



SAP BUSINESS TECHNOLOGY PLATFORM | EXTERNAL

Intelligent Workflows for Asset Maintenance

Intelligent Workflows for Plan to Manufacture

Version: 1.0

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1. Overview

This Asset Maintenance Execution Intelligent Workflow package is developed and maintained by IBM to bring transparency, visibility, efficiency, and integration to the Plant Maintenance process, spanning across multiple systems like SAP S/4HANA, SAP Predictive Asset Insights and SAP Internet of Things and to improve asset maintenance process. This package contains use case details for real-time asset health check via digital twin and end to end equipment maintenance planning & execution. It helps to understand how the different processes in disparate systems have been rewired using SAP Workflow Management for plant maintenance order execution, which reduces a lot of manual configuration and monitoring effort and speed up the inhouse asset maintenance process with end-to-end performance visibility.

It integrates the following business transactions & approval requirements:

- **SAP S/4 HANA:** Automatic maintenance order creation, Order cost review and release Maintenance order.
- **SAP Business Technology Platform:** Microservices (UI Module, HANA Cloud, Node.js Module) for Digital Handover, Digital Twin Dashboard, Maintenance process execution related business logic for Workflow Management Service including business rules and process visibility.
- **SAP Predictive Asset Insights:** Asset Model, Machine Learning Data set for automatic failure prediction.
- **SAP Internet of Things:** Holds digital twin, asset monitoring parameters and its real time value, triggers workflow.
- **Workflow in SAP Workflow Management:** Intelligent workflow for automatic Maintenance order execution process.
- **Business Rule in SAP Workflow Management:** Holds the rule for Maintenance Order cost limit for additional approval and Asset parameter limits to initiate Maintenance Notification.
- **Process Visibility in SAP Workflow Management:** End-to-end business process in SAP Business Technology Platform.

2. Business Scenario and its Challenges

- Lack of real-time visibility on asset operational parameters and inability to automatically predict asset maintenance plan based on asset health condition.
- Difficulty in optimized decision-making for asset maintenance operations.
- Lack of visibility for the Asset Manager about the actions and plans by maintenance planner and Maintenance Manager and the status and timelines for asset maintenance.
- No visibility for number of breakdown and periodical maintenance cost for each equipment.
- Lack of real-time visibility for identifying the bottleneck of servicing process.
- Lack of end-to-end view of maintenance processing to understand maintenance effectiveness

3. Business Needs

- To improve asset monitoring and automatic maintenance execution to achieve next level of maturity and readiness for the future.
- Modernization to automate the asset maintenance execution process.
- Clear picture of asset maintenance process to improve end-to-end view of maintenance execution process and to understand maintenance effectiveness.
- Asset manager needs a quick and automated process for the entire end to end maintenance process to know the number of breakdown and periodical servicing cost for each equipment.
- Need to identify the bottleneck of the servicing process for optimized maintenance planning and execution.
- Provide visibility to the Business Outcomes through live Key Performance metrics of the end-to-end processes.

4. Solution

Intelligent Workflows to execute business functions across Plan to Manufacture, Maintenance Management & Execution with ability to provide process performance visibility.

Asset Maintenance Intelligent Workflow:

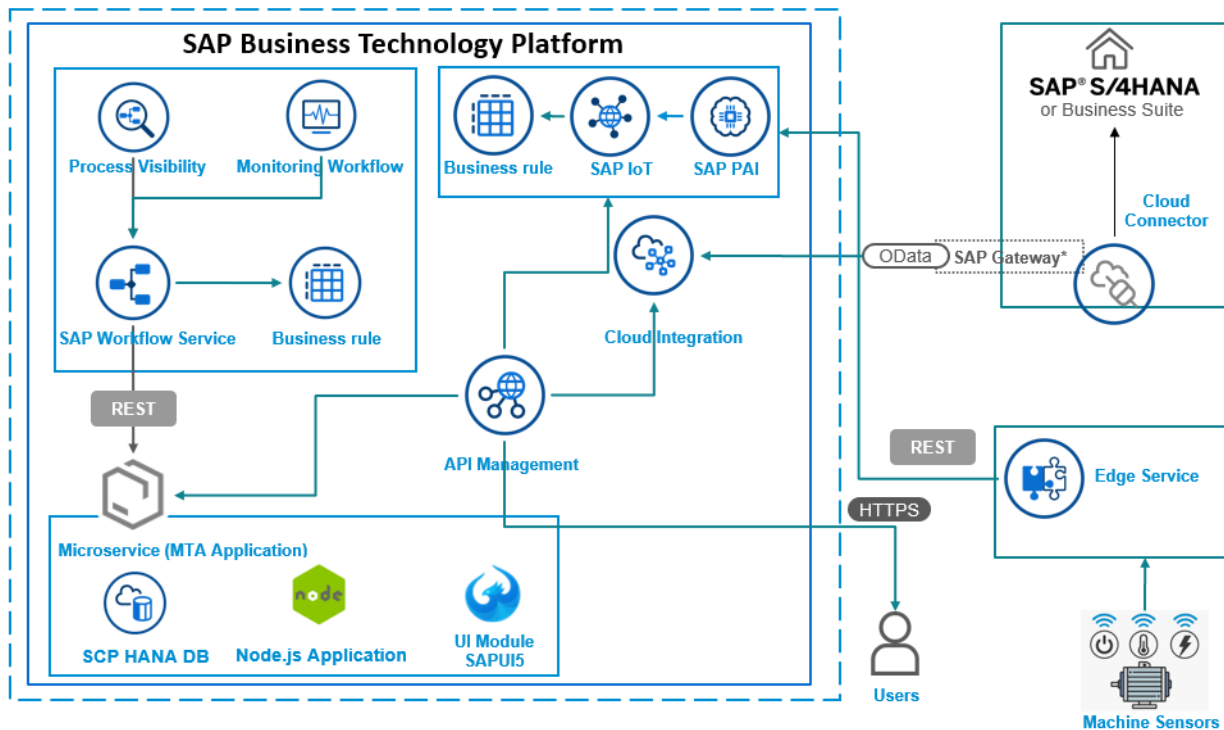
To improve end-to-end view of plant maintenance execution, understanding maintenance process effectiveness and to automate decision-making for maintenance operations this intelligent workflow has been developed.

- Maintenance Order Review and Modification:
 - Review of auto created S/4 HANA maintenance order from Digital twin.
 - Review the automatically added spare parts list and cost.
 - Add/Modify additional information and confirm.
- Approval Process:
 - Maintenance Planner reviews auto-generated maintenance order from digital twin and confirms to proceed further.
 - Maintenance Manager reviews the cost and accordingly approve/reject.
 - Once maintenance cost accepted, the maintenance order will be released in S/4 HANA and a notification will be sent to Technician.
- Maintenance Execution Performance Dashboard
 - End to end process visibility is also provided based on the workflow in SAP Business Technology Platform to monitor the key process KPIs like mean time for equipment failure, no. of maintenance notification, maintenance cost for each equipment and derive strategic insight.

5. Value Proposition

- Improved decision making and real-time visibility of asset servicing.
- Quick identification of the blockage of the process.
- Automatic review of maintenance cost based on cost limit defined in Business Rules.
- Modular Intelligent Workflows for key capabilities with Process Visibility.

6. Architecture – Intelligent Workflow Asset Maintenance



7. Artifacts (Processes, Decisions, Visibility Scenarios)

Fiori UI: This simple Fiori Application (hosted on SAP Business Technology Platform) has been developed to monitor equipment operational parameters and initiate asset maintenance workflow by creating Maintenance work order.

Asset Maintenance Execution Intelligent Workflow: It covers end to end process for maintenance order review, taking necessary review and approval from required personas as well as releasing maintenance order in SAP S/4 HANA leveraging the Workflow and Business Rules in SAP Workflow Management with the SAP Internet of Things and persistency services in SAP Business and Technology Platform.

Business KPIs Dashboard (Process Visibility): This Process Visibility dashboard enables process excellence, process transparency, process transformation by providing KPIs like mean time for equipment failure, number of Maintenance notifications, Maintenance cost for each equipment.

Business Rules in Workflow Management: Holds the rules for maintenance order cost limit for additional approval and asset parameter limits to initiate maintenance notification.

8. Solution Components

- SAP S/4HANA
- SAP Internet of Things
- SAP Business Technology Platform
- SAP Workflow Management
- SAP Predictive Asset Insights

9. References

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