



Smart maintenance solutions

Getting started with concrete AI applications in your business



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From product-oriented to *service-oriented organization*

Just a few years ago, smart industry was called the new industrial revolution, with big data and data analytics as the main drivers. We now see that this revolution is in full swing and that advanced data technology is being used in more and more companies.

In the manufacturing industry and in technical services, smart maintenance offers plenty of opportunities. Servitization is booming, with the business model shifting from product to service.

Companies see that, by applying smart maintenance technology, they can make great strides in service, quality and customer satisfaction. But they can also better deal with challenges such as staff shortages.

Using data and data analysis to optimize production and maintenance processes, provide better service and even develop new services: smart maintenance makes it possible. **But where do you start? And how do you get past the ideas and proof-of-concept stage?**

After reading this white paper, you'll know what your next step is on the road from a product-oriented to a smart, service-oriented and data-driven organization. Our data and AI experts will be happy to help you on your way!



02

The main advantages of smart maintenance



For companies in the manufacturing industry: higher efficiency and continuous improvement

Prevent downtime

If a piece of equipment or machine is not working, it is inconvenient. But it only becomes really annoying when the asset in question is part of a production process or chain, which comes to a standstill as a result. Downtime is therefore something you want to avoid at all times. Providing timely maintenance and preventing failures can save you and your customers a lot of money.

Better risk management

Do you have to deal with certain risks, such as fire risk? If so, temperature sensors, for example, can help you better manage these risks. By immediately issuing an alert at certain values, you can react quickly and adequately and prevent worse.

Higher customer satisfaction

Data and AI do not only help in improving the internal production process. With the help of information about the end user and the use of the product, you can give faster and better feedback to R&D and thus continuously improve your products. This ensures better quality, better service and therefore higher customer satisfaction.

For technical service providers: competitive advantage by being distinctive

Effective deployment of personnel

Solving more faults at the first visit: an important objective for many service and maintenance companies. By combining the data you collect with the information from your field service system, you can make the right match between employee and required skillset. Moreover, employees can be supported and learn remotely, thanks to remote technology such as the HoloLens 2.

New payment models ensure stable income

Earning more when your customer has more outages? Surely that business model no longer makes sense in the year 2021? What if you use technology and data to prevent outages together with your customer? And if your customer pays based on uptime? This is how you build sustainable customer relationships and customer satisfaction and revenue go hand in hand. Smart technology enables companies to offer ever new services with which they can distinguish themselves from the competition. But not only that. New business models also offer opportunities to achieve better margins and stable revenues.

Achieving sustainability targets faster

For technical service providers and their customers, sustainability and the realization of CO₂ reduction have shifted from 'nice to have' to 'must have'. Thanks to smart industry solutions, new optimizations and savings can be realized based on data insights that, until recently, were only possible on paper. This turns out to be an indispensable digital link in the industrial green revolution.

Customer Case: ***Bredenoord***

Family business Bredenoord develops, builds, sells and rents a wide range of power solutions, such as generators. Bredenoord employees go out every day to check the units and refill fuel. But how do you know which device needs to be refilled and when? HSO developed an IOT solution combined with data analytics.

Using sensors, the fuel consumption of the rented equipment is measured and this information is available in real time. With this Bredenoord can serve their customers optimally and deploy their employees more effectively: no more machines that stand still unexpectedly and fewer employees who are unnecessarily on the road.





03

Why do companies hesitate when *starting with smart maintenance?*

Many organizations see the potential and are probably already planning to start smart maintenance. Yet, companies are hesitant to actually start. They often struggle with the same questions. Recognizable?



- How do you make the shift from preventive to predictive maintenance?
- How do you determine the value of your data?
- Is the organization ready for new ways of thinking, for new business models?
- Are our customers ready for it?
- How do we connect our assets to the IoT?
- Do we need to invest in a new IT platform?

- What data do we need to gather for future use?
- How do we develop a good business case?

If you want to get past the ideas and proof-of-concept phase, determining the right use cases is essential: applications of smart maintenance that deliver immediate value.

Getting beyond
the idea and
proof-of-concept
stages?

Our answer:

***keep it small
but think big.***

Some tips:

- Start with use cases that can be named concretely and approached pragmatically;
- Start with a 'broad' exploration and cleansing of data;
- At the same time: get to work with the data you have and don't wait until everything is 'complete';
- Involve experts from your organization and the right stakeholders;
- Apply an agile way of working.

Don't focus on the one, fatal mistake...

We see that many providers of smart maintenance technology focus on preventing that one fatal error. However, these errors are very rare in practice. Most

companies for whom uptime is crucial have already optimized their production chain tremendously. Preventing that one failure, which may occur once every ten years, will therefore not quickly recoup your investment in predictive or smart maintenance.

Instead, it is better to look further into the indirect, perhaps 'smaller' effects, which do provide a high return on investment. Compare this to, say, the tire pressure of a car. Instead of doing everything possible to prevent a blowout that might happen once in a lifetime, it is better to ensure that you always drive with optimal tire pressure. This is safer and you will also save a lot of fuel, and therefore money.



Customer Case: **Stolt Tankers**



Berend Vree, Stolt Tankers:

“We suspected that it would be possible to make predictions about possible failures in the engines of our tankers. Our own team was unable to substantiate this expectation with a working algorithm. HSO’s approach did lead to a concrete, predictive model.”

Stolt Tankers is the world’s largest operator of advanced chemical tankers, providing safe and high-quality transportation services for bulk chemicals, edible oils, acids and clean petroleum products.

Stolt collects data with more than 1,000 IOT sensors per ship, combined with data from various technical installations and other company information, such as inspection reports. Based on this data, HSO developed an AI solution that can detect premature piston

ring problems very accurately. Timely detection prevents unnecessarily high fuel costs and also extends the life of the cylinder walls.

By detecting this relatively minor problem earlier, 500 tons of fuel can be saved per ship on an annual basis and the life of the cylinder in which the piston moves has been extended from 40,000 hours to 60,000 hours.

Stolt Tankers 

04

Five steps to *smart maintenance*





Data collection and the IoT

Step one in the smart maintenance chain is **data collection**. Thanks to the Internet of Things (IOT), devices, machines and products are connected to each other. And, with the help of sensors, information is collected 24/7 about consumption, temperature, vibration, pressure, capacity and humidity, among other things. You can also **source data from external sources** that affect the quality and life of your product. Think about weather forecasts.

In addition to IOT data and external data, you probably also have relevant information at your disposal from your **ERP or CRM environment**, such as product and customer information, that you want to include in your analyses.



Analyzing data, modeling and identifying issues

The second step in the chain is to analyze the data and create models so that you can then identify certain deviations – or issues. Depending on the number of data sources and the quality of the data, it is cleansed and, if necessary, edited.



The right action at the right time

Next is the step from data insight to **actually improving and influencing** the business process. For example, scheduling the right mechanic via Dynamics 365 Field Service, but other call-to-actions are also possible. If the measured or calculated information reaches certain values, an alert is generated after which a workflow starts. Subsequently, a mechanic or other action can be scheduled **fully automatically**.



Step 4

The result? Your assets are optimally monitored

With smart maintenance you can ensure that you stay ahead of failures and optimize the process. You extend the lifespan of machines by carrying out timely maintenance and you only go to a machine or piece of equipment if you have a good data-driven reason to do so. With smart maintenance you can **prevent downtime and increase efficiency**.



Step 5

Self-learning feedback loop

Continuous improvement is the key to the success of smart maintenance. By continuing to learn, the entire chain becomes smarter and smarter. More and more information about your machines and usage is becoming available, allowing you to make more and **more accurate predictions**. In fact, the model looks at the predictions that are correct and those that are incorrect and then the model starts to train itself (self-learning) to learn from mistakes.



Customer Case: *Grünbeck*

This German company sells and installs water filtering systems. They sell their equipment through dealers, but because of this they lacked insight into the use of their products by the end customer. HSO developed an IOT solution and a mobile app for Grünbeck. The user can control his device

and gets insight into the use. Grünbeck itself receives information about the use of all customers. This means better service for the end customer and, above all, much more user information, which Grünbeck can use to further improve its products and services. And so we have come full circle!



grünbeck

05

Getting started with *smart maintenance*



In practice, we see many companies starting experiments in the field of IOT, predictive and smart maintenance. Think of placing sensors and developing the first machine learning models. Unfortunately, it often remains at this exploratory phase. So how do you realize smart maintenance with added value and impact on your results?

HSO – as a Microsoft solution integrator – has all the technology and expertise in-house to deliver the complete smart maintenance chain. HSO employs experienced specialists in the field of architecture, IOT and infrastructure, data analytics, AI and field

service. Do you want to take concrete steps with smart maintenance? Attend our free, 60-minute envisioning workshop, where we look at the possibilities for your company and immediately get to work with practical use cases.



Workshop: **Smart Maintenance in 60 minutes**

- Turnaround time: 60 minutes
- Location: Online workshop via Teams or on-site
- Free of charge

In an online 1-on-1 session of 60 minutes, we jointly discuss the questions around smart maintenance in your industry and company and outline how you can take the first steps. We identify concrete use cases that can be tackled pragmatically by leveraging Microsoft Dynamics 365, Azure IoT and the Power Platform.



Interested in the possibilities?

Interested in the possibilities for your business or attending a workshop?
Contact me at:

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MENU



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Sinds 1989 is HSO actief als Microsoft Solution Integrator en uitgegroeid tot een succesvol ICT-bedrijf met meer dan 1200 medewerkers en vestigingen in Europa, Noord-Amerika en Azië. HSO ondersteunt lokale en internationale bedrijven in de retail, groothandel, industrie en (technische) dienstverlening om met digitale technologie het verschil te maken. Het fundament hiervoor is Microsoft Dynamics 365: een compleet platform van CRM, ERP, Office 365 en BI-software. HSO verzorgt de implementatie, optimalisatie en het 24/7 beheer van deze cloud oplossingen. HSO behoort tot de Microsoft Dynamics Inner Circle en is in het trotse bezit van het predicaat 'Meest klantgerichte partner van Microsoft'. Meer informatie over HSO is te vinden op <http://www.hso.com/nl> of volg HSO op Twitter via @HSO_NL.