CELEBAL TECHNOLOGIES

IIOT - Predictive Maintenance

Microsoft Solutions Partner

Infrastructure (Azure)
Data & AI (Azure)
Digital & App Innovation (Azure)
Security
Biz Applications

Celebal Specialization and Strength

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Microsoft
AI Partner Of The Year 2023
Global

databricks
Partner Of The Year 2022 & 2023
Asia Pacific and Japan
2 YEARS IN A ROW

databricks
Migrations Partner Of The Year 2023
Asia Pacific and Japan

Partnerships

Microsoft Solutions Partner

databricks Elite Partner

SAP Silver Partner

Red Hat Ready Business Partner

Advanced Specialization

- AI & Machine Learning
- Analytics
- Infra and Database Migration
- Kubernetes
- Cloud Security
- Low Code No Code
- Intelligent Automation

INDIA | USA | CANADA | APJ | MIDDLE EAST | AUS

2800+ Employees

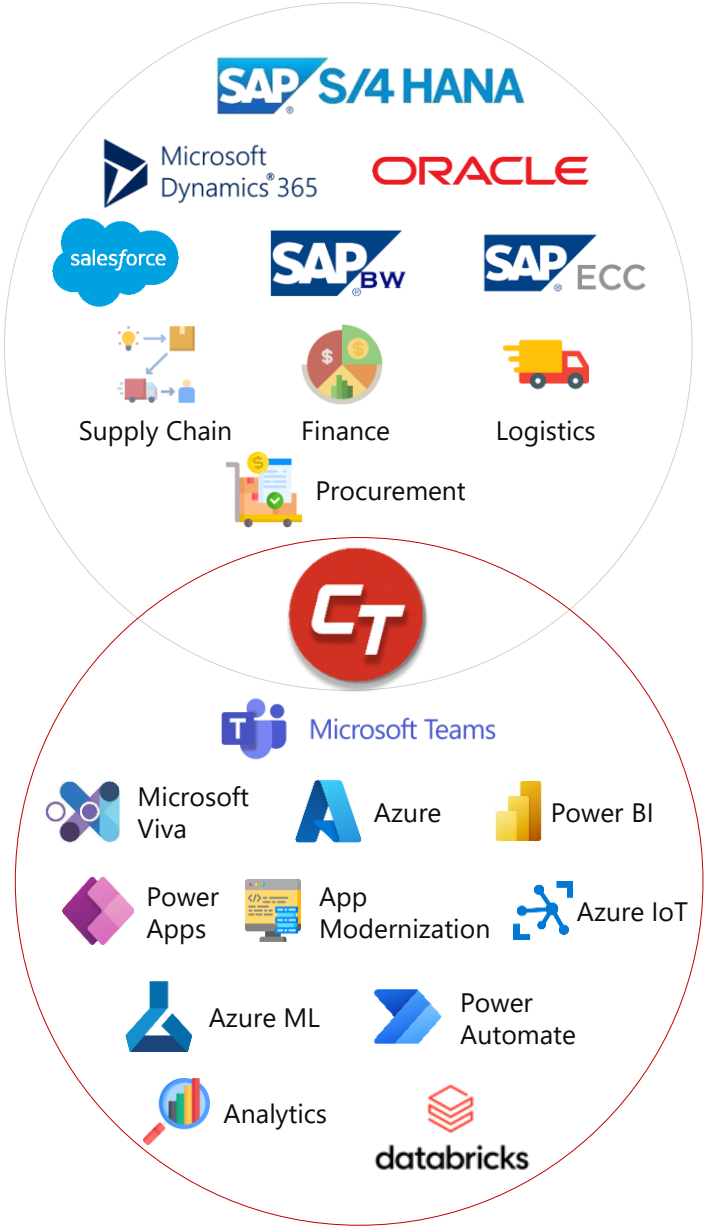
800+ AI experienced professionals

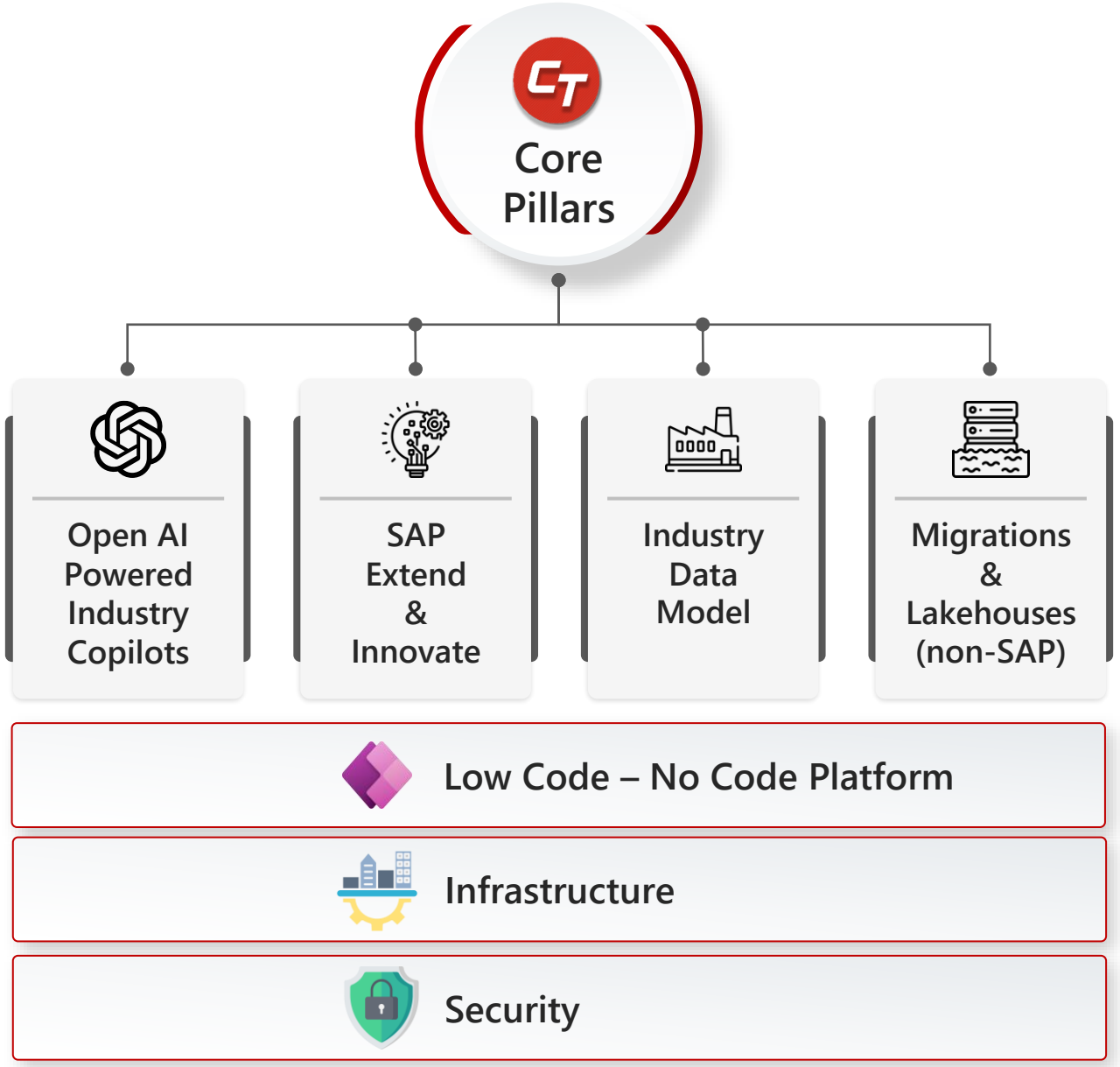
500+ AI Certifications

Industries We Serve

Manufacturing | Retail & CPG | Financial Services | Energy & Sustainability | Healthcare & Life Sciences | Media & Entertainment

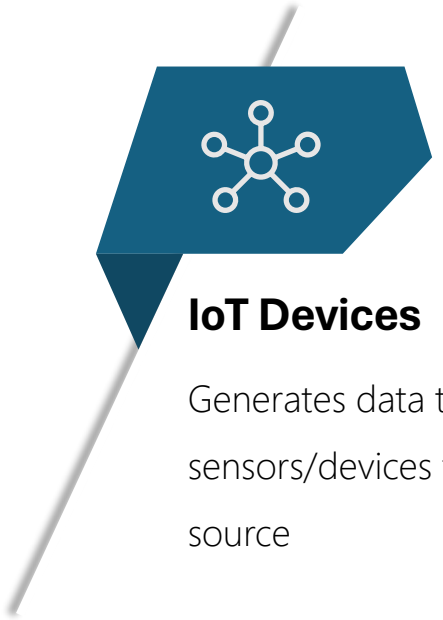
Celebal Core Pillars





Internet of Things (IoT)

IoT is the practice of interconnecting the physical world with cloud services via electronic devices, software, and sensors.

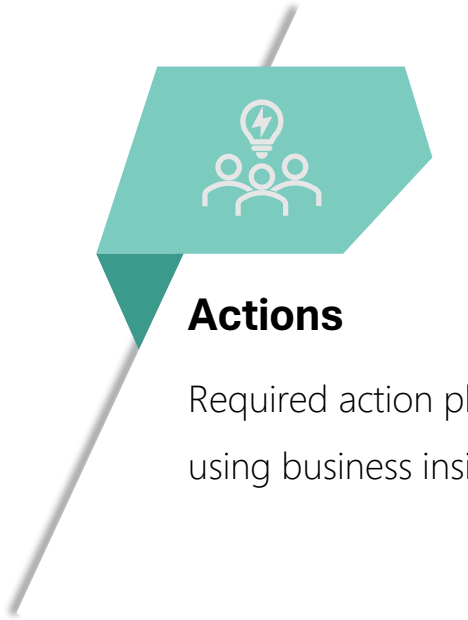


IoT Devices

Generates data through the sensors/devices from the Data source

Insights

Generated data is analyzed to give business Insights



Actions

Required action plan is made using business insights

Benefits of modernizing with IoT

IoT Adoption and growth

Manufacturing industries who have begun executing digital strategies

86%

15 Trillion $

This is the total investment that companies will make in the IoT market by 2025

91%

Of industrial companies invest in the development of smart factories

Source: Bquare IIOT maturity survey, Mckinsey

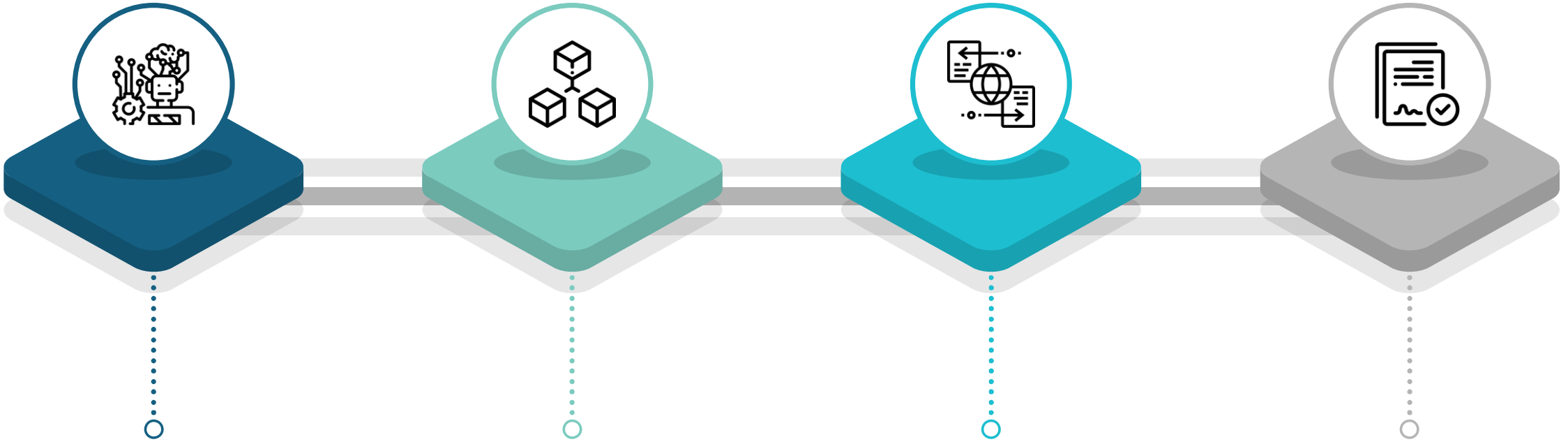
IIoT Predictive Maintenance

Predictive maintenance continuously assesses the status of equipment during normal operations using a mix of real-time data received via the Industrial Internet of Things (IIoT) to reduce the likelihood of unexpected machine failure.

Organizations can use predictive maintenance to

- Monitor for performance abnormalities
- Determine and project equipment health
- Maximize equipment uptime and reduce disruptive downtime
- Minimize disruption
- Optimize resource management

Capabilities of the IIoT Predictive Maintenance Solution



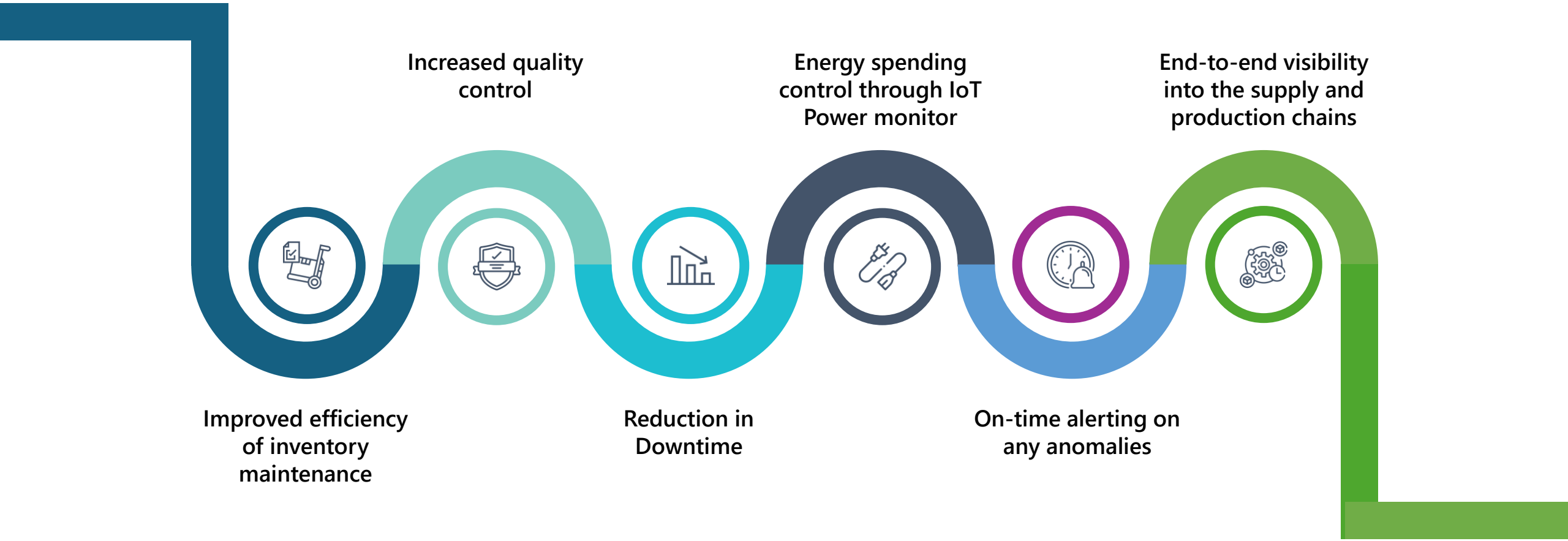
Anomaly identification and forecasting using self-service machine learning.

Interconnection between systems is built-in.

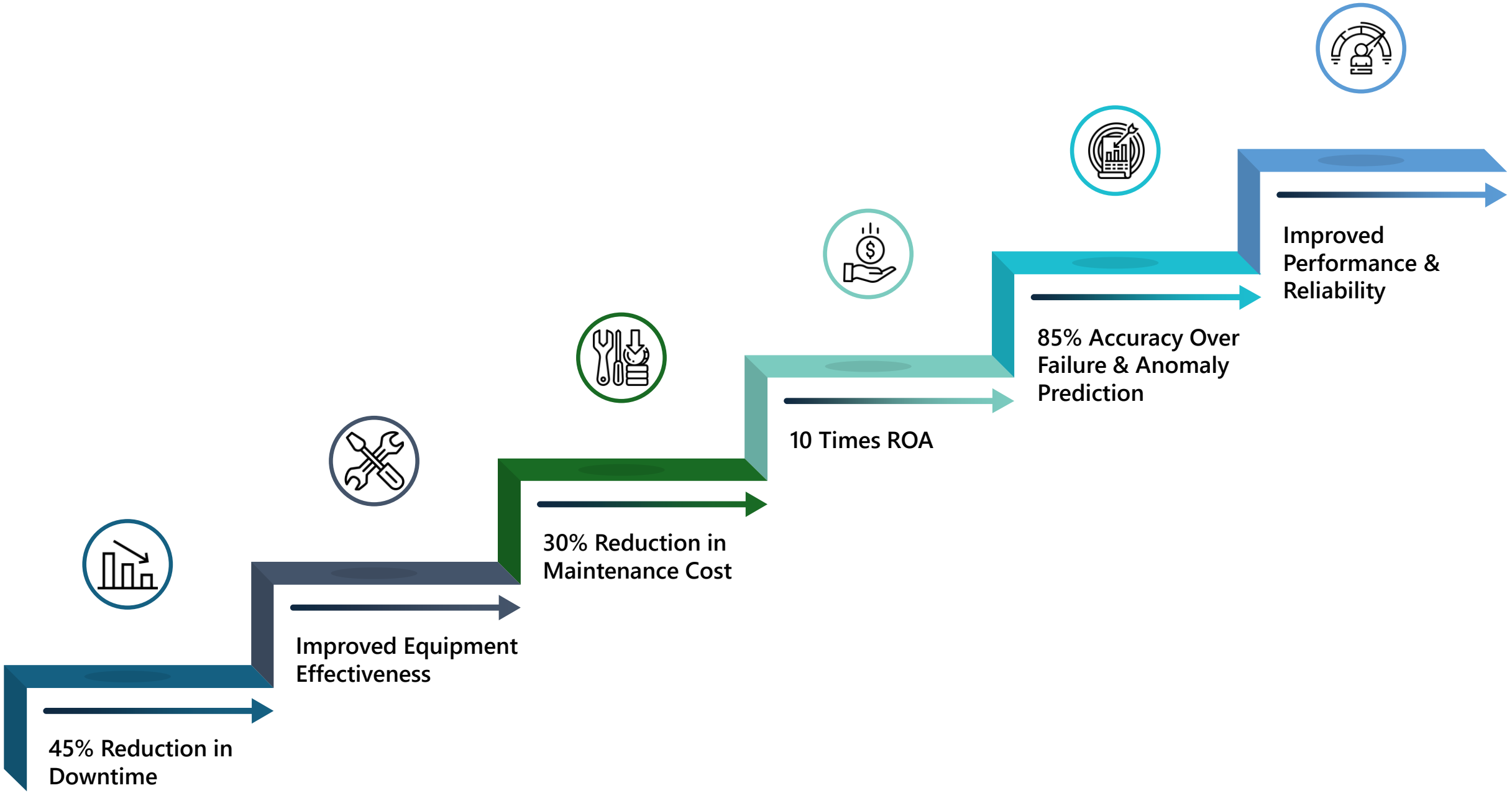
Data sharing with other applications in a secure manner.

Work orders are automatically escalated based on sensor indicators.

The Benefits of IIoT Predictive Maintenance



Business Impact



Technologies We Used

IOT Hub

Stream analytics

Data lake

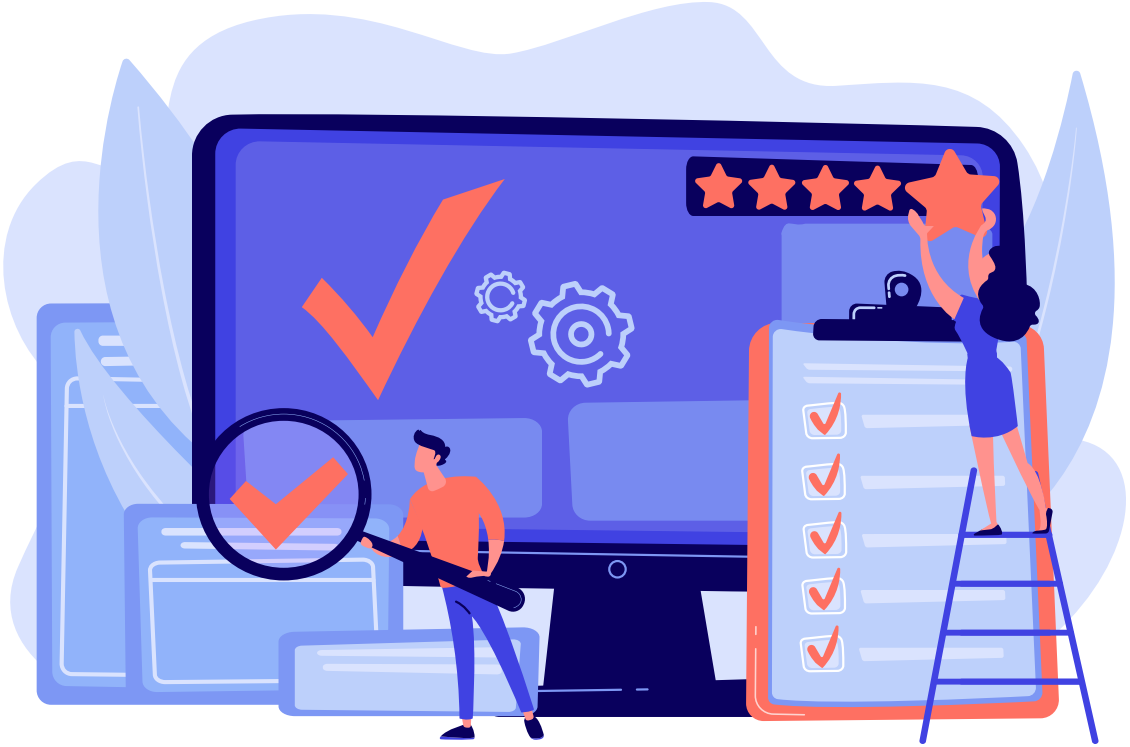
Synapse

Azure ML

Power BI

Key vault

Industry Proven Success



Enhanced Maintenance Practice for a Leading Company in India Using Predictive Analytics

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Business Scenario

- Developing an easily scalable renewable energy solution consisting of different types of predictive analytics use-cases for plant and equipment's such as Pyranometer, Inverter, Transformer and SCB's.
- It requires a great expertise in the field of statistics, deep learning, and significant knowledge of domain. Client was using Scada system to generate data of sensors present at different assets in plant. Power BI reports were reporting tool and Synapse has been used for storing transactional and modelling data.

Solution

- Predictive Analytics of Assets, that include Fault Diagnostics (Anomaly Detection), Fault Classification, Fault Prediction, Probable Reason of Failure/Remaining useful life of Assets.
- Generation-portfolio management and Power modelling that include Expected Generation, Losses Analysis, Performance of Plot Month on Month and Day wise Analysis.
- To deploy 15000MW Plots across different locations of India, currently we are using 20 containers with 300 collections and 15000 RU's in Cosmos DB

Impact

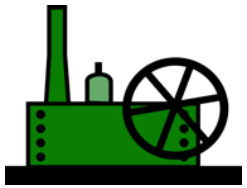
- Improve performance and reliability.
- Cost reduction by optimizing resource allocation on the assets that matter most.
- Transform network data into a condition-based asset-management strategy driven by the health and criticality of a utility's assets.
- Proprietary power modeling tools evaluating policy, energy trends, and forecasts for scenario analysis.
- 80%+ accuracy over failure and anomaly prediction for all the equipment's.

Functional Flow – Predictive Maintenance

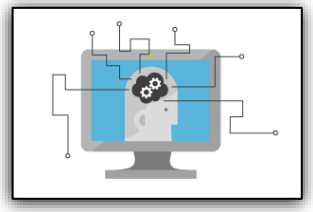
ERP Data

Real-time Feed

Industrial Sensor Data



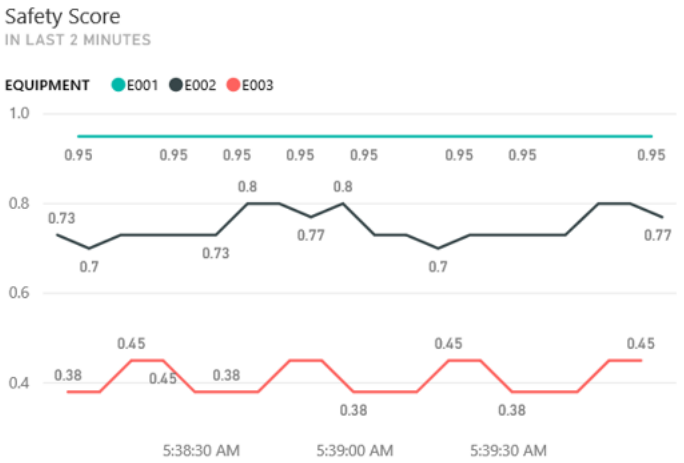
(Machine Learning)



Maintenance Notifications
Maintenance Orders
Functional Location
Plant

SAP S/4 HANA

ERP Maintenance Data



Dashboards, Alerts and Notifications (Power BI)

Maintenance Engineer

Plant Manager

User Alerts

Microsoft

IIoT Predictive Maintenance Solution for a Fortune 500 Company in India Using Power BI

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Business Scenario

- Developing an easily scalable solution consisting of different types of predictive analytics use-cases for plants & Real Time Monitoring in Power BI .
- Client had multiple Independent Business Units and each was using their own Scada system to generate data of sensors present at different assets in plant/factories.

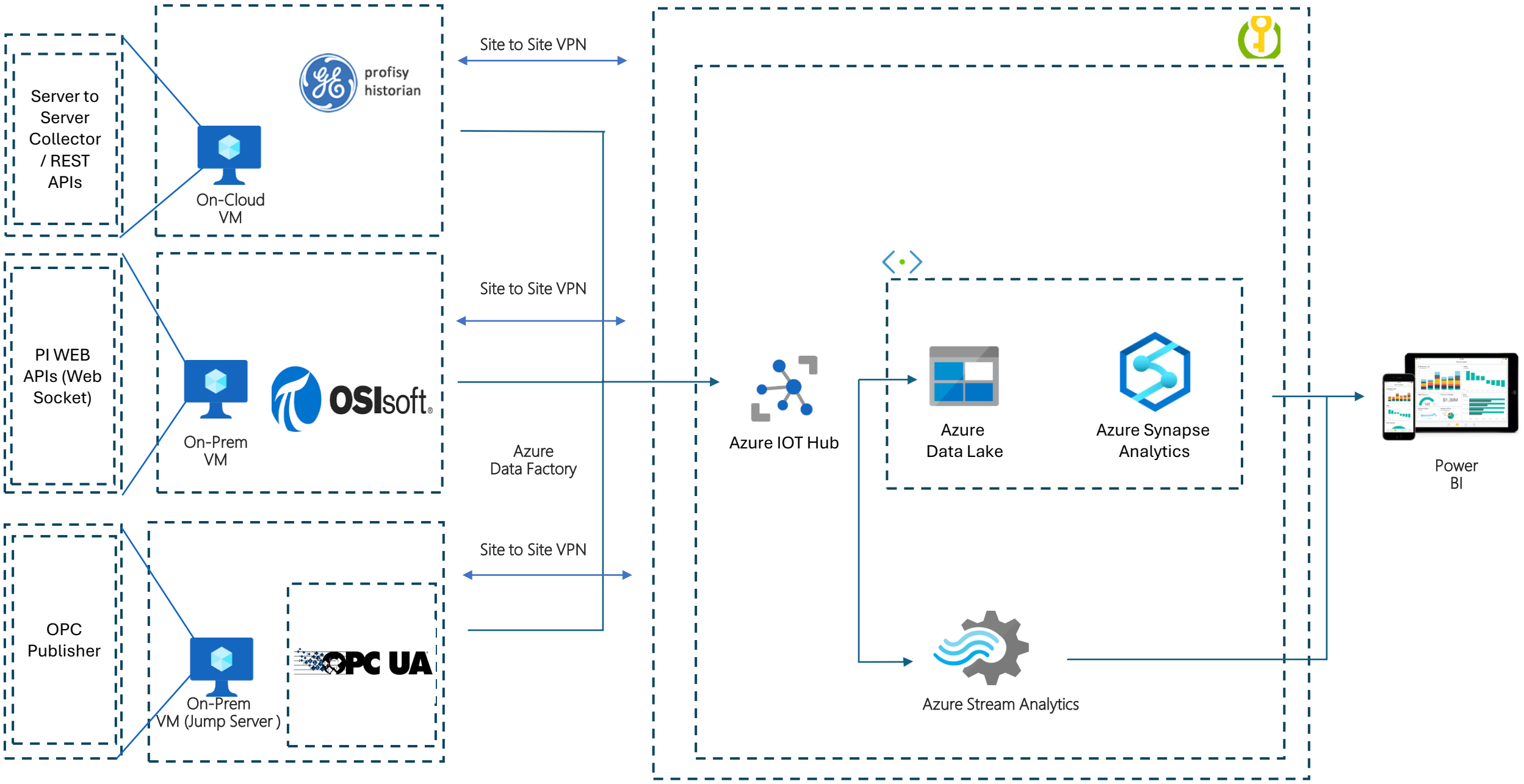
Solution

- Predictive Analytics of Assets, that include Fault Diagnostics (Anomaly Detection), Fault Classification and Fault Prediction.
- Real Time Alerting and Monitoring Using Power Platform along with aggregated reports for Asset Optimization .
- Connection with Multiple Data Sources through Service Provider , REST APIs & WebSockets.
- Recommendation of cause of failure to all assets for field engineers to take preventive actions.

Impact

- Improve performance and reliability.
- Cost reduction by optimizing resource allocation on the assets that matter most.
- Recommendation of cause of failure to all assets for field engineers to take preventive actions.
- Proprietary manufacturing modeling tools evaluating policy, different parameter's trends, and forecasts for scenario analysis.
- 85%+ accuracy over failure and anomaly prediction for all the equipment's.

Reference Arch - IOT Hub

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Thank You