

PREsenso.

NEED



Downtime reduces an average of at **least 5%** of a factory's productive capacity. In some cases, **its 20%**



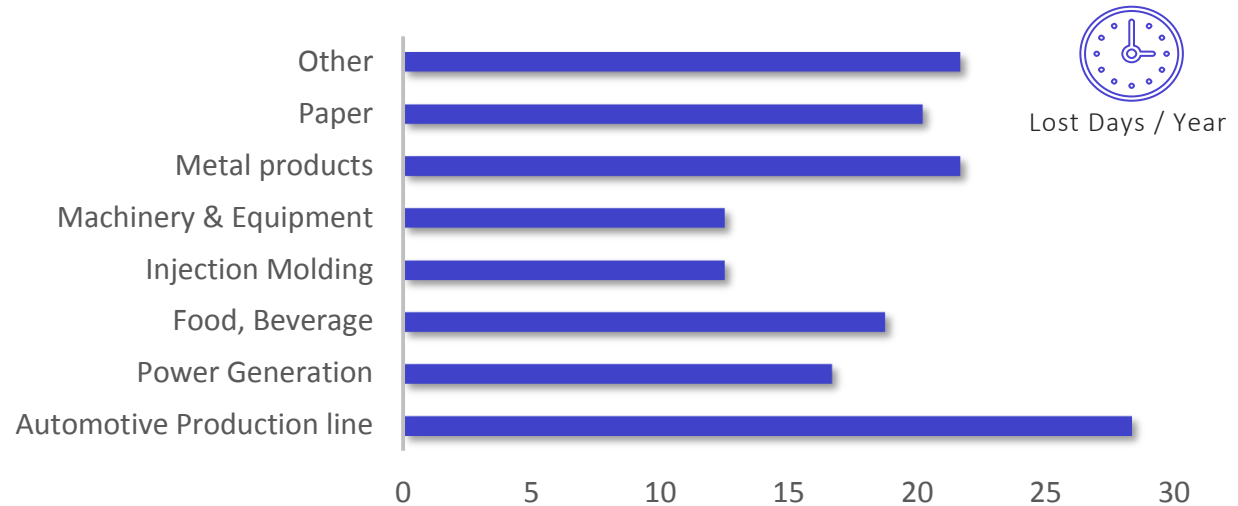
80+% of Manufacturers have No Model to Quantify Downtime Costs

92%



Maintenance Related Shutdowns were Unplanned

An average of **17** days of production are lost annually **per machine**



Lost Days / Year

THE TRADITIONAL INDUSTRIAL WORLD IS CHANGING



THE INDUSTRIAL IOT POTENTIAL IS SIGNIFICANT

Manufacturers
Investments
expected to total
US\$ 907 B
per year
until 2020

Revenue to
rise by
US\$ 493 B
per year
until 2020

Costs to be
reduced by
US\$ 421 B
per year
until 2020

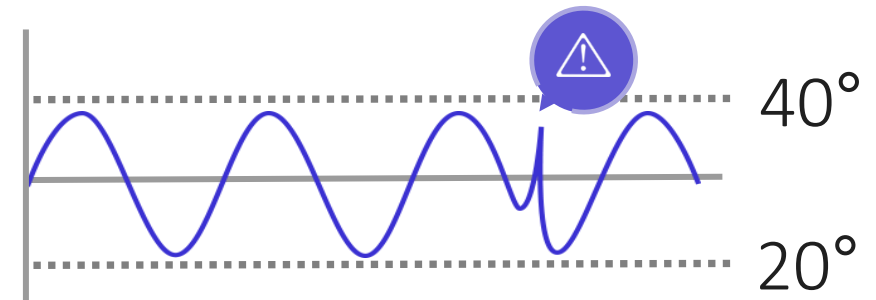


CURRENT INDUSTRIAL MONITORING SYSTEMS

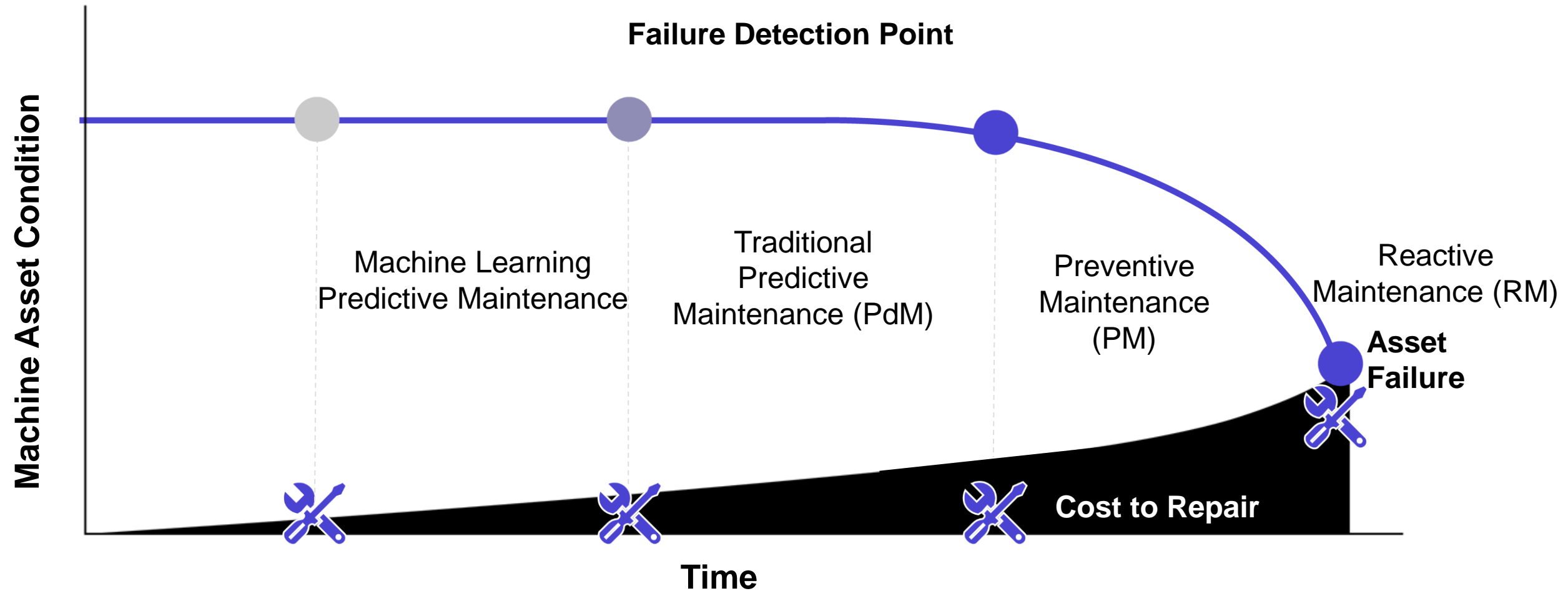


Traditional SCADA systems are outdated
No available system today can handle large amounts of data in real time.

All use rule-based alerts that leave abnormal events undetected:



HOW MACHINE LEARNING FITS INTO THE ASSET MAINTENANCE MIX

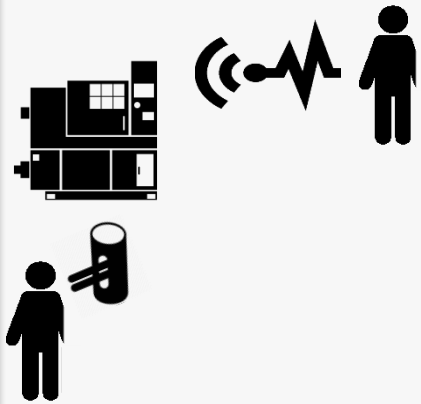


SOLUTION

BIG DATA FOR ASSET MAINTENANCE

HW Based solutions

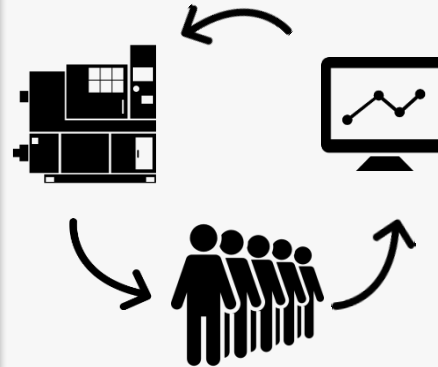
Acoustic and Vibration sensors



Requires new HW manufacturing and deployment

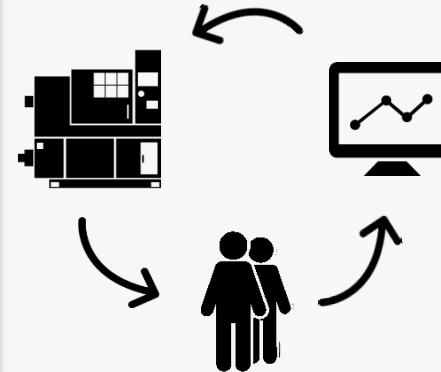
SW Based solutions

Simulated Digital Twin



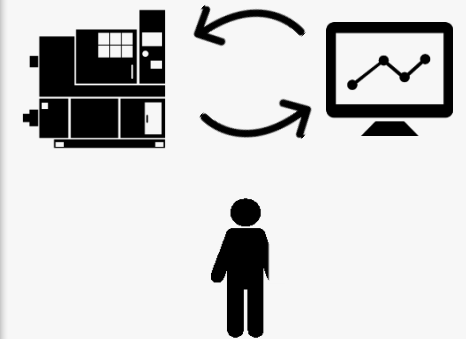
Mechanical Eng. work with Data scientists to manually build machine model

Manual Statistical Modelling



Data scientists manually build machine models based on historical data

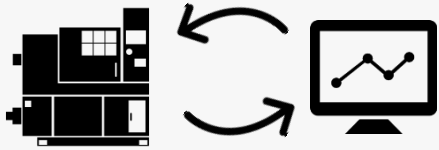
Automated Machine Learning



Automated machine modeling with no man in the loop

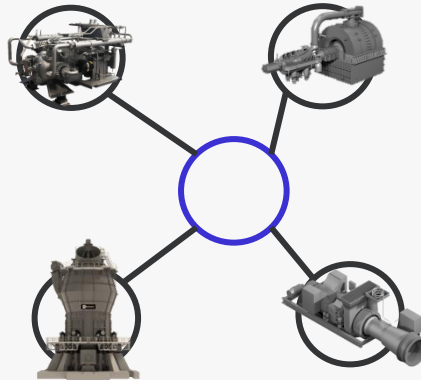
AUTO ML – WHY?

Automated Machine Learning



Automated machine modeling with no man in the loop

1 Solution for Multiple Types of Machines



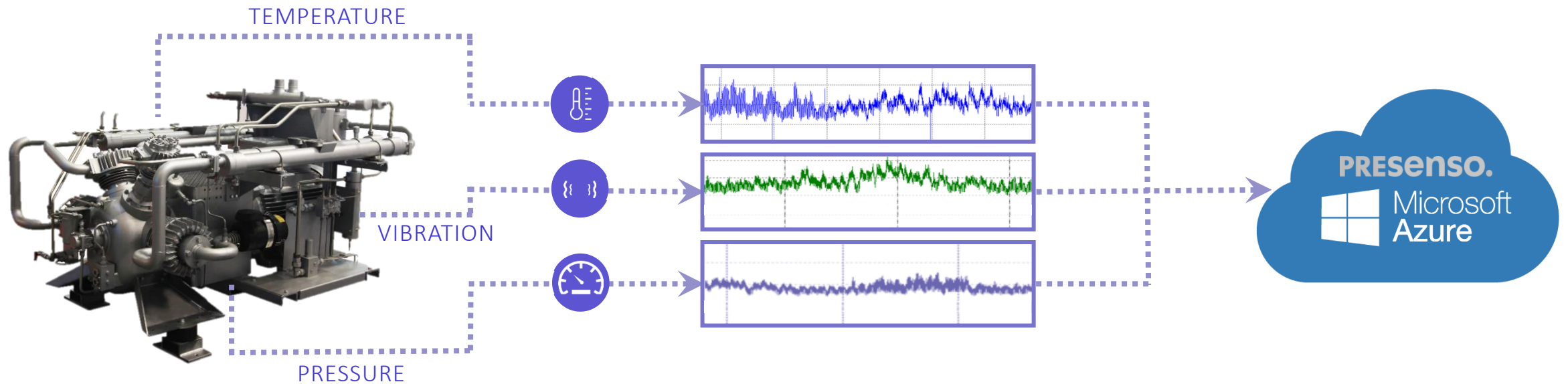
Quick to Deploy



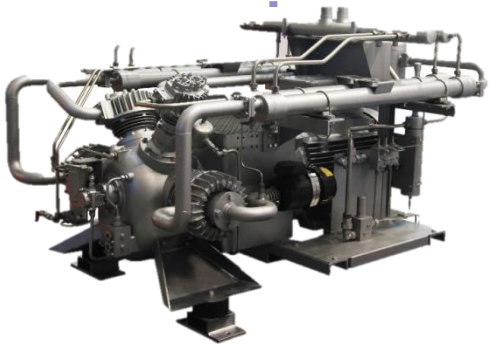
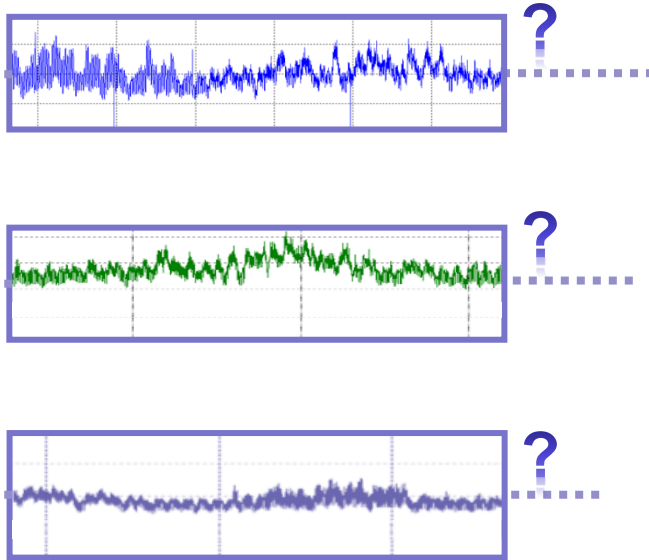
Self Adapting and Maintaining Models



AUTO ML – HOW?



AUTO ML – HOW?

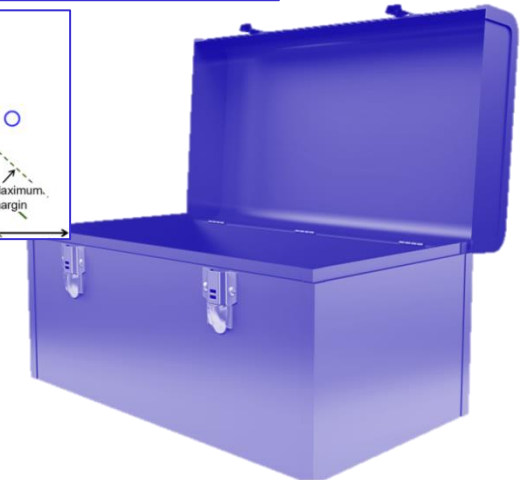
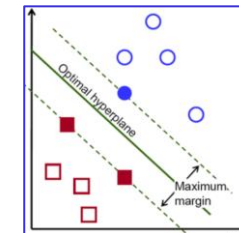
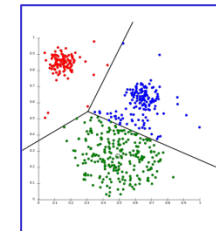
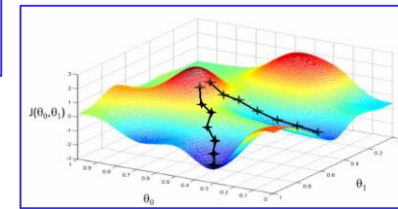
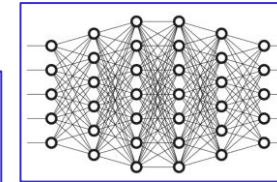
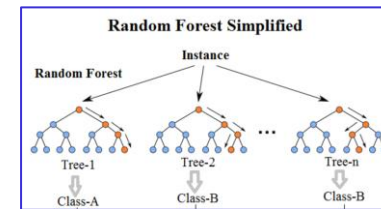


“Automated Machine Modeling”:

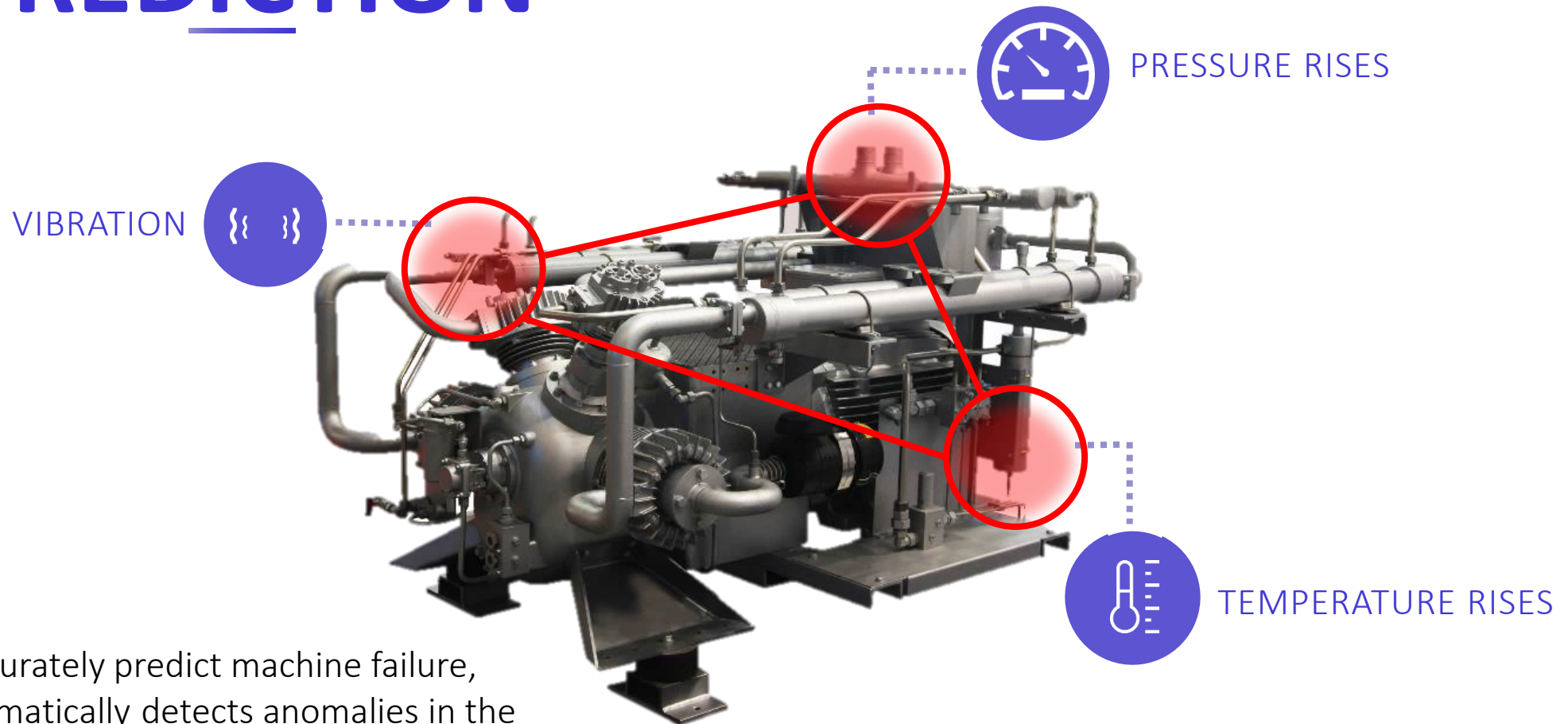
- SW selects its own algorithms
- Generates representing models of machines
- Continuously validates and maintains models

PREsenso.

**100+
Models**

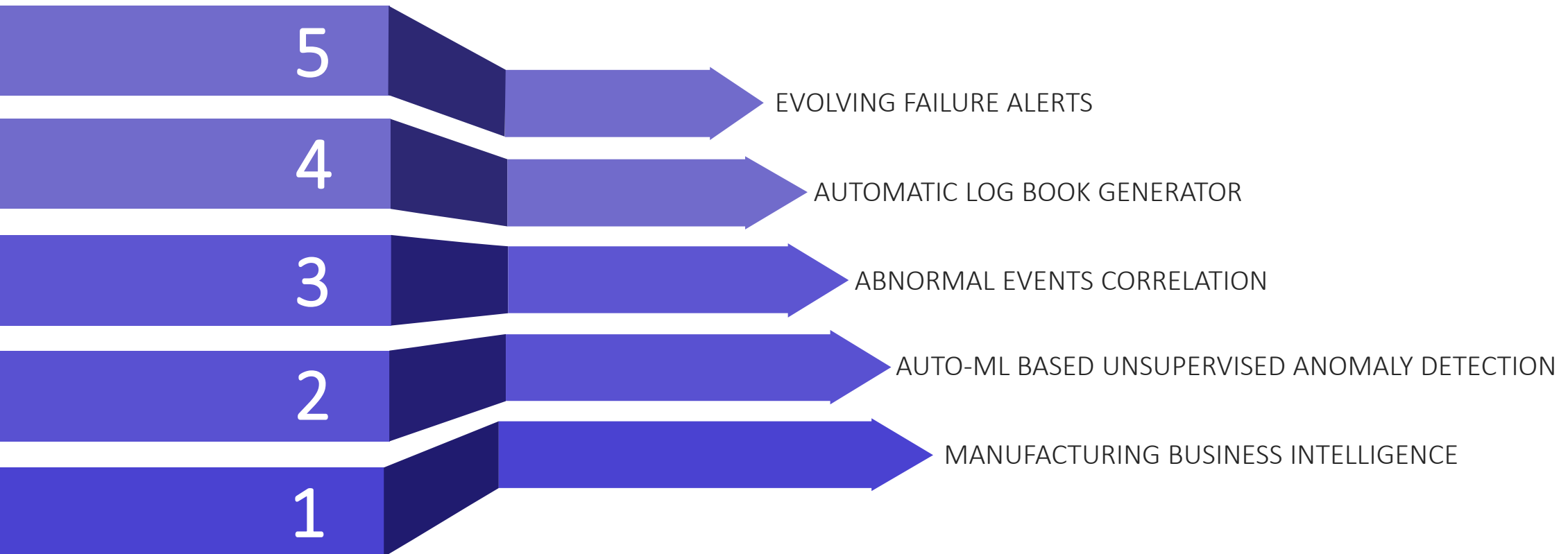


FAILURE PREDICTION



In order to accurately predict machine failure, Presenso automatically detects anomalies in the signals and finds the correlation between them

5 Layers Of Value



USE CASES

PREDICTIVE ASSET MAINTENANCE

MANUFACTURING BI

Enhanced monitoring of automated warehouse that is the logistic heart of a large German valve manufacturer



MACHINE MODELING

Early detection of increased pressure and current consumptions in 16 cement mills across the world



FAILURE PREDICTION

82% of failures predicted days in advance in a farm of wind turbines in a European mountain range



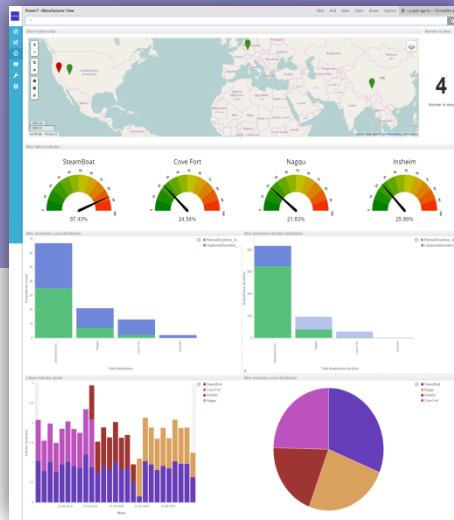
FAILURE PREDICTION

100% of failures predicted 10 days in advance in a waste to energy power plant in Austria



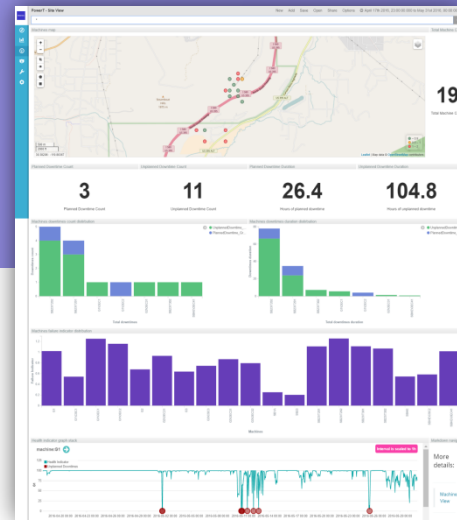
DASHBOARDS

FOUR LAYERED DASHBOARDS



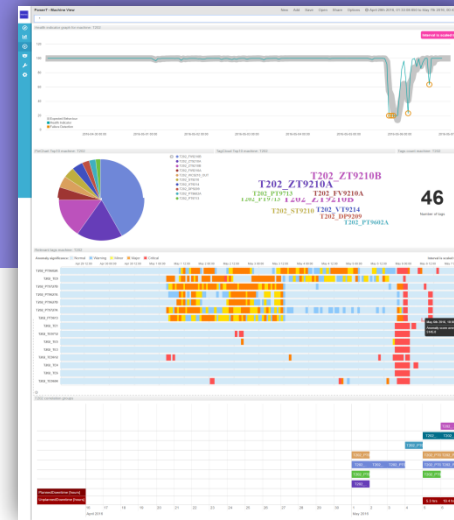
GLOBAL OVERVIEW

Compare sites performance



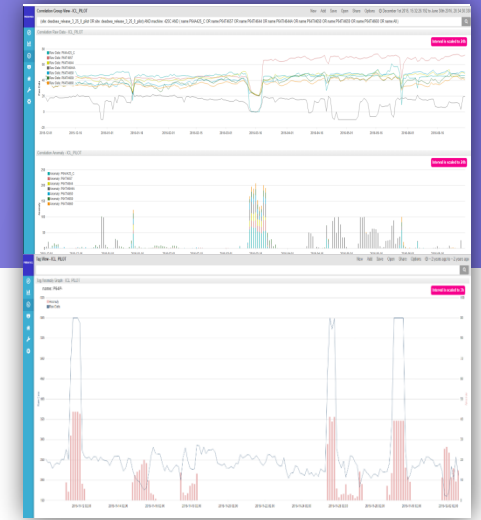
FACTORY VIEW

Easily compare machines operations



MACHINE VIEW

Single machine view for a lower level investigation



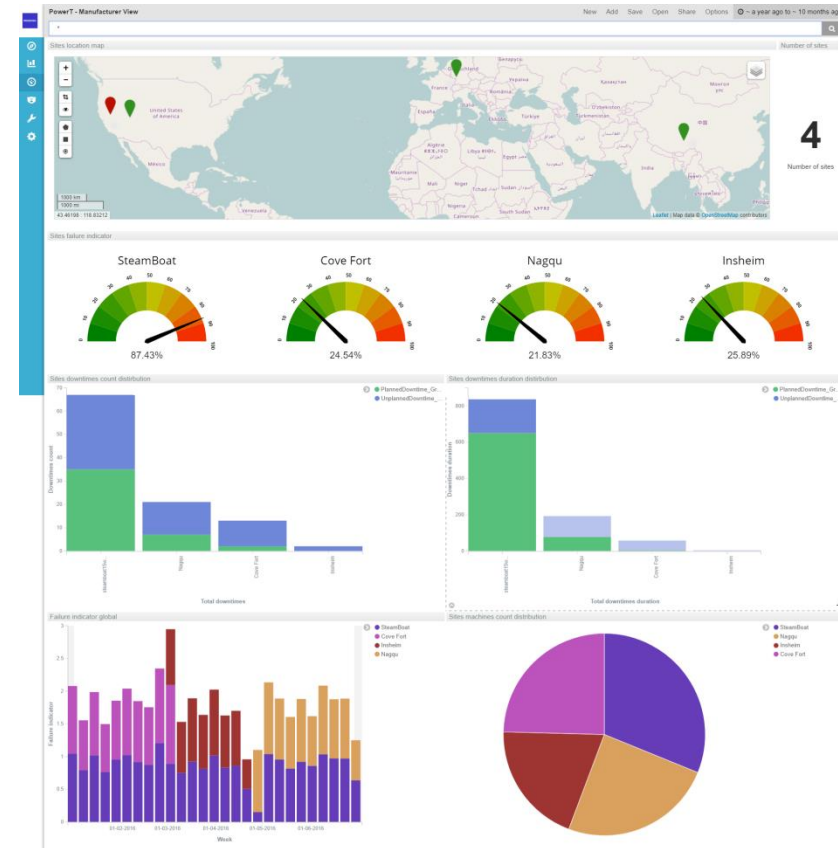
SENSORS VIEW

Sensor raw data available for further technical analysis

GLOBAL OVERVIEW

ONE VIEW OF THE ENTIRE GLOBAL FLEET

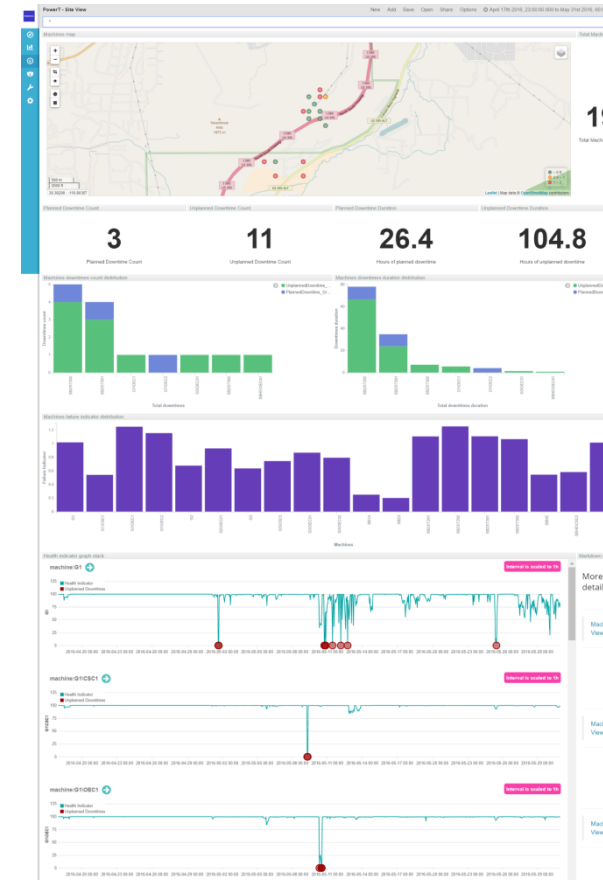
- High level real-time report showing a global overview of your operation
- Presenting the performance and probability for a failure in all sites
- Easily compare site performance



FACTORY VIEW

COMPARE MACHINE BEHAVIOUR

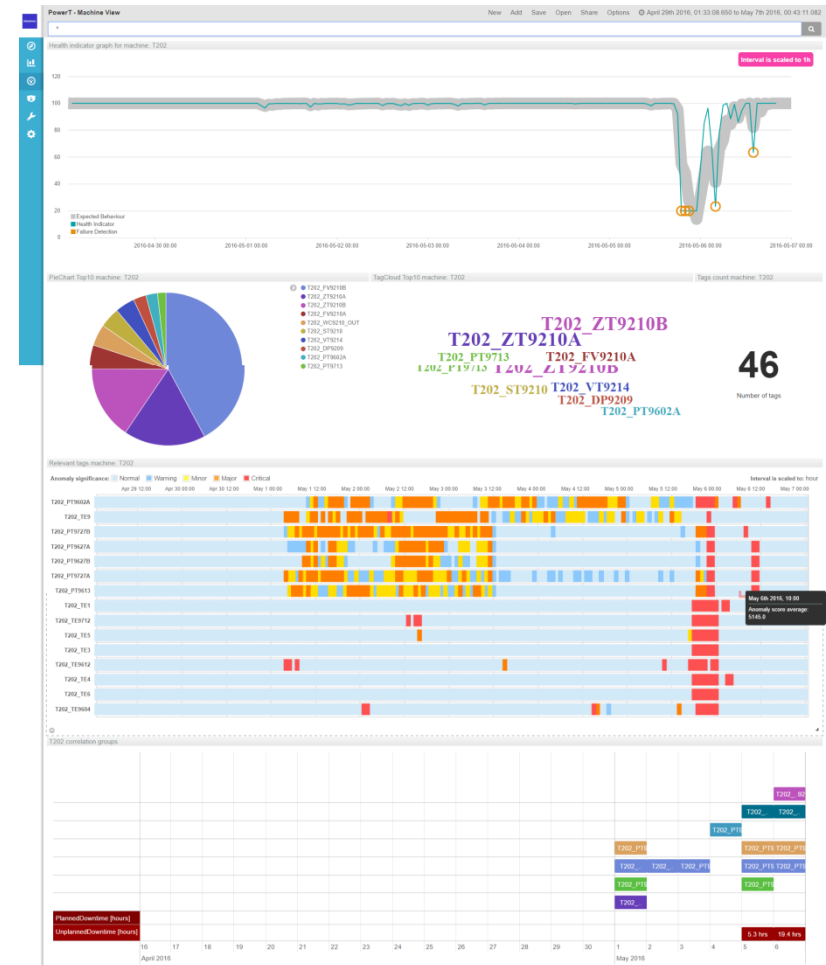
- View all machines operating in your facility on one screen
- Get clear visual indication of machine performance
- Compare machines with adjacent ones in the fleet
- Start investigating in the event a machine is marked as prone to fail



MACHINE VIEW

TECHNICAL VIEW OF SUSPICIOUS MACHINE BEHAVIOUR

- Low level drill down into a single machine dashboard
- List of top anomalous sensors
- Mapping off all abnormal sensor measurements detected
- Cross-sensor correlations



Machine Health Indicator

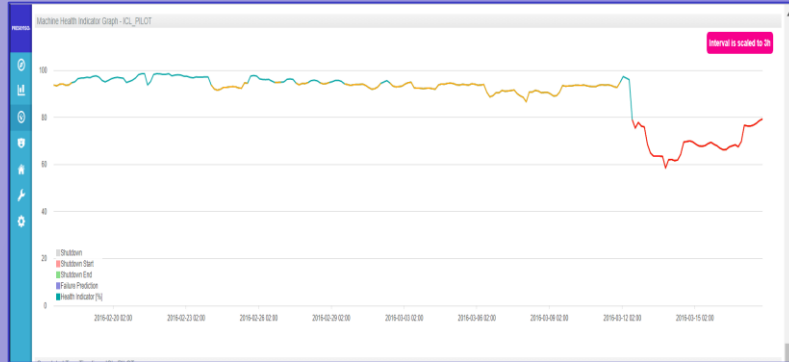
Most Anomalous Sensors

Anomalies Map

Detected Correlations

MACHINE DASHBOARD

Health Indicator



One single aggregated metric, calculated based on all findings on a specific machine

Correlated Sensors



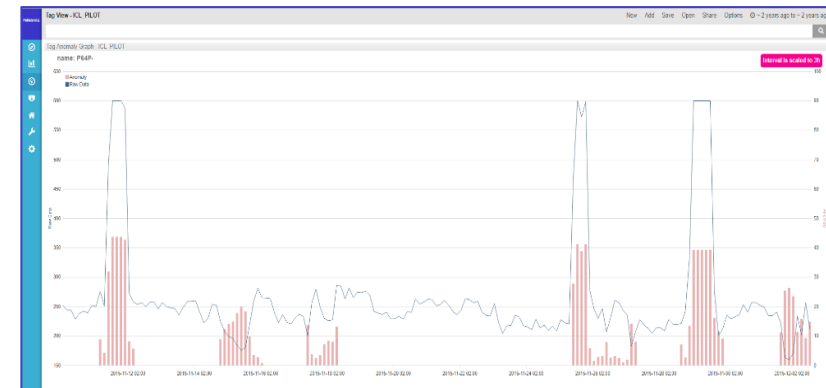
Clusters of auto-correlated abnormal sensors, assisting in partitioning to machines sub components

Anomaly Map



Intuitive visual representation of abnormal process detected cross-sensors

Raw Data with Micro-anomalies



Low level raw data available with continuous and real time anomaly detection

In Conclusion

01

Agnostic to sensor physical attribute and to machine type

02

No additional HW

03

Fast, remote deployment
No need to be on site

04

No human in the loop,
no expert knowledge

05

4 levels of value – BI, Anomaly Detection,
Event Correlation, Prediction

06

Fast learning time –
fully operational short time after installation

07

Modern big data technologies,
Machine Learning , Deep Learning

THANK YOU

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