



**ODEN
TECHNOLOGIES**

AI Agents for the Factory Floor

Making the complex easy



Speaker Introductions



Willem Sundblad

Co-Founder and CEO
Oden Technologies



Vivek Murugesan

Research Analyst
LNS Research





**We are on a mission to empower
industry leaders to transform
their organizations**

**Our vision is a world where
industrial companies are agile,
autonomous, and sustainable**



The Four Industrial Megatrends of Today.



**Rapidly Changing
Workforce**



**Expanding Asset &
Product Complexity**



**Growing Supply
Uncertainty & Risk**

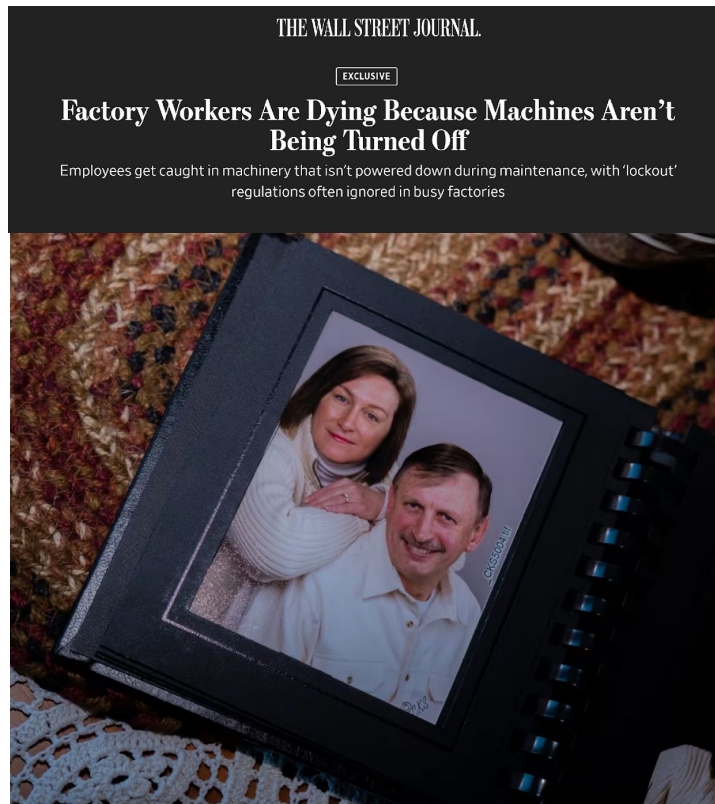


**AI Going
Mainstream**

But Why Now?

The Degrading Base Case of Manufacturing (2019 – 2024)





Worker Safety Inflection Point 2019

4.0

3.5

3.0

2.5

2.0

1.5

1.0



US Manufacturing Workforce Fatality Rate

Deaths per 100,000 workers, Department of Labor

THE WALL STREET JOURNAL.

BUSINESS

Boar's Head Closing Virginia Factory Tied to Deadly Listeria Outbreak

Company said factory would close indefinitely after nine deaths linked to outbreak

By Timothy M. Shew [the.wsj]

Updated Sept. 25, 2024 1:44 pm EDT

[Print](#) [Email](#) [Share](#) [Link](#) [Unlocked article](#)

[Listen: 7 min](#)

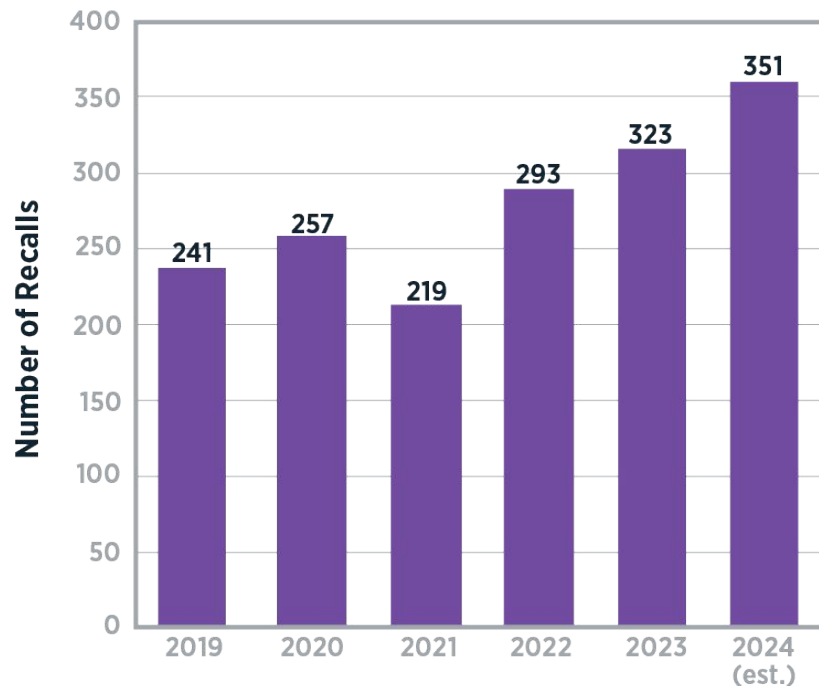


An aerial view of the Jarratt, Va., plant in 2019, which was the source of the Listeria outbreak.

WALL STREET JOURNAL | THE NEW YORK TIMES | BLOOMBERG | CNN | FOX NEWS | MSNBC | CBS NEWS | ABC NEWS | NBC NEWS | PBS NEWS | NPR | THE NEW YORK TIMES | THE WALL STREET JOURNAL

Product Quality

Inflection Point 2021



THE WALL STREET JOURNAL

Now Comes the Hard Part of the Dockworkers Fight: Automation

Operators can afford the 62% pay increase, but not the low productivity that the work rules produce.

By Peter Tirschwell
Oct. 7, 2024 3:20 pm ET



Workers picket outside of the Red Hook Container Terminal in New York, Oct. 3. PHOTO: MICHAEL NGALO/ZUMA PRESS

Industrial Productivity

Inflection Point 2023



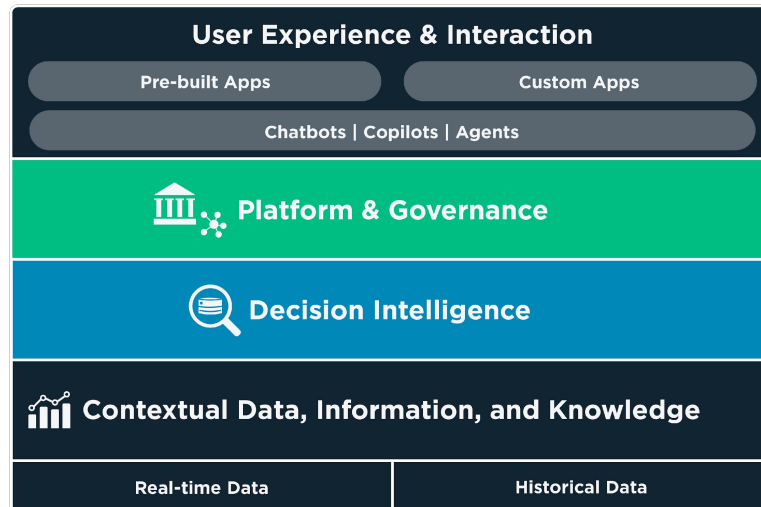
So, What is Industrial AI?

What is Industrial AI

Industrial AI is the application of a range of Artificial Intelligence algorithms, models, and techniques—including machine learning, data-driven, and reasoning models—in conjunction with first principles, rules-based statistical methods, and other analytical approaches to solve industrial problems across the value chain. It brings together Advanced Analytics and Decision Intelligence frameworks through a suite of pre-built applications, enables custom applications through no-code/low-code and prompt-based development, and orchestrates a continuum of Chatbots, Copilots, and Agents.

The Four Layers of Industrial AI:

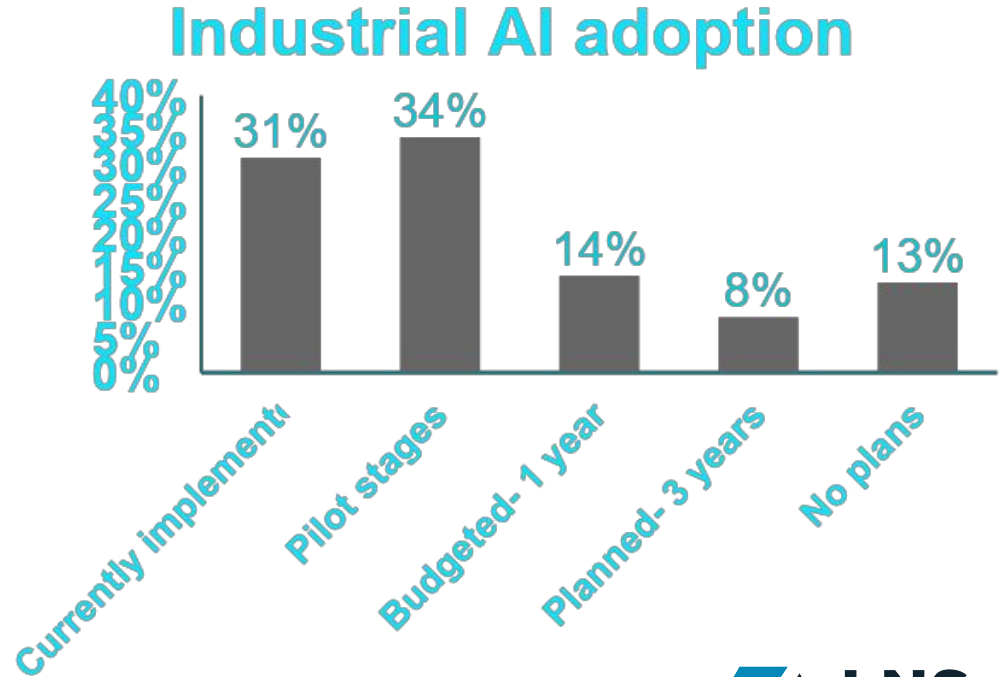
- ❖ **User Experience:** Humans – Machines – Software interaction
- ❖ **Platform:** Interoperability, Integration, and Governance
- ❖ **Decision Intelligence:** Monitoring, Recommending, and Execution of 1P, Data, ML, and AI-driven insights
- ❖ **Data layer:** Contextual and semantic data, information, and knowledge models across real-time and historical data



Source:  **LNS**
Research

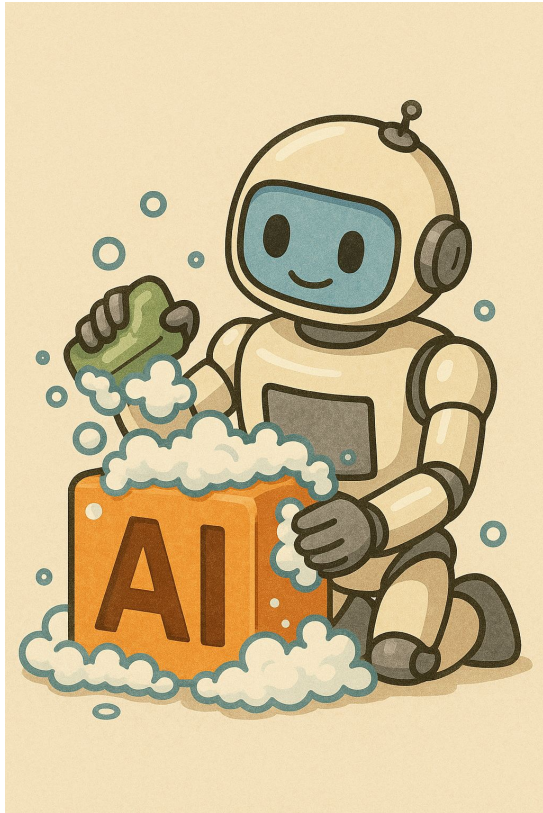
Industrial AI Goes Mainstream in 2025

- Almost two-thirds of industrial companies are actively engaging in Industrial AI initiatives, with 31% already implemented at scale and 34% in pilot
- Industrial AI investment is expected to grow significantly to address major productivity concerns



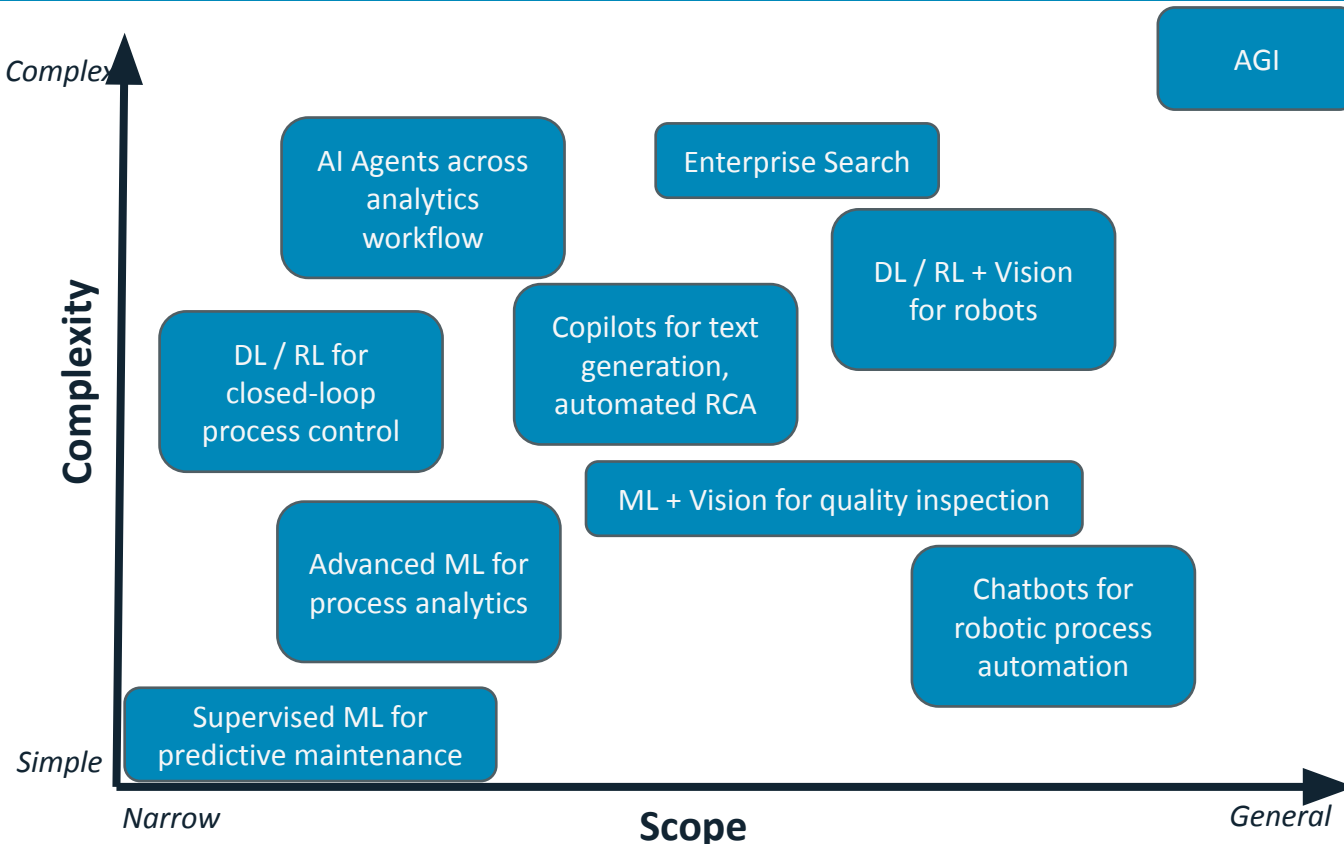
Data Collection: July 2024

AI Washing is Real



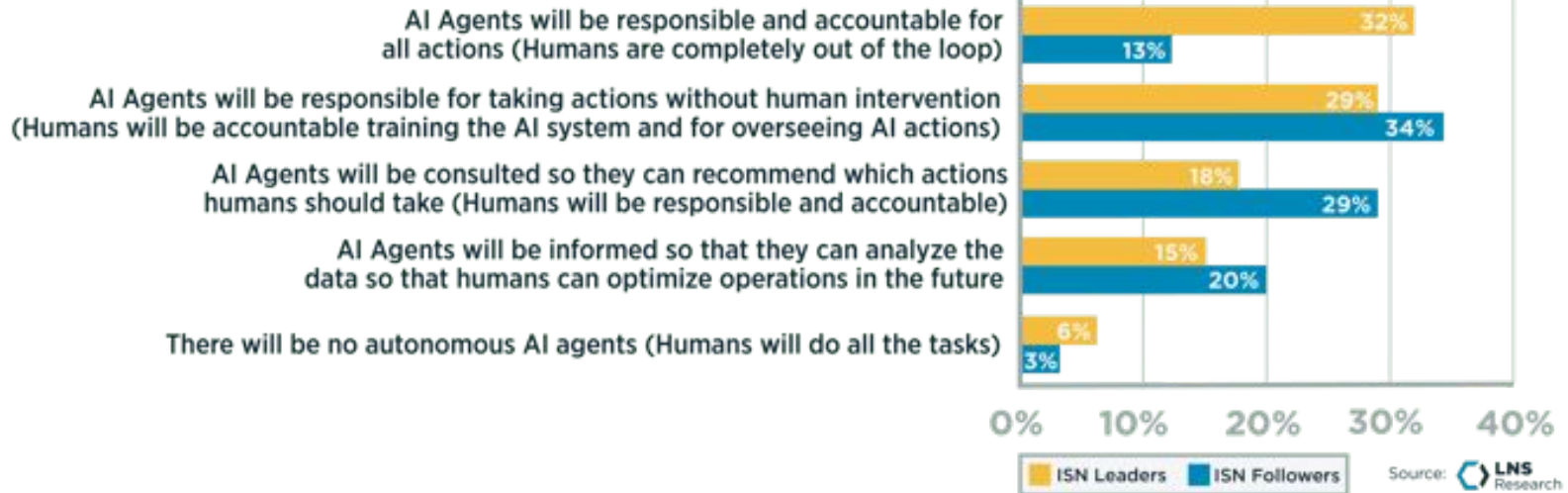
- Spectacular rise of ChatGPT triggered an industry-wide gold rush for Everything AI
- Industrial Companies are increasingly turning to AI to fix productivity problems
- Leading with flashy technology, not business problems, risks repeating past transformation failures

A Closer Look at Industrial AI

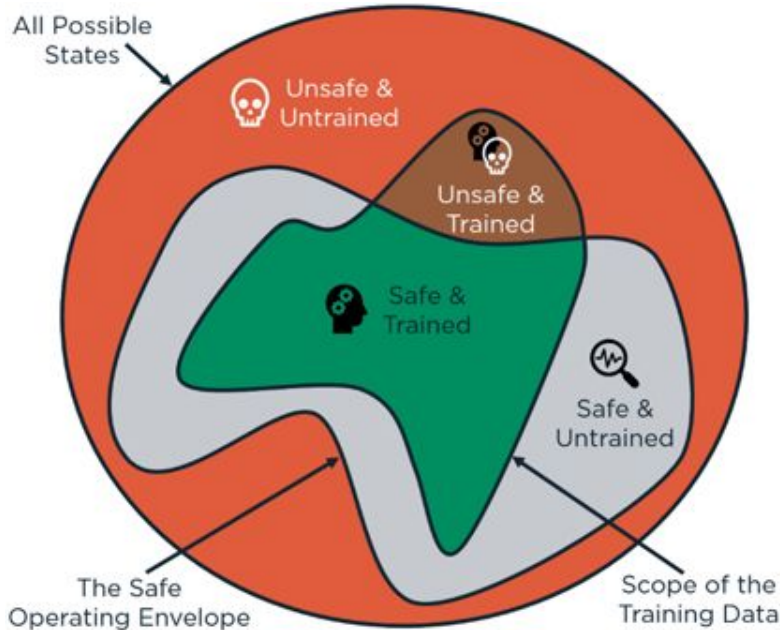


Agents and the Case for Autonomy

Which of the Following Best Describes the Desired Software Autonomous Operations Architecture

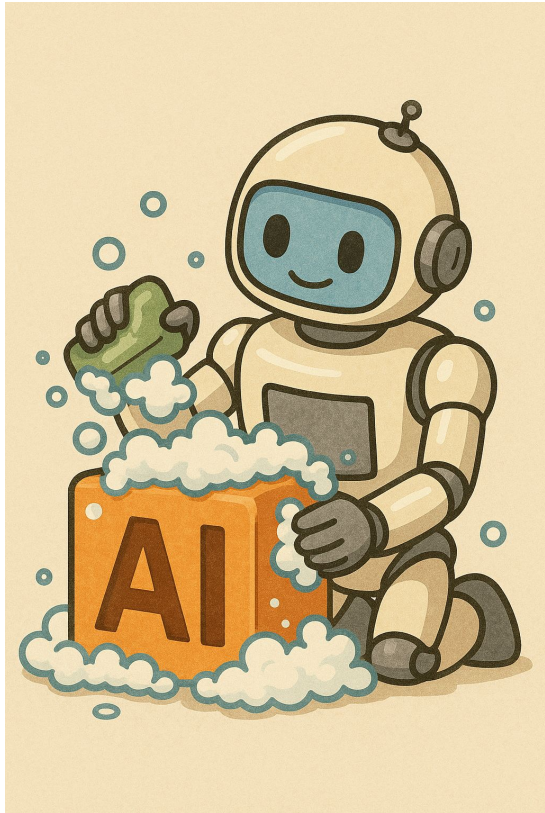


Agents and the Case for Autonomy

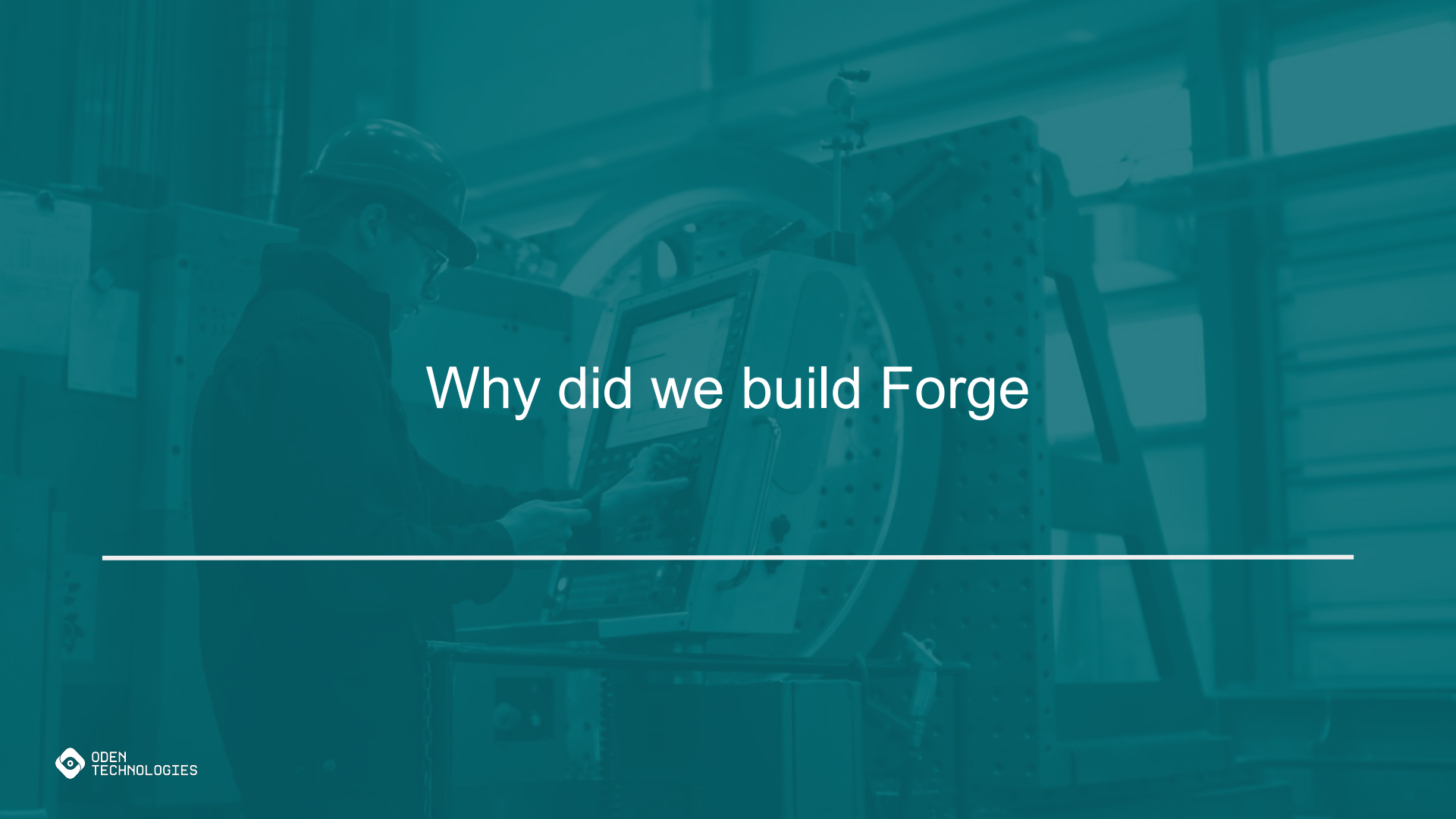


- **Safe and Trained:** The sweet spot
- **Safe and Untrained:** The zone of Untapped Potential
- **Unsafe and trained:** The Deceptive Zone
- **Unsafe and Untrained:** The Danger Zone

Closing Thoughts

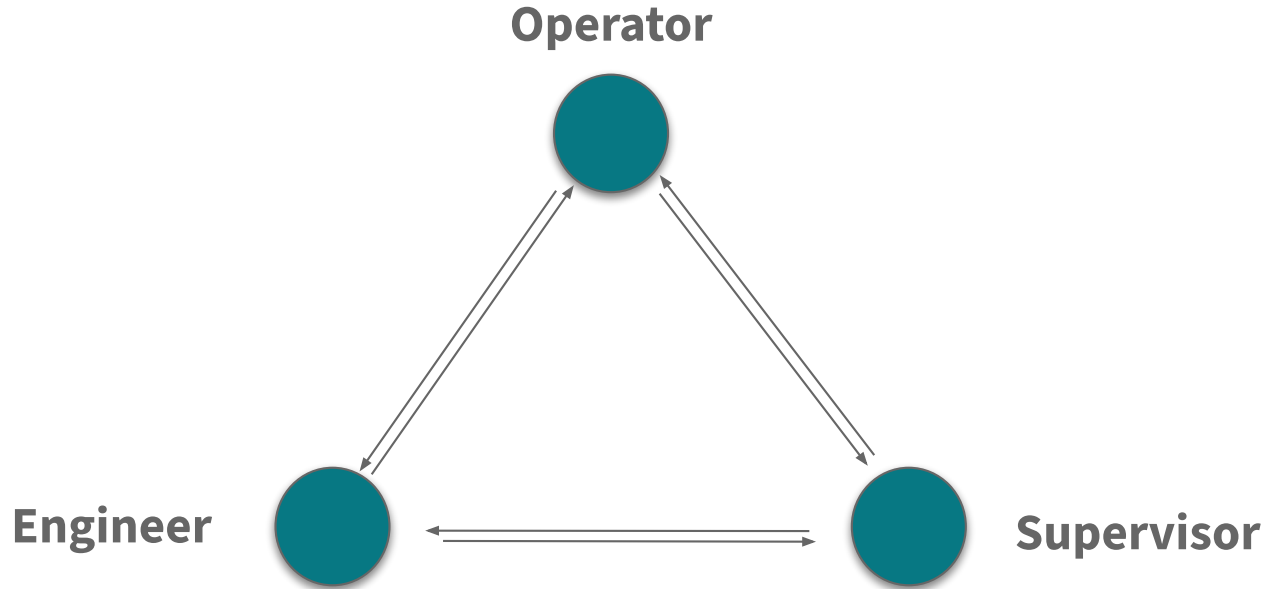


- ✓ **Do it the right way for the right reasons:** AI Agents provide substantial, unprecedented productivity gains if aligned with business objectives.
- ✓ **Data Quality & Reliability is Paramount:** Garbage In and Garbage Out has never been more relevant.
- ✓ **Understand Your Safe Operating Envelope:** Relying on probabilistic systems for critical processes without guardrails is not recommended.

The background image is a photograph of a worker in a hard hat and safety glasses, focused on a control panel of a large industrial machine. The entire image is overlaid with a semi-transparent teal filter. The worker is positioned on the left side of the frame, facing right towards the machine. The machine has a large circular component and a control panel with a screen and buttons. The text 'Why did we build Forge' is centered in the middle of the image in a white, sans-serif font. A thin white horizontal line is positioned below the text.

Why did we build Forge

Factory's Operations Heartbeat



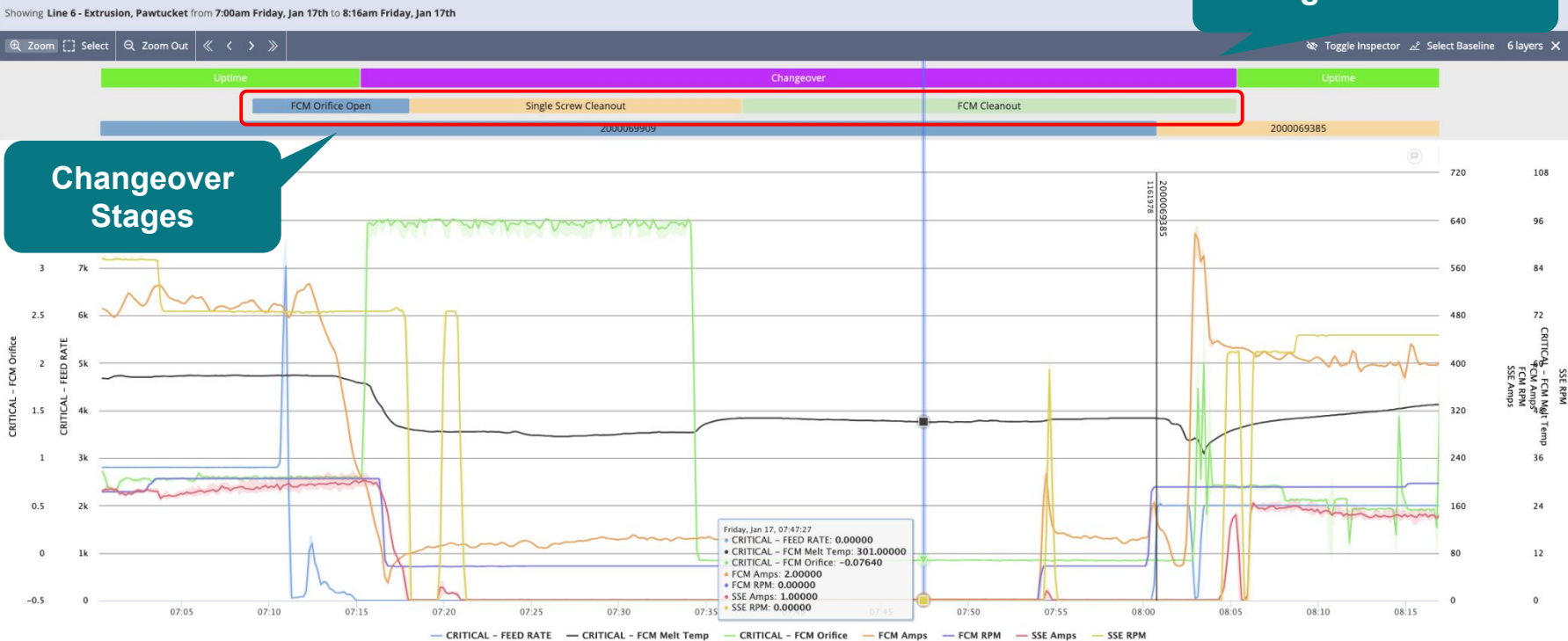
Are LLMs useful in Manufacturing?

Automatic Data Labeling Creates Useful Data For LLM

Time series data configured with rules, ML models, matrix profiles, & anomaly detection can improve data accuracy and trigger actions or agent workflows

Changeover Interval

Changeover Stages



Deterministic Queries = Trusted Insights

- LLMs are good at code generation
- Better performance with a DSL designed for manufacturing - Oden Query Language (OQL)
- Agents can be trained on unique data taxonomy to complex functions & process knowledge
- Model guardrails & built in feedback loop give control & iteration

</> Data

```
1  AGGREGATE
2  avg(metric_group('performance')) as 'Overall Average',
3  p75(metric_group('performance')) as 'Achievable Speed',
4  ((p75(metric_group('performance')) - avg(metric_group('performance')))/(avg(metric_group('performance')))*100 as '%
   Opportunity',
5  ((p75(metric_group('performance')) - avg(metric_group('performance'))*(timeinif(interval.state.type = 'Uptime')/60))
   as 'Potential Footage Gain',
6  round(timeinif(interval.state.type = 'Uptime')/3600,0) as 'Uptime Hours',
7  durationWeightedAvg(interval.run.performance_target.value) as 'Performance Target',
8  (avg(metric_group('performance')) / durationWeightedAvg(interval.run.performance_target.value)) * 100 as '% to Target'
9
10 WHERE
11   time from now() - 60D to now()
12   AND interval.state.type = 'Uptime'
13   AND factory.id = "71fbde62-82a7-496e-8aad-d87fa07b9718"
14 GROUP BY
15   product.name as 'Product',
16   line.name as 'Line'
17 ORDER BY
18   'Potential Footage Gain' DESC
19 HAVING
20   'Potential Footage Gain' > 0
```



Example Workflow



Understand the user **intent** & gather the **correct data**



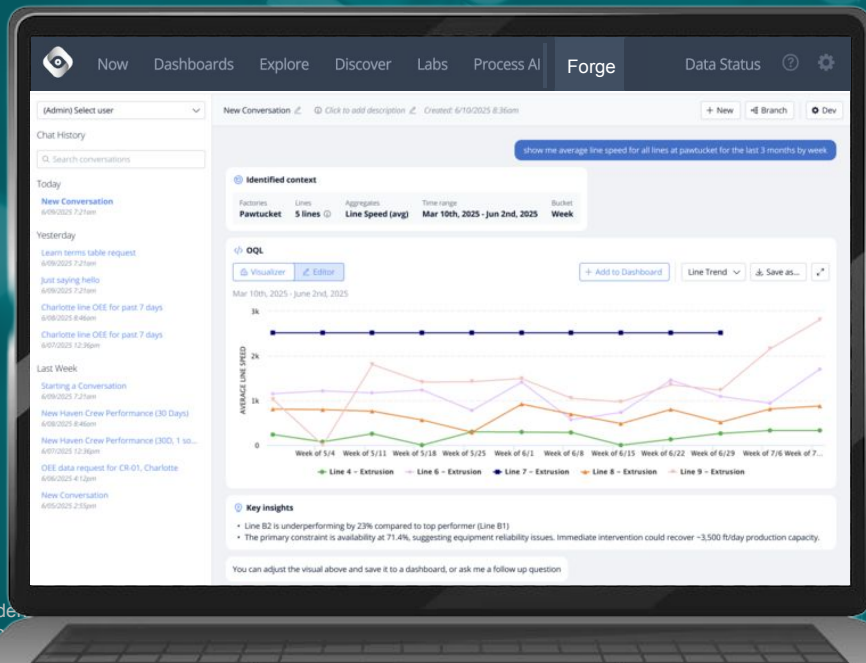
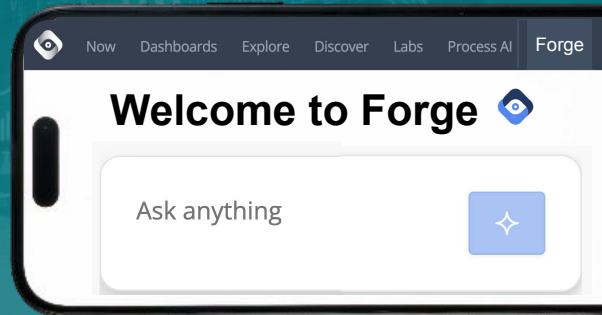
Analyze the data with **effectiveness**



Perform **action** or suggest with **controlled approval**

Forge

Multi-agent workflow to access all your data, tools and take action



AI Agents on your proprietary data

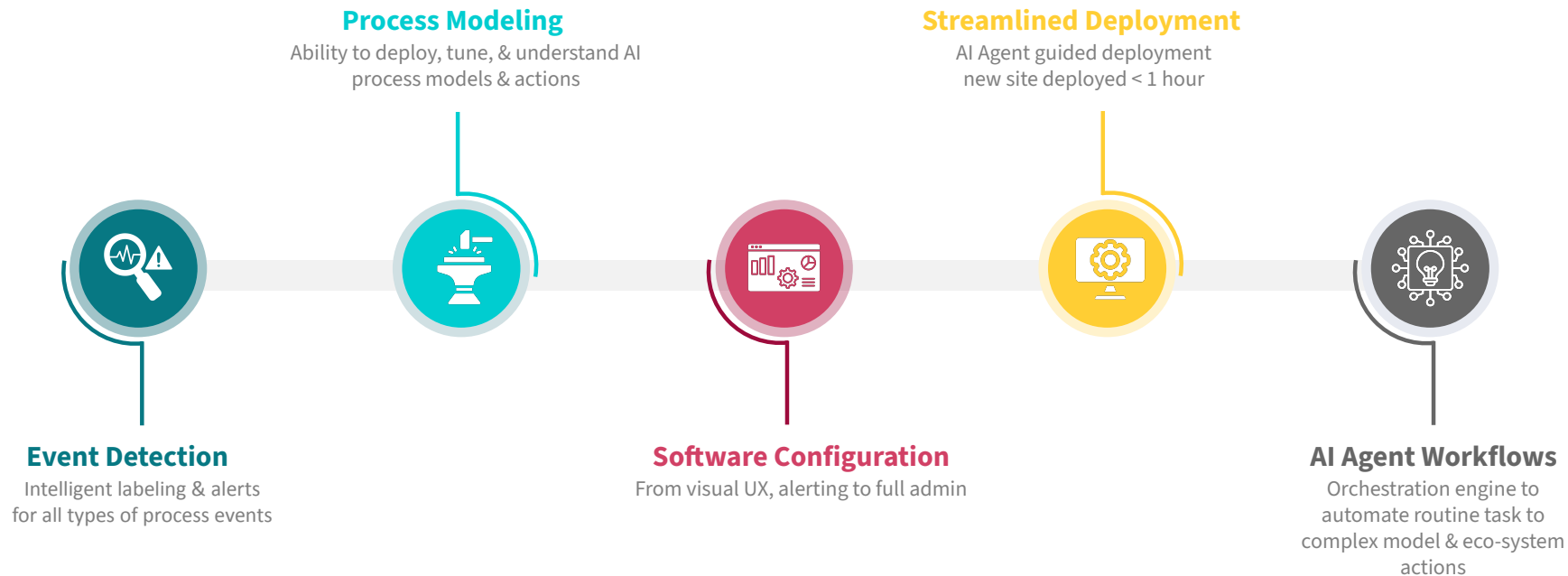
Forge is native to the Oden platform, access data, automate workflows and solve problems faster

Making the complex

easy allows customers to access tools that would have otherwise required Python, R, OQL or other languages through natural language



Forge Roadmap



Step 1 for Industrial AI

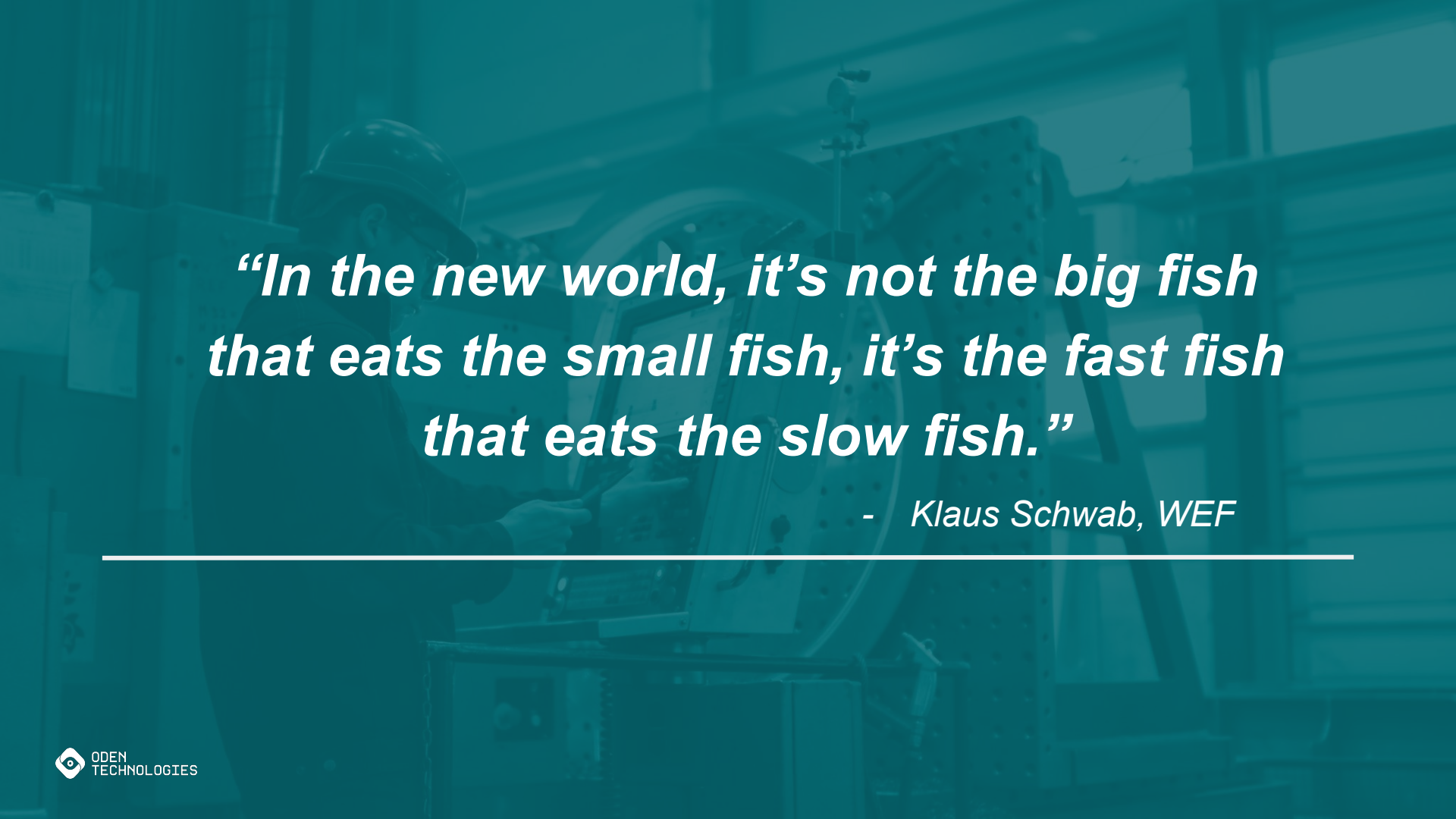
What is happening on the line?

Step 2 for Industrial AI

What should I do about it?

Step 3 for Industrial AI

Do it



***“In the new world, it’s not the big fish
that eats the small fish, it’s the fast fish
that eats the slow fish.”***

- Klaus Schwab, WEF



Contact an Oden expert at
oden.io/contact/
