

Welcome!

The program will begin soon.
You will not hear audio until we begin.

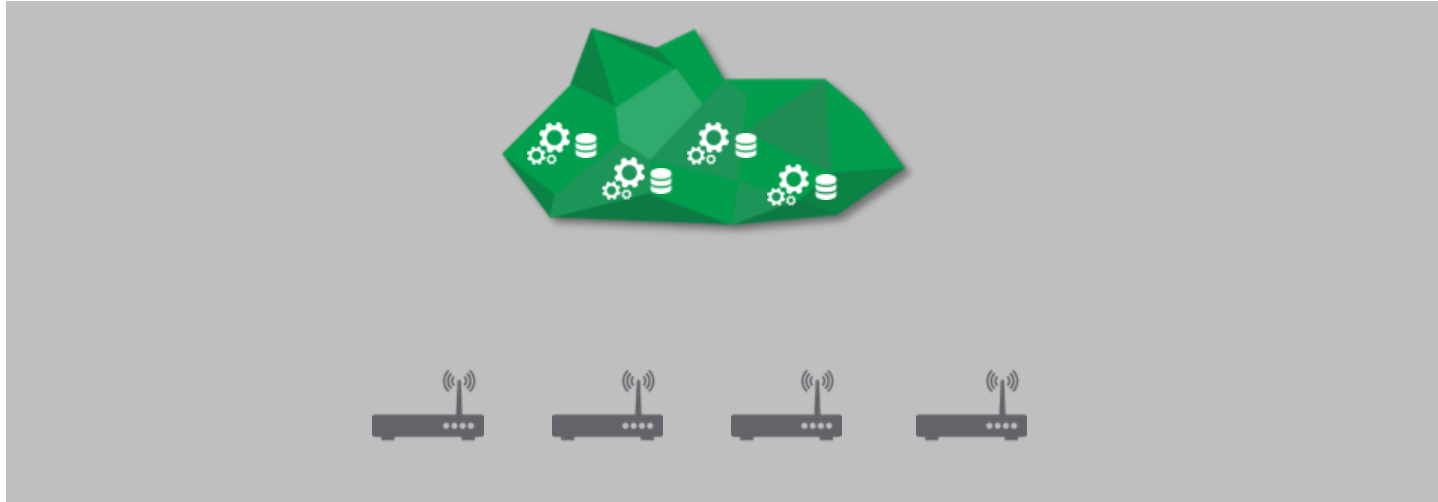


AI at the Edge

Powered by Augmented Data Intelligence

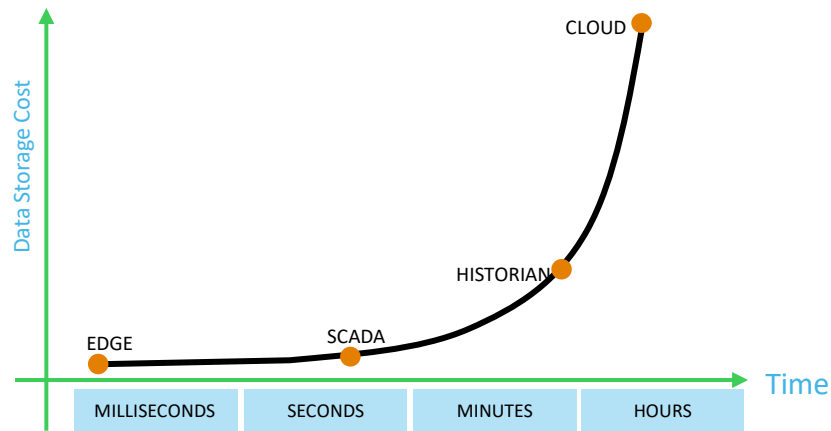
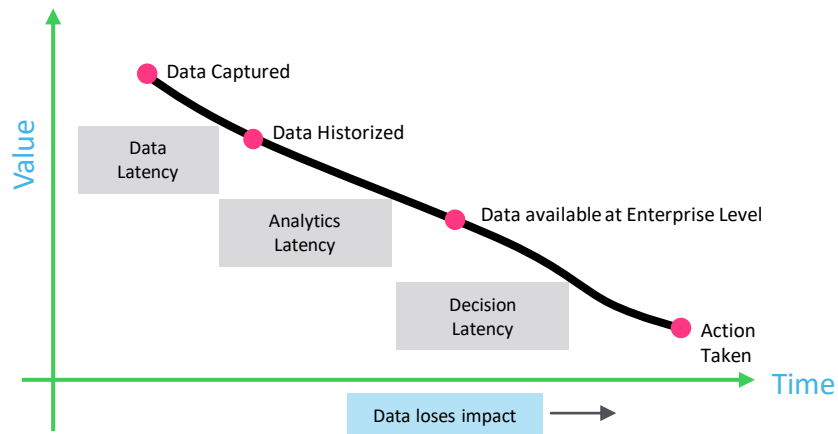
What is Edge?

Definition



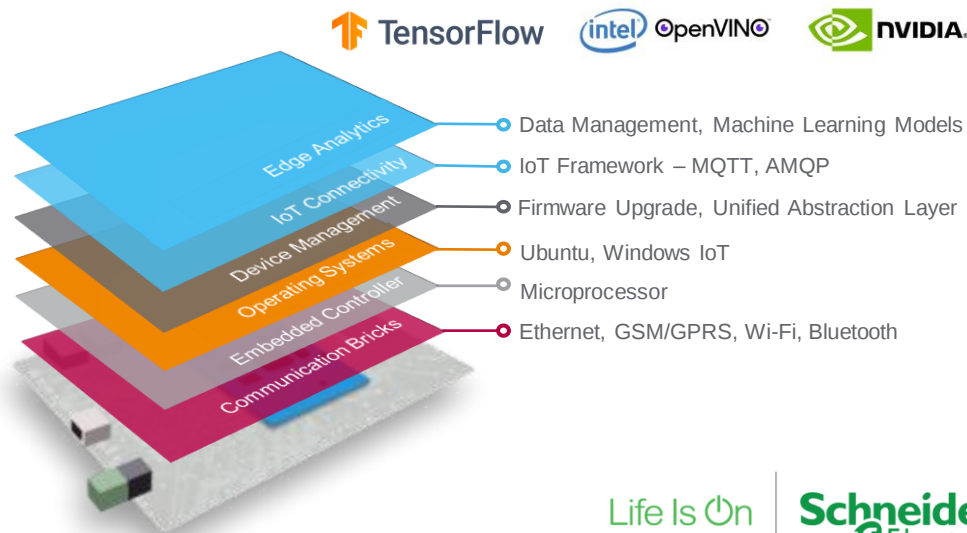
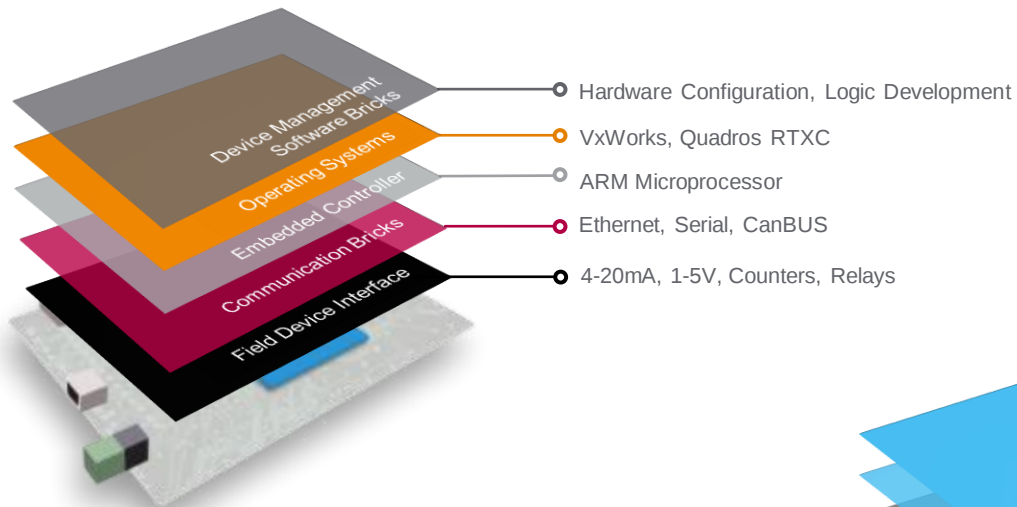
“Edge computing pushes applications, data and computing power (services) away from centralized points to the logical extremes of a network.” (Wikipedia)

Edge Analytics – Accelerated Decision Making

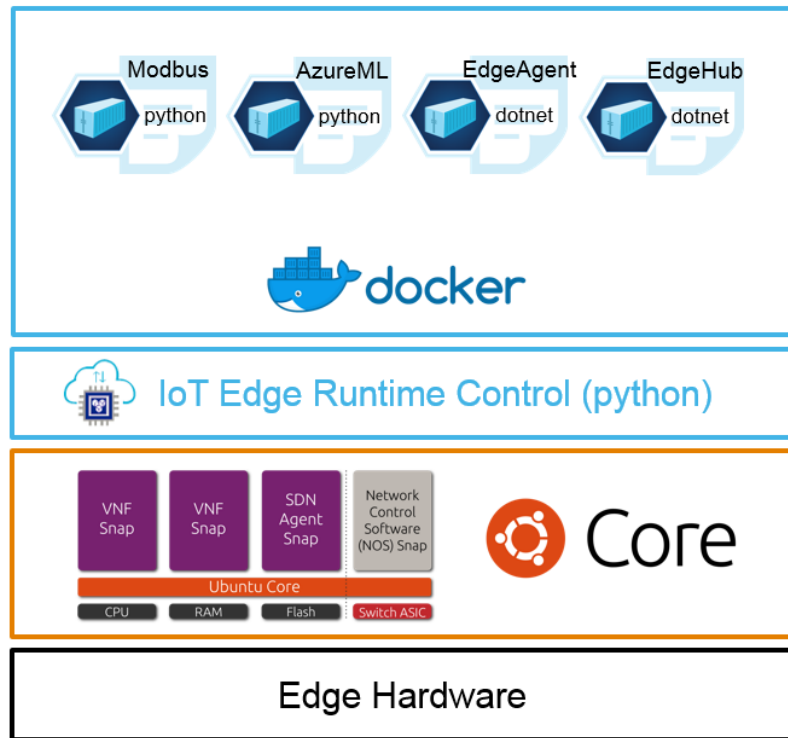
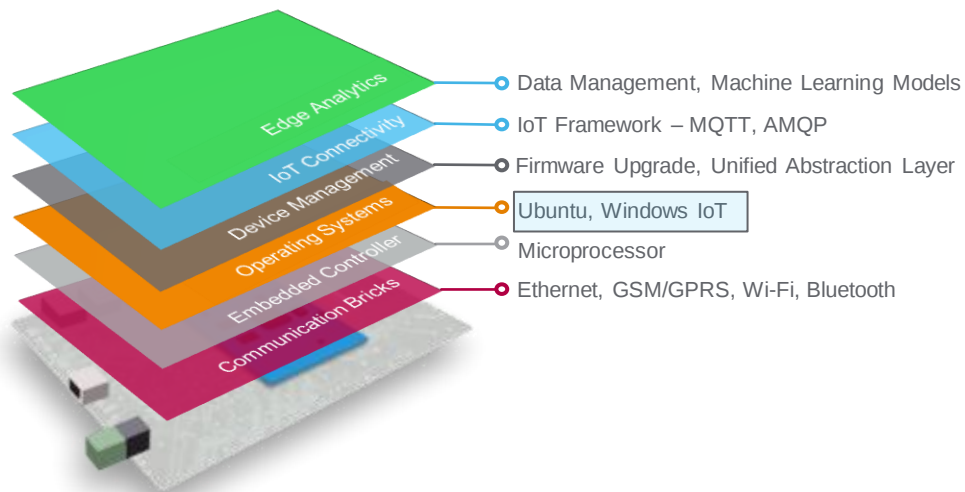


Evolution of Edge Devices

Conventional Industrial Controllers vs. Edge Gateways

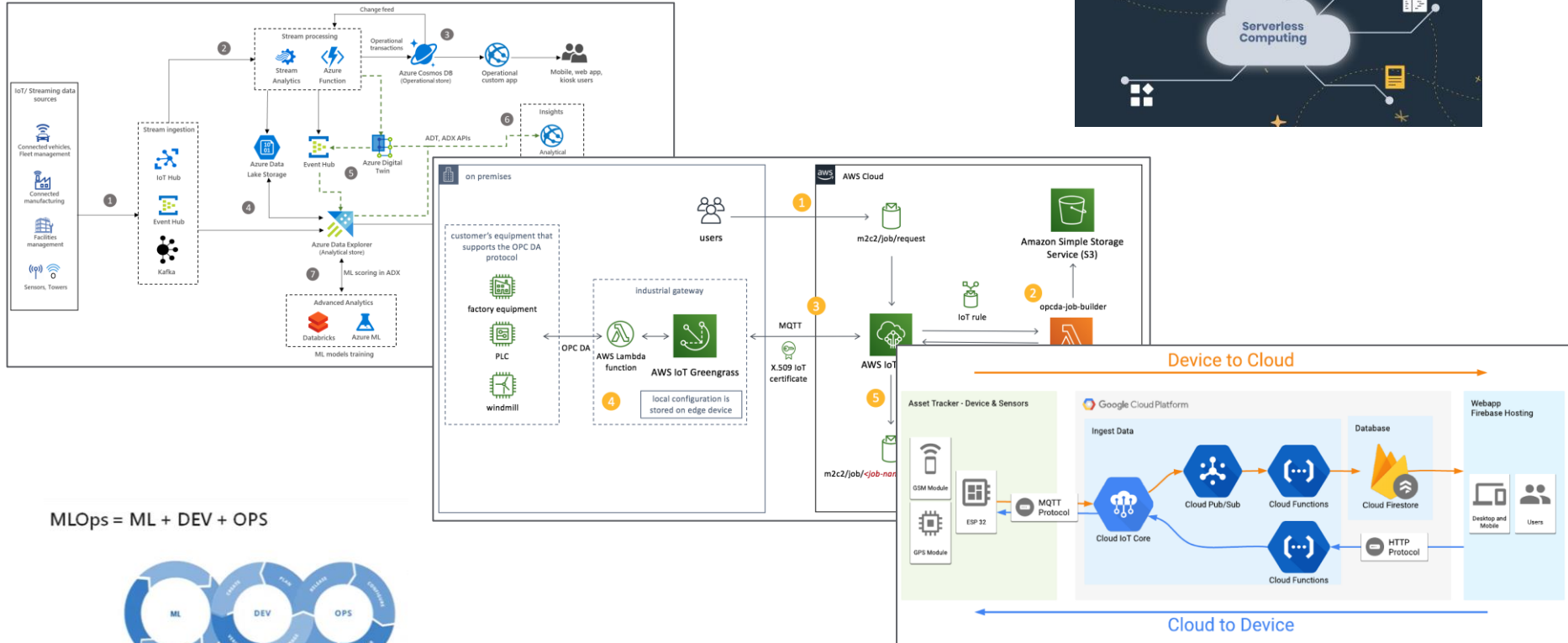


Enabling Micro Services



Scalable Cloud Architectures

Leveraging the Cloud



$$\text{MLOps} = \text{ML} + \text{DEV} + \text{OPS}$$



Your Typical SCADA System to IoT Edge Enabled

Typical Real Time Data Aggregation Architecture

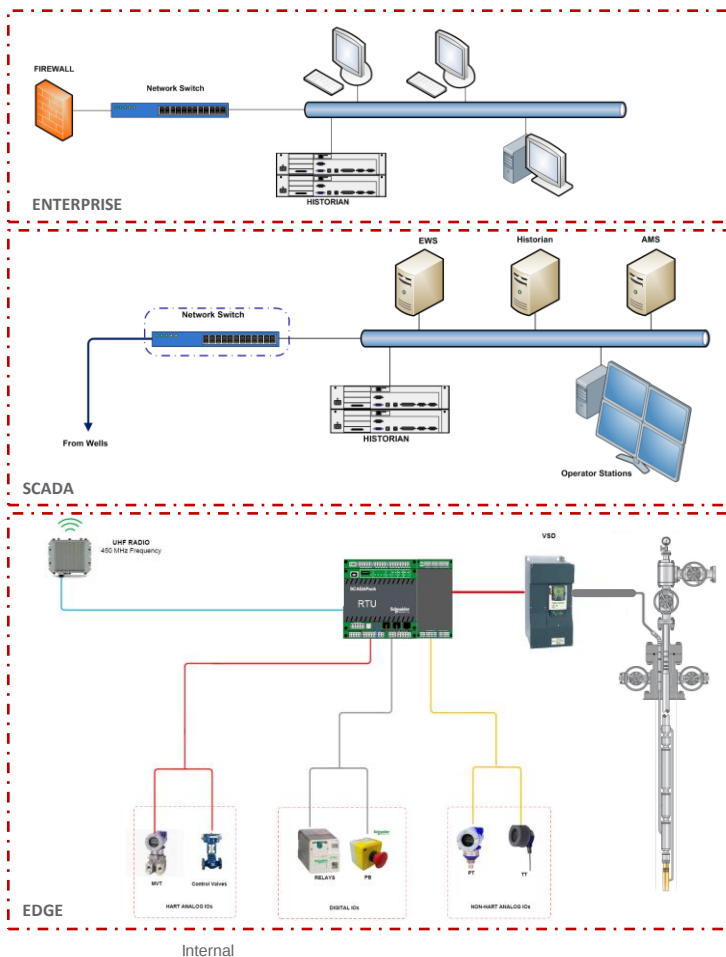
Data Aggregation dependent on HISTORIAN capabilities

Challenge sharing data from HISTORIAN with applications

Data Aggregation dependent on communication backbone

Limitations due to Industrial Protocols (MODBUS vs. DNP3)

Data Aggregation occurring in MILLISECONDS



Edge Analytics – Cloud to Edge Architecture

Two way communications with (I)IoT protocols like MQTT, etc. using cybersecure channels like VPNs, private APNs, etc.

One or two way communications with industrial or (I)IoT protocols like MQTT, OPC, etc.

One or two way communications with industrial protocols like MODBUS, DNP3, etc. through a local ethernet or serial connection

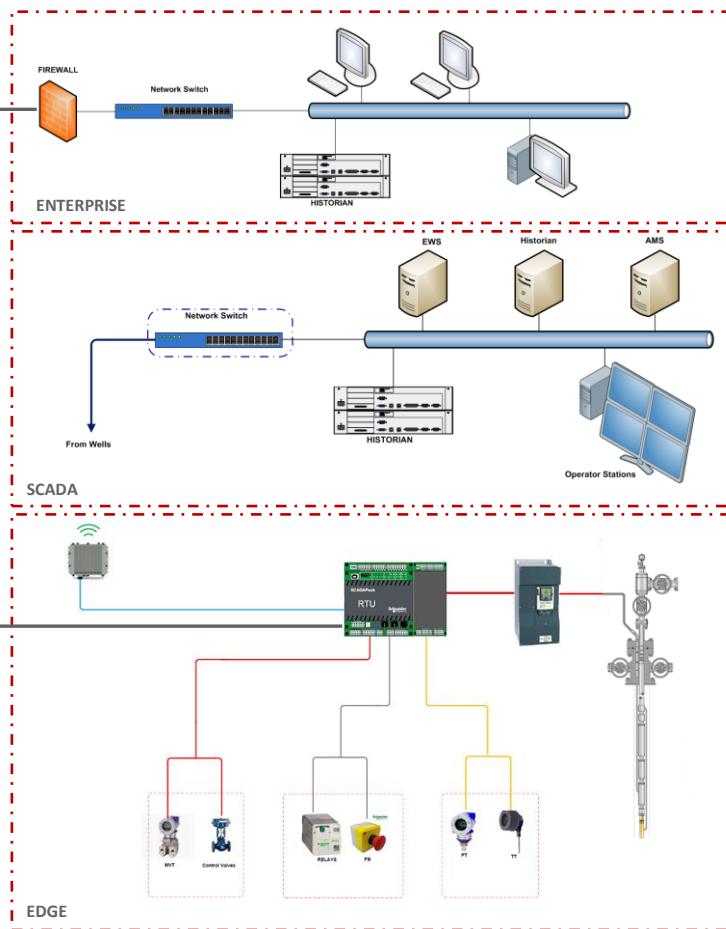


IoT Capable Device

DOCKER Container capable OS

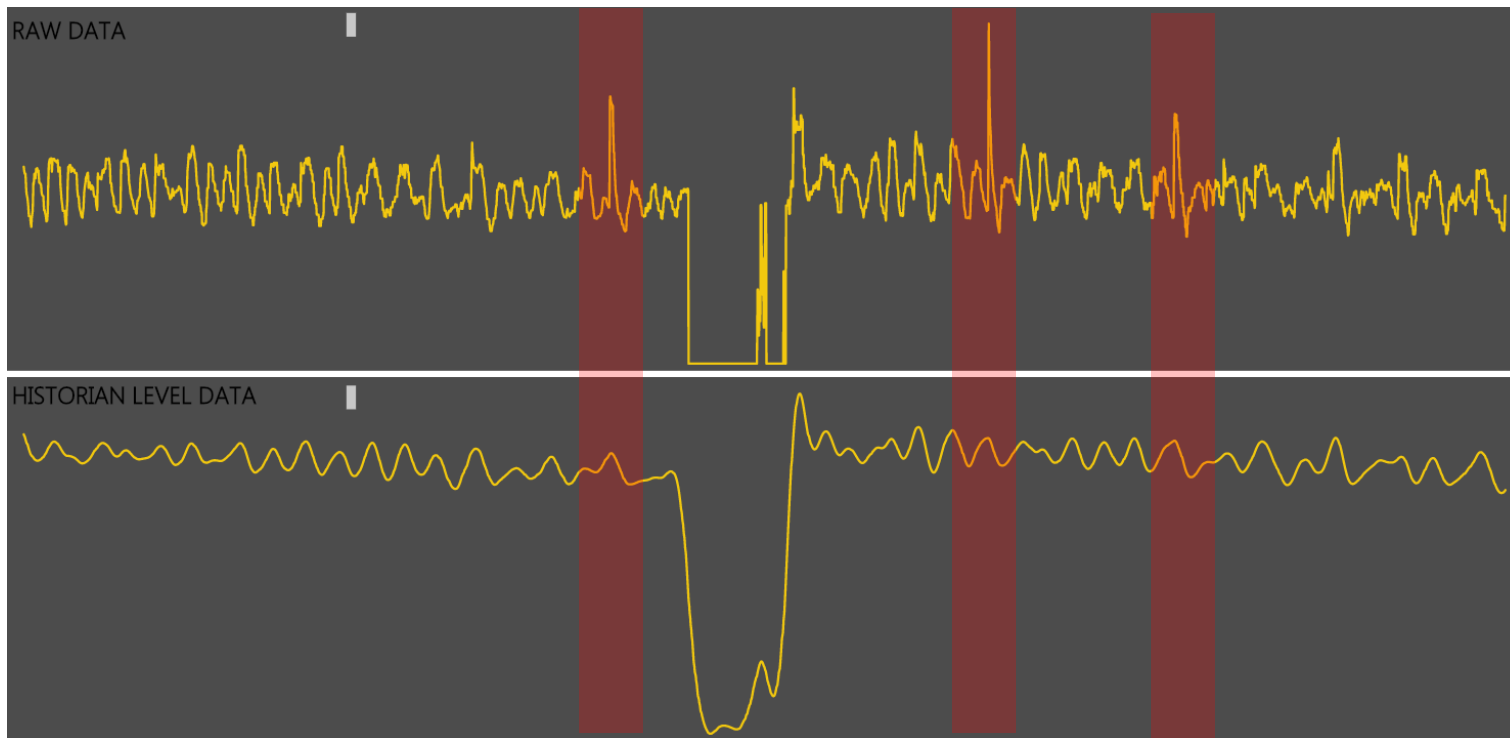
Open Protocols

Security Standards

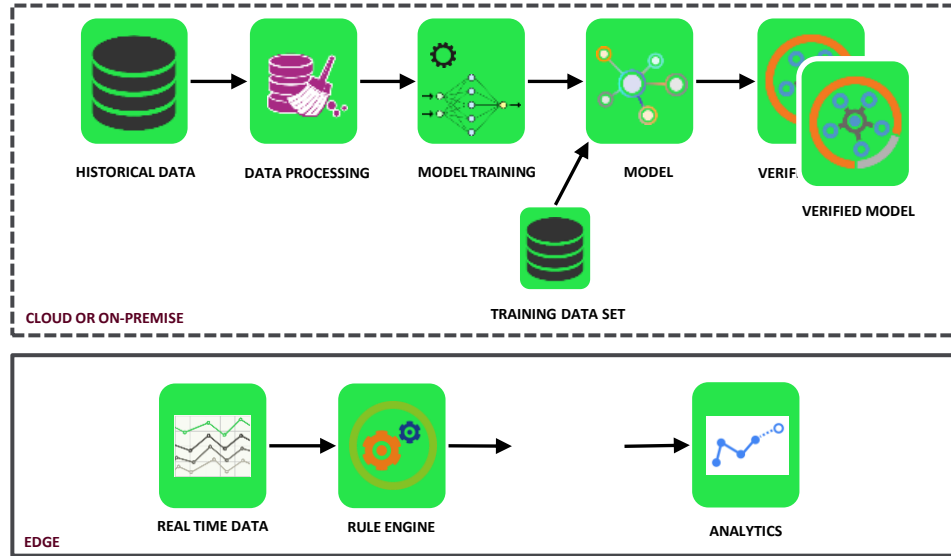


DATA Quality Matters

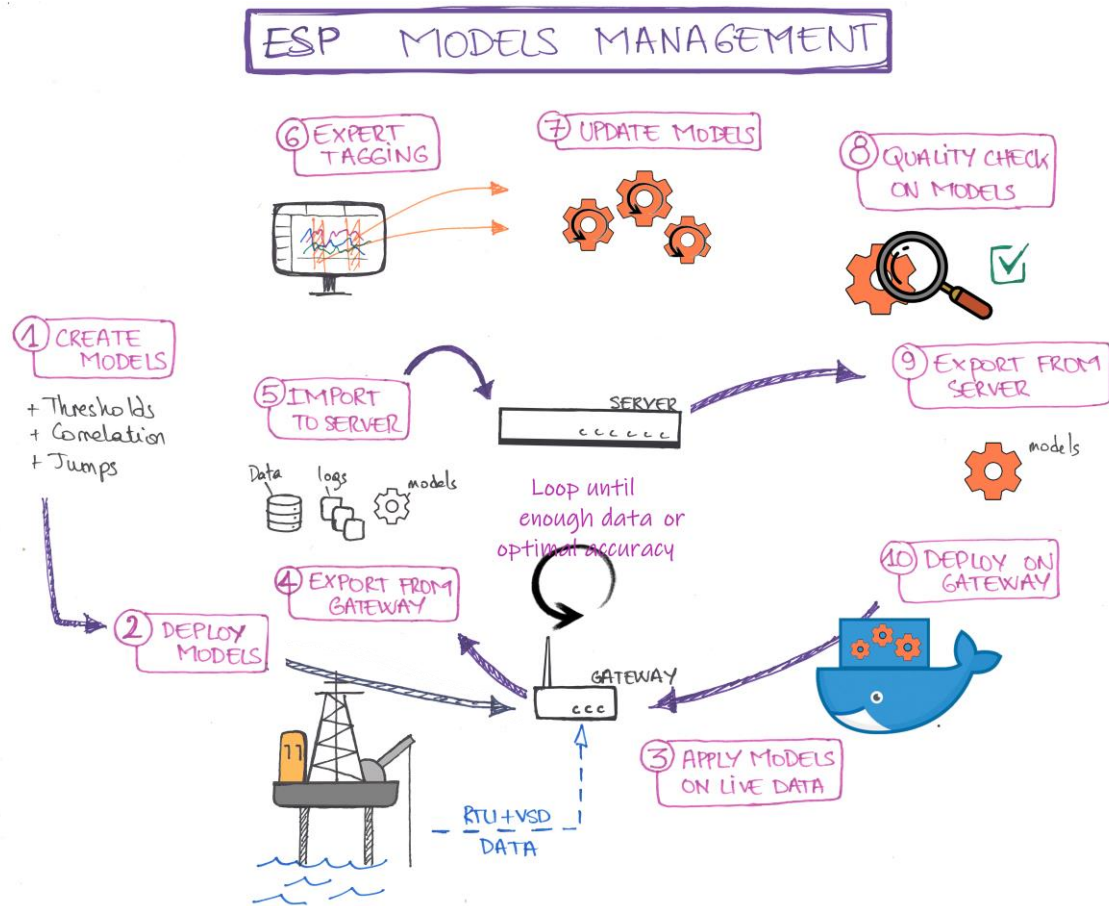
Edge Analytics – RAW vs. FILTERED DATA



Building and Deploying a ML Model

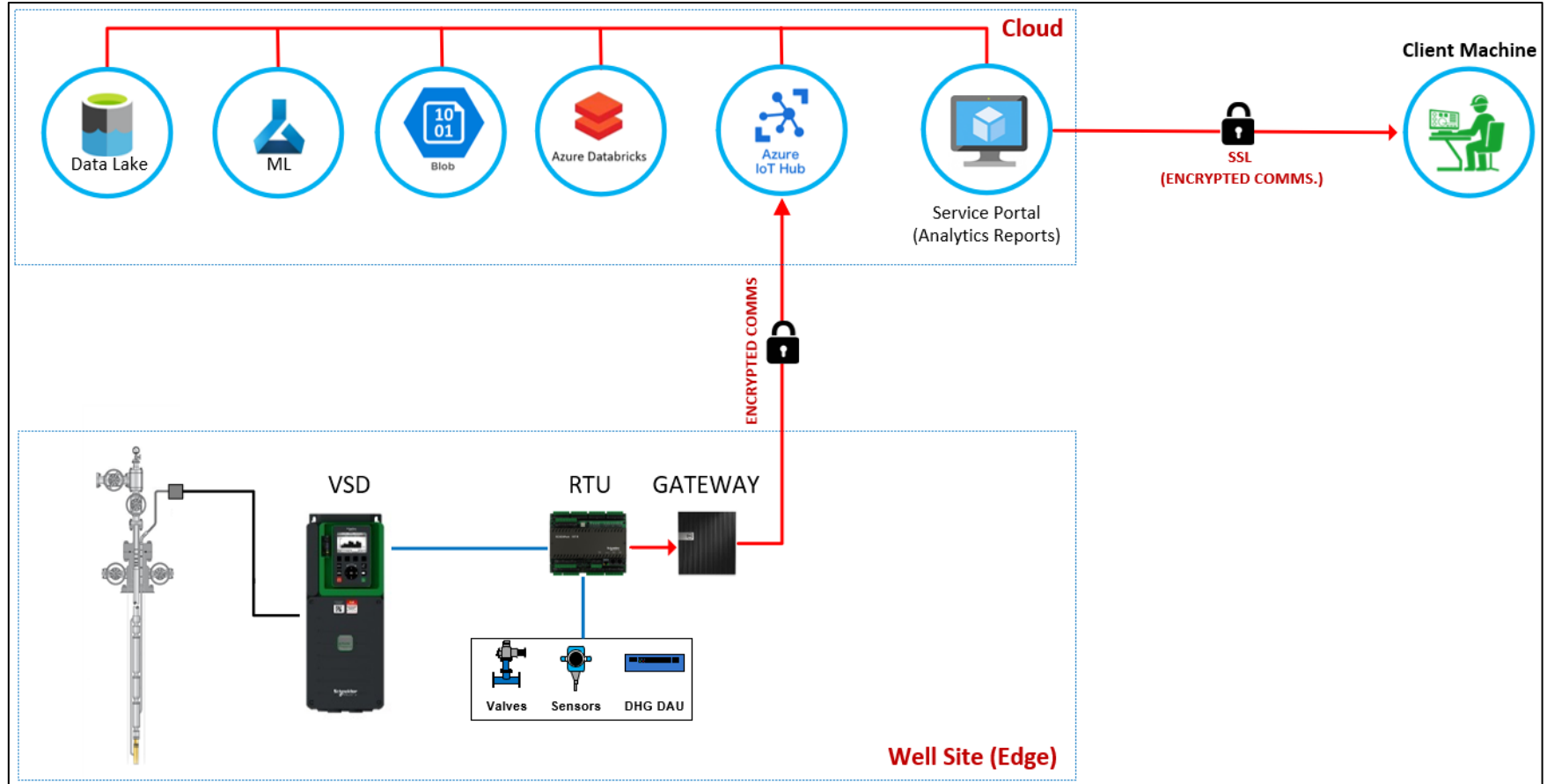


Autonomous Production Advisor – Augmented Intelligence

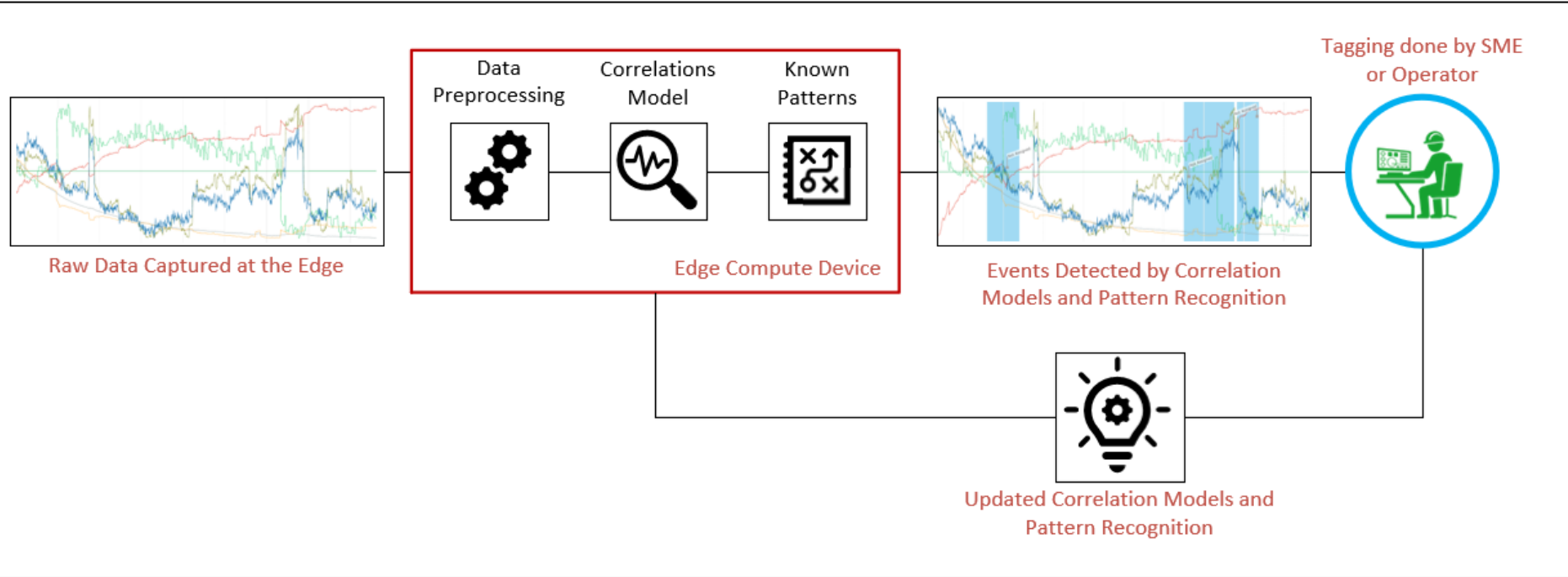


We WILL need Humans

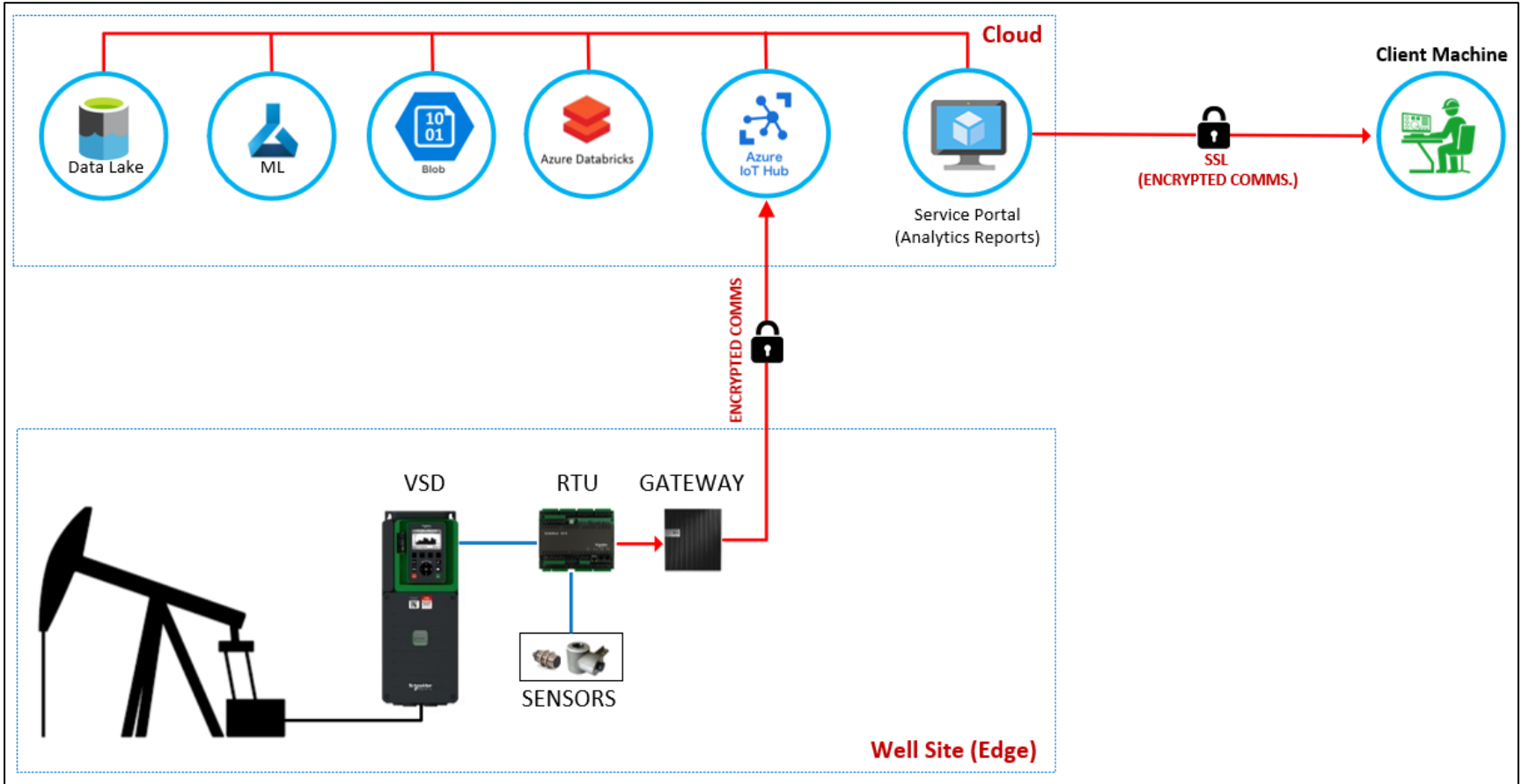
Edge Analytics – Cloud to Edge Architecture



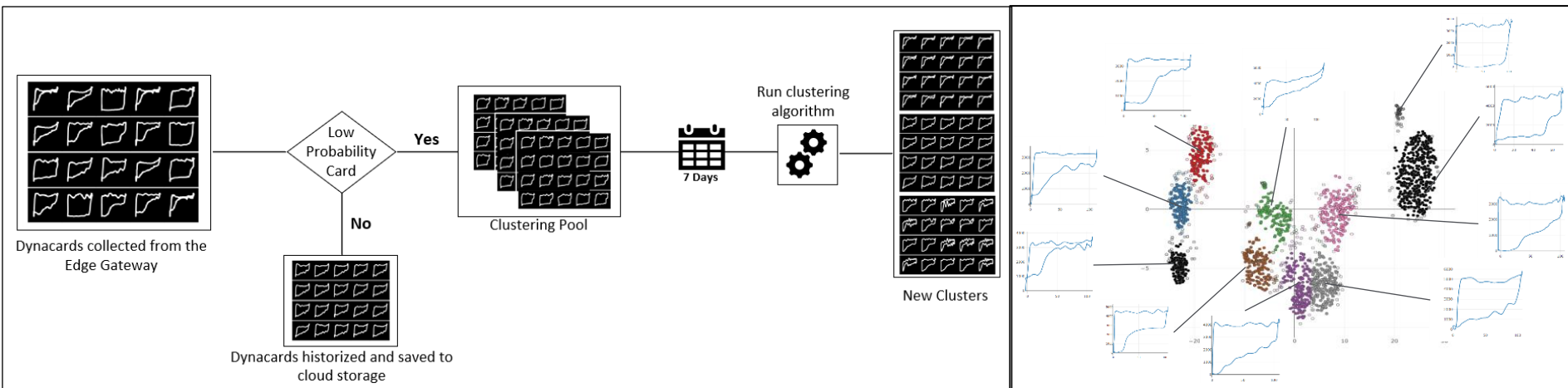
Edge Analytics – Cloud to Edge Architecture



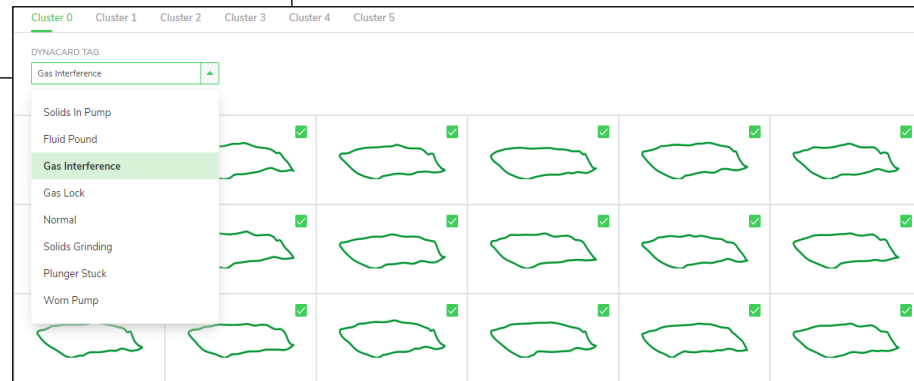
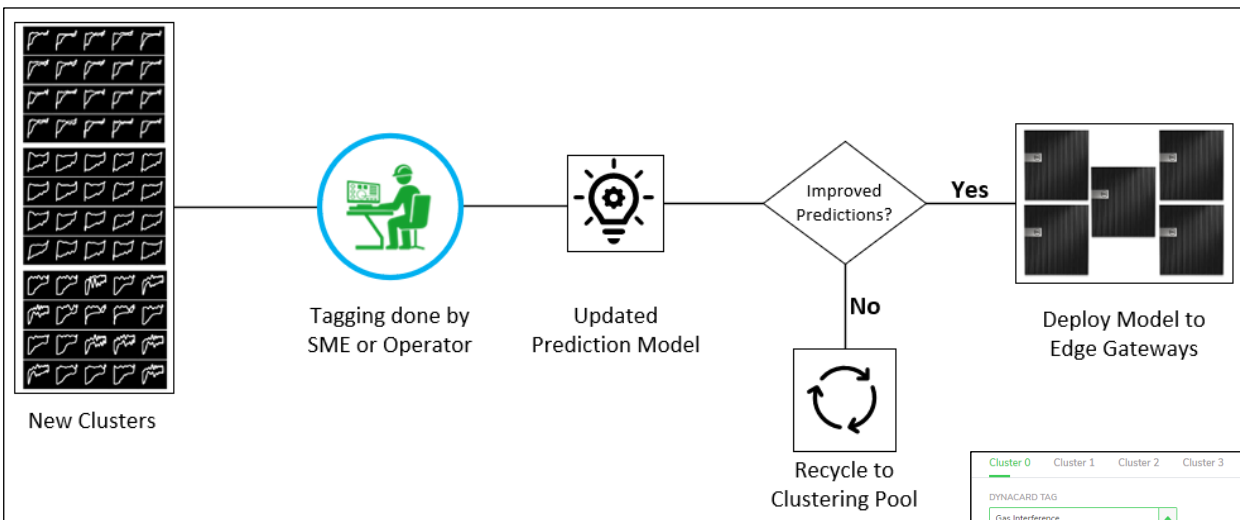
Edge Analytics – Cloud to Edge Architecture



Edge Analytics – Cloud to Edge Architecture

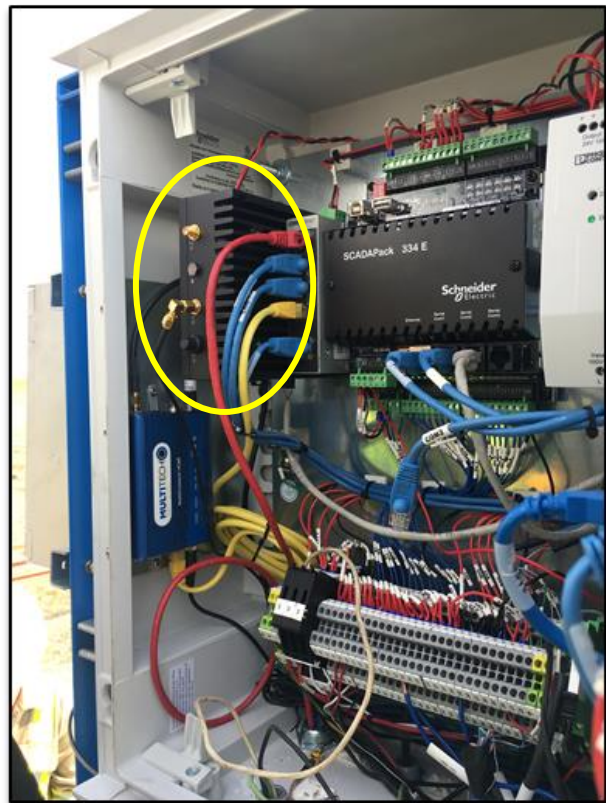


Edge Analytics – Cloud to Edge Architecture



AI Applications at the Edge

- Brings data from multiple devices (traditional and non-traditional) to an Edge Controller
- The Gateway runs Machine Learning (AI) models to identify patterns from the collected data in real time
- The ML models can be enhanced and retrained by the operator to increase accuracy or add new patterns to be identified
- ML models can be shared between wells and the corporate systems
- Closed loop control can be implemented for full autonomous control





Life Is On

Schneider
Electric