



Connected Assets

Asset Status Monitoring by Digital Twin
with Plant Maintenance Planning &
Execution

Use Case : Connected Assets

Overview

This solution will enable

- closed-loop scenario for real-time asset health check by automatic provisioning of digital twin and end to end maintenance execution to reduce machine downtime to avoid revenue loss.
- trade-off analytics for maintenance planning
- cognitive worker guidance
- end to end analytics on maintenance effectiveness and asset reliability with predictive and prescriptive analytics

Challenges

- Lack of real-time visibility on asset operational parameters to reduce machine downtime. Asset downtime causes less output i.e. loss of revenue.
- Inability to automatically predict asset maintenance plan based on asset health condition.
- Difficulty in optimized decision-making for maintenance operations
- Lack of end to end view of maintenance processing to understand maintenance effectiveness

Value Prop

- Improved decision making and real-time visibility of asset maintenance which helps to reduce machine downtime to avoid revenue loss.
- Easy and automated process for maintenance operations
- Predict possible future downtimes in advance so that preventive action can be taken which increases total machine up time.

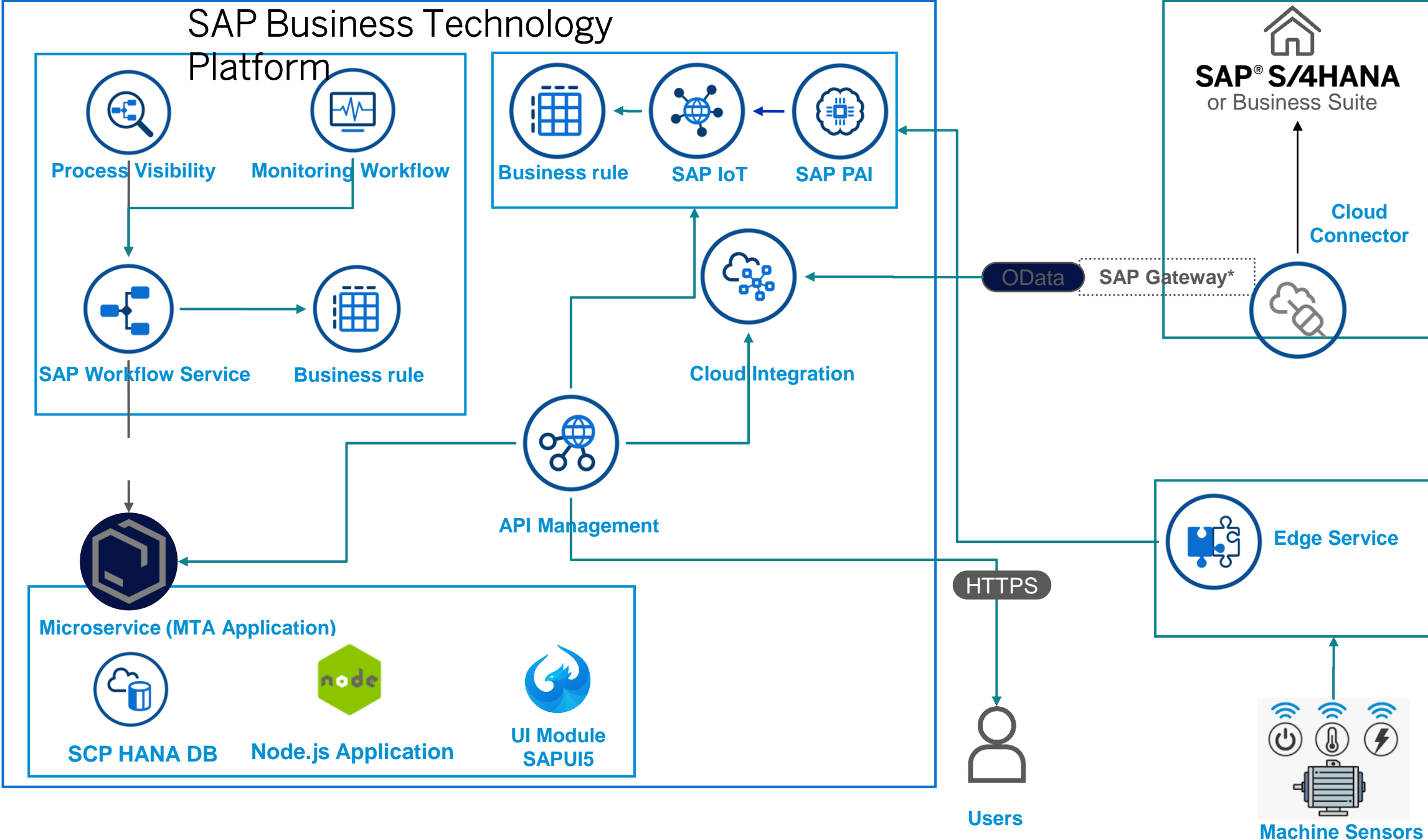
Features

- Automatic provisioning of digital twin from enterprise asset model and machine integration model at edge
- Notification for failure and early warning and prediction of machine health
- Trade-off analytics for optimized decision-making for maintenance processing
- Worker guidance through natural language chatbot and voice interface
- Prescriptive analytics to determine effectiveness of maintenance operations

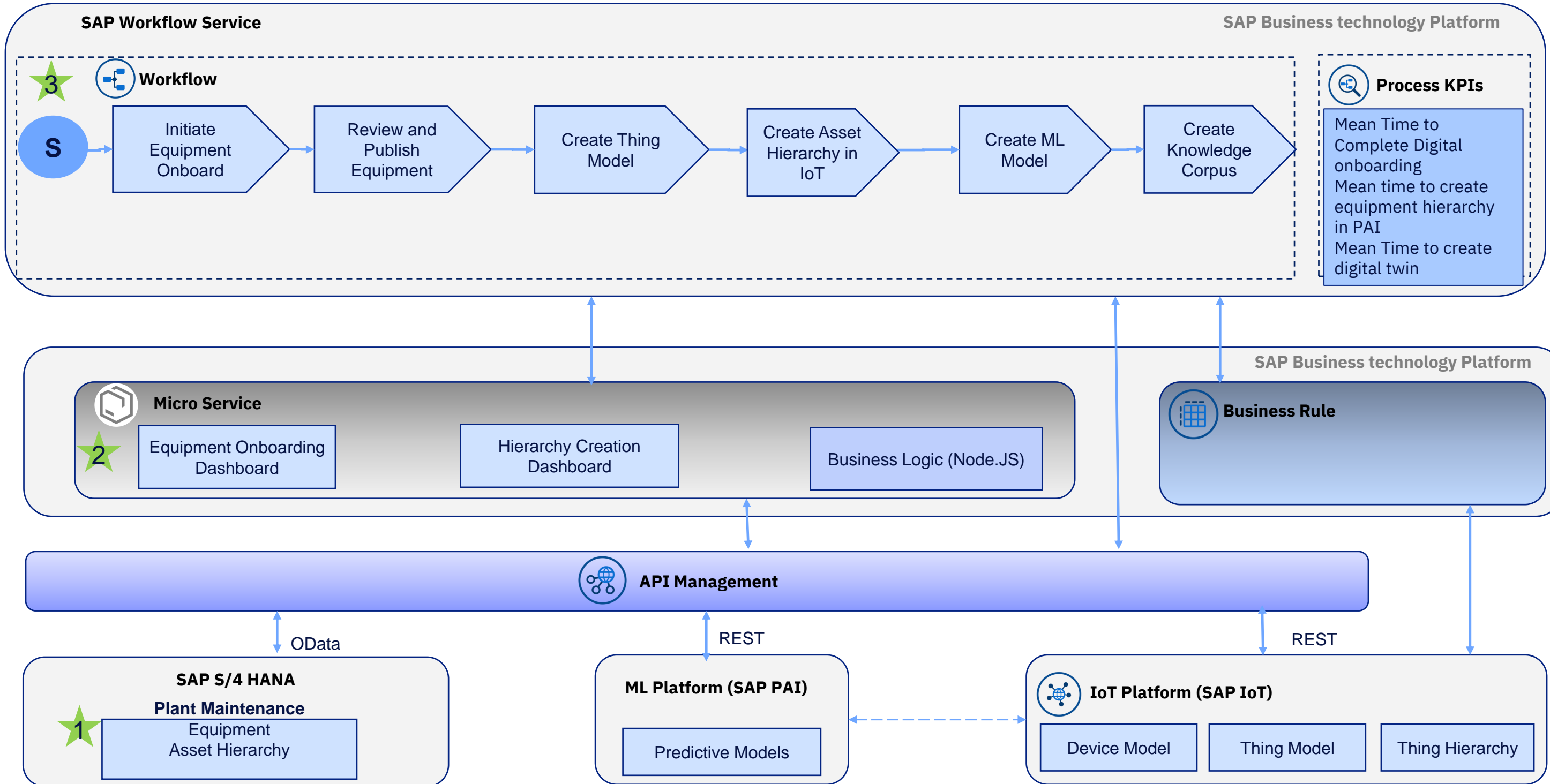
IBM Differentiators

- Quick and automated provisioning of digital twin for real-time asset health monitor
- Predictive and prescriptive insight on maintenance operations and automated decision-making for optimized maintenance planning
- Cognitive solution for worker guidance for maintenance operations

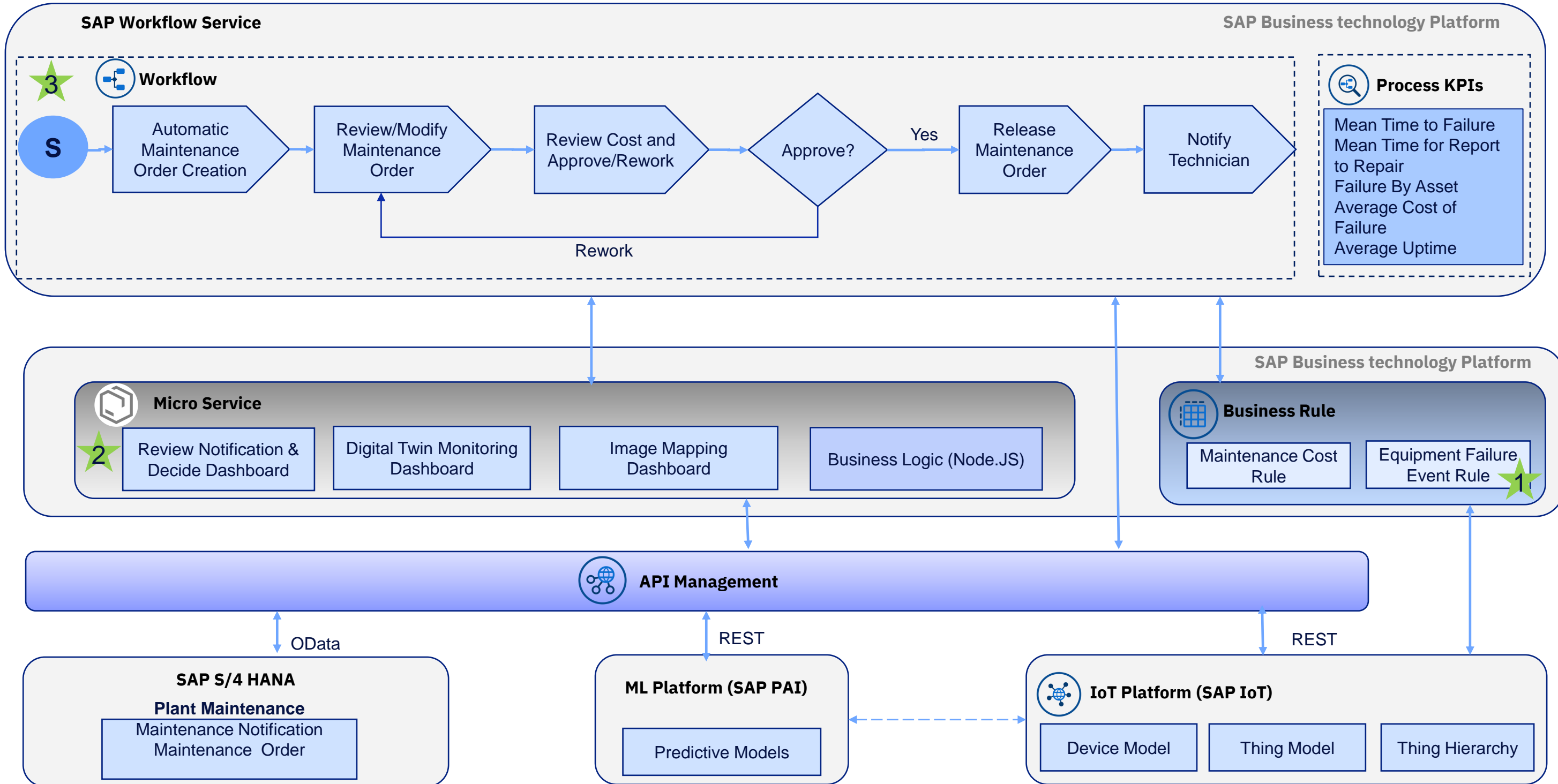
Connected Asset Integration Architecture



Connected Asset Digital Onboarding – Intelligent Workflow Architecture



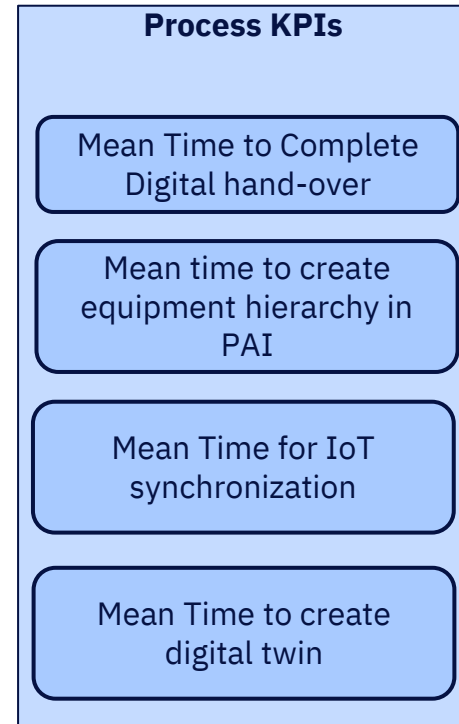
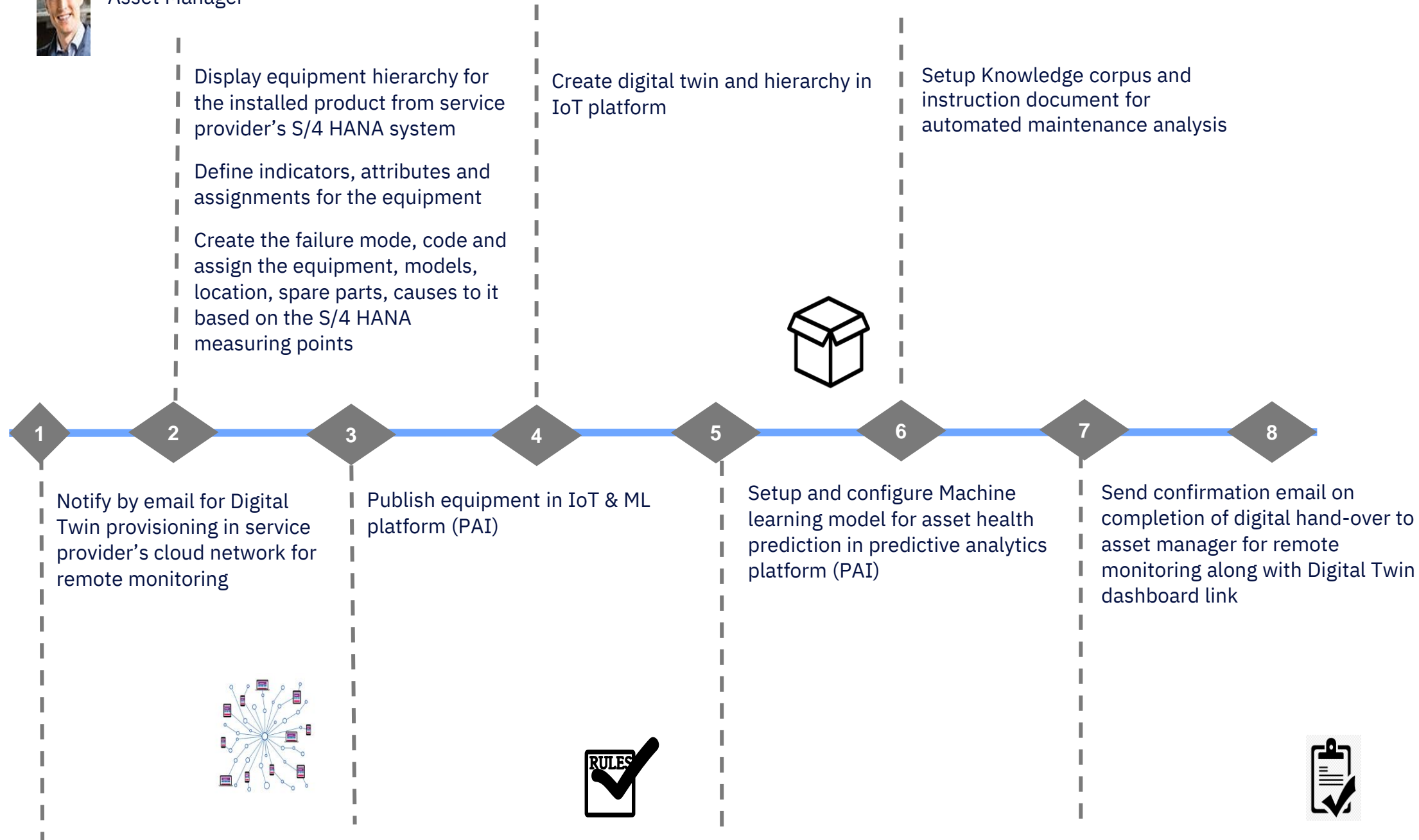
Connected Asset Monitoring and maintenance Execution– Intelligent Workflow Architecture



Connected Asset Digital Onboarding – Intelligent Workflow



Asset Manager



Note: This workflow will be triggered when the After Market Service needs to be initiated for an equipment e.g., after installation and commissioning process

Connected Asset – Intelligent Workflow



Asset/Production Manager



View online Asset Operational Parameter Data from Equipment in real-time



View current failure information of the asset

View the preventive maintenance plan for the equipment

View the required spare parts and cost for the equipment maintenance

View the production plan in the related work center linked to the equipment for next 7 days

View the historical maintenance for the equipment in last 30 days



Get proactive notifications on PM work order creation

Get the proposal for spare parts in the PM Work Order based on the failure information from Digital Twin and update PM work order which is automatically created once the asset manager decides on the maintenance date



Maintenance Planner



Approve PM Work order or send for rework if needed



Technical gets notified on new PM work order

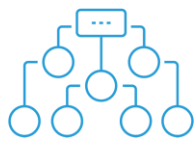
Uses chatbot to get PM work order details and guidance for maintenance



Maintenance Technician



1 Define and manage enterprise asset model
Generate Digital Twin from enterprise asset and edge model



2 System automatically generates PM Notification based on equipment health condition and generate alert



3 Decide on the best possible date for the maintenance for the current issue and trigger PM Work Order creation

OR

Close PM notification if decided no maintenance is needed



4 Get workflow task to view PM Work order cost



Maintenance Manager

5 Once approved the PM Work order will be automatically released for execution



