

NTT Data
Trusted Global Innovator

DIGITIZE MAINTENANCE SOLUTION

**REDUCE ASSET DOWNTIME,
MAXIMIZE PERFORMANCE**



WHAT IS IT?

NTT DATA's Digitize Maintenance Solution helps manufacturers implement reliability-centered maintenance strategies designed to minimize unplanned downtime, optimize asset performance and automate maintenance operations. It integrates SAP platforms, plant management and back-office automation, so enabling faults to be detected earlier and the appropriate maintenance procedures optimized.



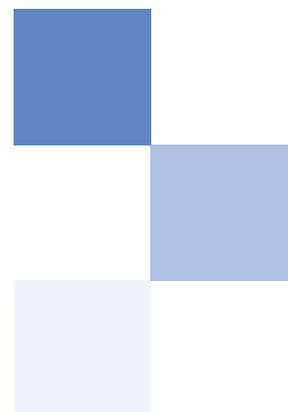
THE BUSINESS CASE

When it comes to issues relating to the maintenance and services of their production assets, unplanned downtime and the need it creates to provide rapid-response service for a piece of equipment that has suddenly failed, have long been major headaches for manufacturers.

Unsurprisingly, reducing unplanned downtime is considered one of the major maintenance goals by nine out of ten companies, according to a survey by PAC/CXP Group. Being able to extend the life of older equipment is a no less important objective and so is boosting customer satisfaction. After all, if a manufacturer has less unplanned machine downtime, it is better placed to make its products to schedule and deliver them on time, so creating happier customers.

In an ideal world, all maintenance would be planned and executed at the time that best suits the manufacturer. NTT DATA's Digitize Maintenance Solution seeks to help companies do just that, enabling them to reduce unplanned downtime, and the associated high costs of halting the production process. It also enables companies to plan their service-related processes better and optimize holdings of spare parts.

The Digitize Maintenance Solution also makes possible new "servitization" business models for the manufacturers of production assets. In Maintenance as a Service, for example, the machine manufacturer takes over the maintenance tasks from the customer and uses IIoT technologies to continuously collect data on how its machines are being used in the field and remotely monitor their healthiness. That data can be used to optimize field maintenance tasks, performed by the manufacturer or a service provider, and to improve the design of future machines.



THE SMARTER WAY TO DO MAINTENANCE

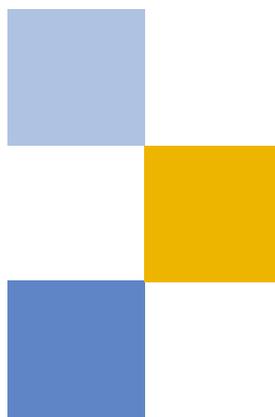
The least effective type of maintenance is reactive maintenance, which represents the worst-case scenario of the machine failing without warning and having to be repaired quickly. As well as the direct revenue lost through halted production, there are many additional costs associated with reactive maintenance, such as having to have maintenance staff on call to work outside regular hours, holding high spare part inventories or paying a premium for parts that are not in stock and are needed urgently.

To avoid those overheads manufacturer have traditionally undertaken preventive maintenance on critical production assets. This involves conducting routine maintenance at fixed time intervals with the aim of spotting potential problems with a critical component and replacing it before the problem gets worse and causes a failure.

The arrival of digital technology on the shop floor has helped improve preventive maintenance tasks. Using handheld equipment or sensors fitted to a machine, it is possible to regularly monitor the condition of a machine and detect abnormal parameters that often lead to equipment failure.

For example, a motor may start to vibrate after being in use for extended period due to bearings wear. The motor manufacturer knows that its motors fail more often once the bearings have worn, so it advises customers to repair the motor if the vibration goes over a threshold.

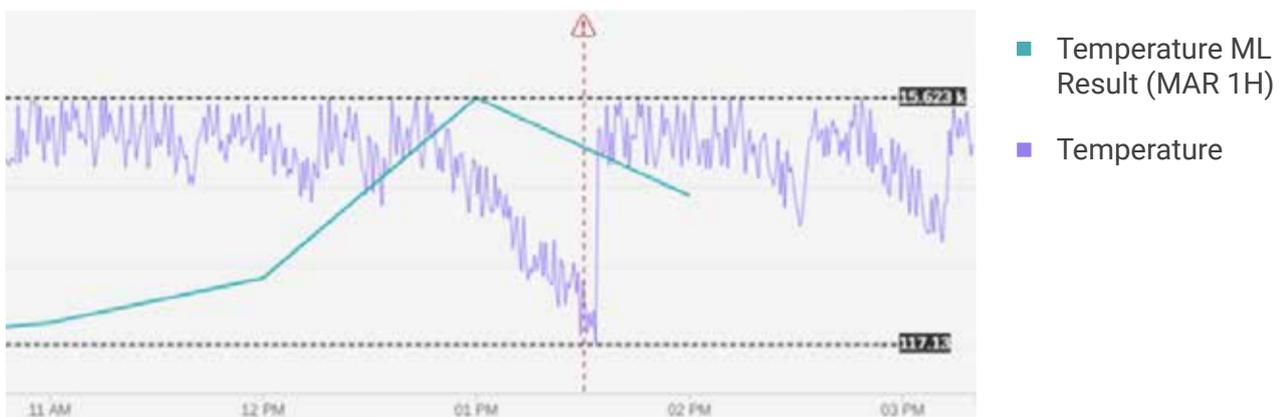
Thanks to the IIoT, it is now possible for manufacturers to go much further and manage their production assets and associated maintenance processes in a much more intelligent way. Digitizing maintenance procedures has the advantage over traditional labor-intensive preventive maintenance because the fault-finding is largely automated and possible issues can be detected much earlier on.



This is done using ML algorithms that analyze the real-time data produced by sensors on a machine and compare it with the historic data collected from that and similar machines.

By identifying early warning signs that are correlated to the specific conditions in which a machine is operated, the algorithms can predict the probability of total failure of the machine. This reduces the need for planned maintenance and permits the manufacturer to continue using the machine with confidence during its Remaining Useful Life (RUL).

The RUL will probably vary from machine to machine even if they are of the same model or family. Different machines may be exposed to different ambient temperature or humidity or the specific operating conditions, such as cycle time, may differ. ML algorithms take these variables into account, so enabling manufacturers to adjust their preventive maintenance activities to the real needs of each machine.



Caption: Graph showing the output of a ML algorithm (blue line) that monitors temperature sensor data (violet line) and warns of impending failure before it occurs (red line)

NTT DATA DIGITIZE MAINTENANCE SOLUTION

Main Features

- Cloud solution
- Configurable algorithms for triggering actions
- Tool fatigue detection
- Failures and breakdowns detected in advance
- Scheduled maintenance assistant
- SAP Plant Maintenance integration



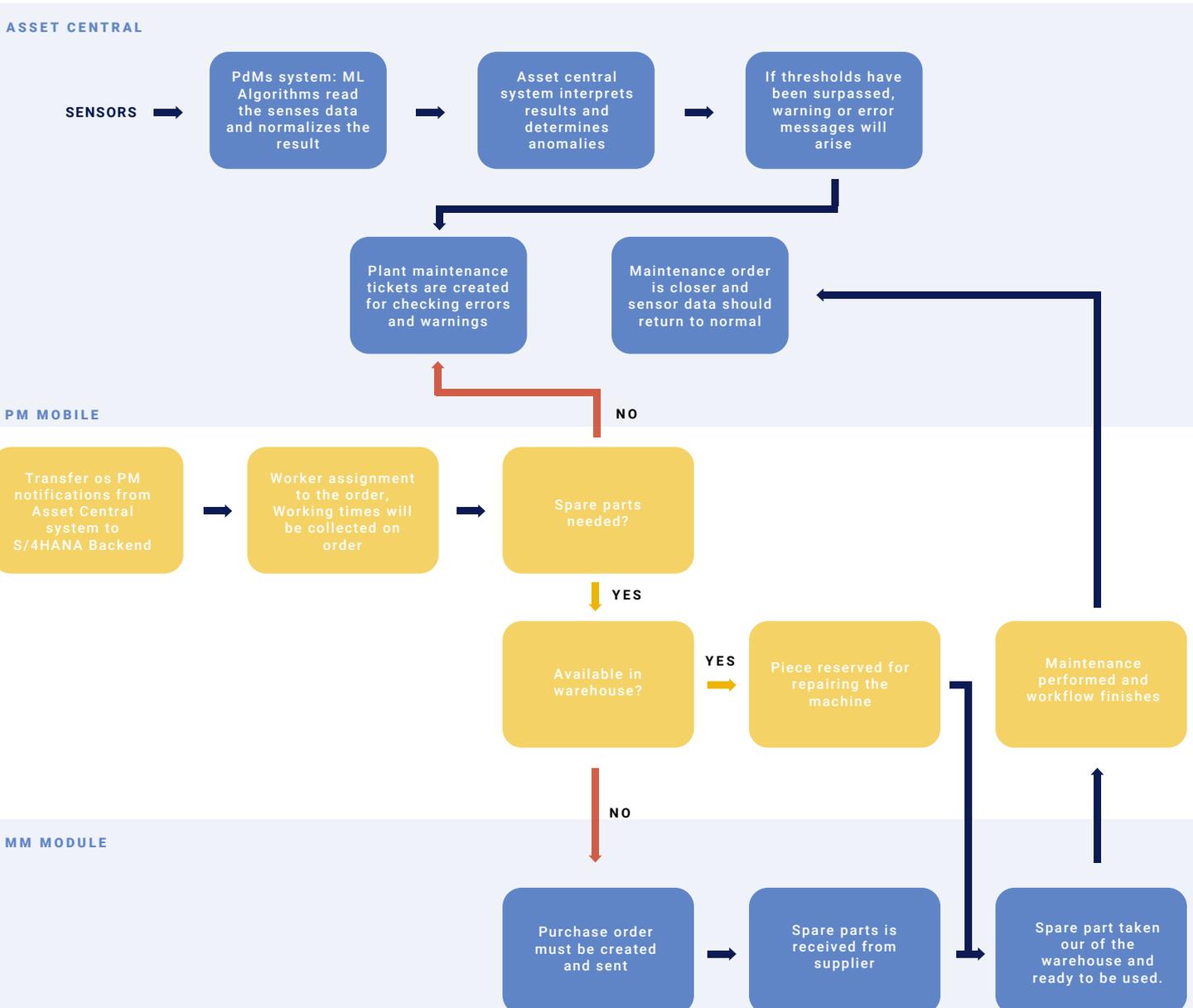
How it works

NTT DATA leverages the powerful predictive capabilities of SAP Predictive Asset Insights to predict equipment malfunctions before they occur.

It does this using advanced algorithms to process and analyze large quantities of sensor data and other operational data and so obtain insights that help reduce machine downtime.

If a warning condition is detected, SAP Asset Central automatically notifies the Plant Maintenance module of SAP S/4HANA back-end system and the appropriate business processes are started to repair the defective asset.

The work order automatically assigns a worker to the maintenance task, the necessary spare part needed for the repair is requested from the warehouse and if it's not available, then order is sent to an external supplier.



BENEFITS

- Reduces unplanned downtime and business disruption
- Helps to optimize maintenance actions and so optimize costs
- Automates the generation of maintenance actions
- Sensor data can be visualized to identify potential root causes
- Improves the utilization of resources while minimizing carbon footprint
- Reduce the usage of datacenter by sharing information
- Optimizes total production costs
- Enables machine manufacturers to adopt servitization business models



SYSTEM REQUIREMENTS

- SAP Business Technology Platform.
- SAP S/4HANA.
- SAP IoT.
- SAP Asset Central with PdMS.

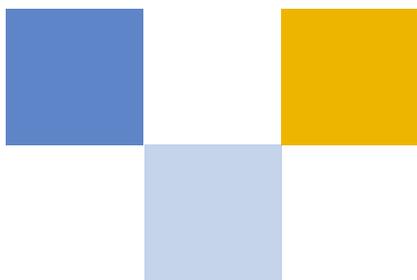
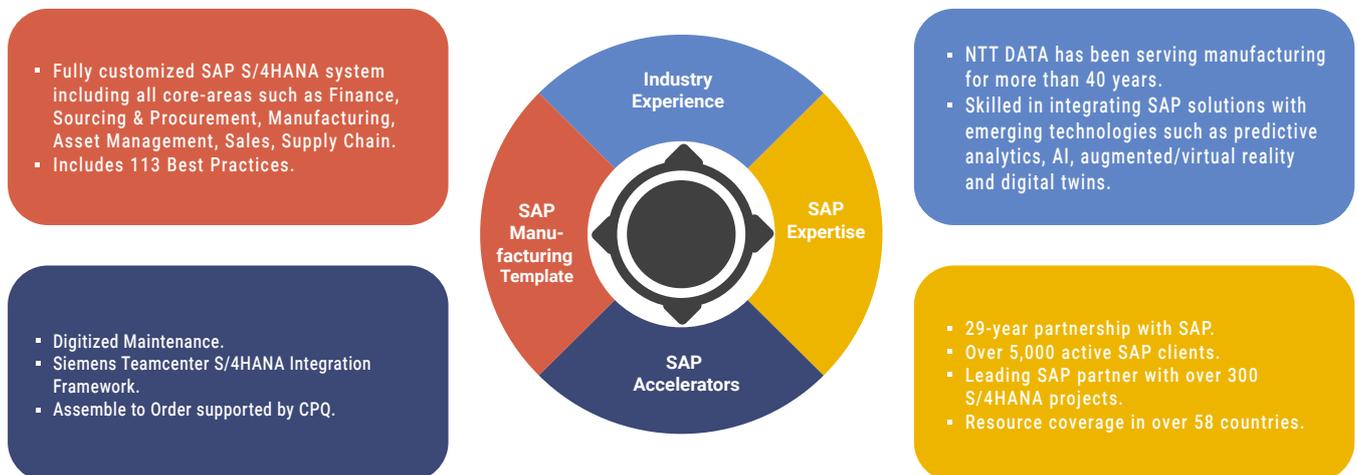


WHY CHOOSE NTT DATA FOR YOUR SAP MANUFACTURING PROJECT?

NTT DATA has been serving the manufacturing industry for more than 45 years and we have 15,000 professionals serving manufacturing clients. Our global reach allows us to offer services to companies with factories around the world regardless of time zone.

We are a formidable force in SAP services with more than 20,000 SAP professionals, 2,700 SAP clients worldwide, 21 delivery centers and operations in 41 countries. NTT DATA has achieved the highest accolade by SAP, Global Strategic Services Partner, which recognizes its ability to offer a wide range of best-in-class business consulting and solution implementation services in support of SAP technology.

NelsonHall identified NTT DATA as a Leader in the Manufacturing Capability market segment in its “IoT in Digital Transformation” report. This demonstrates NTT DATA’s ability to meet future client requirements as well as delivering immediate benefits to IoT services clients in the manufacturing sector.



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