Smart Machine Tool Digital Engineering

“FILL will be the leader in smart machines building by reducing the development time of machines. The developed edge-technology based on smart engineering and industrial big data engineering and analysis is obligate.”

Factory 4.0 Big Data Pilot Motivation
- Model-based and big data-driven engineering process
- Machine and Process Models Optimization Engine
- Machine Big Data Logger and Exchange Platform
- 3D Production Simulation

Model-based and big data-driven engineering process
Model management & data analytics process:
- Digital asset repository
- Big Data & data processing pipelines
- Data exploration, model integration and deployment

Simulation based release process:
- IoT Data and simulation driven engineering (using real historic data)
- Virtual Commissioning

Service development process:
- Extending Fill business model by digital services (Model as a Service)
- Smart Maintenance

Competitive Advantages
- Reducing time to market: lot-size-1 engineering lead time -15%
- Increasing quality / reducing failure costs: service costs -15%
- Increasing efficiency: unplanned downtimes -20%

Big Data Pilot Lifecycle Scope
- Digital Engineering
- Production Planning
- Smart Operations
- Smart Production
- Smart Services

Big Data Pilot Site
Fill Gesellschaft m.b.H.
Gurten, Austria

Pilot Partners
Machine Tool Lighthouse Factory
Simulation
Machine Learning
IoT Hardware
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:** High-precision Lot-size-1 Machining

**Big Data Analytic Techniques:**
- IoT Platform (edge and cloud computing)
- Data analysis with Spark/Pyspark

**Big Data Platforms:**
- Cybernetics by Fill
- Hadoop Stade

**Open I4.0 Big Data Pilot Pillars**

**IDSA**

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

**FIWARE**

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.

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