Nucleus for Manufacturing

on Microsoft Azure

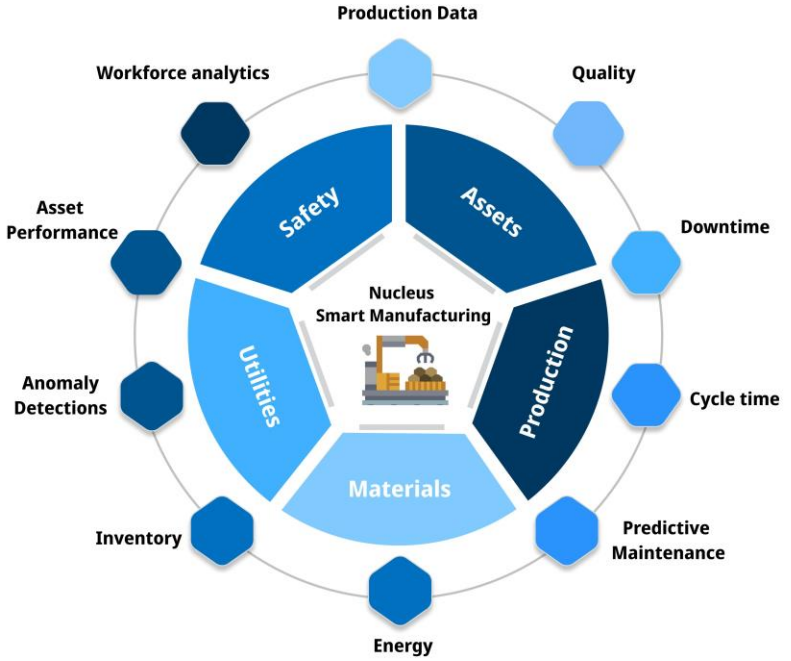
January 2024

Nucleus for Manufacturing – Introduction

Nucleus for Manufacturing

Enterprise Manufacturing Cloud for Customers to digitize complex operations, drive innovation and agility across Value Chain at Global Scale

- Industry cloud for Manufacturing Digitization
- Azure based Industrial IoT solution with common data framework
- Reference architecture & Reusable accelerators “our IP”
- Integration layer for various IT, OT systems and point solutions
- Addressing Edge to Cloud
- Digitalization across value chain
- Complex data management



NFM

Value Propositions

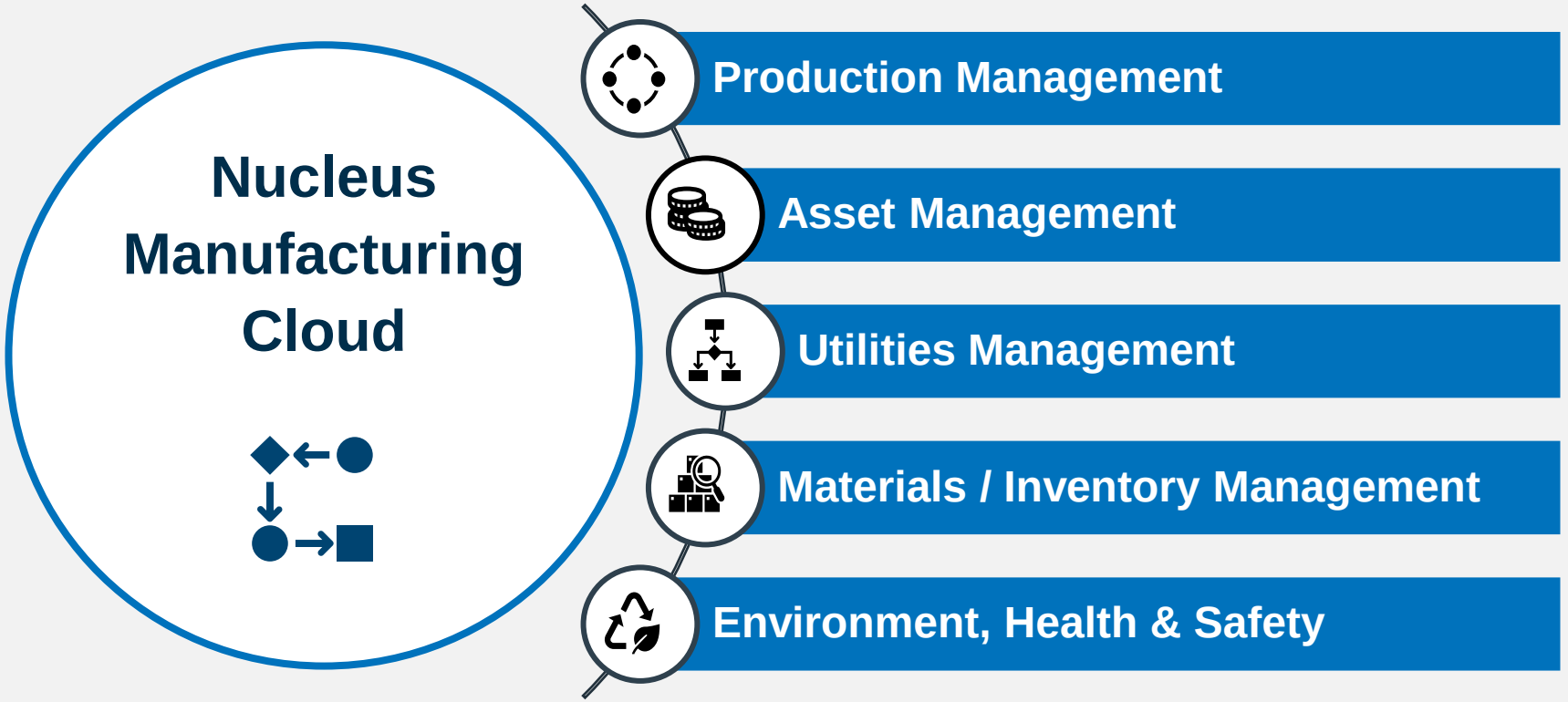
One time license per factory	Future Scalability	User Customization	Reusability	Ready Connectors	Efficient Engineering	One Stop Solution

Nucleus for Manufacturing – Business Focus Areas

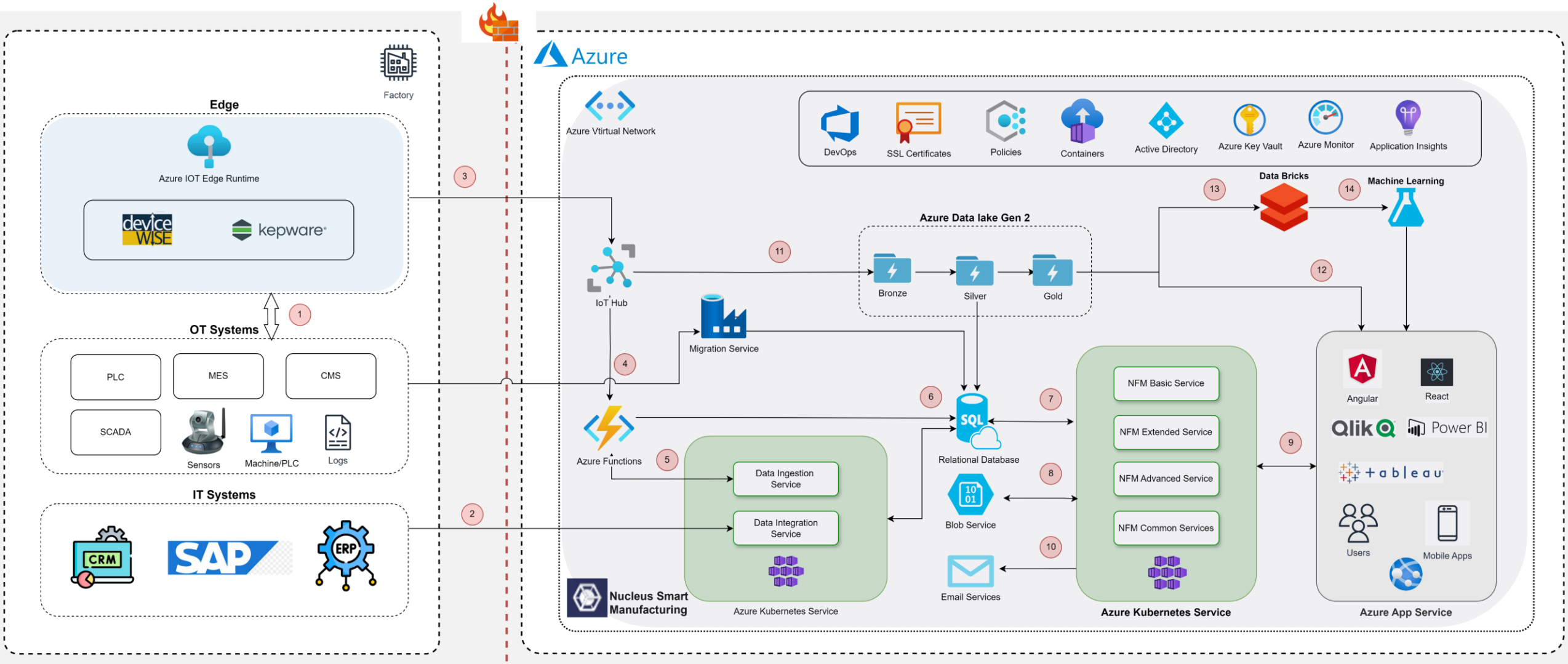
NFM is an open integration accelerator which can connect, collect, and contextualize disparate data from various factory data sources. It enables single source of truth for various data types and sources the data for advanced analytics and centralized insights

Capabilities

- End to end factory Visibility starts from raw material to finished goods
- Intuitive dashboard enabled with angular and power BI
- Smart Operations to enable operators to feed in manual data
- Remote assistance enabled with AR/VR to assist the support engineers
- Andon workflow enabled with ServiceNow integration
- Structured factory modelling provides factory, line and machine view
- Real time alerts and trends to keep the stakeholders notified
- AI/ML predictions provide predictive maintenance forecasting capabilities and anomaly detection
- Smart Maintenance automated with digital checklist
- Graphical and tabular reports for analysis

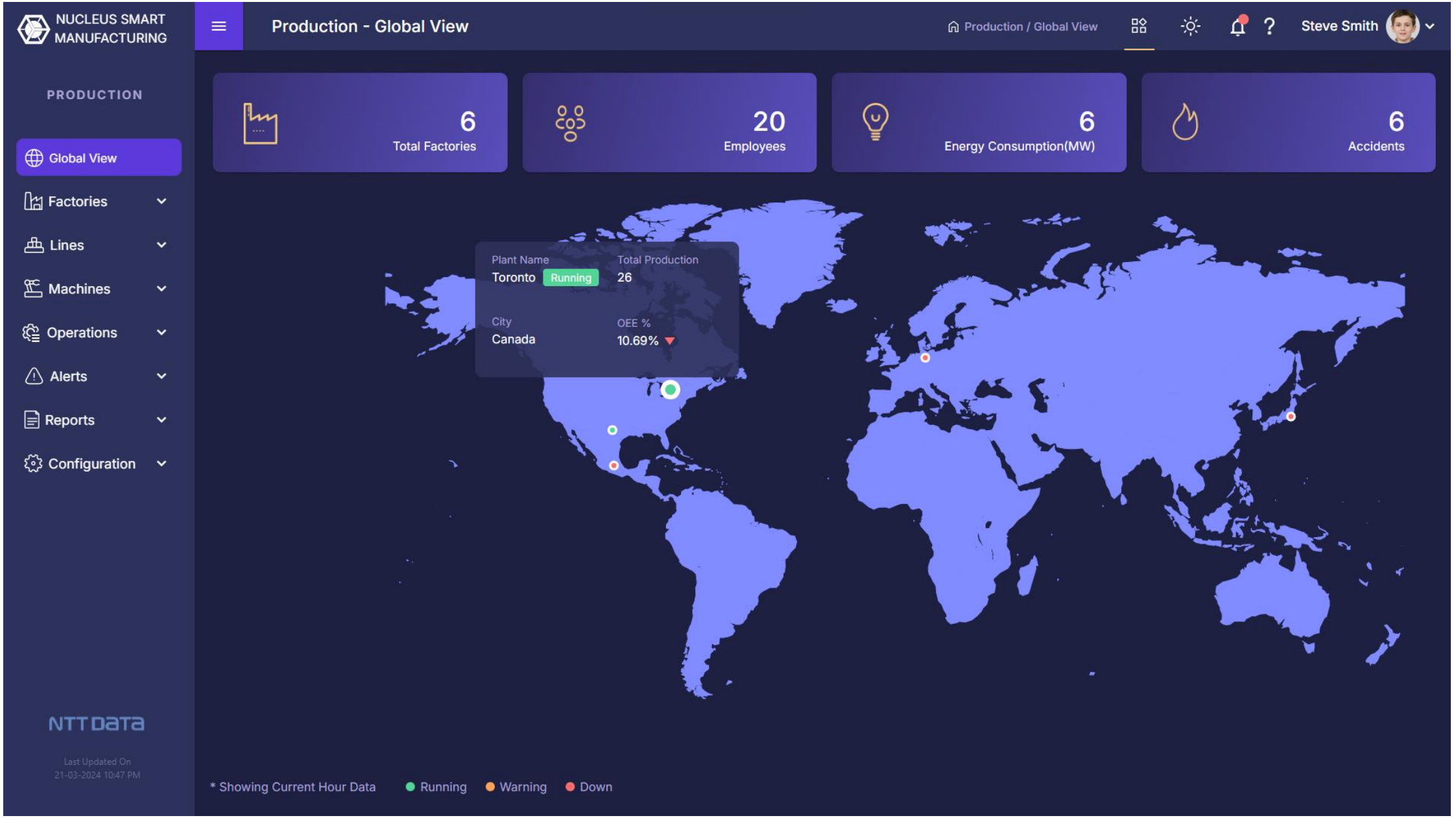


Technical Architecture - Azure



1. OT Real time streaming data integration
2. IT Batch data integration
3. Data Ingestion Edge to Cloud
4. Real time IoT Hub to Azure Functions using triggers
5. Ingests the data to the NFM Ingestion Services
6. Function App Ingests the raw data to SQL
7. SQL data is exposed in the form of APIs
8. Unstructured data are stored in blob storage
9. APIs are consumed by mobile apps, BI tools etc
10. Alerts notification via emails
11. IoT Hub Ingests the unstructured data, logs and raw messages
12. Data in data lake is used by self servicing dashboards
13. Data bricks uses the data from data lake for ETL operations
14. Data from data lake is used for machine learning

NFM- Production Global View



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NFM- Production - Factory View

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NFM- Production Machine View

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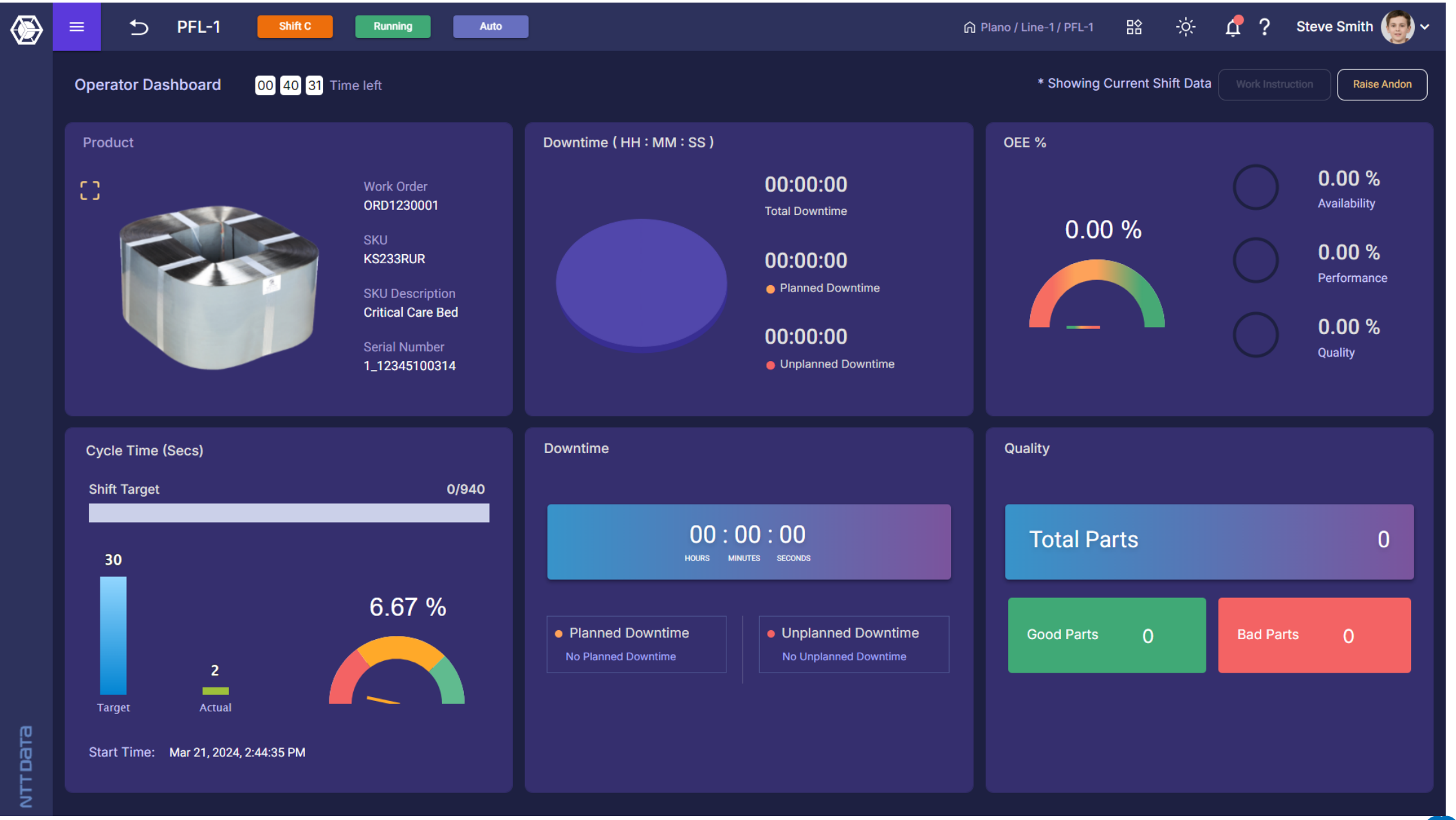
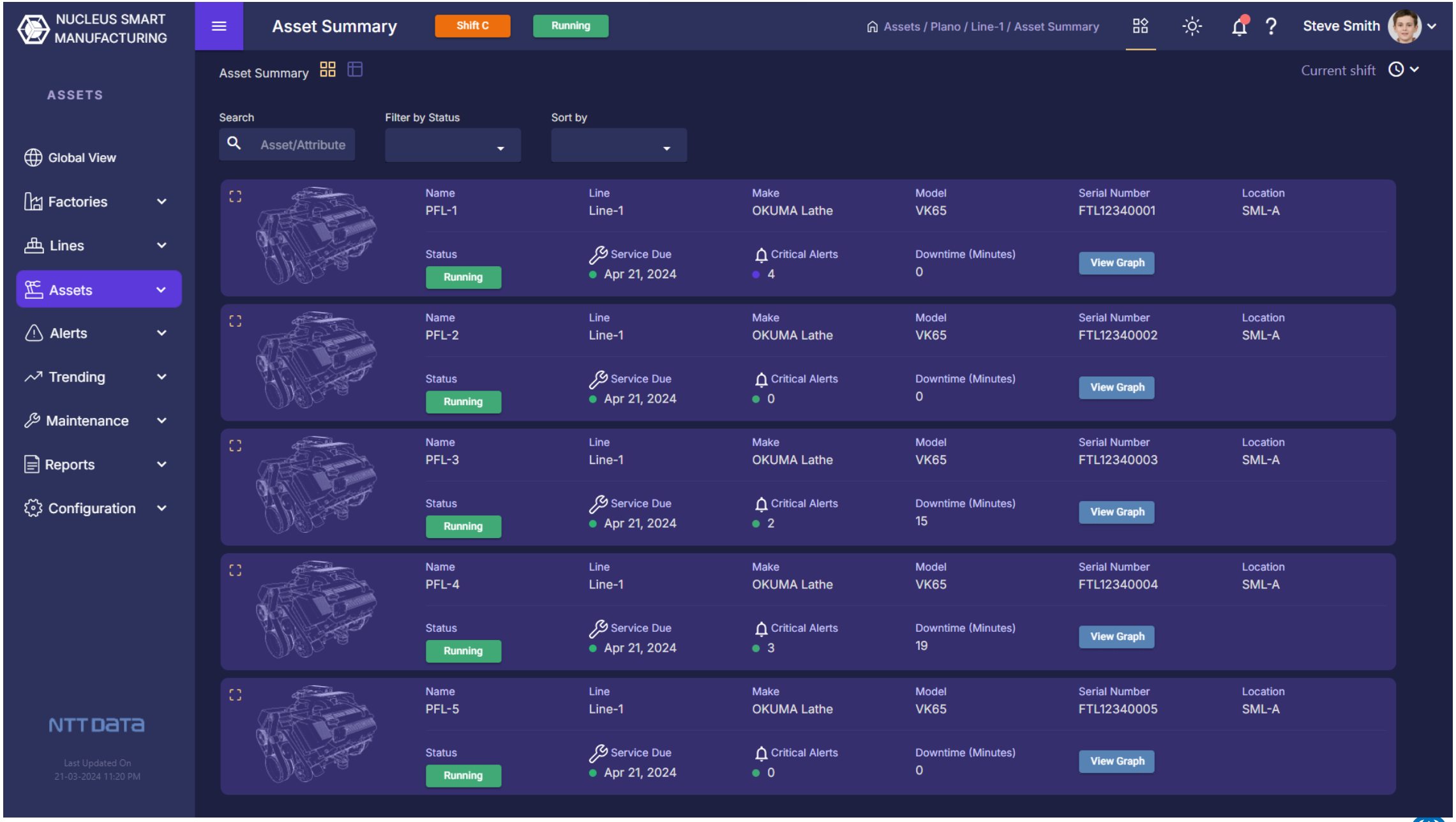
NFM- Production -Operations view



NFM- Asset –Summary View



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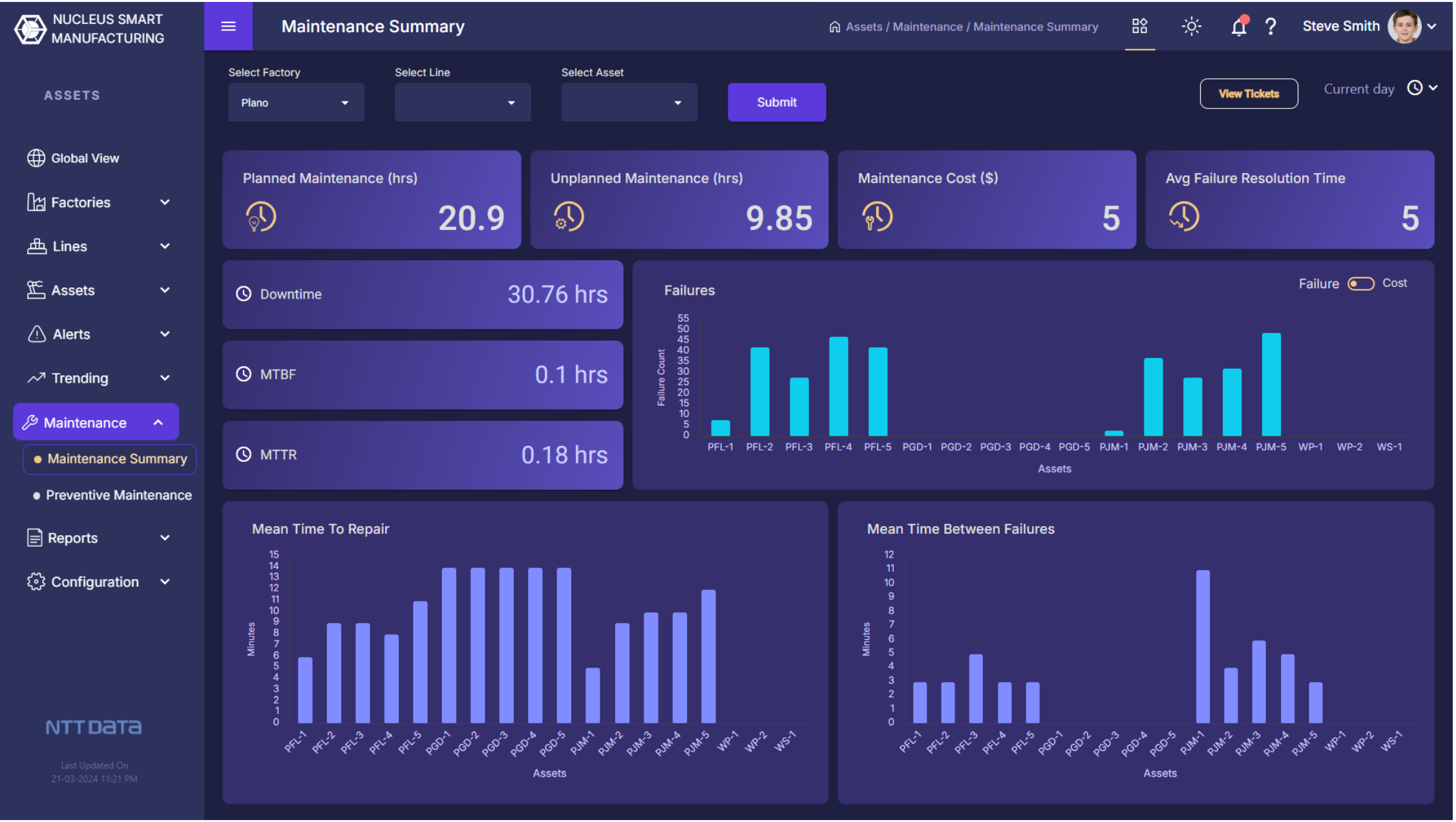
NFM- Asset -Maintenance view



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