Predictive Maintenance and Service of a Hot Forming Line

BENTELER ▽
makes it happen

"Big Data is a fundamental base to facilitate productivity, efficiency and agility for the automotive industry of the future."

Predictive Maintenance in manufacturing at Benteler

Smart Factory Big Data Pilot Motivation

Deployment and evaluation of a predictive maintenance framework at BENTELER:
• Standardized process from data acquisition to integration within the maintenance process
• Systematic collection and analysis of machine data of a hydraulic press system and a scrap belt
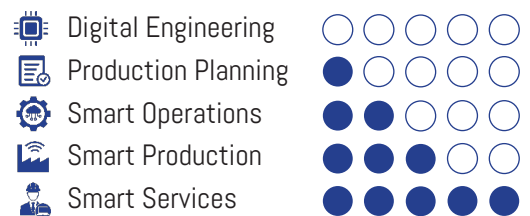• Detection and prediction of fault patterns in the production process at BENTELER

Fault Detection and Prediction based on Machine Data

• Detection of machine errors before they occur
• Avoidance of breakdowns
• Decrease in downtime, improvement of the production process efficiency

Competitive Advantages

• 5% increase of overall equipment efficiency
• 25% reduction of unplanned machine downtimes
• 5% reduction of maintenance activities

Big Data Pilot Lifecycle Scope

Digital Engineering	○○○○○
Production Planning	●○○○○
Smart Operations	●●○○○
Smart Production	●●●○○
Smart Services	●●●●● ●

Big Data Pilot Site

BENTELER Automotive Plant An der Talle
Paderborn | Germany
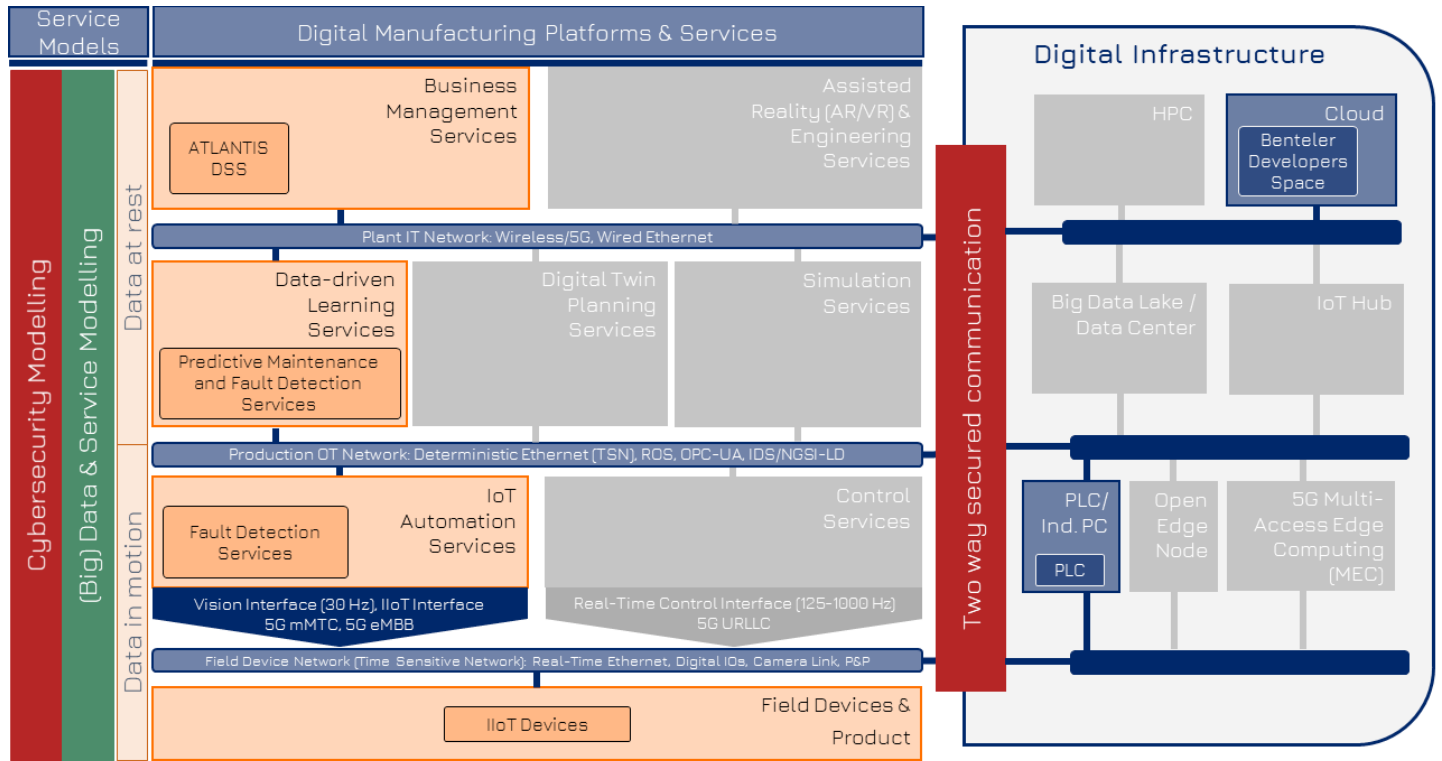
Pilot Partners

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Automotive Lighthouse Factory

ATLANTIS ENGINEERING
Predictive Maintenance Solution & Decision Support System

Fraunhofer
PdM Solution & Model Transfer

it's owl
Dissemination & Multiplication

I4.0 Big Data Pilot Solution Framework

Boost 4.0 big data solution framework leverages on Big Data Europe (BDE) big data pipeline technologies, International Data Spaces Association (IDSA) specifications for data sovereignty, FIWARE NGSI-LD API for open IDS implementation and Hyperledger technologies for transaction traceability. Boost 4.0 big data platforms and technologies align to RAMI 4.0 and are integrated under the Digital Shopfloor Alliance (DSA) autonomous service framework to ensure reduced cost, time and effort in solution deployment and extensibility (https://digitalshopflooralliance.eu/).

I4.0 Big Data Pilot Features

Sector / Product: Automotive

Manufacturing Process: Hot Forming

Big Data Analytic Techniques:

- Fault Detection and Prediction
- Decision Support

Open I4.0 Big Data Pilot Pillars

INTERNATIONAL DATA SPACES ASSOCIATION

IDSA defines a reference architecture and an ecosystem, which supports sovereign exchange and sharing of data between industrial partners.

FI-WARE

FIWARE is a curated framework of open source platform components to accelerate the development of smart solutions for Industry 4.0.

HYPERLEDGER

HYPERLEDGER is an open source collaborative effort created to advance cross-industry blockchain technologies.

BIG DATA EUROPE
Empowering Communities with Data Technologies

The BDE offers an open source platform, allowing to build several Big Data components into a pipeline through a simple graphical UI.