

The logo consists of a white, stylized leaf-like shape on the left, followed by the word "Synbiosys" in a white, sans-serif font.

# Synbiosys

Enabling a world where seamless integration between materials, manufacturing processes and AI creates unparalleled efficiency, resilience and sustainability.

# Team



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Executive

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**Peter Gossas**  
Advisor

Chairman, Alumbra Group AB  
Former President, **Sandvik**  
**Materials Technology** (now  
Alleima)





**Our mission is to increase productivity,  
resilience and sustainability for  
materials and manufacturing.**





**Validating, qualifying and deploying material & manufacturing technologies is currently too complicated, time consuming and expensive.**



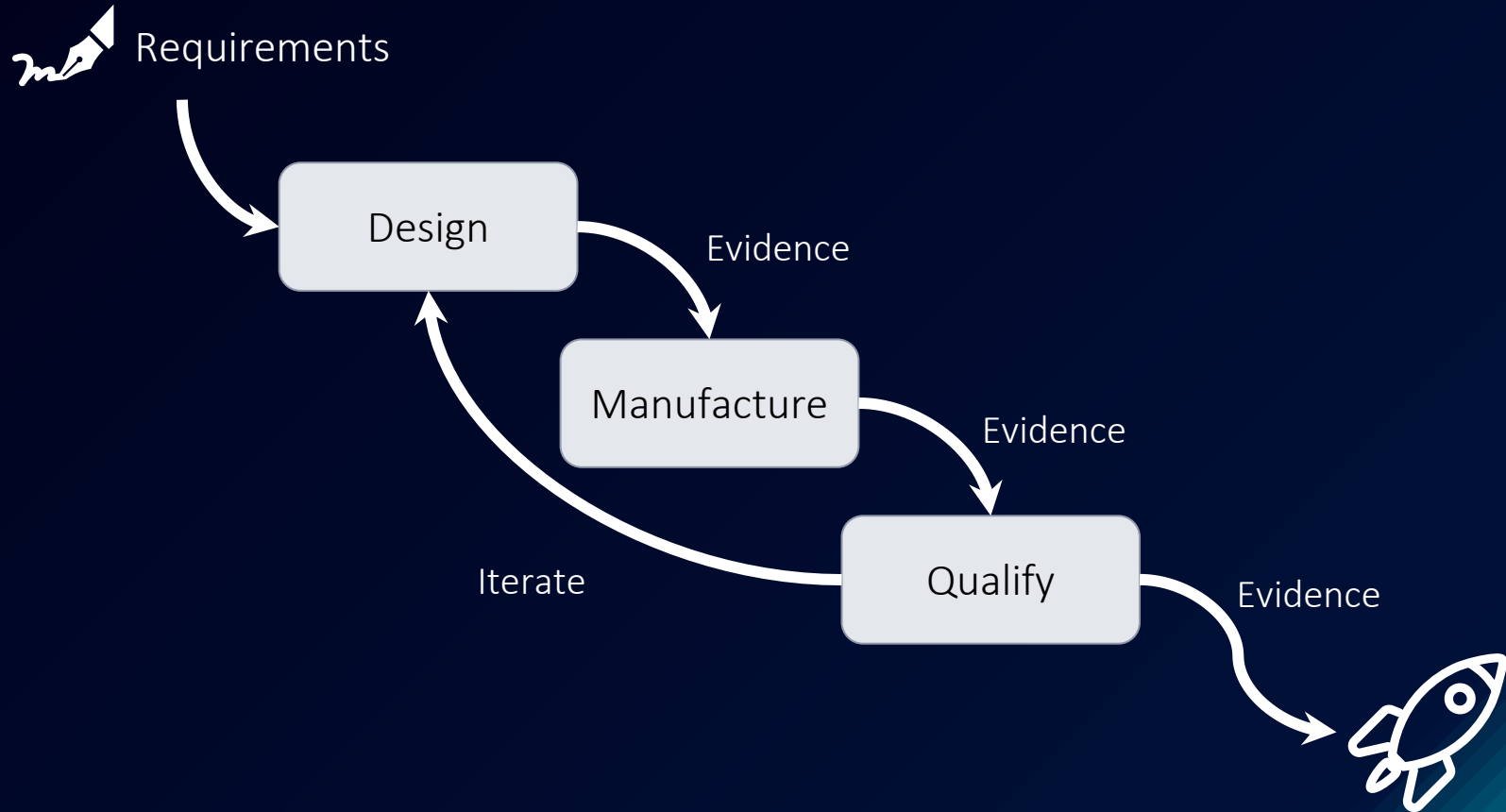
# Evidence

- Data
- Models
- Know-how

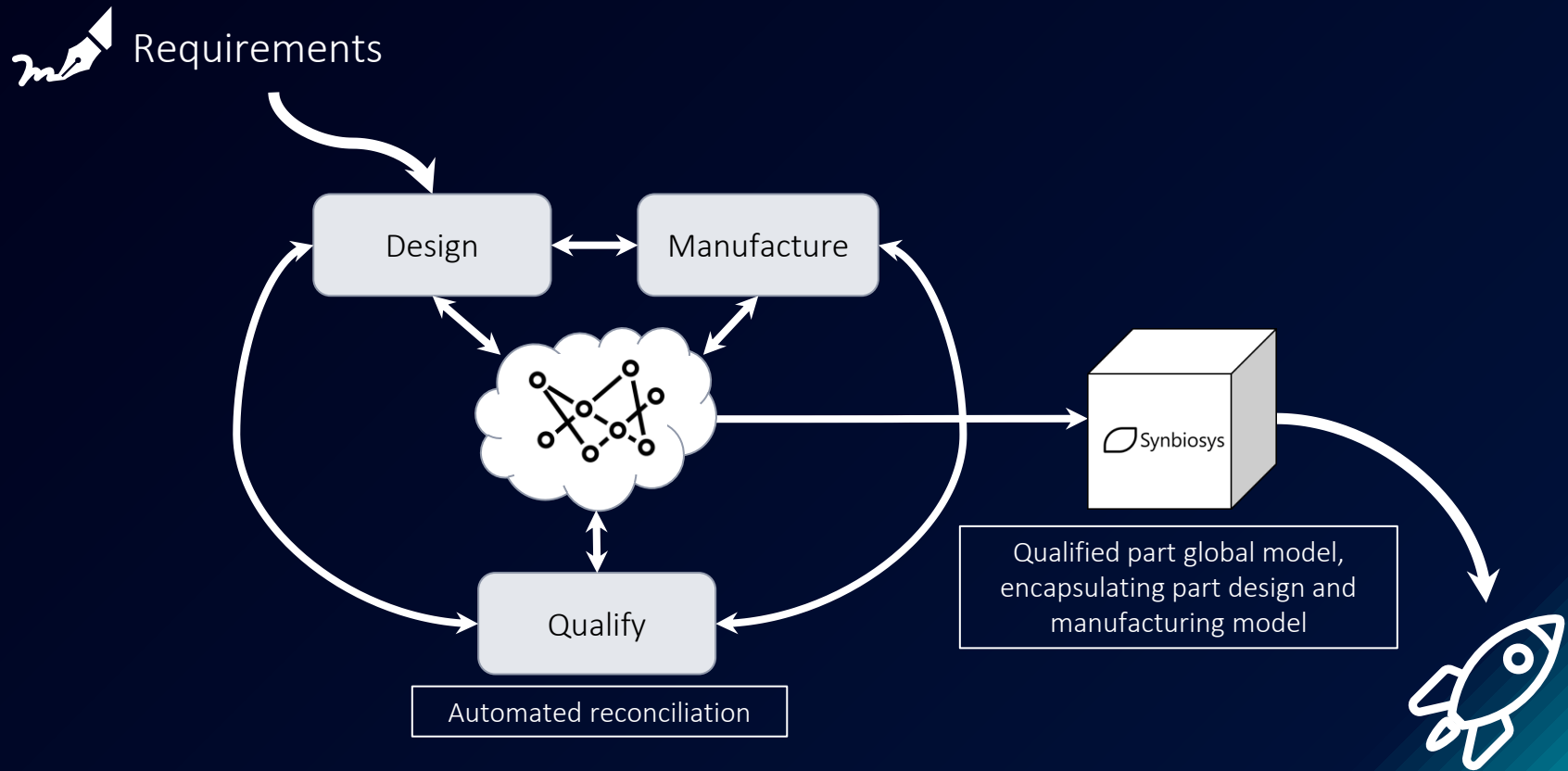
Trust lies in the burden of:

- Curation
- Reconciliation
- Leveraging

# Verification & validation



# Verification & validation - Future



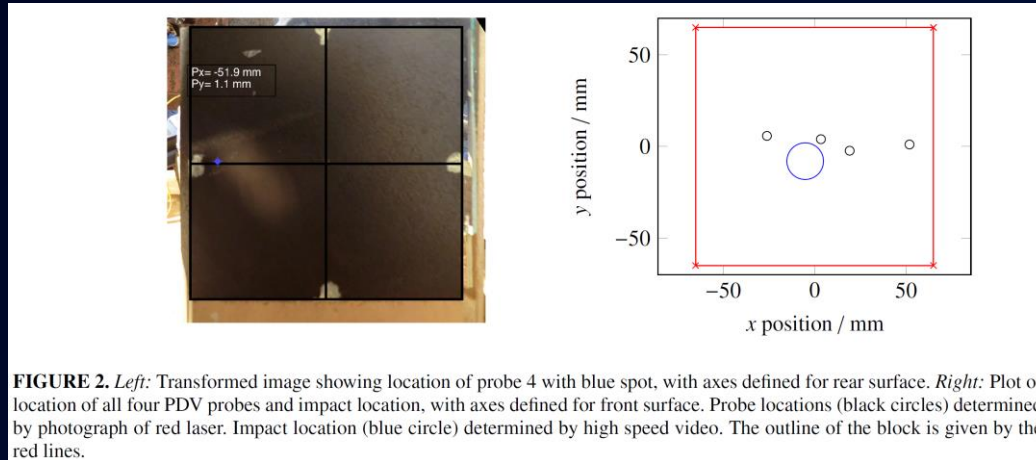


# Back to basics

- Are the tests I'm performing relevant and worthwhile?
- Is the data I'm gathering good enough for what I need?
- Do I have enough data for full confidence in my product?

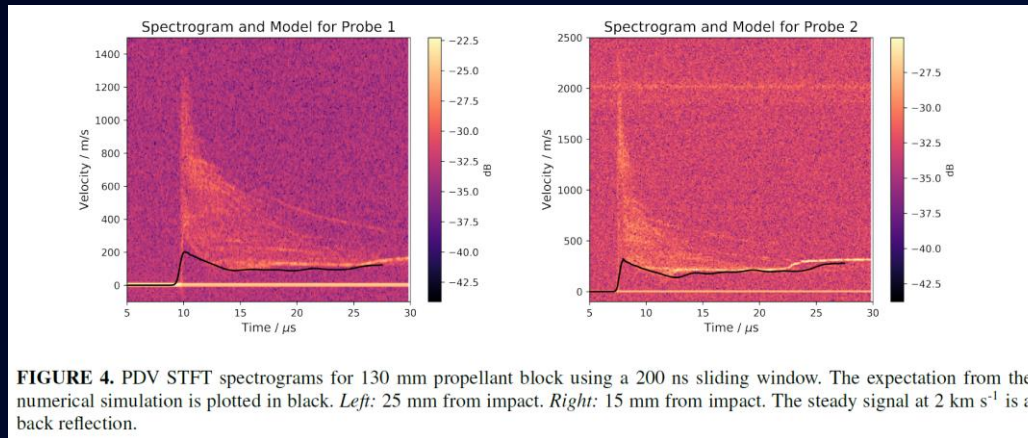
# Use case – Synbiosys armour

## ■ Fuse interferometry probe position onto high speed camera data



# Use case – Synbiosys armour

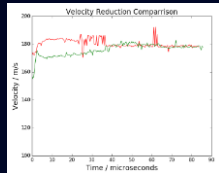
■ Use high fidelity interferometry data to validate high quality models



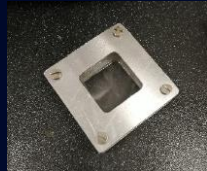
# Use case – Synbiosys armour

Rapid development of phase change armour.

Now being developed for munition safety compliance.



Test 5



Test 40



Test 60

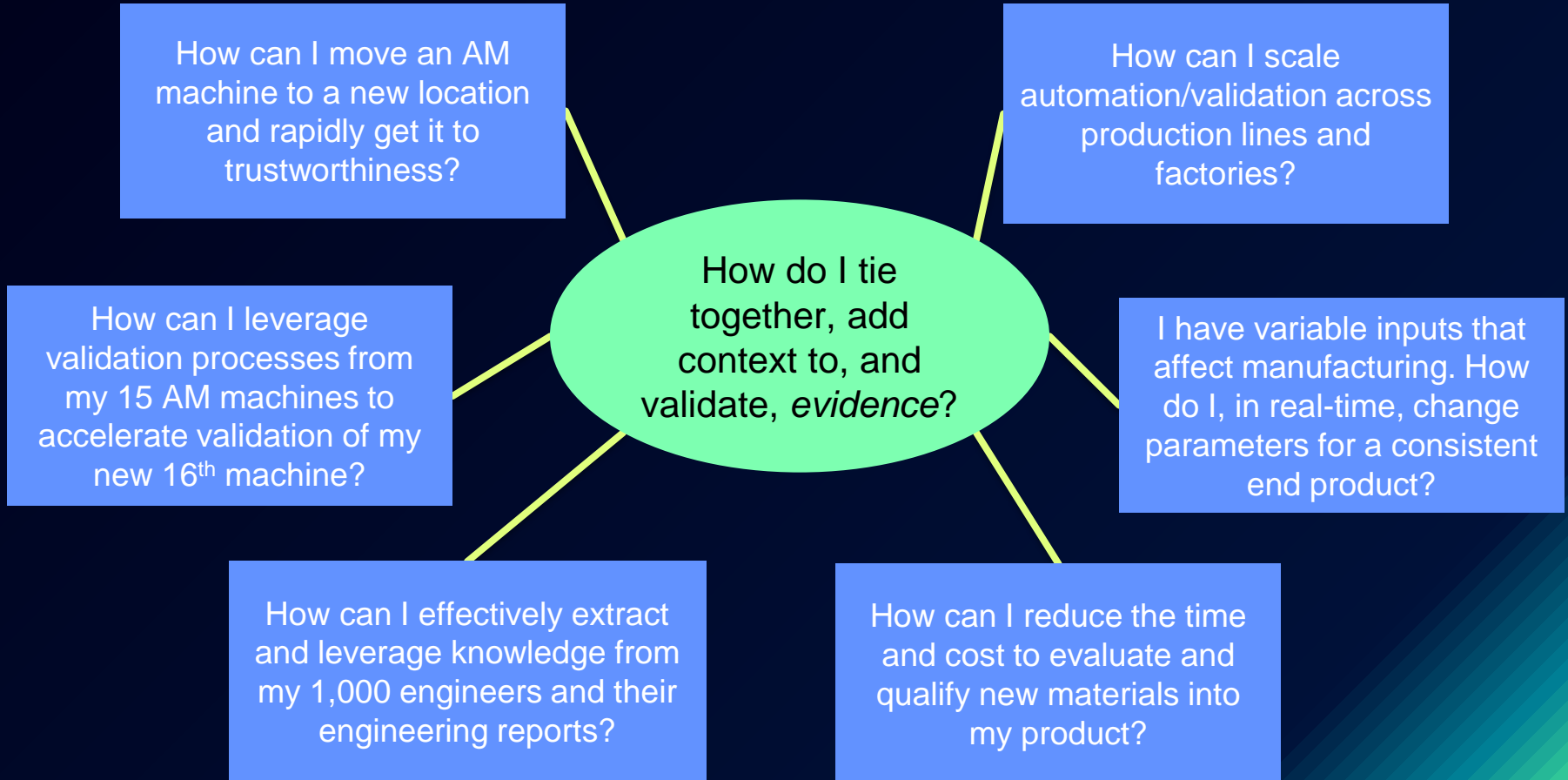


Test 80



Test 120

# Superficially different problems - All connected





# The Validation Platform


An AI- and ontology- powered platform for building, deploying and managing materials and manufacturing models.

Digital infrastructure that allows end users to automatically integrate and reconcile data, models, processes and tacit knowledge.

Build from a bottom-up approach.

 Faster and de-risked

Automatically build, validate and qualify changes in manufacturing scenarios

 E.g. Change in supplier or requirements.

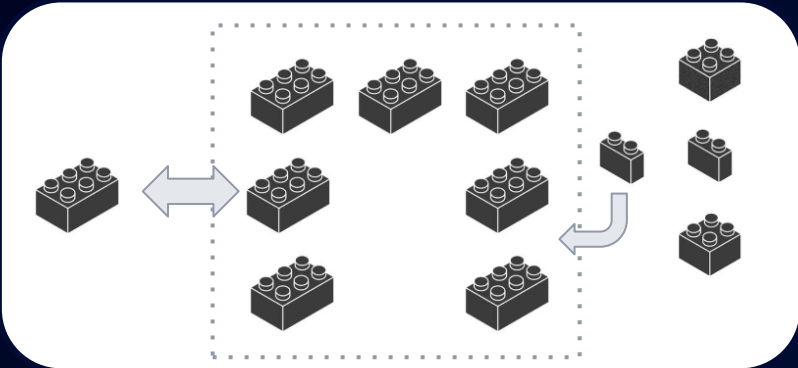
# Case study – Belt levelling



# Case study – Belt levelling

Vision:

 Automated, optimised and modular factory.



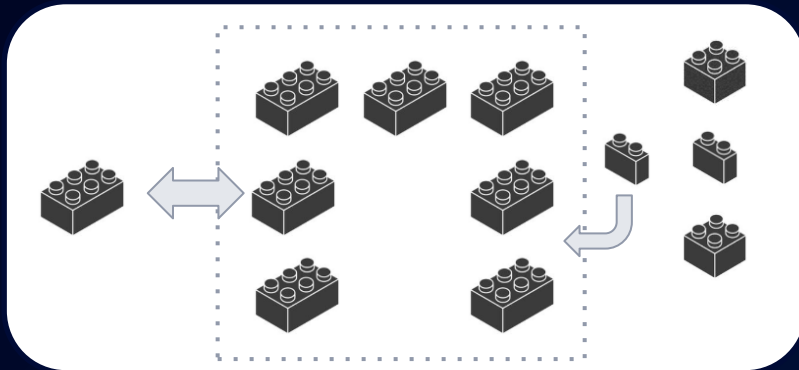
# Case study – Belt levelling

Challenge:

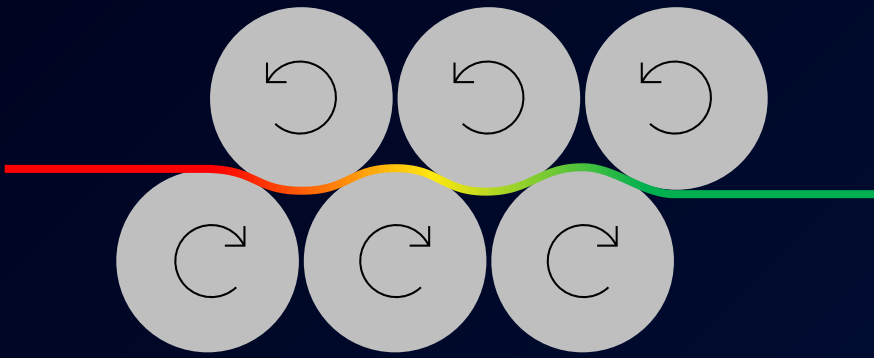
- Limited digital infrastructure.
- Siloed systems, limited data transfer.

Start small:

- Legacy production line.



# Case study – Belt levelling





# Case study – Belt levelling

## Key aspects:

- Engage key stakeholders from Day 1.
  - Operators
  - Production managers
  - IT
- Identify the real performance/business metric

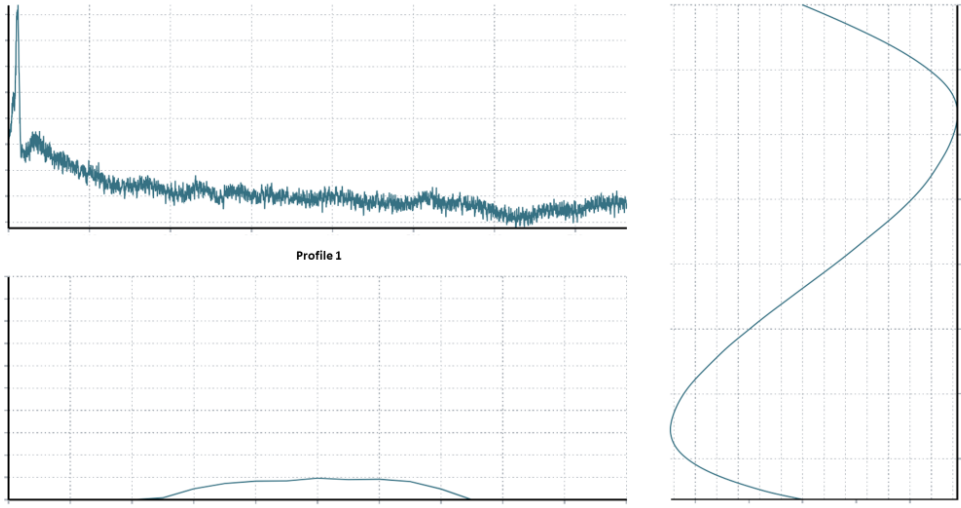
## In 6 months:

- Digital infrastructure built.
- Data was validated and made accessible.
- Models were built, validated, deployed.



# Case study – Belt levelling

Belt: 1234 Material: Steel Length: m Width: m Thickness: mm Latest Runs



Profile 1

Profile 2

Profile 3

X1	X2	X3	X4	Y1	Y2	Y3	Y4	Z1	Z2	δ
0	0	0	0	0	0	0	0	0	0	0

Leveller Setting 1: 1    Leveller Setting 2: 2    Leveller Setting 3: 3

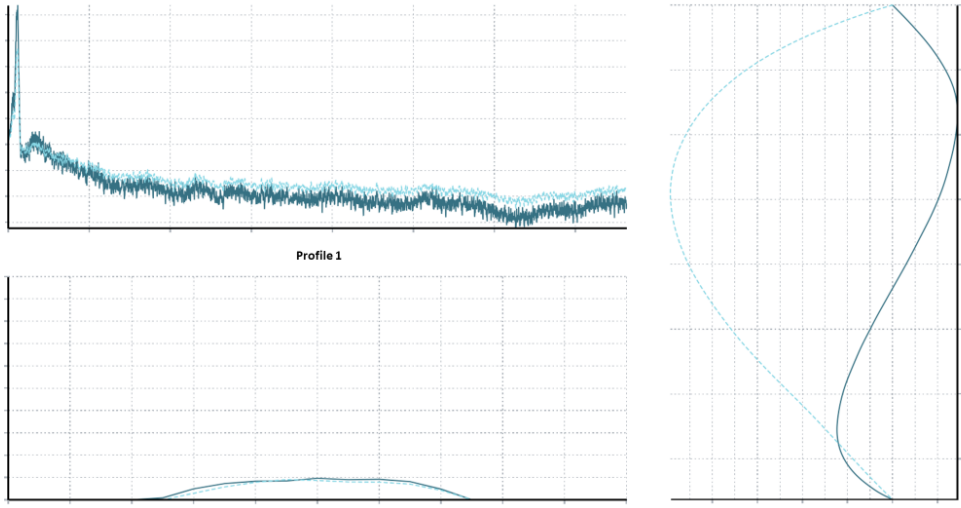
Select Run to model: Run 7

Select Model: Model\_02    Clear models: Clear All

Reset All    Submit

# Case study – Belt levelling

Belt: 1234 Material: Steel Length: m Width: m Thickness: mm Latest Runs



Profile 1

Profile 2

Profile 3

X1	X2	X3	X4	Y1	Y2	Y3	Y4	Z1	Z2	δ
-1	0	0	0	0	-2	0	0	0	0	32

Leveller Setting 1: 1    Leveller Setting 2: 2    Leveller Setting 3: 3    Reset All

Select Run to model: Run 7    Clear models:

Select Model: Model\_02    Clear All

Submit

# Case study – Belt levelling

Immediate result:

- 10% throughput increase with first model iteration.
- 25% reduced worked hours per product.

Optimised result:

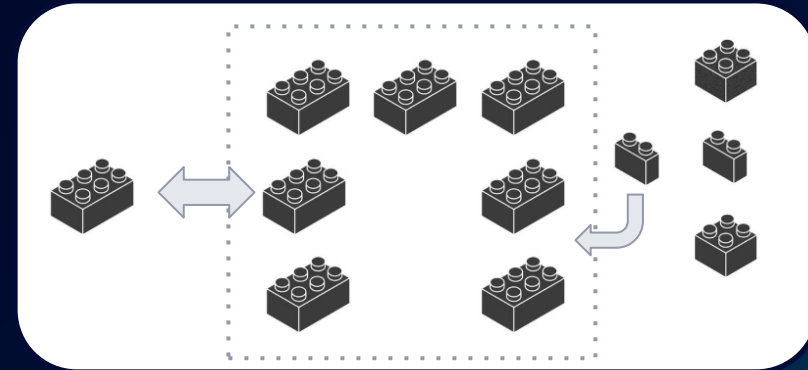
- 50% throughput increase.
- 50% reduced worked hours per product.



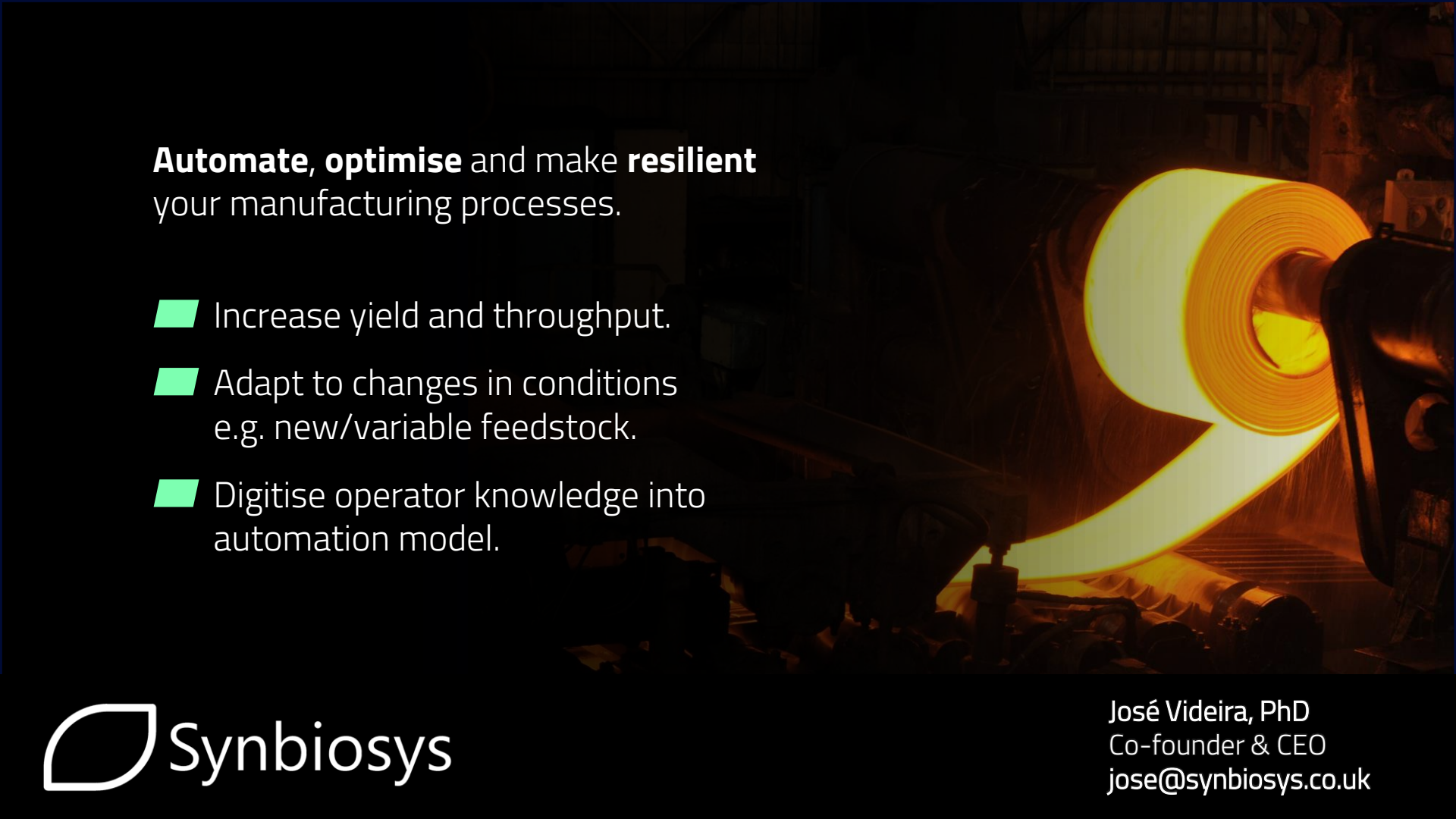
# Case study – Belt levelling

With modular data pipeline and infrastructure:

- Further production models built, validated, deployed in months.
- Predictive models can be rapidly updated to new engineering scenarios:
  - New supplier feedstock.
  - Downstream consequences.





A glowing yellow roll of material, possibly a film or fabric, is shown in a dark industrial setting. The roll is illuminated from within, creating a bright, warm glow that contrasts sharply with the surrounding darkness. The material appears to be moving through a complex mechanical structure, with various rollers and supports visible. The overall atmosphere is one of high-tech manufacturing or industrial production.

**Automate, optimise** and make **resilient** your manufacturing processes.

- Increase yield and throughput.
- Adapt to changes in conditions e.g. new/variable feedstock.
- Digitise operator knowledge into automation model.