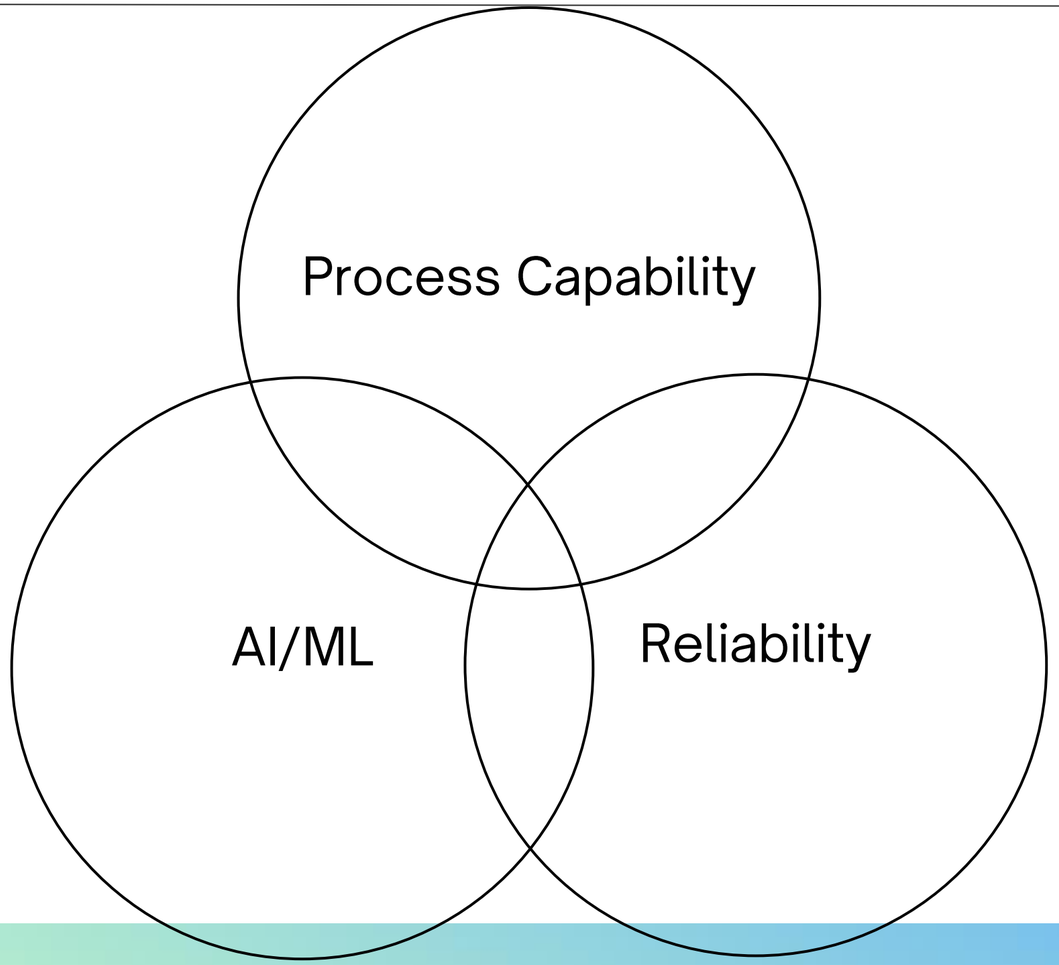

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Agenda →

Introductions

Predictive Maintenance: The Game-Changer

Why Equipment Reliability Matters

Measuring Reliability: Beyond the basics

A diverse perspective

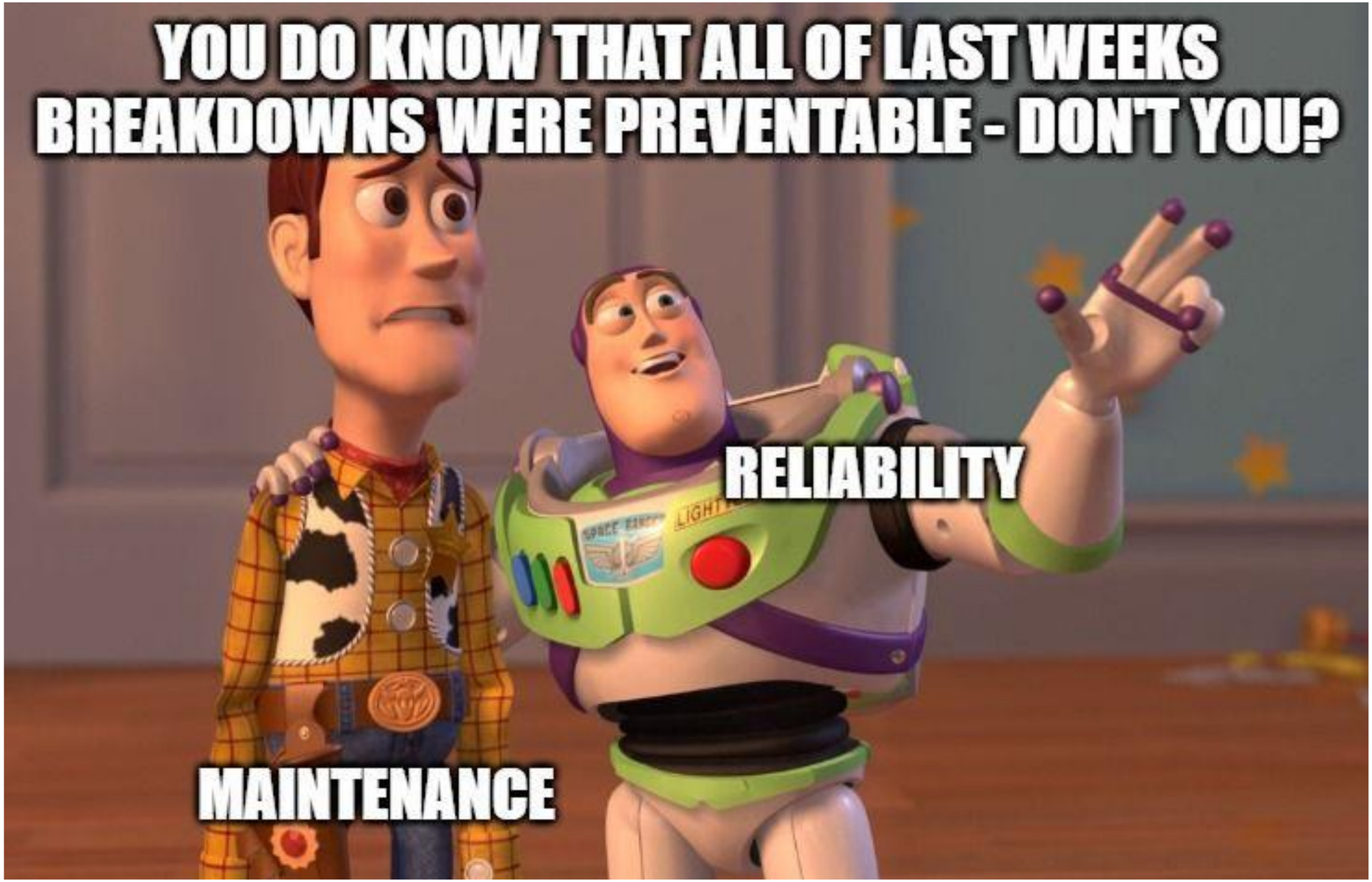
Getting started on your AI-enabled reliability journey

Wrap up and Q&A

Factory AI

Factory AI

To make innovation accessible to everyone in manufacturing



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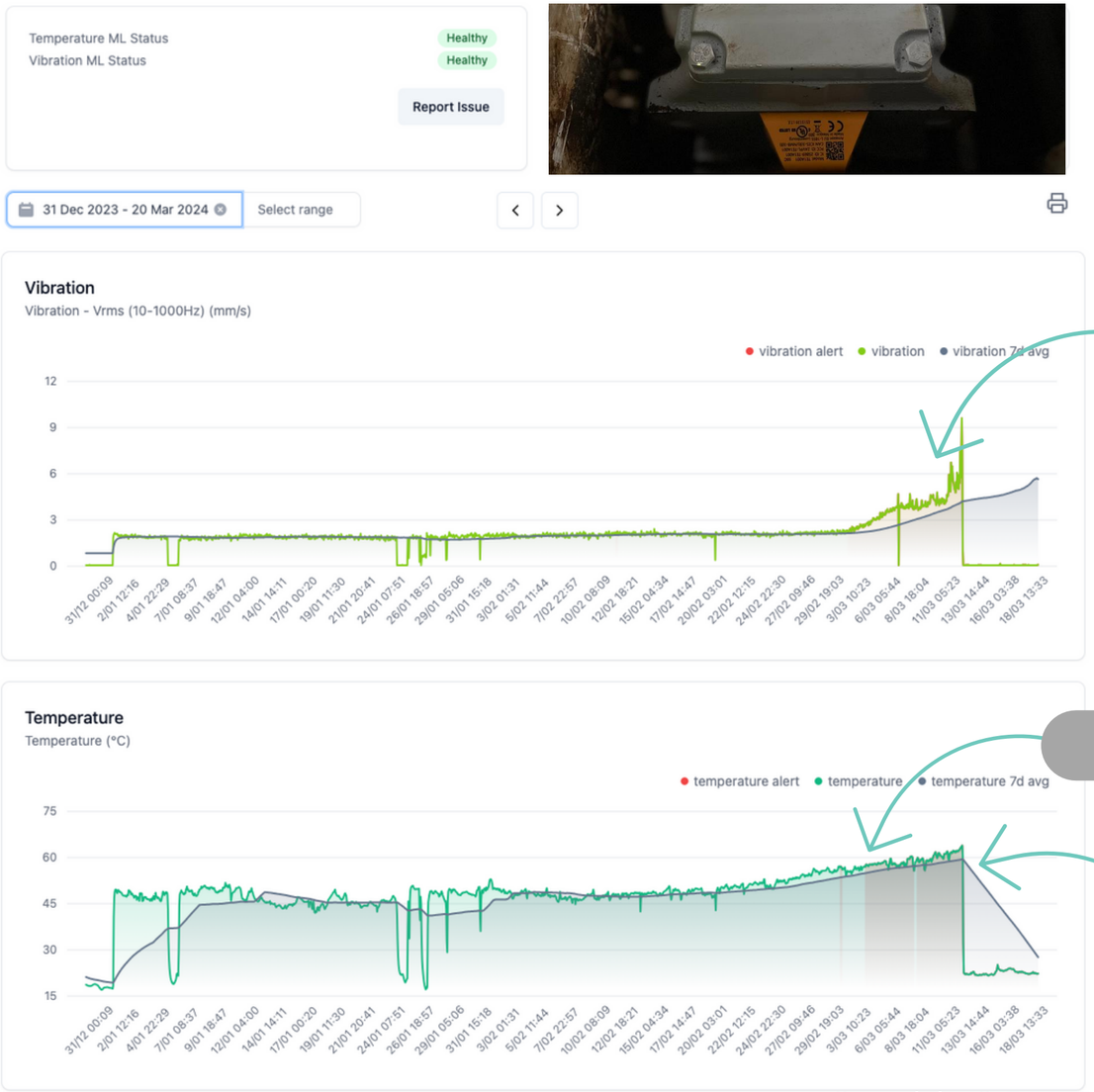
Engineers are Wizards

because they can predict the future



2nd Alert

1st Alert

Asset fails 2 weeks after the alert

Alerts Sent

3/03/2024

Two alerts to the team about the [redacted asset name].

What happened

Although unfortunate, this incident serves as evidence of the technology's accuracy in predicting and mitigating equipment failures.

Two-week notice to take action. In most situations, this timeframe is sufficient for the team to make the appropriate decision and act accordingly.

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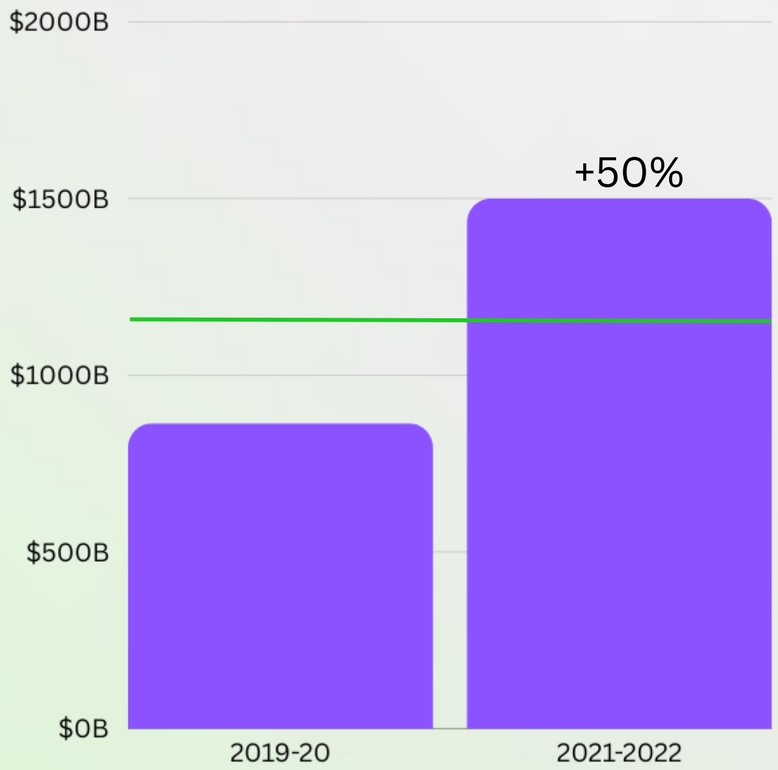
Every year, manufacturers are losing more money to downtime



Cost of unplanned downtime across global Fortune 500 companies

$1.5T

DUE TO UNPLANNED DOWNTIME

3.3M hours

OF UNPLANNED DOWNTIME

11%

ANNUAL REVENUES

Source: Senseye, “True Cost of Downtime”

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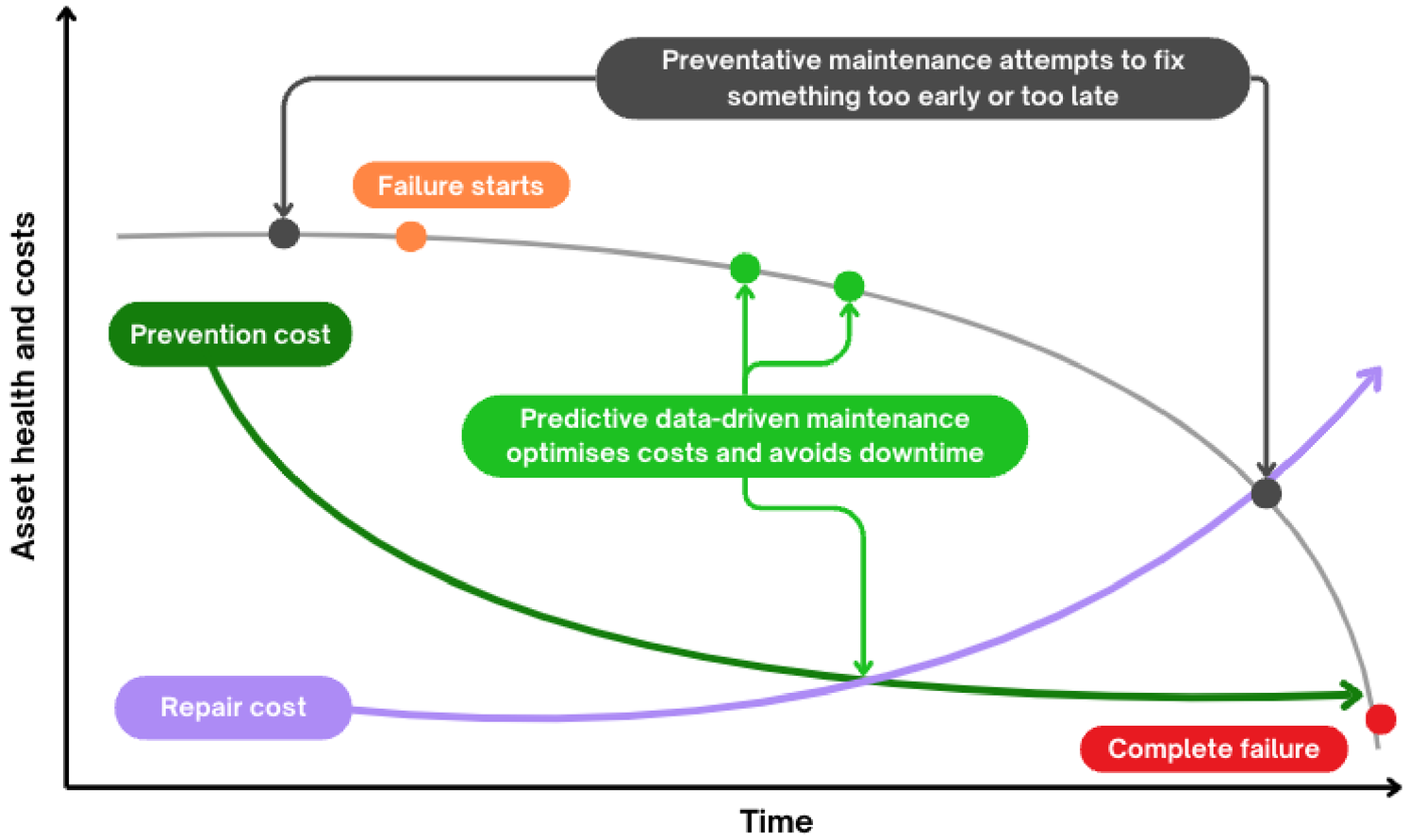
Status Quo

Predictive Maintenance

Currently solve the problem using preventative or reactive maintenance process



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You can’t improve what you don’t measure

Availability = Run time / Plan Production

= MTBF / (MTTR + MTBF)

= Uptime / (Uptime + Downtime)

99.9% Availability = 8 hours and 41 minutes of downtime per year
99% Availability = 87 hours and 36 minutes of downtime per year
98% Availability = 3 hours of downtime per week, 8.5 minutes per 8-hr shift.

What went wrong?

Failure modes - lubrication, looseness, cavitation, transmitted etc.

Why did the failure happen?

Failure cause - maintenance, operation, wear etc.

What was the consequence?

Downtime hours, penalties for missed deadlines, unproductive labour, emergency repair costs, overtime labour expenses, expedited shipping for parts etc.

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Moving the needle in the right direction

What other metrics are important?

Increasing products produced per maintenance hour

Improving revenue per maintenance dollar spent

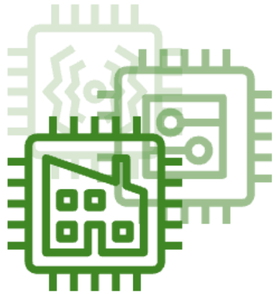
What can we learn from other industries?

Monitor and observe each subcomponent of a system/process

Systems that can self-heal or automatically recover from issues

Develop and implement playbooks and continuity plans

How does predictive maintenance work?



Source

Sensors, Time-series tags, Historian, CMMS, SCADA, ERP etc.

Collect

Easily ingest terabytes of data with Factory AI's reliable and secure cloud based platform.

Discover

Contextual information such as production line, asset types, and asset details help enhance system output.

Detect

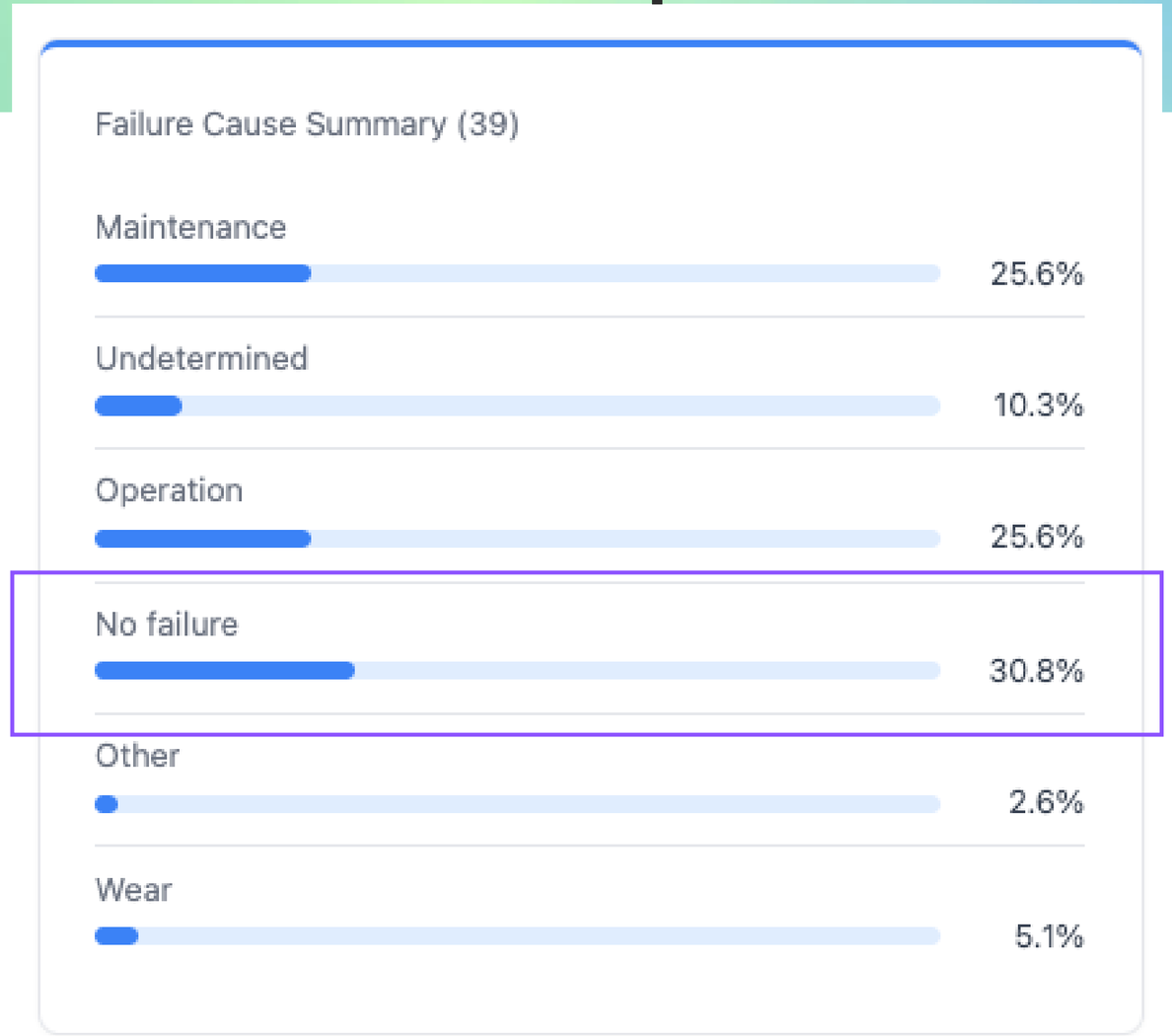
Asset data is analysed to understand when performance degrades or is about to fail.

Feedback

Factory AI notifies the user with the next best action. Users can provide feedback to further improve the accuracy of the machine learning models.

Factory AI

Expect some false positives



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Getting started

Problem Summary

The team currently doesn't collect asset data for maintenance prioritisation, leading to preventable asset failures and significant annual costs for the site.

[Team] seeks to transition to predictive maintenance by instrumenting assets and leveraging machine learning.

Objective

Transition to predictive maintenance.

Equipment health data will provide valuable insights **to prevent costly equipment failures** and **enhance maintenance planning.**

Business outcomes

We aim for a **15% reduction in unplanned downtime** for monitored assets, resulting in significant annual **savings amounting to hundreds of thousands.**

Remove periodic inspections tasks on monitored equipment; **improving maintenance productivity**

Pilot success metrics

The pilot's success will be evaluated based on three key metrics:

1. Generating **3+ true positive alerts that prevent a failure.**
2. Benchmark against revenue per maintenance dollar or products produced per maintenance hour

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Create a SWAT team

Build a small cross-functional team

	Leadership	Domain Expert	Data
Person	**Site leader or Executive**	**Engineer**	**Data Lead**
Commitment	30 mins / monthly	1 hr / week	1 hr / week
Responsibility	1. Review business case, provide feedback from leadership. 2. Provide executive sponsorship	1. Provide guidance on best assets and components to instrument. 2. Feedback on FMEA / RCA	1. Integrate data from different systems 2. Analyse and surface patterns 3. Measure ROI and suggest most valuable use cases

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Key Takeaways

Think big but start small

AI isn’t perfect, we’re all learning together

Create tight feedback loops to go fast

Thank you

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CTO of Factory AI

Need a hand getting started?
Or want to connect to dive deeper

Scan the QR code above
or click this link to schedule a time to chat with us

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What assets should you pick?

Use the matrix below and your PM data to **select a pool of about 30-50 assets.**

A high cost of failure as
determined by unplanned downtime hours

Operational profile
(must be constant speed +/- 10%)

A high emergency WOs (EM) or
preventative maintenance (PM)
or corrective maintenance (CM) WOs

Asset can be shutdown to install sensor

Degradation failure that can be measured by
vibration and/or temperature

Connectivity / Network requirements

Failure occurs in a process of degradation
over time, preferably over five days or more

Is rotating equipment with bearings including
motors, pumps, compressors, gearboxes, fans.

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