Predictive Maintenance & Prescriptive Guidance with IoT Using ERP & Real-time Streaming Data

Microsoft Azure

Salient Points

- Delivers Predictive Maintenance in Real Time & offline Prescriptive Guidance
- Connects seamlessly to various ERP Systems for historical maintenance data
- Uses Machine Learning to train algorithms for finding anomaly and patterns
- Leverages IoT to collect & process sensory data in real time
- Conducts Batch Processing for pattern matching & Prescriptive Guidance
- Intuitive and Flexible Data Visualization and real time Alerts
- Completely Built on Microsoft Azure platform & 1st party IP

Case Study: Manufacturing Plant in Midwest

Large Enterprise running a facility for manufacturing Solar Panels
A stable ERP system in place for Plant and Equipment Maintenance
Business is looking to reduce maintenance costs and increase operational efficiency, reducing downtime
Predictive Maintenance would be ideal (as opposed to Reactive, Proactive & Preventative Maintenance)

ERP system has valuable historical information on all Plant and Equipment Maintenance History

Smart sensors attached to Equipment continually measure and stream vital stats (Temperature, Voltage, Frequency and other sensory data)

These data points are used train Machine Learning algos to predict and preempt failures

ERP Maintenance Historical data used to train Machine Learning model

Real time Sensory Streaming Data is run against this model to assign a Safety Score

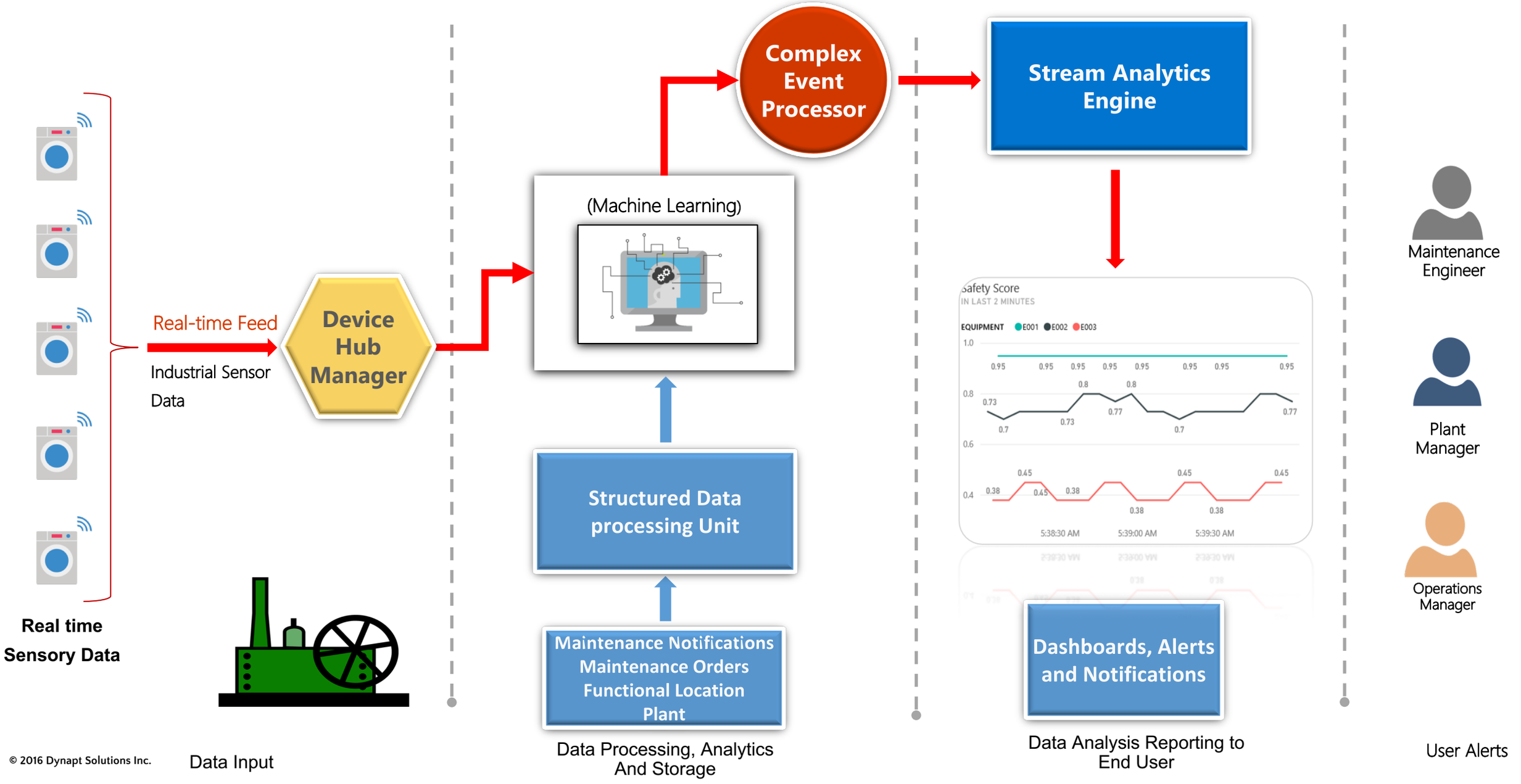
This score predicts risk of failure and sends real time alerts to person responsible (plant manager, service engineer etc.), identifying exactly the issue, along with historical maintenance data

Batch Processing to mine the data for identifying failure patterns& provide Prescriptive Guidance

Leverages Machine Learning

- Import ERP Maintenance history data into IOT Predictive system
- Use this data to train Machine Learning model (Support Vector)
- Stream sensor data into the Model to assign Safety Score
- Visualize streaming data for sensor and scoring information
- Send Maintenance Alerts to responsible users in real time
- Predict failures and take corrective action
- Leverage ML to find failure patterns to provide Prescriptive Guidance to eliminate failure at source
- Preempt & Avoid shut-downs – Save Cost, Improve Operational Efficiency

Functional Architecture



Key Takeaways

- **Seamless connectivity with ERP systems:** historical plant and equipment maintenance data
- **Deep Machine Learning** – leverage historical data from ERP systems and deep ML to build models that grow ever more accurate and smart with time and data processing
- **Real time Sensory Data** – Ingest real time sensory data at scale to discern trends to predict future failures to take preemptive action
- **Real Time Analytics & Batch Processing** – complex event processing in real time and offline data mining with industry leading technologies for deeper insights and **Prescriptive Guidance** to identify RCA and fix issues for good
- **Ad-hoc Querying** – go beyond prebuilt data views to conduct on-demand, at-will analytics on real time and historical data

Q&A

thank you!

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