

SAP BUSINESS TECHNOLOGY PLATFORM | EXTERNAL

Intelligent Workflows for Digital Handover

Intelligent Workflows for Plan to Manufacture

Version: 1.0

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1. Overview

This Digital Handover Intelligent Workflow package is developed and maintained by IBM to bring transparency, visibility, efficiency, and integration to the Plan to Manufacture process, spanning across multiple systems like SAP S/4HANA, SAP Predictive Asset Insights and SAP Internet of Things, to automate Digital Twin creation from enterprise Asset Model. This package contains use case details for real-time asset health check by automatic provisioning of digital twin from enterprise asset model defined in S/4 HANA. It helps to understand how the different processes in disparate systems have been rewired using SAP Workflow Management to automate digital twin creation and configure asset monitoring dashboard which reduces manual configuration effort and speed up the digital twin setup and digital handover process with end-to-end performance visibility.

This Digital Handover Intelligent Workflow has been developed for Aftermarket service and plant maintenance scenarios to automate Digital twin generation for monitoring equipment, once Equipment installation is completed.

It integrates the following business transactions & approval requirements:

- **SAP S/4 HANA:** Enterprise asset model including Equipment Hierarchy, measuring points and spare parts details from which Digital twin gets created.
- **SAP Business Technology Platform:** Microservices (UI Module, HANA Cloud, Node.js Module) for Digital Handover and Digital Twin Dashboard related business logic for Workflow Management Service including 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 part of SAP Workflow Management:** Intelligent workflow for automatic Digital Twin Onboarding process.
- **Process Visibility as part of SAP Workflow Management:** End-to-end business process in SAP Workflow Management in SAP Business Technology Platform.

2. Business Scenario and its Challenges

- No automated way to create digital twin from enterprise asset model. Manually replicate Digital twin for enterprise asset model takes time.
- Lot of manual technical configuration needed which needs good amount of time and expertise.
- No standard linkage between SAP Equipment measuring points and Digital twin parameters.
- Lack of real-time visibility on asset operational parameters and Inability to automatically predict asset maintenance plan based on asset health condition.
- Lack of end-to-end view of digital handover process to understand the effectiveness.

3. Business Needs

- Automation in digital twin generation from enterprise asset model which makes the Digital twin creation process less complex, saves lot of manual effort and time.
- To improve asset monitoring and automatic maintenance execution to achieve next level of maturity and readiness for the future.
- Asset manager (Service provider or in-house, depending on use case) gets clear picture of asset handover process to improve end-to-end view of digital handover and to monitor asset health.
- Clear mapping between S/4HANA measuring points and digital twin asset parameters.
- Provide visibility to the Business Outcomes through live Key Performance metrics of the end-to-end processes.

4. Solution

Digital Hand Over Intelligent workflow:

This digital handover Intelligent workflow has been developed to automate the digital twin creation from enterprise asset model, for better real-time visibility and to automatically predict asset service, based on asset operational parameters.

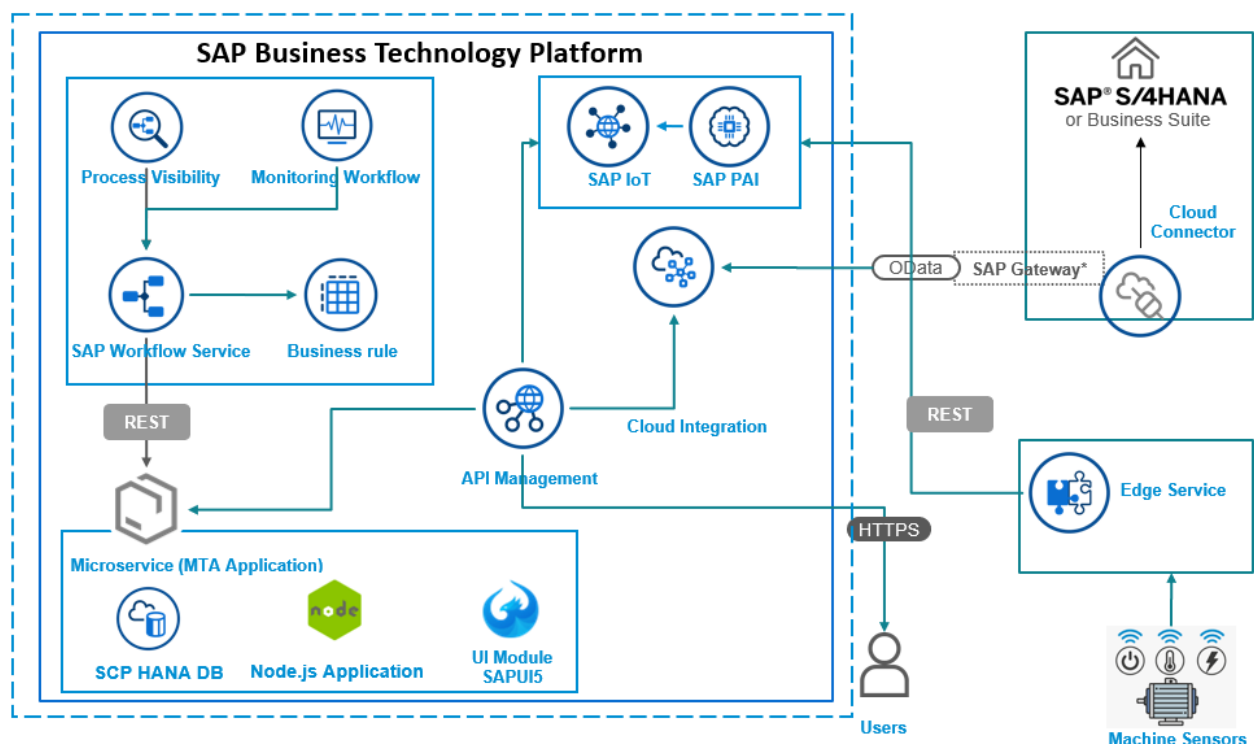
This workflow is focused on Digital Twin Creation process.

- Digital Twin Generation:
 - Ability to create Equipment Model and measuring indicators in SAP Predictive Asset Insights automatically from enterprise asset model.
 - Ability to create digital twin and asset hierarchy in SAP Internet of Things platform automatically, from enterprise asset model and link with SAP Predictive Asset Insights equipment model.
 - SAP Business Technology Platform ML services based Predictive Model to generate Score for asset failure or anomaly, based on historical records.
- Approval and review process:
 - Asset Service Manager reviews and selects S/4 HANA Equipment and its parameters to initiate SAP PAI Equipment Model and Digital twin.
 - Asset Service Manager generates the Asset hierarchy referring to Enterprise asset hierarchy.
 - Digital twin image tagging, and monitoring dashboard link sent to Asset Service Manager automatically, once digital handover process completed.

5. Value Proposition

- Improved automated way to generate digital twin in SAP IoT and prediction Model in SAP Predictive Asset Insights from S/4HANA enterprise asset model which reduces lot of manual effort and time.
- Automatic mapping of equipment measuring point and Prediction scores into Digital twin.
- Clear picture of asset handover process to improve end-to-end view of digital handover process and to monitor asset health.
- Easy and automated process to replicate Enterprise asset hierarchy and map it with Digital twin dashboard.
- Quick identification of the blockage of the Digital Handover process.
- Modular Intelligent Workflows for key capabilities with SAP Process Visibility service.

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 help

- Equipment and measuring point selection and creation for Predictive Asset Insights Equipment model and
- Asset Hierarchy Creation and update in SAP Internet of Things platform based on Enterprise asset model for digital twin onboarding Intelligent workflow process.

Device Onboarding Intelligent Workflow: This Intelligent Workflow enables automatic digital twin generation of physical assets based on the asset master data in SAP S/4HANA, for remote monitoring and analysis using SAP Internet of Things & SAP Business Technology Platform.

Business KPIs Dashboard (Process Visibility): This Process Visibility dashboard enables process excellence, process transparency, process transformation by providing actionable insights on KPIs like mean time to complete digital hand-over, mean time to create digital twin, step wise duration.

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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