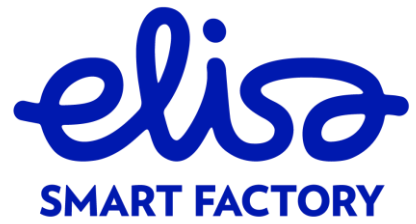


Elisa Smart Factory



Discrete and process industry - focusing on pharma, electronics, automotive, paper & pulp, food & beverage



Challenges

Lack of visibility into end-to-end production, making it impossible to identify the real bottlenecks, understand the root causes and to optimize production.

The results: inaccurate and late decision-making, misaligned end-to-end processes, inefficient utilization of equipment, unplanned downtime, expensive and unproductive operations.

One of the implications is high unplanned downtime – 82% of manufacturers have suffered from it during the past 12 months (*source: Aberdeen*).

It results in loss of customer loyalty and productivity - 46 % couldn't deliver services to customers, 37 percent lost production time on a critical asset, and 29 percent were totally unable to service or support specific equipment or assets.



Ideal Solution

- Ability to integrate siloed data and turn it into real-time insights
- Make it easy to understand what is happening, why it's happening and - and how to avoid it.
- Open technology solution to avoid dependency on one supplier

By combining IIoT and analytics enables rapid integrated data analysis and better decision making. This helps manufacturers to :

- Increase machine utilization
- Predictive maintenance
- Just in time manufacturing
- Sharing knowledge across company



Desired Outcomes

Ability to combine siloed machine, enterprise and process data and turn it into actionable insights.

Make the insights easily understandable with help of a beautiful 3D visualization of the production.

Improve customer experience as well as to gain deeper insights into operations.

According to Gappgemini study from 11/2019:

- 33% of factories have already been transformed into smart factories
- Manufacturers plan to increase annual investments into smart factories by 1.7 time compared to the last three years.



Empowering sustainable productivity

Production Visibility

Intuitive 3D visualization of factory E2E processes

- Know what happens in your overall production cycle – 24/7
- Turn your operations management from reactive to proactive

Better decision-making

Real-time, data-driven insights to drive decision making

- Combine data from machine and enterprise systems
- Embed the data-driven insights into day-to-day processes

Increased productivity

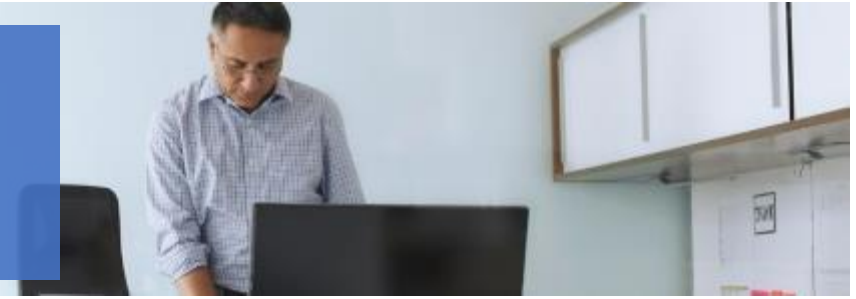
Streamlined operations with improved efficiency

- Identify patterns and trends and predict what will happen
- Remove inefficiencies before they impact your operations

“Elisa Smart Factory is a window to our shop floor - we are now able to see exactly what is happening in the factory and what we can expect. This helps us to optimize our material flows, which we couldn't do before.”

Dr. Rupert Deger, Founding Partner, e.GO Mobile AG

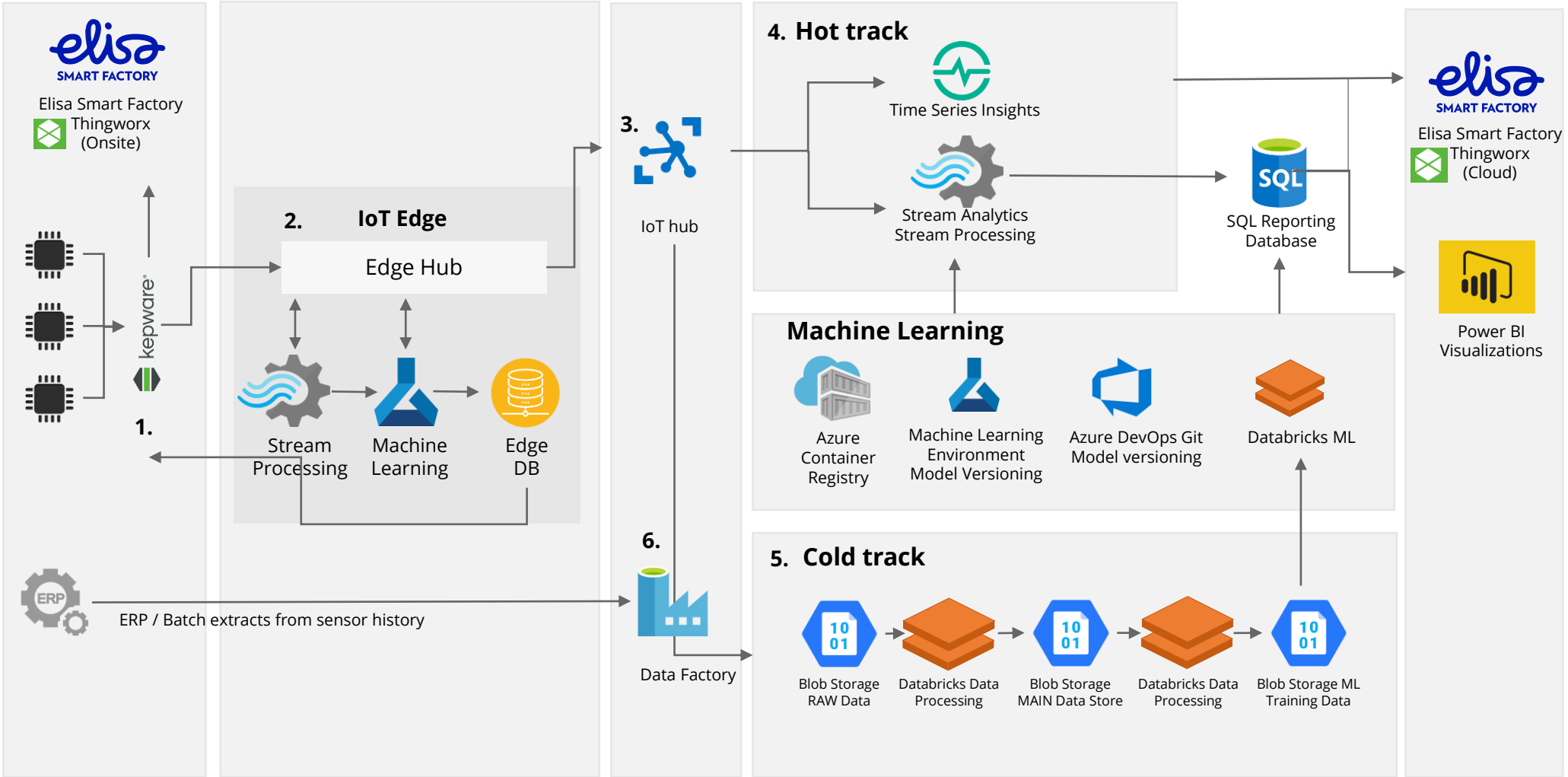
Elisa Smart Factory + Microsoft Azure



Box 2: Elisa Smart Factory uses Azure architecture and capabilities to provide a highly scalable solution globally

See next page for the joint offering

SOURCE **EDGE** **INGEST** **PROCESS** **VISUALIZE**



1. Sensors connected to IoT Edge Hub through Kepware. When possible, data is displayed directly on onsite Elisa Smart Factory UI without Edge/Cloud processing.

2. On the Edge server, data is first processed using Stream Analytics. Then the necessary parameters are routed to a ML module. ML results are persisted into a database maintained on the edge server. Database contents are available for the factory's control systems and Elisa Smart Factory through Kepware.

3. The IoT Hub is used to route the stream to the hot track and to a blob storage for storage and model estimation.

4. Time Series Insights is integrated with Elisa Smart factory to allow visualizations for subject matter experts. If ML is required, it is applied through Stream Analytics. Stream Analytics writes results to a database which is utilized by the visualization applications.

5. The persisted data is processed in stages to produce master and analytics datasets. The analytics dataset is used for model development.

6. When no real-time visibility to data is needed, data is integrated through scheduled batch integrations.