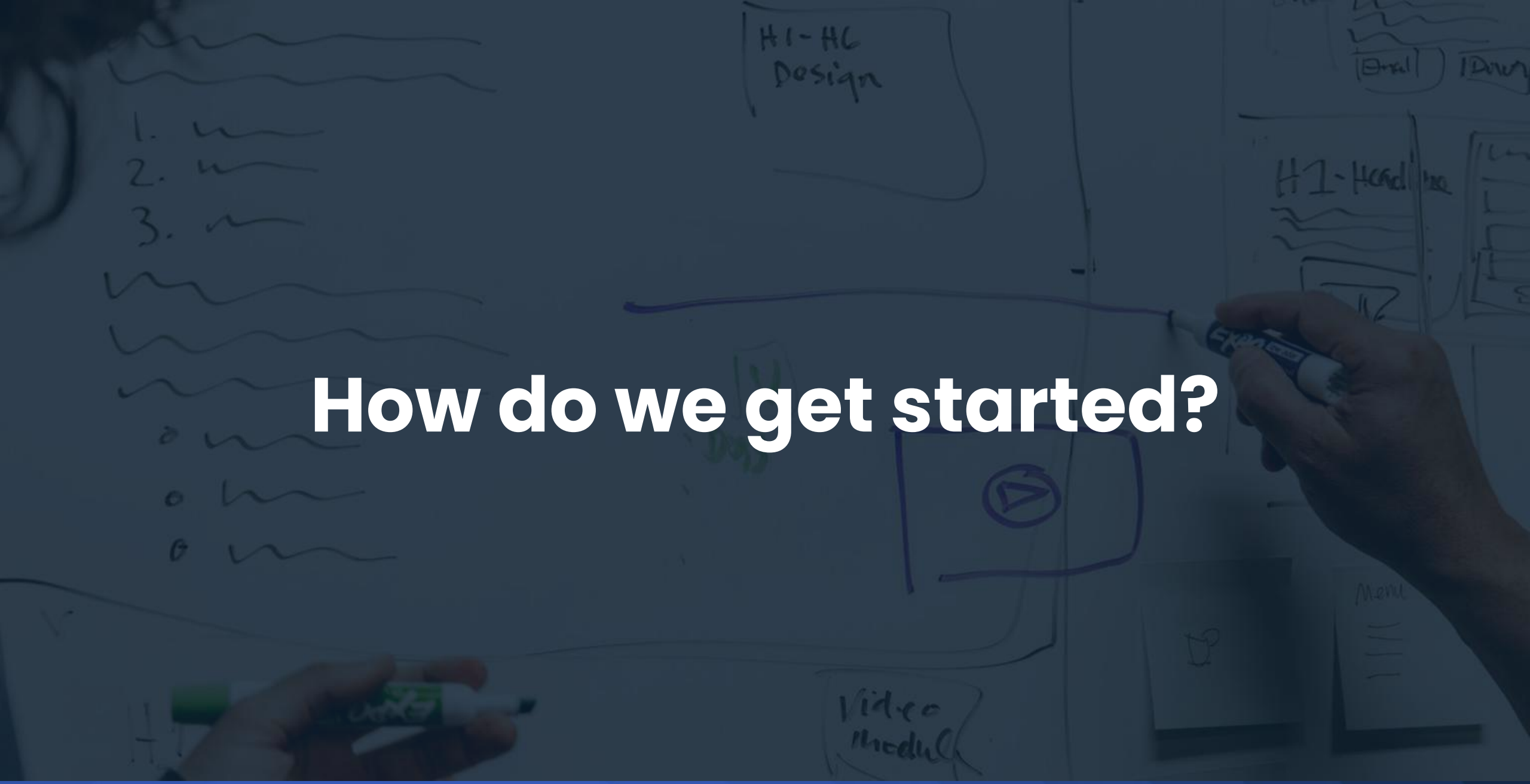
Validate the AI model with a final pass of a full simulation.

Time saving example: 50 design alternatives

Making your knowledge accessible

GJUTERI FÖRENINGEN

Swedish Foundry Association



How do we get started?

How we work

Initial discussion

Outline your area of interest and goals. 30 minutes is usually enough.

Scoping

Drill into the problem and align technical work with expected outcomes.

Execution

Our experts work side-by-side with your people. You learn while we build.

Off-boarding

You leave able to run with it, maybe help you with finding a deployment partner.

40-80

hours of MIMER expert time per project

+ compute resources when needed.
No 30-page application. No procurement process.

Bigger ambitions? We chunk them!

MONTH 0-1

Workshop

What's possible? Where to start?

MONTH 2-4

Low-hanging fruit

Pick one. Solve it. Hand it over.

MONTH 6-12

Next, more advanced

Compound on what worked.

What works – and what we ask of you

WHAT WE'VE LEARNED

- **Start small. Compound.**
- **Pair AI with your domain experts.**
- **Bad data beats clever models.**
- **GenAI is a drafter, not a decider.**

WHAT WE ASK OF YOU

- **Commit the time you agreed to.**
- **Give us access to the right people.**
- **Help us measure the value created.**
- **Be honest about what's working — and what isn't.**

In return: the resources we deploy on your behalf are worth a great deal. We want them to work hard for Swedish industry.

Let's build something!

You have the problems.

We have the compute, expertise, and time.

The EU has paid for it.

www.mimer-ai.eu

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