Drive Resilient Operations with S/4HANA Maintenance Management

2021 Release Highlights

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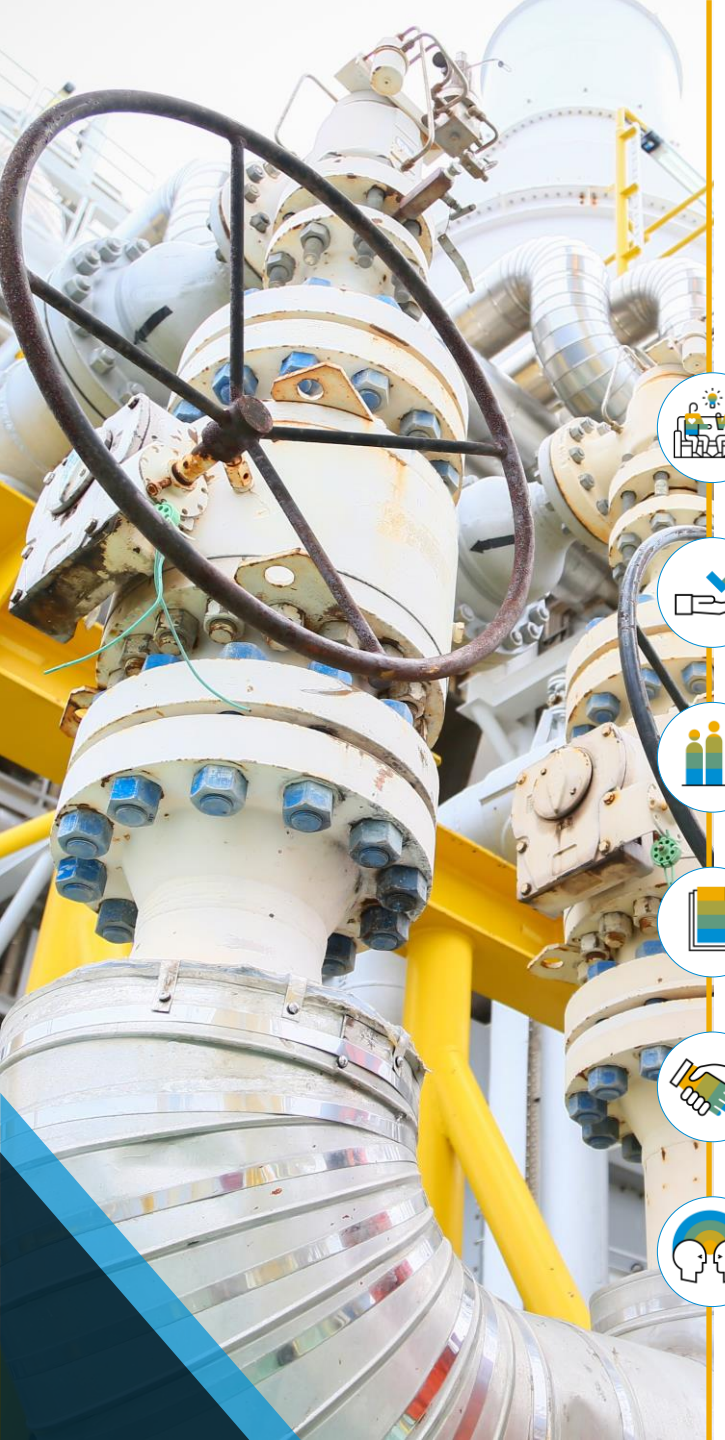


Agenda

Maintenance Management SAP S/4HANA 2021

Asset Management Portfolio Overview

New Phase Model Approach

Innovations in Maintenance Planning

Innovations in Maintenance Execution

Q&A

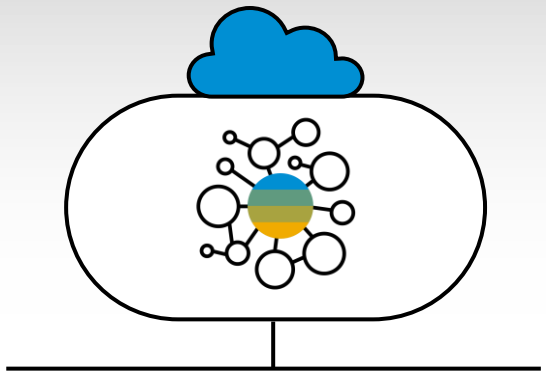
Rachel Romanoski

Solution Management Asset & Service Management

SAP Digital Supply Chain Solutions for Operate

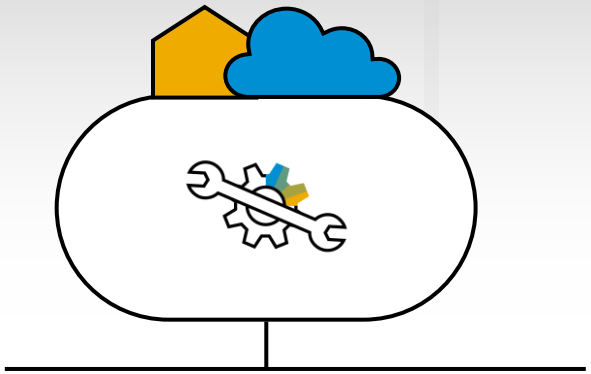
Connect Assets, People and Processes Across the Enterprise and Networks

Intelligent Asset Management



SAP Asset Performance Management

Risk and Reliability Management, Predictive Maintenance & IoT

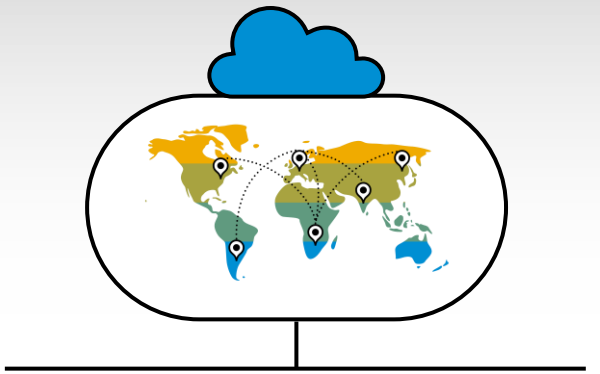


SAP Maintenance and Service Operations

S/4HANA Maintenance and Service

Field Service Management

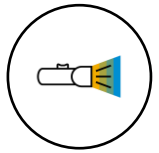
Resource Scheduling and Mobile Applications



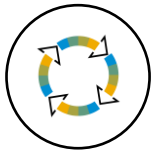
SAP Asset Intelligence Network

Digital Content and Maintenance Services Collaboration

Connect with new collaborative networks



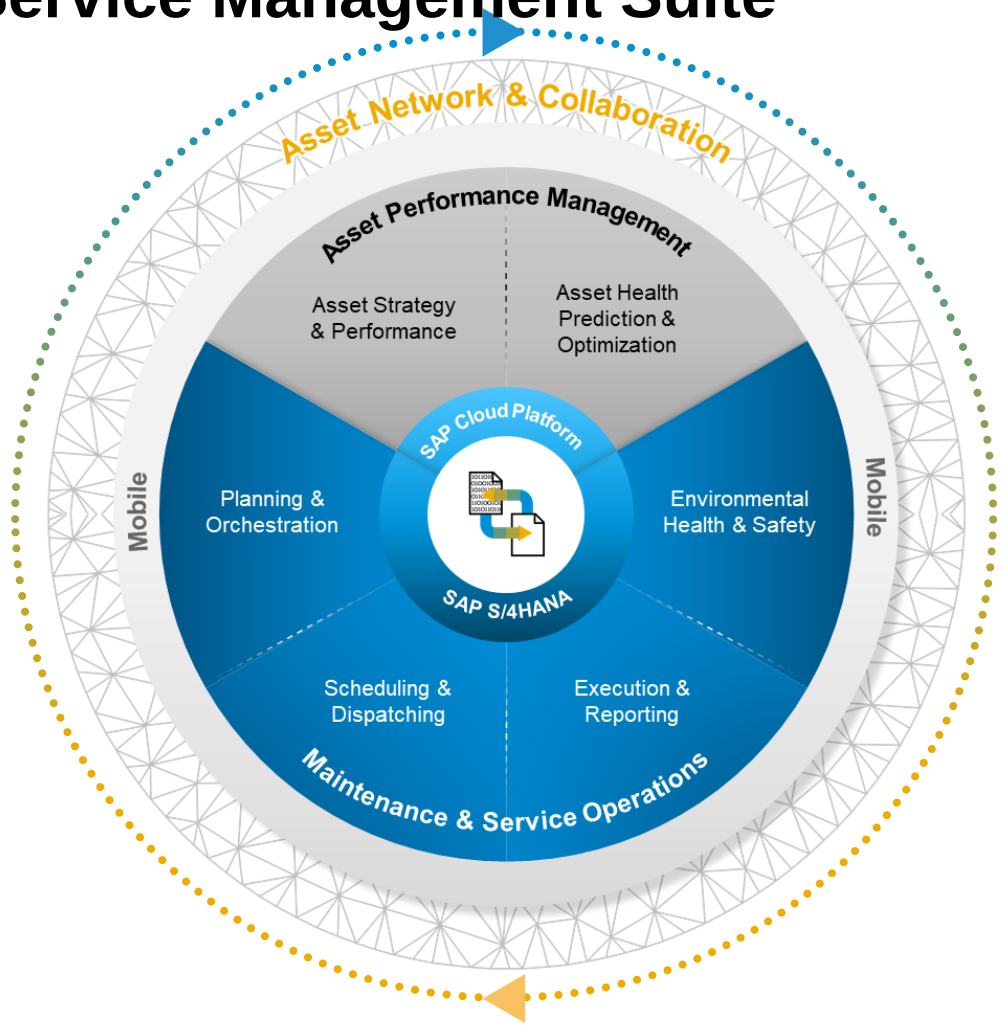
Connect assets with Industry 4.0 for real-time insights



Connect strategy, planning and execution processes

Connect operations across the supply chain and enterprise

Intelligent Asset and Service Management Suite



- Functional Locations and Equipment
- Spare Parts
- Specifications, Drawings, and Work Permits
- Maintenance Plans
- Spatial Asset Management

- Sensor Data & Predictive Insights
- Failure Modes
- Measurement Readings & Inspections
- Maintenance Order
- Task List & Operations

- Connect with new collaborative networks
- Connect assets with Industry 4.0 for real-time insights
- Connect strategy, planning and execution processes
- Connect operations across the supply chain and enterprise

Maintenance & Service Operations

Planning & Orchestration

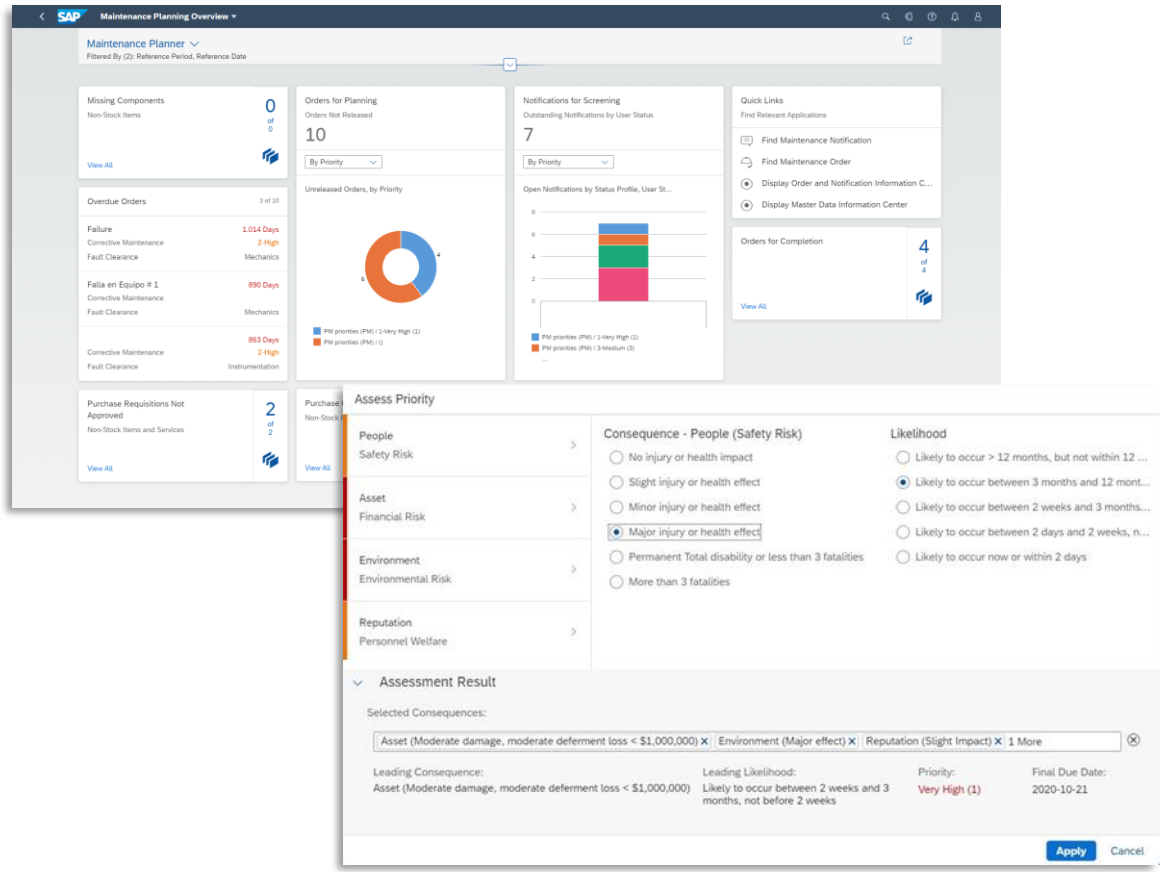
Maintain Asset master data for operations including; maintenance plans, task lists, equipment characteristics, and spatial data

Leverage **planning buckets** defined by scope to effectively manage maintenance and service backlog

Screen demand and **evaluate work priority** or task deferrals with risk-based assessments.

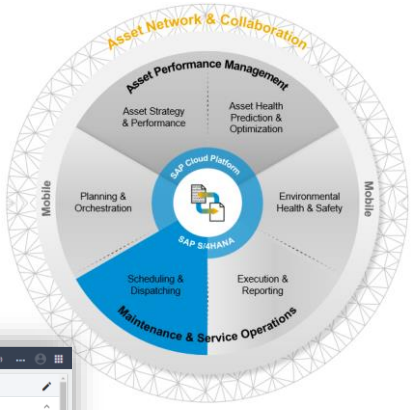
Build work package to plan activities in detail, including time, material, tools, safety permits and documentation

Orchestrate order readiness optimized coordination between procurement and other logistic support teams



Maintenance & Service Operations

Scheduling & Dispatching



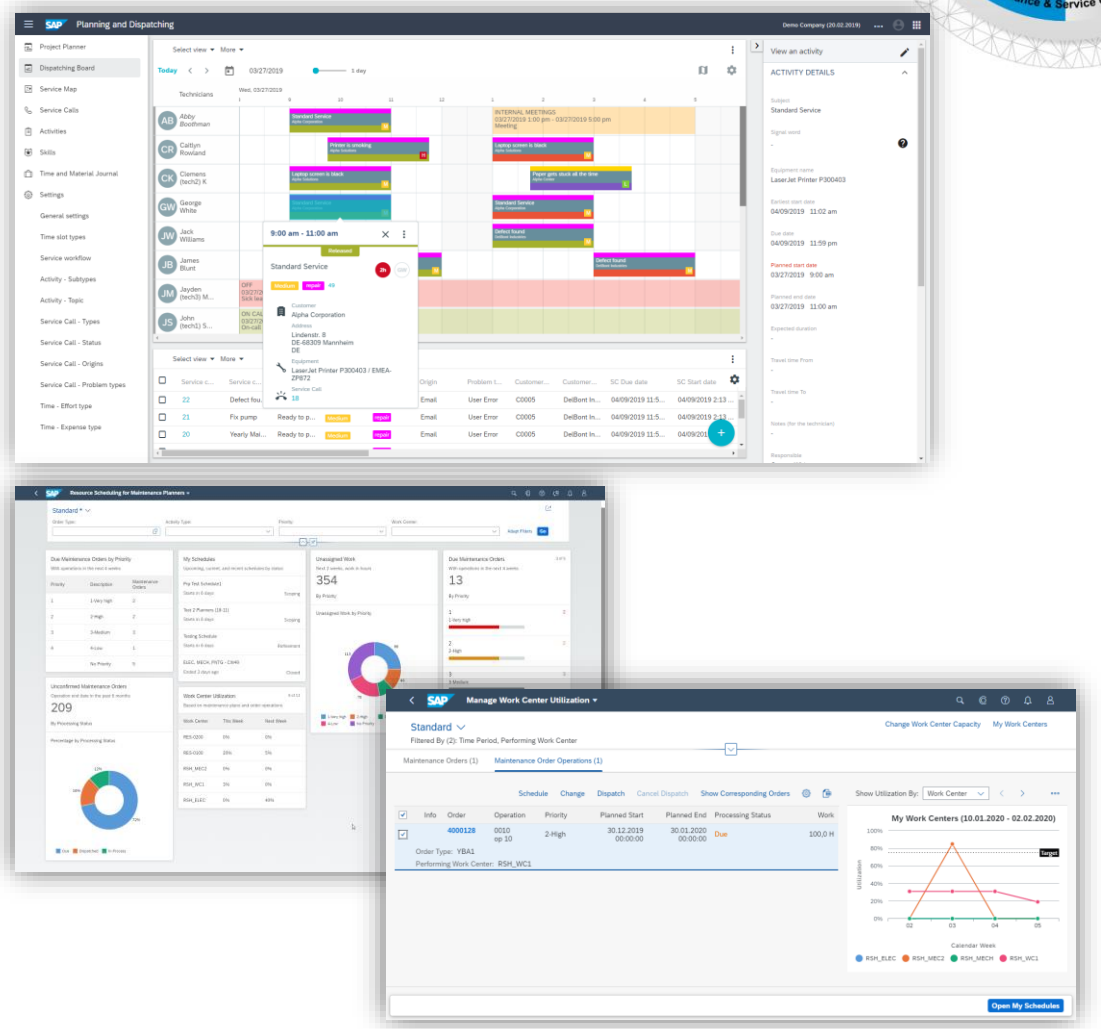
Schedule Maintenance and Service, identify capacity bottlenecks and level **work center utilization**

Optimize work and resource schedules using advanced rules, automatic routing and scheduling

Dispatch in real time to optimally match work to technician availability and skills

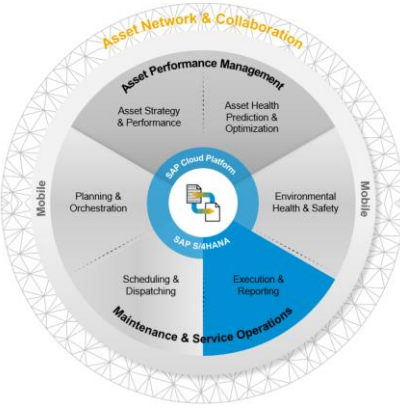
Monitor schedule compliance metrics of **planned vs actual** work completed

Intelligently source and manage third party resources through **Crowd Sourcing** and Partner Collaboration

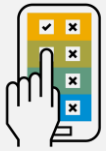


Maintenance & Service Operations

Execution & Reporting



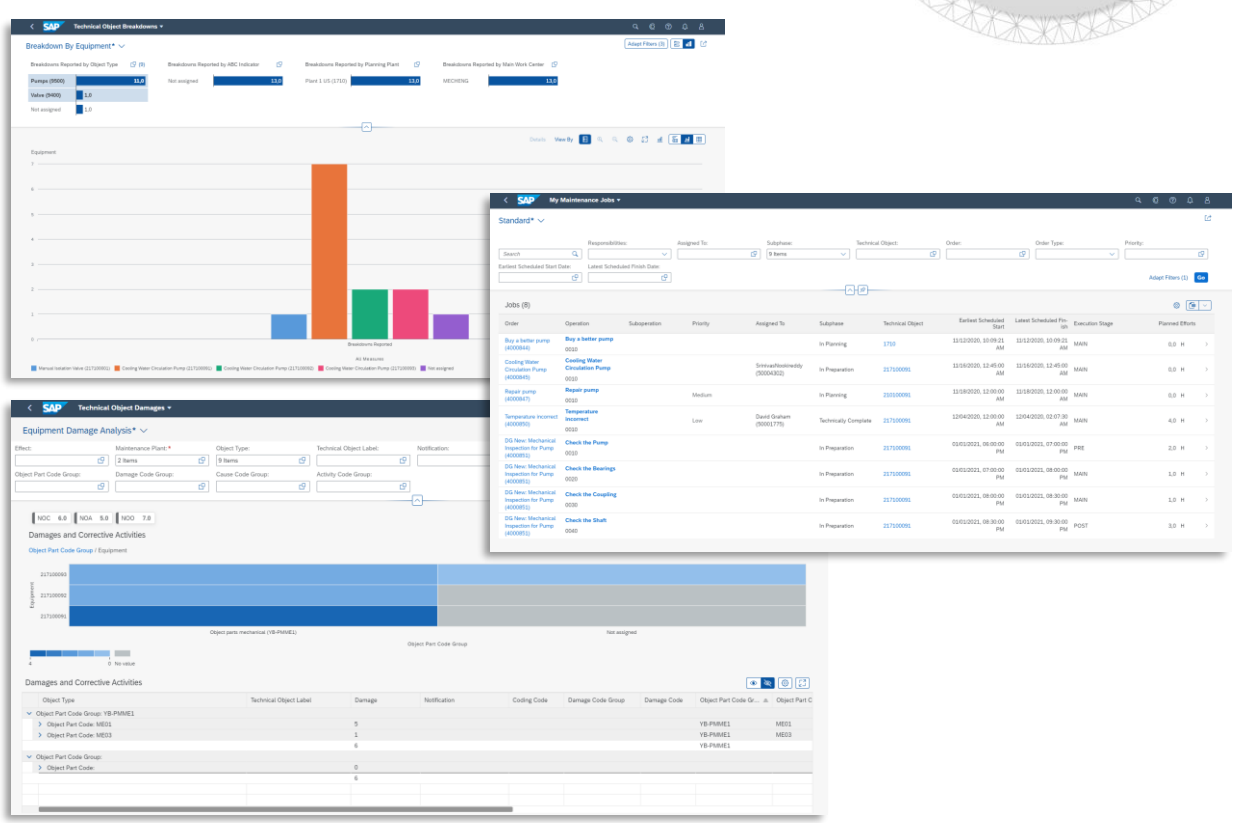
Manage and process all work types including work request and orders, inspection rounds and checklists



Capture and track **work history**, **failure modes**, labor time and materials consumed.

Embedded **real-time costing** and analytics monitor compliance to maintenance budget

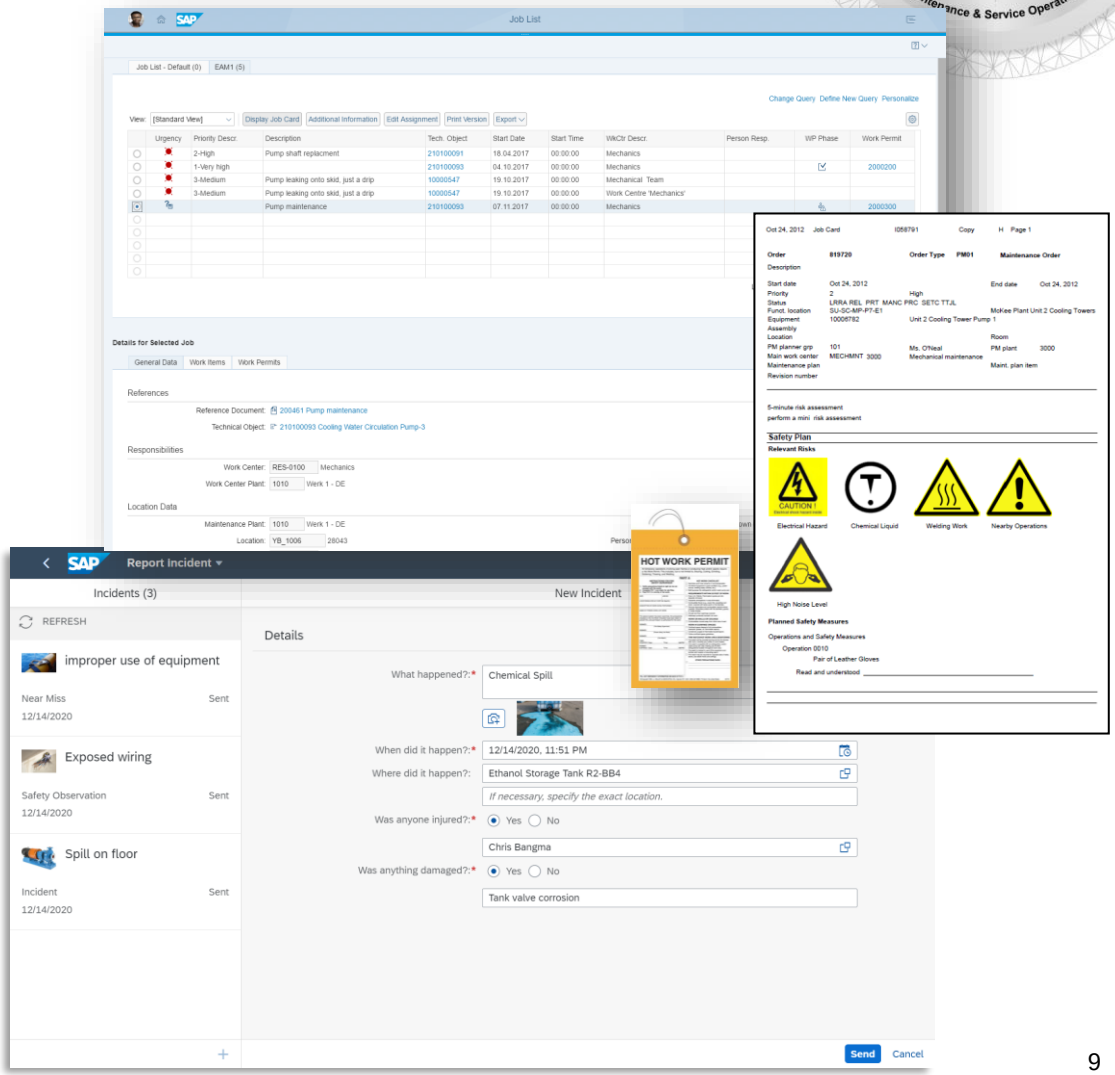
Identify poor performing assets to **continuously improve** maintenance strategies



Maintenance & Service Operations

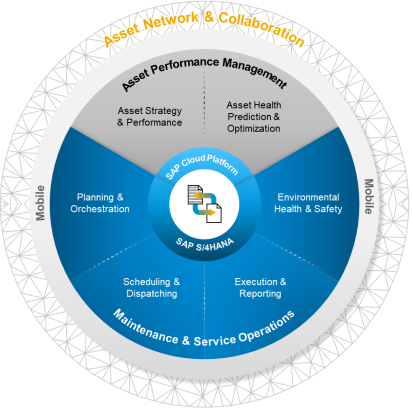
Environmental, Health & Safety

- Provide a centralized solution to track all types of incidents, investigation and **corrective actions**
- Enable an end-to-end process for identifying and dealing with all manner of **hazards and risks**
- Central repository for all **compliance requirements** from enterprise down to specific equipment
- Provide an end to end process to create **execute and monitor change** effectively within an organization
- Full electronic support for controlling hazardous work using **permits and isolation** procedures



Maintenance & Service Operations
Spatial Asset Management*

Solutions in Scope:
SAP Spatial Asset Management



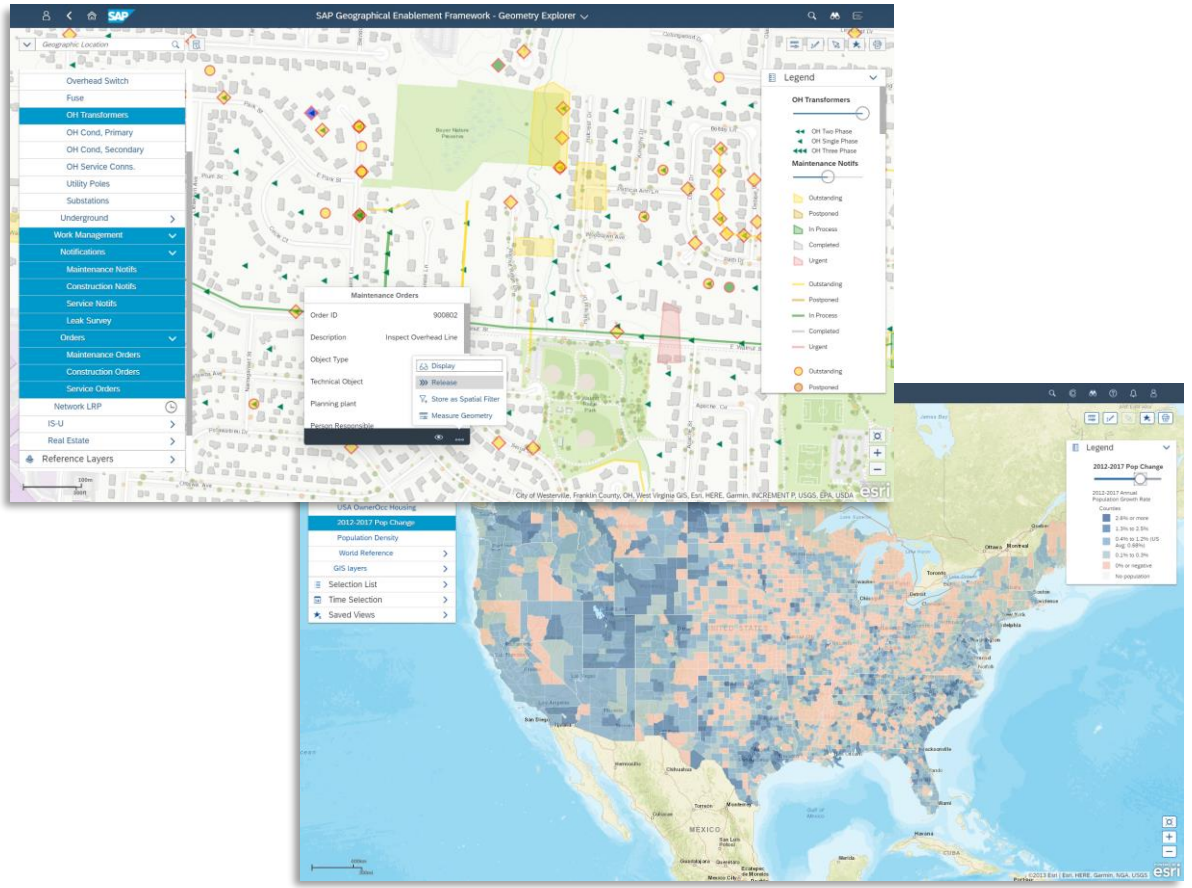
Seamlessly integrate with GIS and business spatial data providing **end-to-end spatial workflows**

Move from Alphanumeric to Spatial and improves efficiency by **driving business transactions from a Map** from desktop or mobile device

Maximize overall planning and worker efficiency by capturing geospatial and contextual information such as makers, offsets, and reference patterns

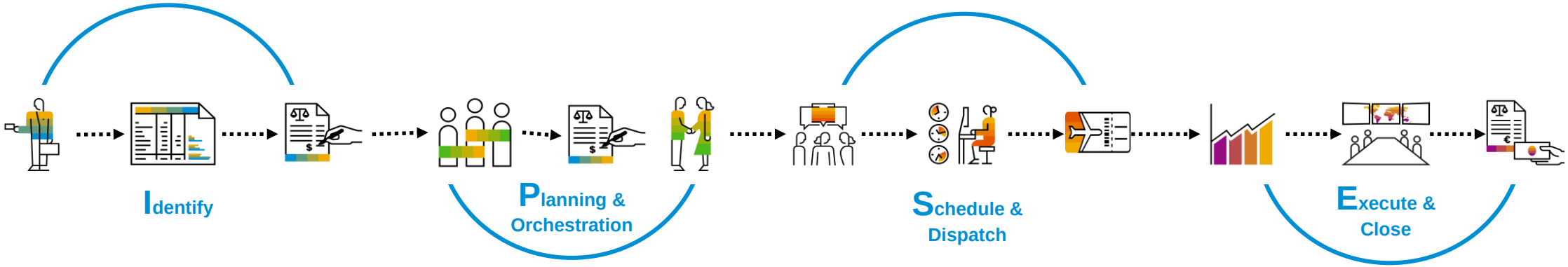
Dynamic segmentation with multiple sets of attributes associated with any portion of an existing linear feature independently of where it begins or ends

Use **a linear referencing method** as a mean to describe and locate a position along the length of the linear asset.



*New Solution Bundle with Linear Asset Management and Geo-Enablement Framework for EAM Available starting Q3 2021

End-to-end Maintenance Management Processes with SAP S/4HANA



Identify

How is Maintenance Work generated?

- Reactive Maintenance – Work requests
- Proactive Maintenance
- Improvement Maintenance
- Operational and Overhead Maintenance
- Condition Monitoring
- IoT/Predictive Monotiling

Planning & Orchestration

How do you prioritize and prepare work packages and monitor order readiness?

- Maintenance Process Phases
- Screen Maintenance Requests and Backlog
- Risk-based Event Prioritization
- Group work based on scope or time
- Approval and Preparation

Schedule & Dispatch

How do you manage capacity, utilization and optimize resources?

- Manage work center utilization
- Maintain flexible schedule periods
- Monitor non-working times
- Must-Start On constraints and last acceptable completion
- Share and Collaborate on Schedules
- Monitor Schedule Attainment

Execute & Close

How do we perform work quickly, correctly, and safely?

- Process all work types
- Leverage Work Instructions
- Capture work history, failure modes, labor time and materials consumed
- Work Permits
- Mobile enabled processes for offline execution

Analyze

How can we continuously improve maintenance strategies, costs, and equipment uptime?

- Analyze MTTR and MTBF
- Identify Bad Actors and common failures
- Monitor costs – baseline, planed, and actual across work

SAP S/4HANA®

Business Scope Release 2021

Asset Management

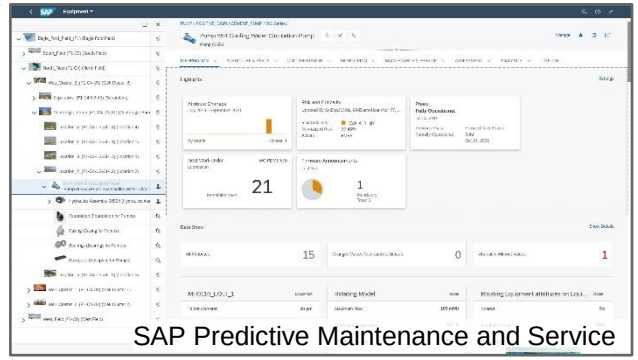
SAP S/4HANA Asset Management: Overview

Suite LoB Solutions

additional license

additional installation

- SAP Intelligent Asset Management
  - SAP Asset Intelligence Network
  - SAP Predictive Asset Insights
  - SAP Mobile Asset Management
  - SAP Asset Strategy and Performance Management
  - SAP Predictive Engineering Insights
- SAP Master Data Governance
- SAP Spatial Asset Management



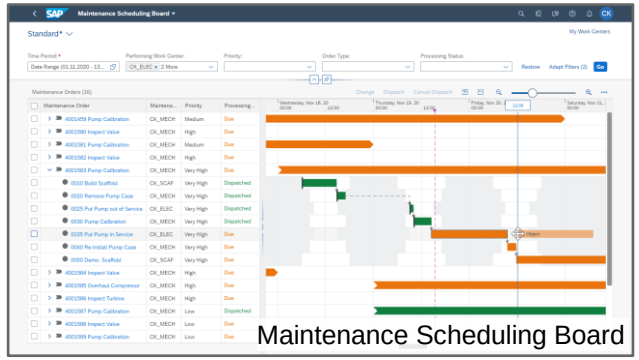
SAP Predictive Maintenance and Service

SAP S/4HANA LoB Apps

additional license

Asset Operations and Maintenance

Extend core scheduling functionality with detailed scheduling capabilities and resource planning.

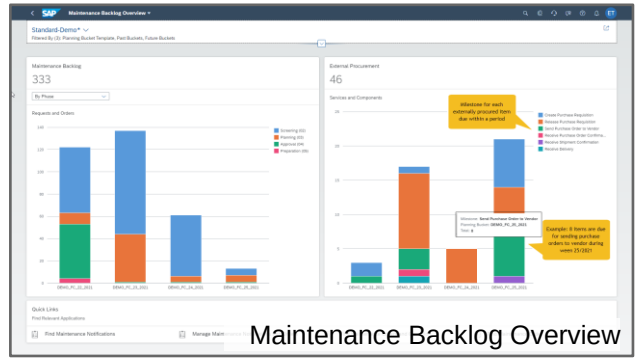


Maintenance Scheduling Board

SAP S/4HANA Enterprise Management

Maintenance Management

Leverage a holistic approach including planning, execution, improvement, and collaboration. Combine material management and plant maintenance functionalities to plan and achieve a holistic strategy for maintenance management. Track costs and conduct thorough damage analysis.



Maintenance Backlog Overview

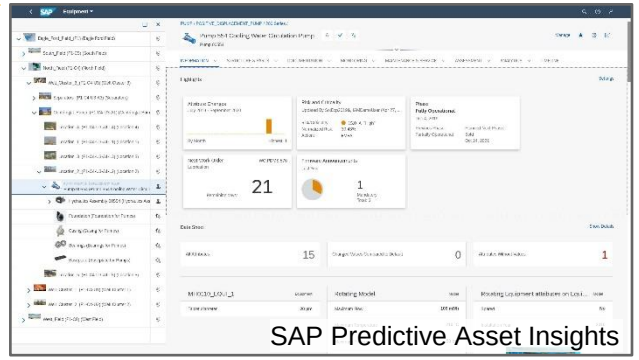
SAP S/4HANA Asset Management: Business Areas and Capabilities

Suite LoB Solutions

additional license

additional installation

- SAP Intelligent Asset Management
  - SAP Asset Intelligence Network
  - SAP Predictive Asset Insights
  - SAP Mobile Asset Management
  - SAP Asset Strategy and Performance Management
- SAP Master Data Governance



SAP Predictive Asset Insights

SAP S/4HANA LoB Apps

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SAP S/4HANA Enterprise Management

Asset Operations and Maintenance

- Asset Spatial Enablement
- Maintenance Scheduling

Combine spatial and asset data to describe, locate, and manage maintenance activities for linear assets (e.g. pipeline, road, railway, etc.).

Optimize resources for asset maintenance with a visualized scheduling board.

Maintenance Management

- Maintenance Demand Processing
- Maintenance Planning
- Maintenance Execution

Create and screen work requests through easy-to-use web apps from any device.

Automate and plan creation of recurring regular maintenance work for assets. ***Organize*** work orders in planning buckets and track stock and procurement for parts needed.

Record hours and parts consumed with variances to the plan with operational data (e.g. meter and counter readings) to be fed back into the planning cycle via analytics.

SAP S/4HANA Asset Management: Maintenance Management

Maintenance Management

Maintenance Demand Processing

Create and process any type of work request, from classical corrective toward condition-based, predictive, or prescriptive maintenance methodologies

Request maintenance work to be performed
Use mobile devices or a desktop to describe the technical faults

Synchronize notification and order data with SAP Intelligent Asset Management

Maintenance Planning

Plan maintenance and find the ideal technician to use appropriate tools and resources and perform maintenance activities. Gain a full view of asset status, maintenance cost and breakdown causes

Reduce maintenance costs by efficiently using labor, material, equipment, and schedules

Classify maintenance plans to allow for better searching

Analyze and monitor maintenance costs

Classify operations into pre-, main-, and post-work

Maintenance Execution

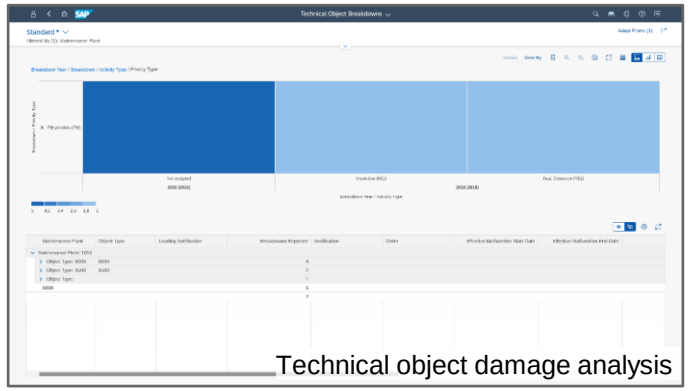
Perform **planned** or **emergency maintenance**

Access relevant information on any device

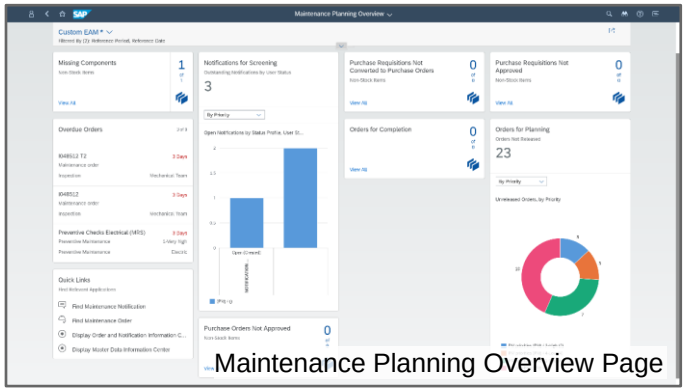
Employees can access, transfer, complete, and manage assigned work orders remotely

Enable real-time insights of asset performance for timely, relevant decisions

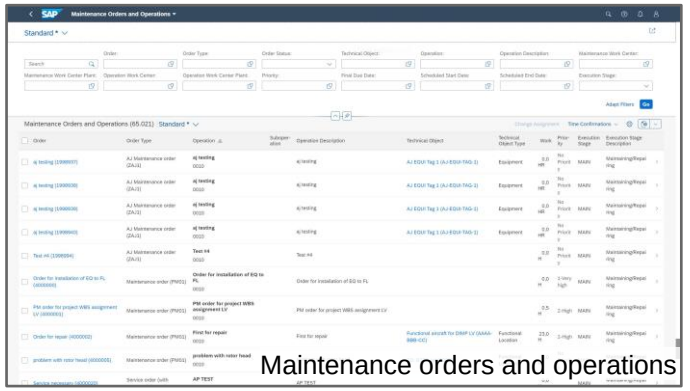
Review ongoing maintenance activities with the ability to reschedule multiple times a day



Technical object damage analysis



Maintenance Planning Overview Page



Maintenance orders and operations

SAP S/4HANA Asset Management: Maintenance Scheduling

Asset Ops and Maintenance

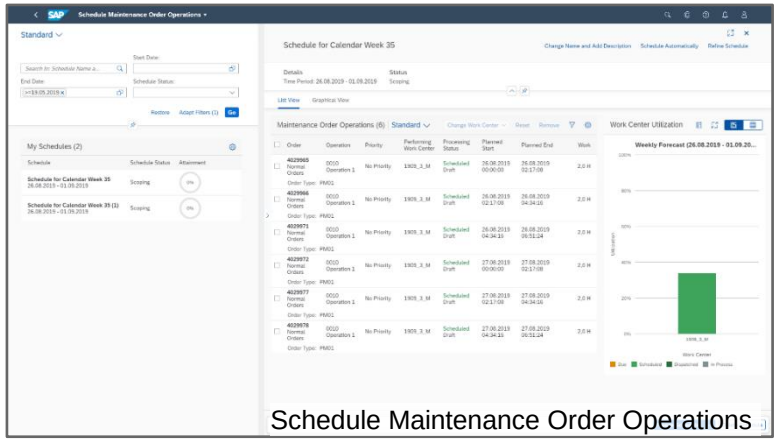
Maintenance Scheduling

Optimize maintenance schedule with availability windows for maintenance, work center capacity, and maintenance plans.

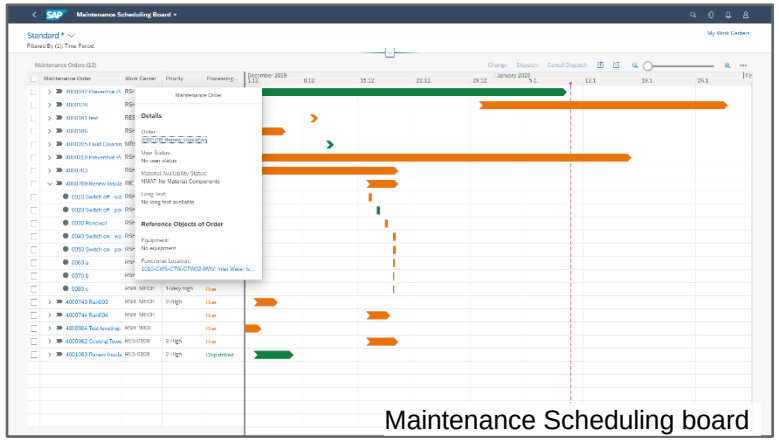
Use **SAP S/4HANA Asset Management for resource scheduling** for embedded resource scheduling.

- Gain insight into your maintenance workload and available capacities for current and upcoming maintenance activities
- Identify critical planning situations early and take action to improve planning-relevant KPIs
- Plan maintenance orders efficiently based on work center utilization to make sure that all maintenance jobs can be completed
- Adjust work center capacity quickly
- Assign statuses to schedules and optimize work center capacity.
- Visualize the maintenance orders in your work centers to gain transparency about what needs to be done when
- Set up, share, and monitor schedules
- Provide feedback for a schedule and plan your own work accordingly

Optionally, **Multi-resource Management** can still be used.



Schedule Maintenance Order Operations



Maintenance Scheduling board

SAP S/4HANA Asset Management: Spatial Asset Management

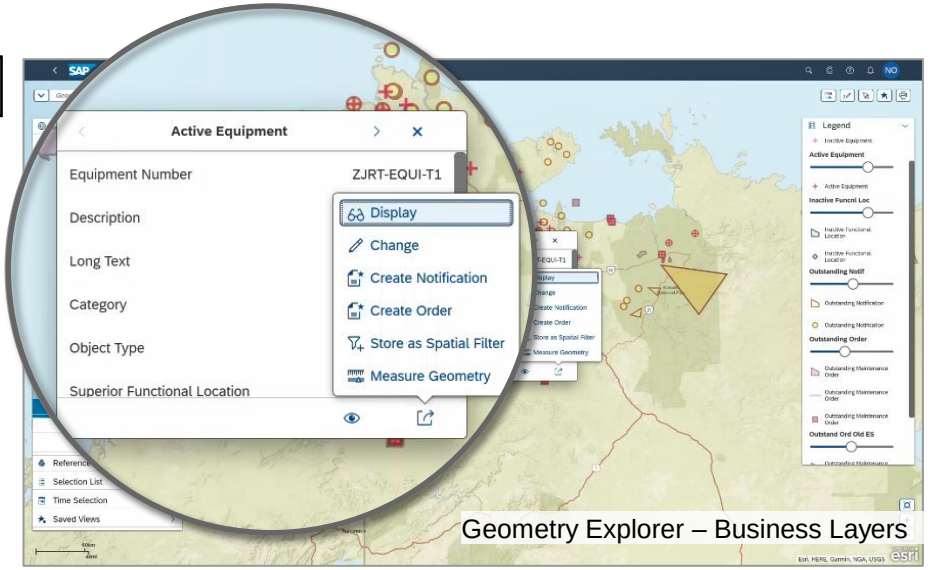
Asset Ops and Maintenance

Asset Spatial Enablement

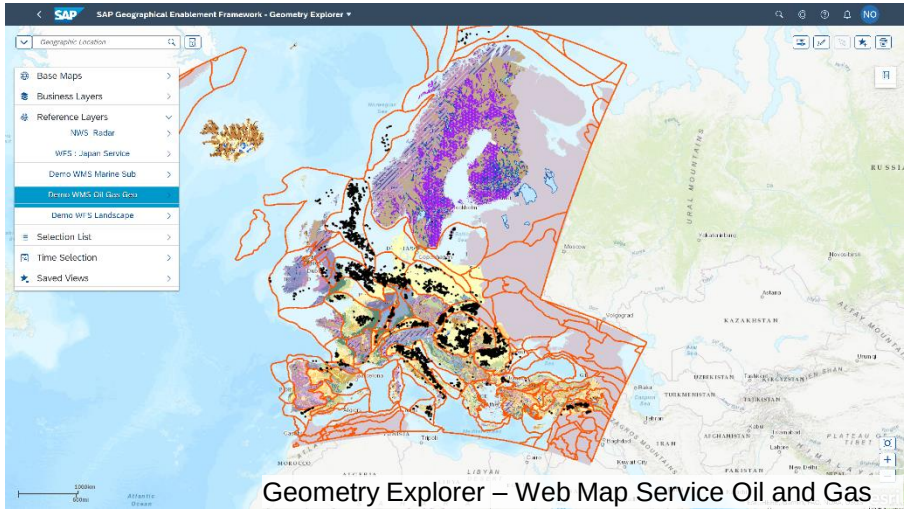
Seamlessly integrate with geographical information systems (GIS) and business spatial data providing **end-to-end spatial workflows**

Key Capabilities:

- Run SAP business transactions from a map on any device
- Create and manage geometry for business objects (equipment, functional location, notification, and work order)
- Support for multiple business layers, reference layers, and geometry types (points, lines, and polygons)
- Bi-directional and real-time visualization of SAP spatial data and external geographical information systems (GIS)
- Linear data modeling – enhancement of technical object functions and classification system to support the definition of a linear asset – e.g. power lines, pipelines, roads, and rail tracks)
- Linear asset work management – enhancement of work order processing to support linear work definition including: notifications, measurement points and counters, measurement documents, work orders, confirmations, and maintenance plans to support linear information



Geometry Explorer – Business Layers


Geometry Explorer – Web Map Service Oil and Gas

SAP S/4HANA Asset Management: Delta Scope Summary

2021

Maintenance Management

Enhancement to process

- Phase Model for the Maintenance Process
- Risk Matrix
- Manage Maintenance Backlog and Buckets
- Lean Service Procurement
- Procurement milestones and tracking
- Maintenance Order: Enhanced ATP Check
- EAM Inspection Checklists

Internal integration

- Lean Service Procurement
- Integration of Maintenance Orders and Extended Warehouse Management Solution

UX

- Machine learning based entry assistance for damage code
- Task List: Mass Changes
- New Fiori apps for the enhanced process Create Maintenance Request · Perform Maintenance Jobs · Maintenance Backlog · Manage Maintenance Planning Buckets · Manage Maintenance Notifications and Orders

Cost Controlling

- New Cost Analytics App

Additional Events and APIs
Measuring Point Events, Maintenance Task List Events

Asset Operations and Maintenance*

UX

- Incremental and continuous UX improvements

Asset Spatial Enablement**

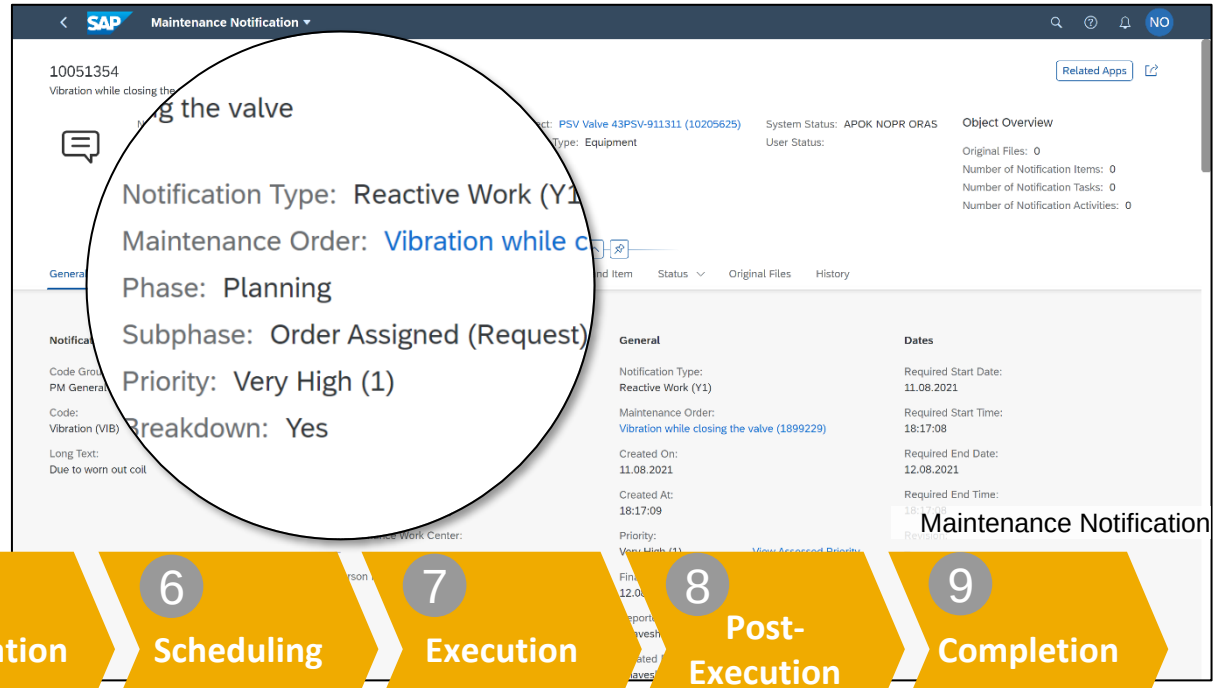
- Interface with any map that is OGC (Open Geospatial Consortium) compliant
- Improvements to linear asset management

Phase Model for the Maintenance Process

Maintenance Demand Processing → Maintenance Planning → Maintenance Execution

With the new phase model, you can create maintenance requests and maintenance orders of specific new types.

These maintenance requests and orders are part of an end-to-end process that is structured according to nine phases.



1 Initiation → 2 Screening → 3 Planning → 4 Approval → 5 Preparation → 6 Scheduling → 7 Execution → 8 Post-Execution → 9 Completion

Submitted for Approval	Approved	Rejected

The individual phases are divided into subphases which - similar to an overall status - document the progress in the maintenance process. You can filter, sort and group the maintenance orders according to the phases or subphases in several order list views.

Create and Screen Maintenance Requests

Maintenance Management 2021

Maintenance Demand Processing

1 Initiation

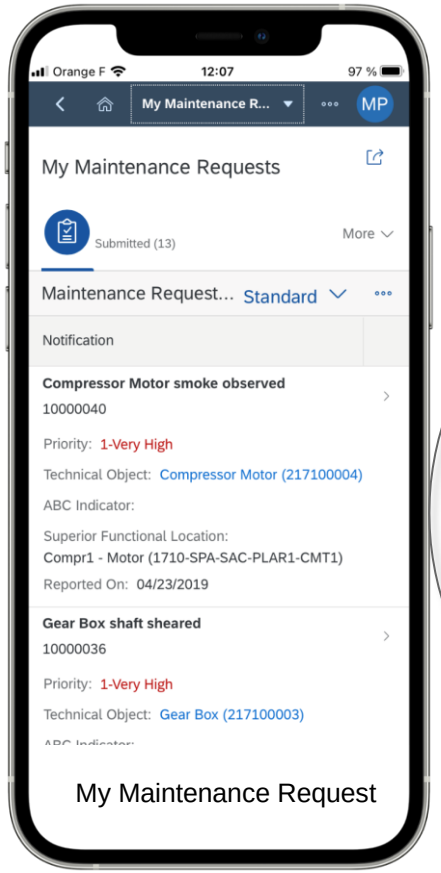
2 Screening

Risk Assessment

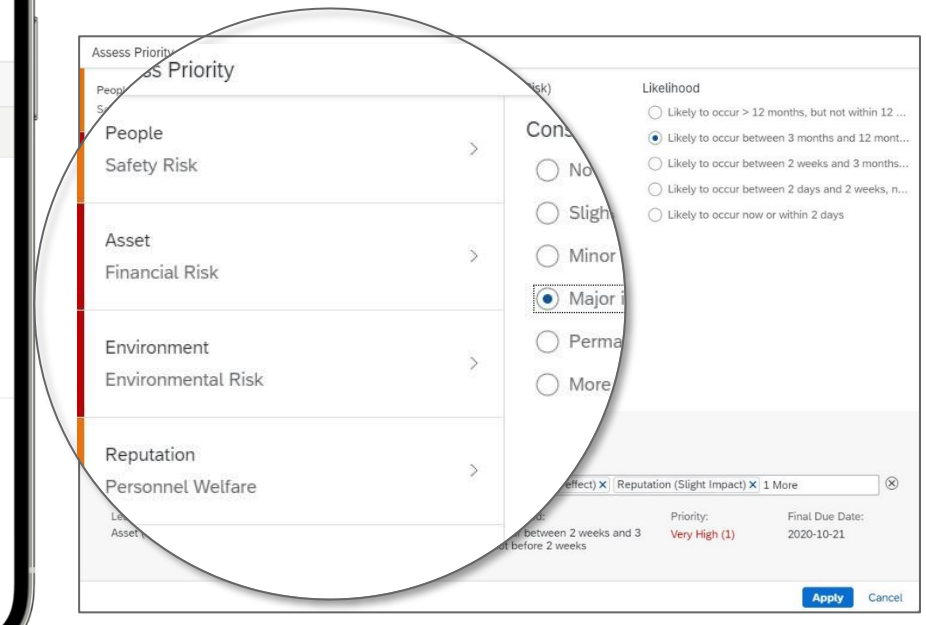
You can include a risk-based assessment of the priority of work request by evaluating expected consequences of failure and their likelihood.

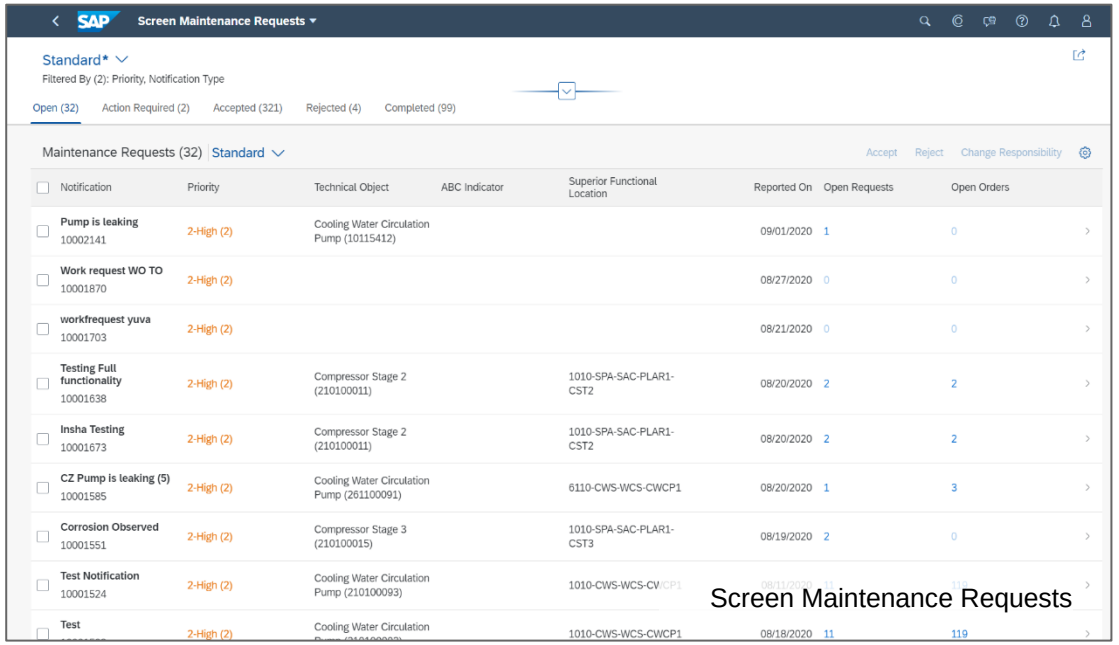
Screening

Maintenance supervisors / planners can review maintenance requests and edit details. You can return a maintenance request to the initiator for additional information. You can proceed to the next phase by accepting the request.



My Maintenance Request





Screen Maintenance Requests

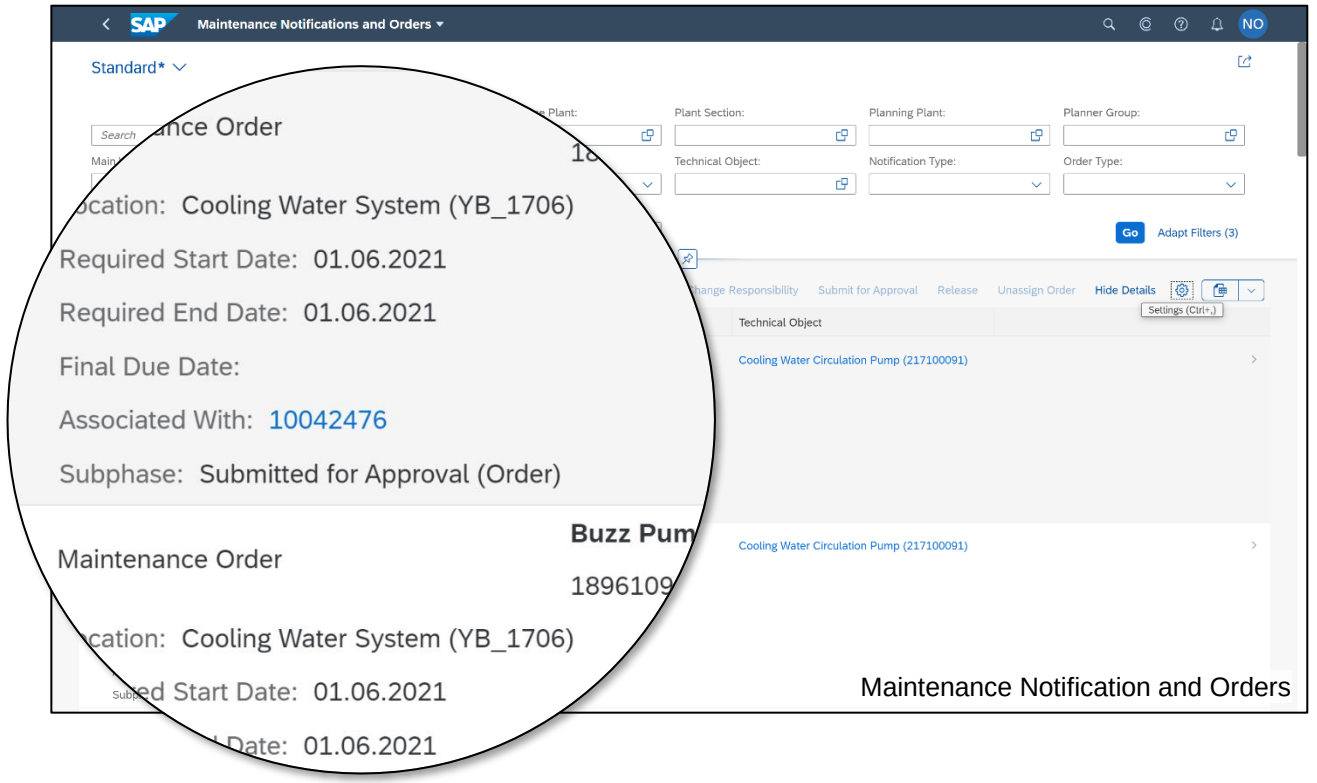
Manage Workflows, Teams, and Responsibilities

Maintenance Management 2021

Maintenance Planning | Maintenance Execution

3 Planning | 4 Approval | 5 Preparation

You can initiate an approval process and manage the approval workflow for maintenance orders. As a configuration expert, you can configure workflows to optimize the approval process for maintenance orders.



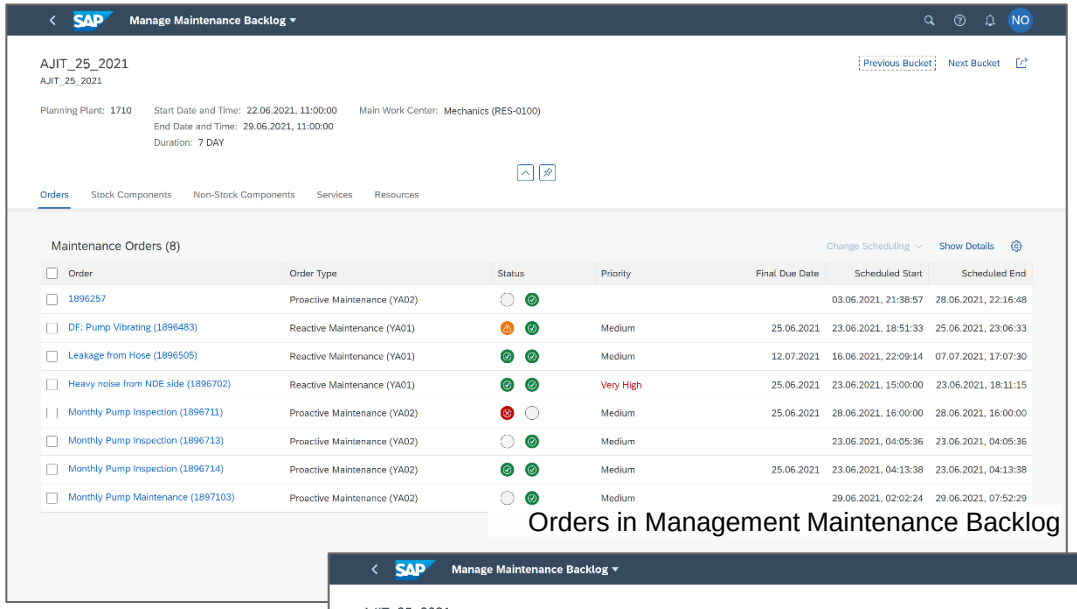
Maintenance Notification and Orders

Maintenance Planning Buckets and Backlog

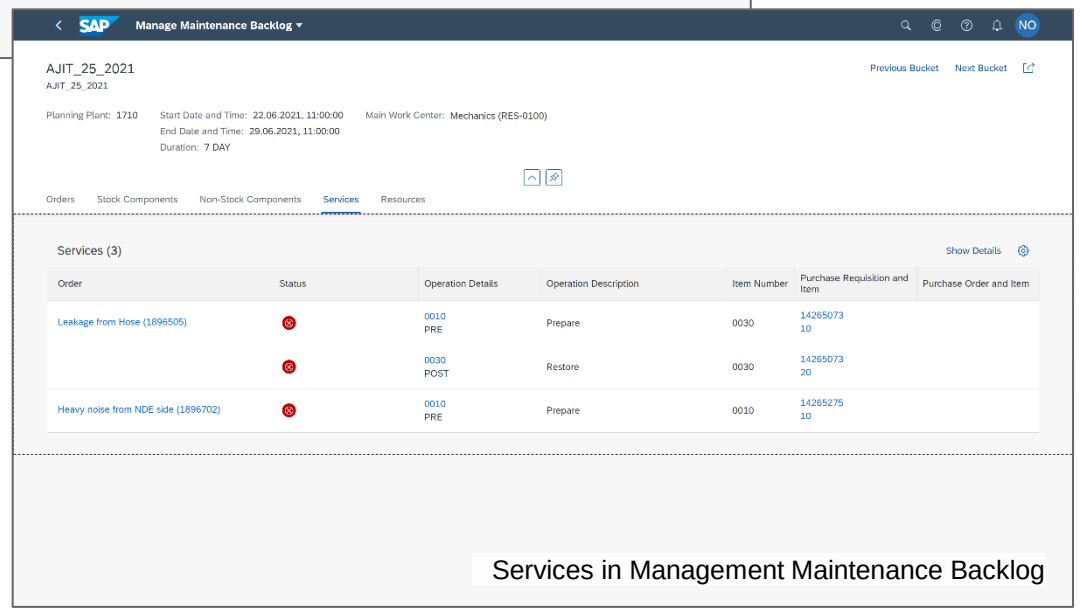
Maintenance Planning | Maintenance Execution

3 Planning | 4 Approval | 5 Preparation

By defining maintenance planning buckets, you can divide the maintenance effort into manageable groups based on their scope. The scope of a planning bucket includes time, but also other important attributes of the maintenance jobs such as the planner group. Based on this scope, the system groups maintenance orders and assigns them to the corresponding planning buckets.



Orders in Management Maintenance Backlog



Services in Management Maintenance Backlog

Maintenance Backlog Overview & Procurement Milestone

Maintenance Management

2021

Maintenance Planning

Maintenance Execution

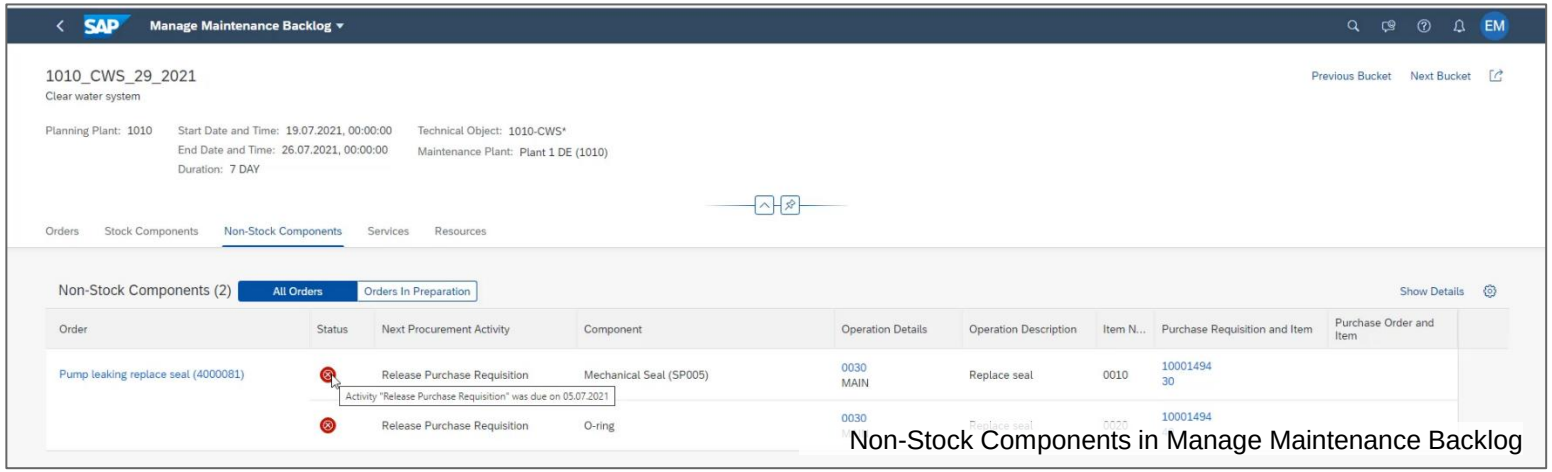
3 Planning

4 Approval

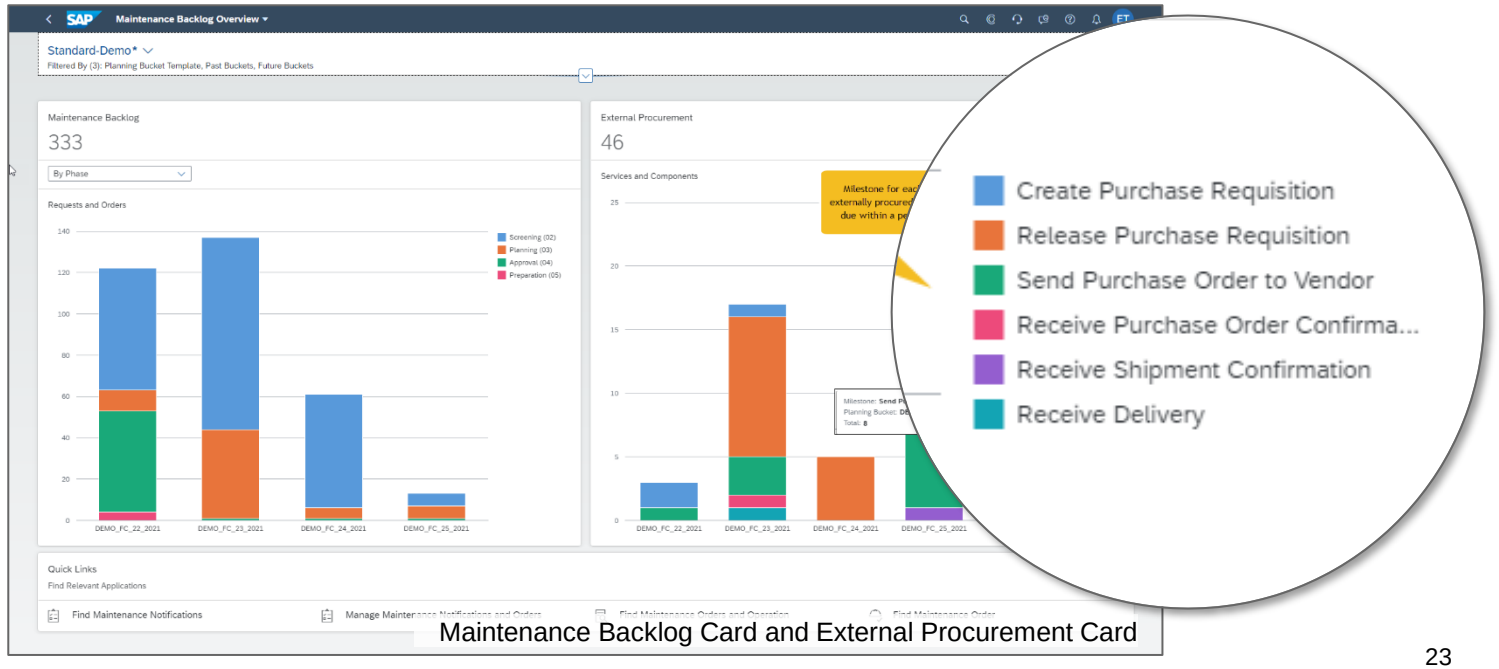
5 Preparation

You can use this Maintenance Backlog to monitor the procurement of non-stock materials and services by means of procurement milestones.

The completion of some milestones depends on changes in the purchase order and posting of the goods receipt for non-stock components.



Non-Stock Components in Manage Maintenance Backlog



Maintenance Backlog Card and External Procurement Card

Maintenance Order: Enhanced ATP Check

Maintenance Management

2021

Maintenance Planning

Maintenance Execution

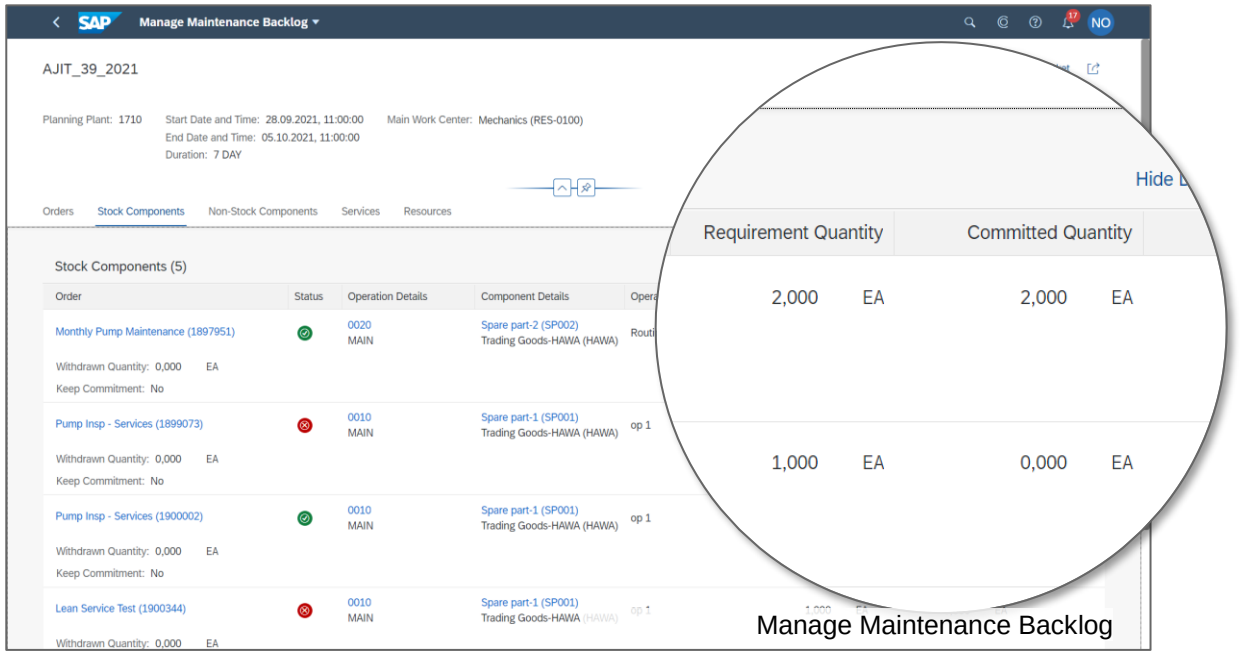
5 Preparation

Scheduling

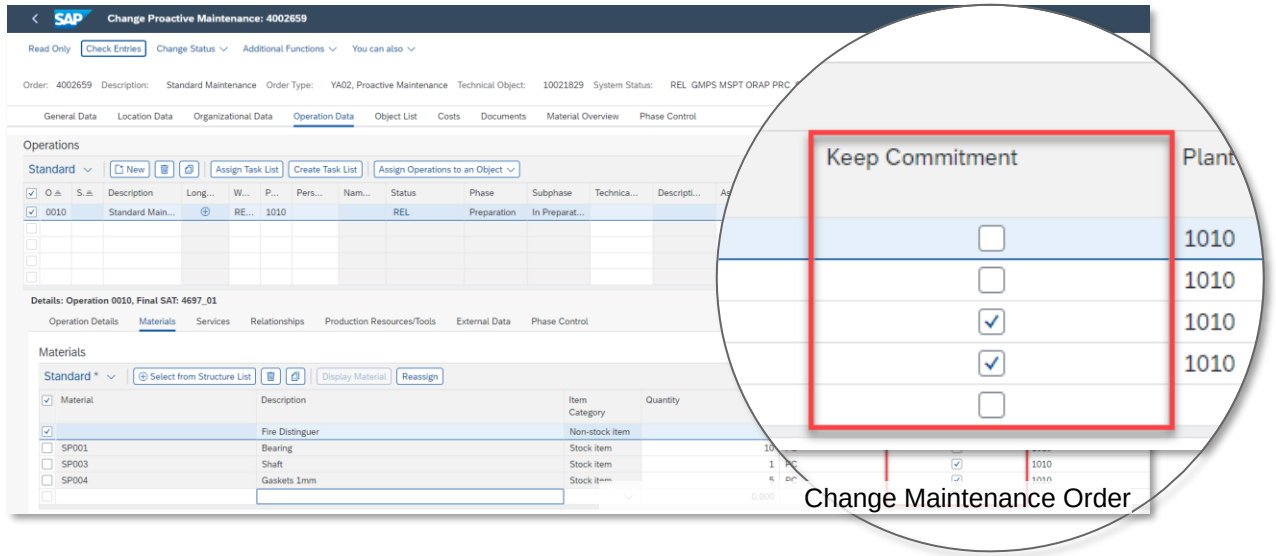
7 Execution

Perform an enhanced material availability check (ATP check) for maintenance orders and reassign committed stock material to the orders with the highest priority and urgency.

you can manually determine that committed quantities of individual components should not be cleared and reassigned during a material availability check by selecting the Keep Commitment checkbox. In this case, available quantities will only be assigned to the respective maintenance order but cannot be removed by the ATP check.



Manage Maintenance Backlog



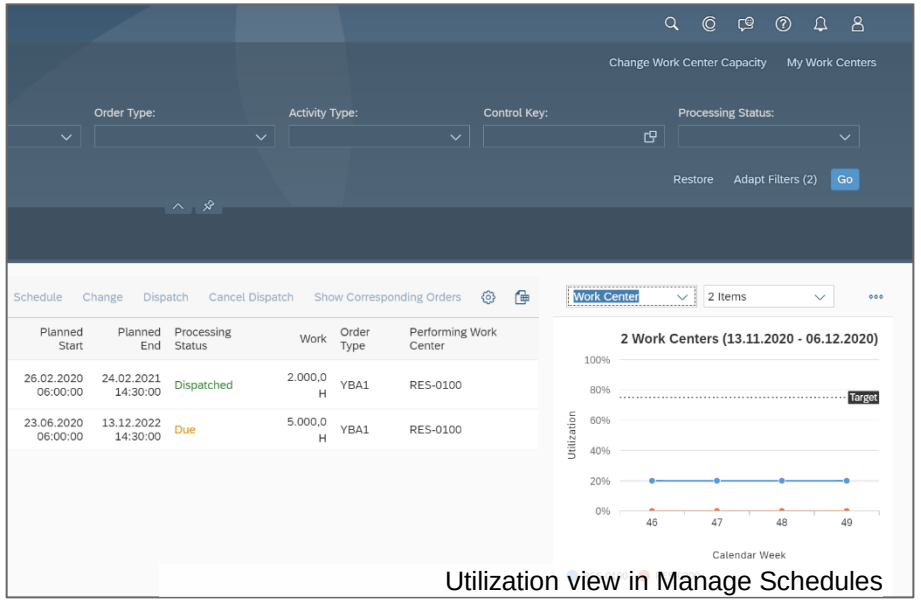
Change Maintenance Order

Resource Scheduling

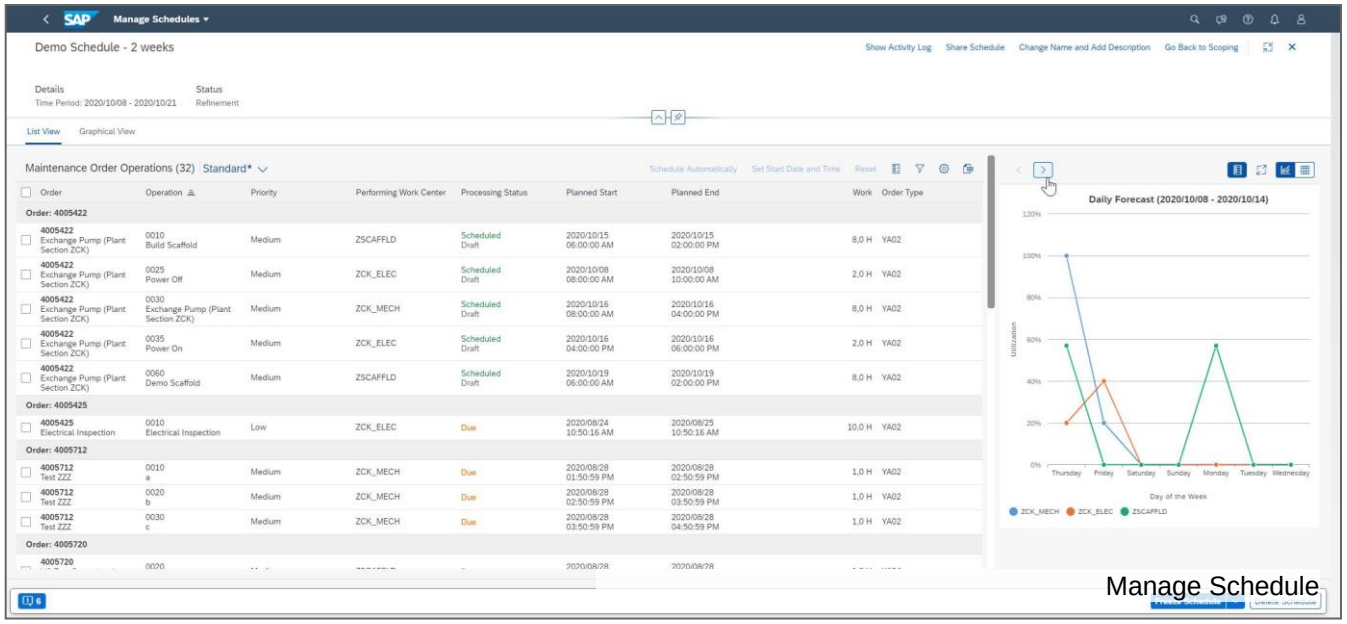
Maintenance Scheduling

6 Scheduling

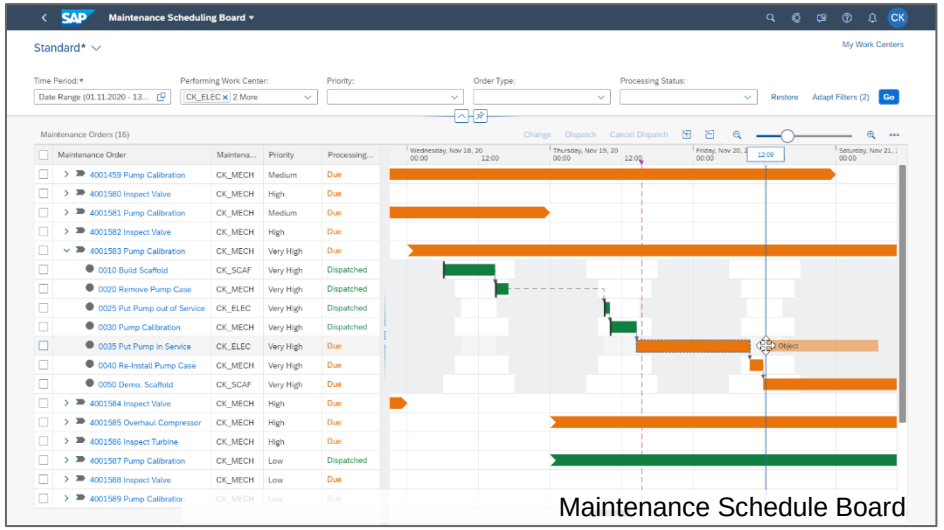
Resource Scheduling has had various useability and functional improvements.



Utilization view in Manage Schedules



Manage Schedule



Maintenance Schedule Board

Maintenance Orders and Extended Warehouse Management

Maintenance Management

2021

Maintenance Planning

Maintenance Execution

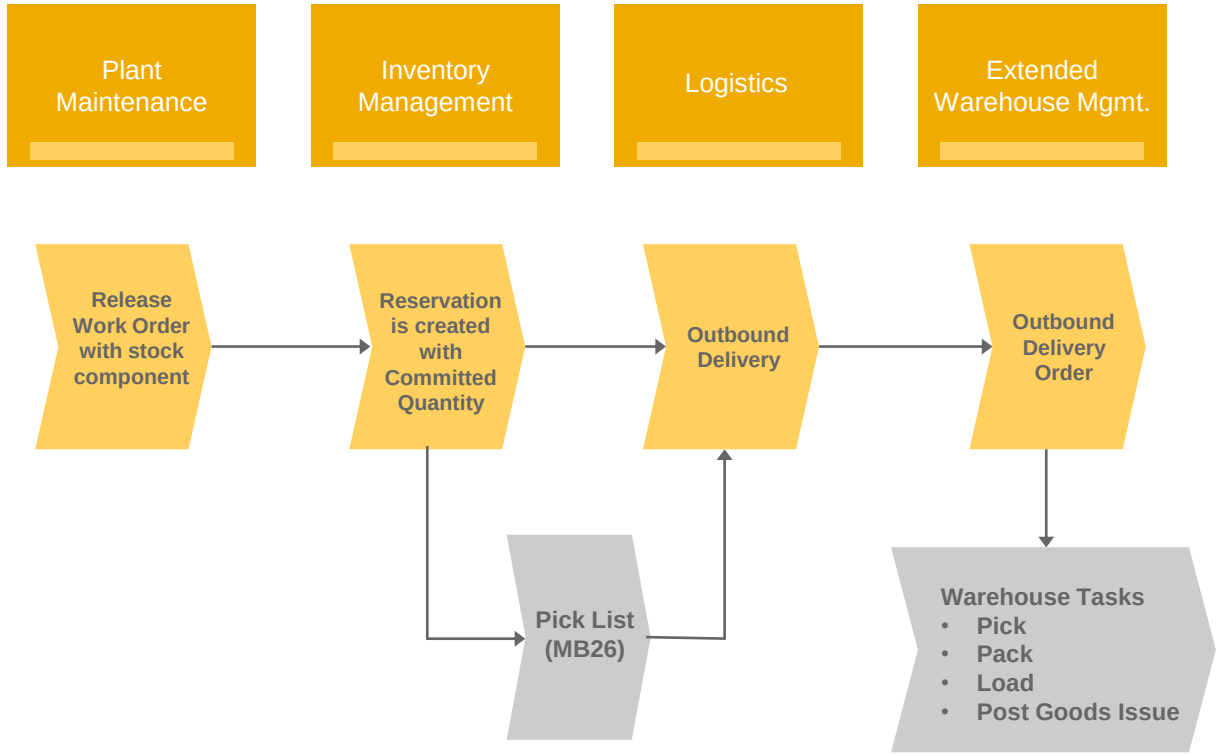
5 Preparation

Scheduling

7 Execution

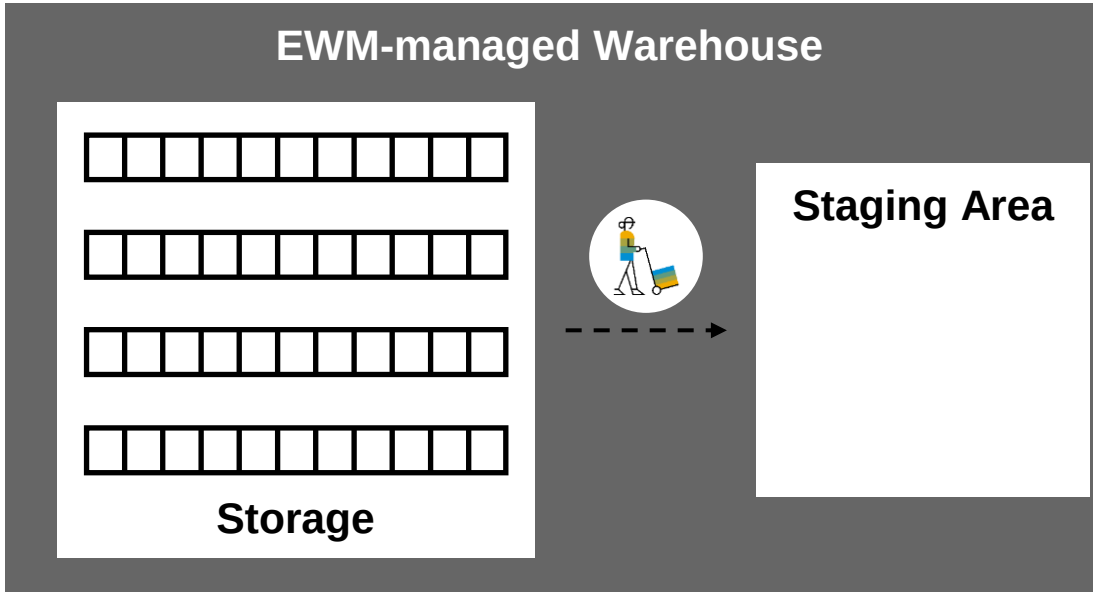
For large-scale warehouse, a new master data object has been introduced: recipient location. It identifies the location where the intended recipient can receive the component.

The integration between maintenance order and extended warehouse management establishes seamless flow between asset maintenance, inventory management, and warehouse, thereby enabling easy tracking of requested stock components across the end to end process.

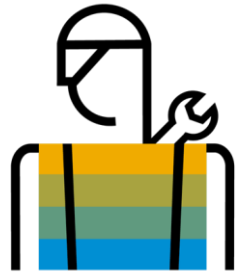


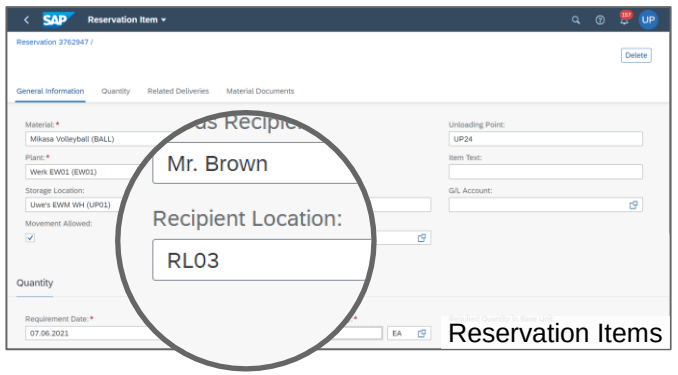
Plant Maintenance Integration

Maintenance Order / Manual Reservation



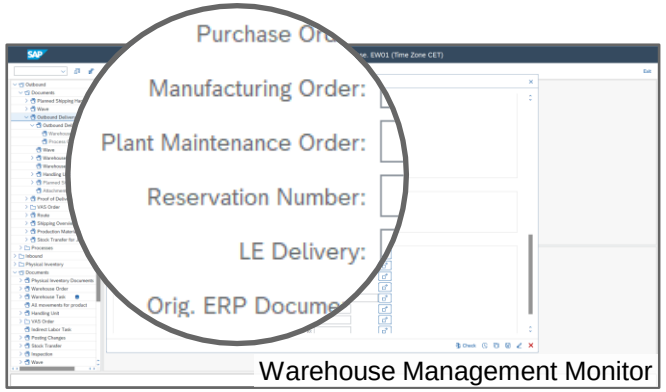
Maintenance operations using staged spare parts





Run plant maintenance operations that involve EWM-stored spare parts seamlessly

- Staging based on **PM order** / manual **reservation**
- **Recipient location** to determine correct staging area
- Adaption of **Warehouse Management Monitor**
- **Unplanned goods issue** with reference to PM order



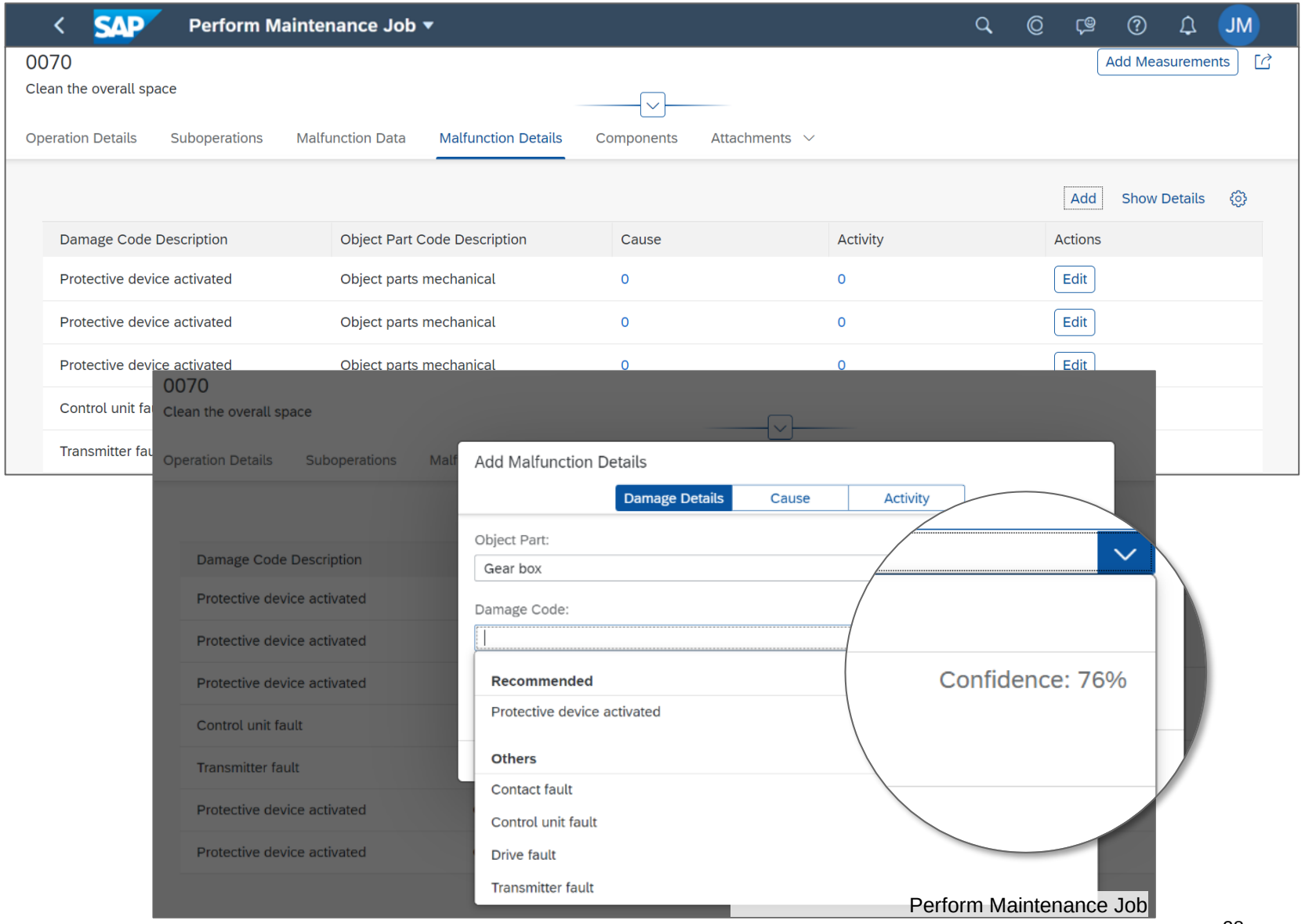
ML Based Entry Assistance for Damage Details

Maintenance Management

2021

Maintenance Execution

- The machine learning feature in the Add Malfunction Details Damage Details section provides appropriate damage code and object part as part of the value help.
- Use Machine Learning algorithms (RDT - Random Decision Tree) to propose the most likely damage code and object part.



Perform Maintenance Job

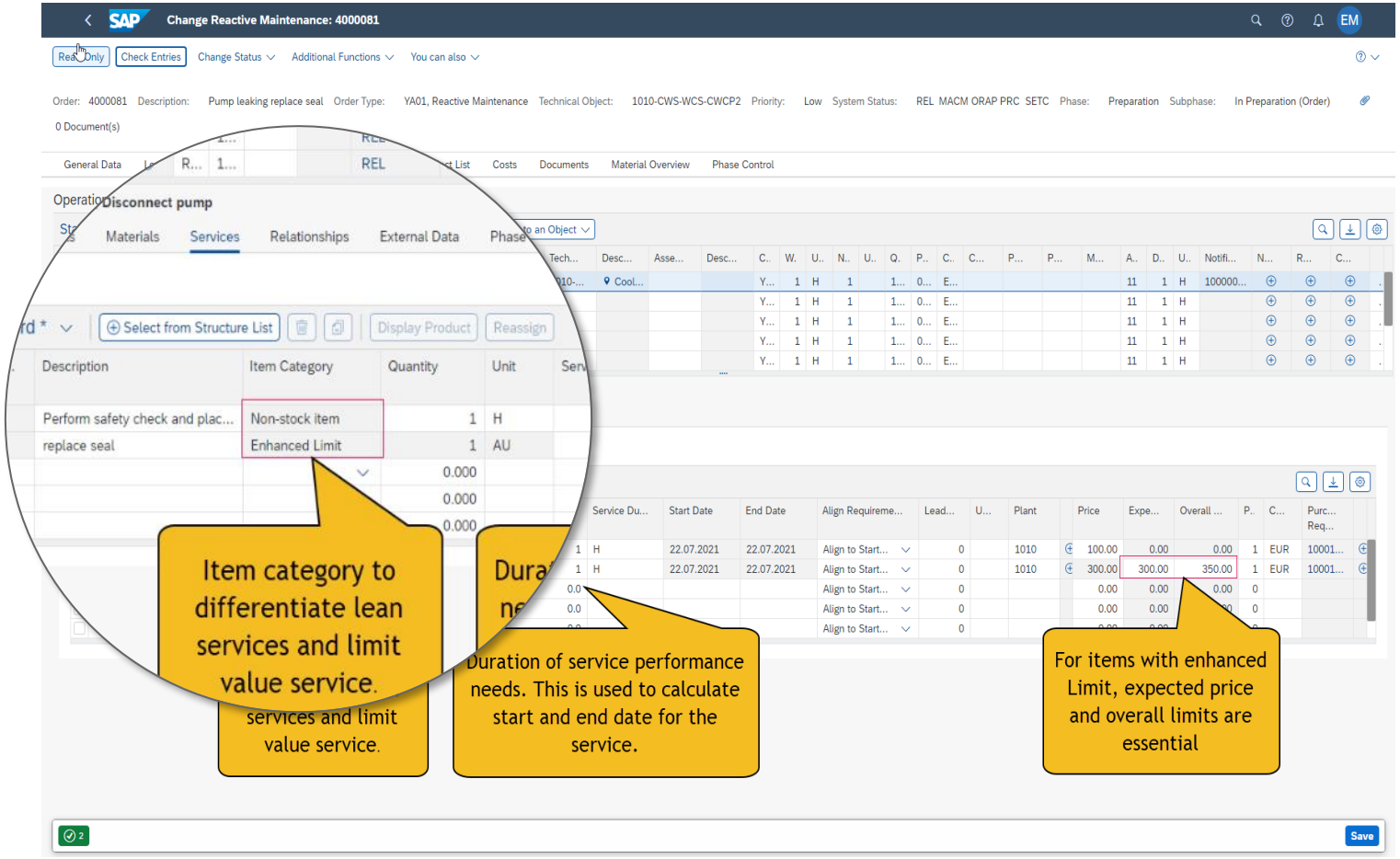
Lean Service Procurement in Maintenance Order

Maintenance Management

2021

Maintenance Execution

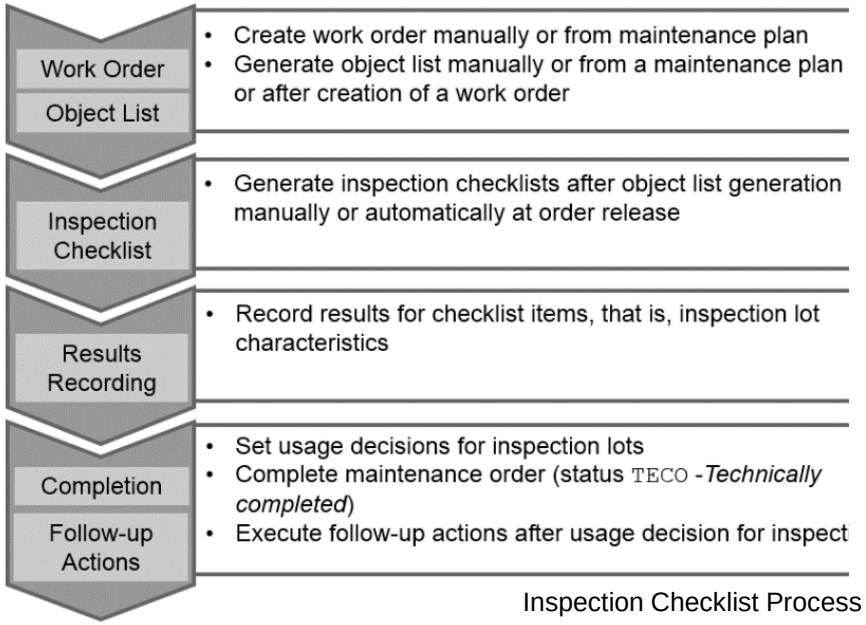
- Lean service can be enabled for select work order types
- Users can also use enhanced limit value-based services for each operation or sub operation of the work order
- Identification for service type is enabled using item category



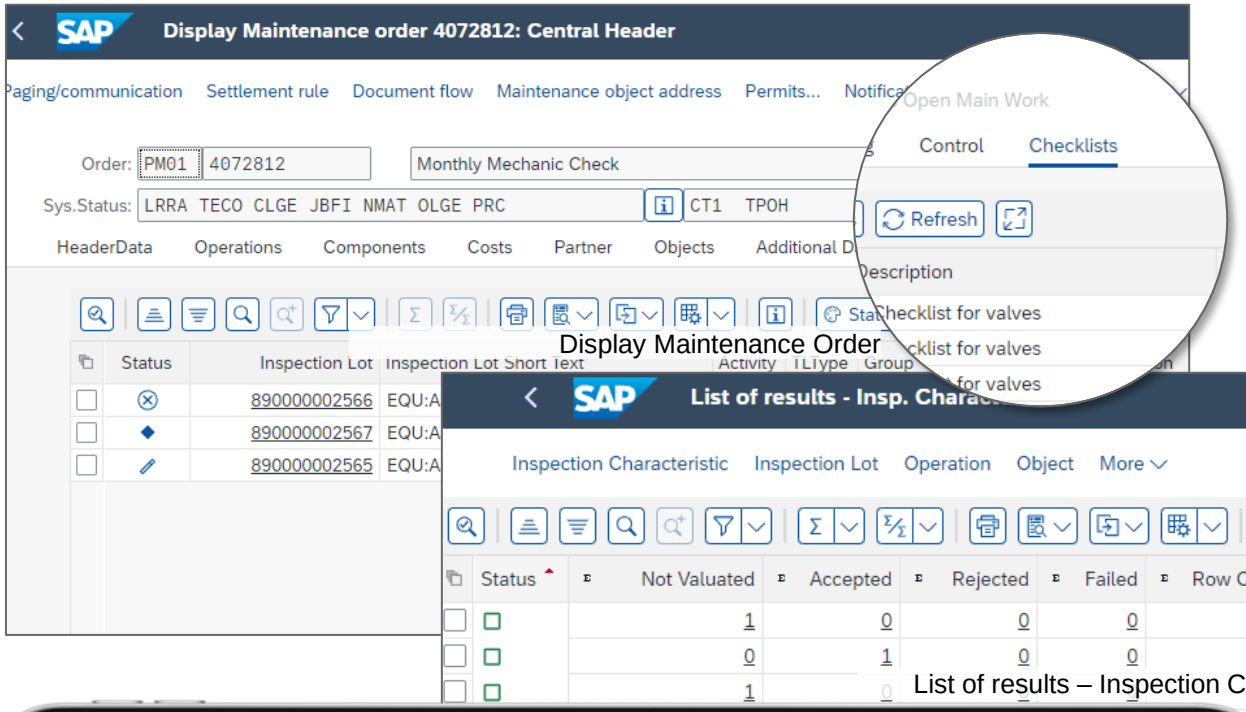
Inspection Checklist

Maintenance Execution

- Enable inspection checklist process from creation of inspection plans, results recording, and follow-up actions – e.g. new checklist tab on maintenance orders
- Create inspection checklist templates for combinations of technical objects and recurring maintenance tasks; e.g. monthly electrical check-ups

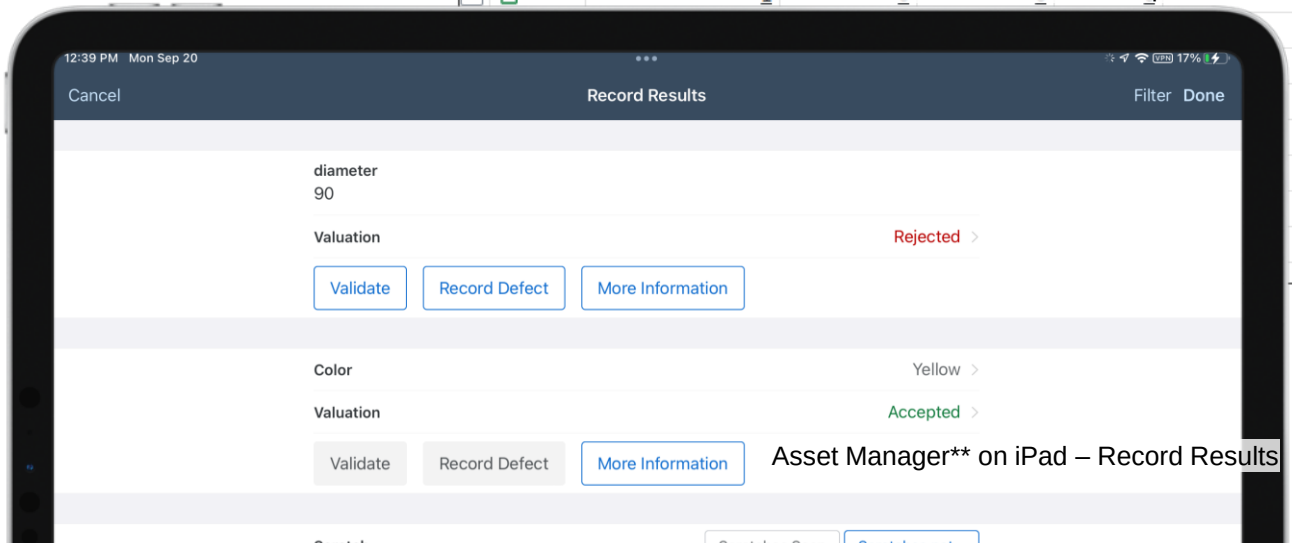


Inspection Checklist Process



Display Maintenance Order

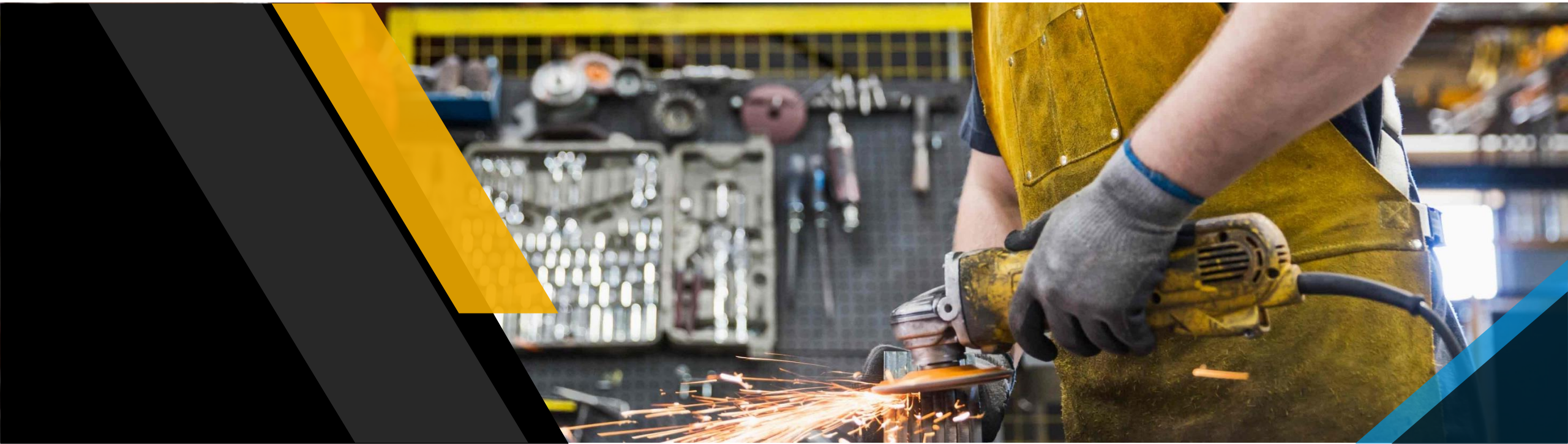
List of results – Inspection Characteristic



Asset Manager** on iPad – Record Results

SAP S/4HANA 2021

Innovation Highlights for Asset Management



SAP S/4HANA 2021 for Asset Management

Innovation Highlights

Maintenance Planning

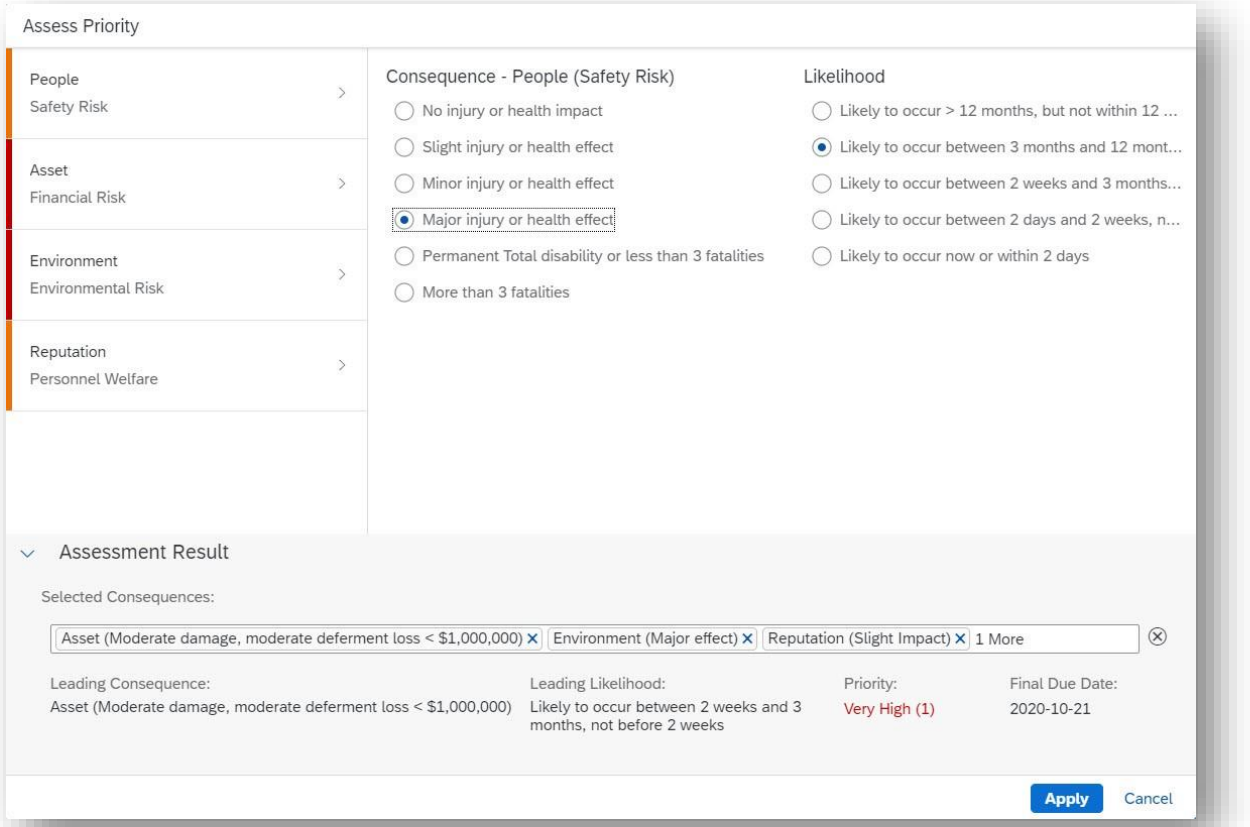
Enable a risk and criticality matrix for evaluation of maintenance activities

- Define the criticality matrix and provide a framework to estimate the time-dependent probability of failure (CoF) for a component and, thereby, on the system
- Determine the consequences of deferment of a maintenance task and estimate the cost of the consequence
- Determine the benefits of deferment (such as increased production or savings on operational costs)
- Prepare time-dependent cost-benefit analysis
- Suggest a deferral time and associated risks
- Determine the priority of the task based on the estimated risk

Benefit

- Evaluate the risk associated with the deferral of a maintenance task by estimating the adverse consequences in terms of employee safety, production loss, and environmental impact as well as the likelihood of the consequence
- Resolve or reduce risk by evaluating various mitigation strategies
- Prioritize maintenance tasks based on the evaluated risk and effectively manage the maintenance workload

USER EXPERIENCE



Key innovations do not reflect licensing

SAP S/4HANA 2021 for Asset Management

Innovation Highlights

Maintenance Planning

Enable procurement of services with limit values from maintenance order

- Simplified process to procure services with limit values

Benefit

- Easy process for planners to define scope of the service in text format and provide limit value that can be invoiced by subcontractors
- Integrated planning of services provided by a subcontractor along with other internal activities
- Process simplification to manage work execution and payment to subcontractors

Business events for maintenance bill of materials

Triggering of business events for maintenance bill of materials during these processes:

- Creation
- Change

Benefit

- Enable subscription to business events by external systems

Key innovations do not reflect licensing

SAP S/4HANA 2021 for Asset Management

Innovation Highlights

Maintenance Planning

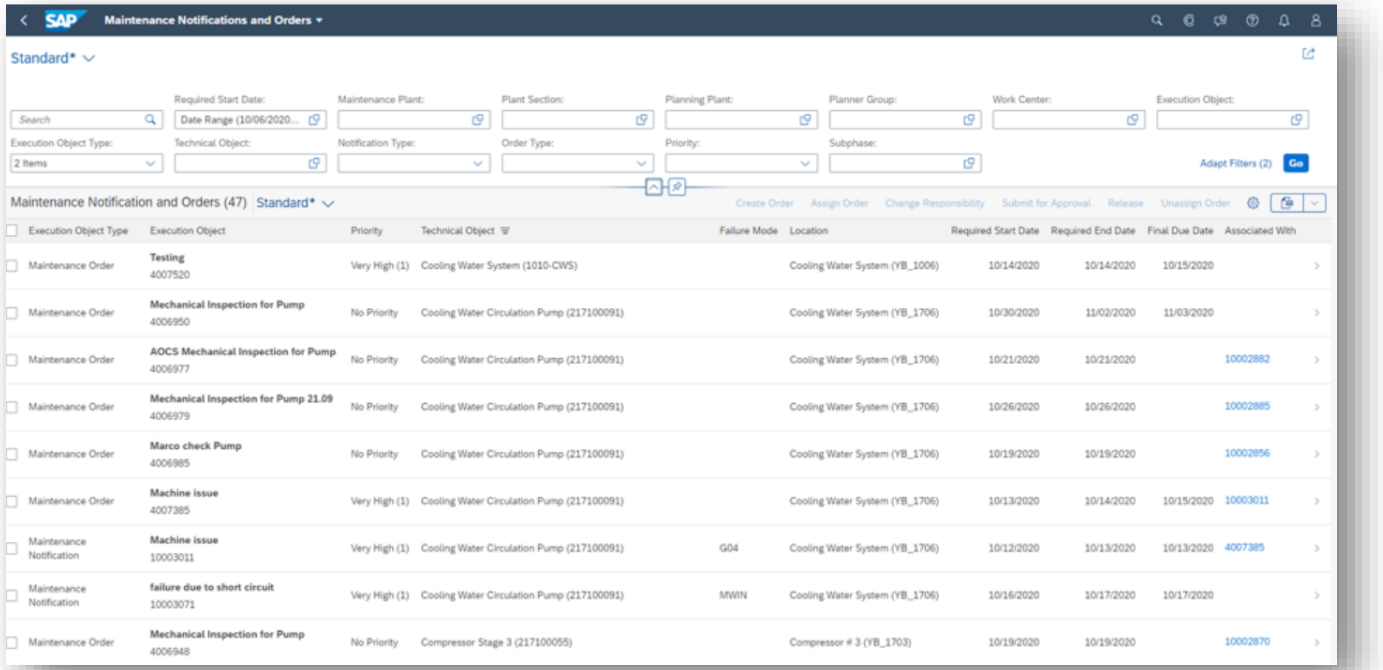
Combined management of open maintenance notifications and maintenance orders

New application providing the maintenance planner with a comprehensive overview of open maintenance notifications and the related maintenance orders requiring further planning before they can be submitted for approval:

- Combined view of open maintenance notifications and maintenance orders for planning
- Planner ability to filter the list of open maintenance notifications and maintenance orders by technical object, plant section, location, and main work center
- Creation of new maintenance orders based on outstanding maintenance notifications
- Option to assign an open maintenance notification to an existing maintenance order to resolve the reported issue
- Planning of detailed maintenance activities and required resources on the work order
- Mass change of responsibilities for selected maintenance notifications or maintenance orders
- Submission of final planned work order for approval before starting work preparation
- Replanning of work order not approved (rejected)

Availability only with the following SAP S/4HANA Cloud scope items:

- 4HH – reactive maintenance, 4HI – proactive maintenance
- 4VT – improvement maintenance
- 4WM – operations and overhead maintenance



DIGITAL TRANSFORMATION

Key innovations do not reflect licensing

SAP S/4HANA 2021 for Asset Management

Innovation Highlights

Maintenance Planning

Monitor readiness of work orders

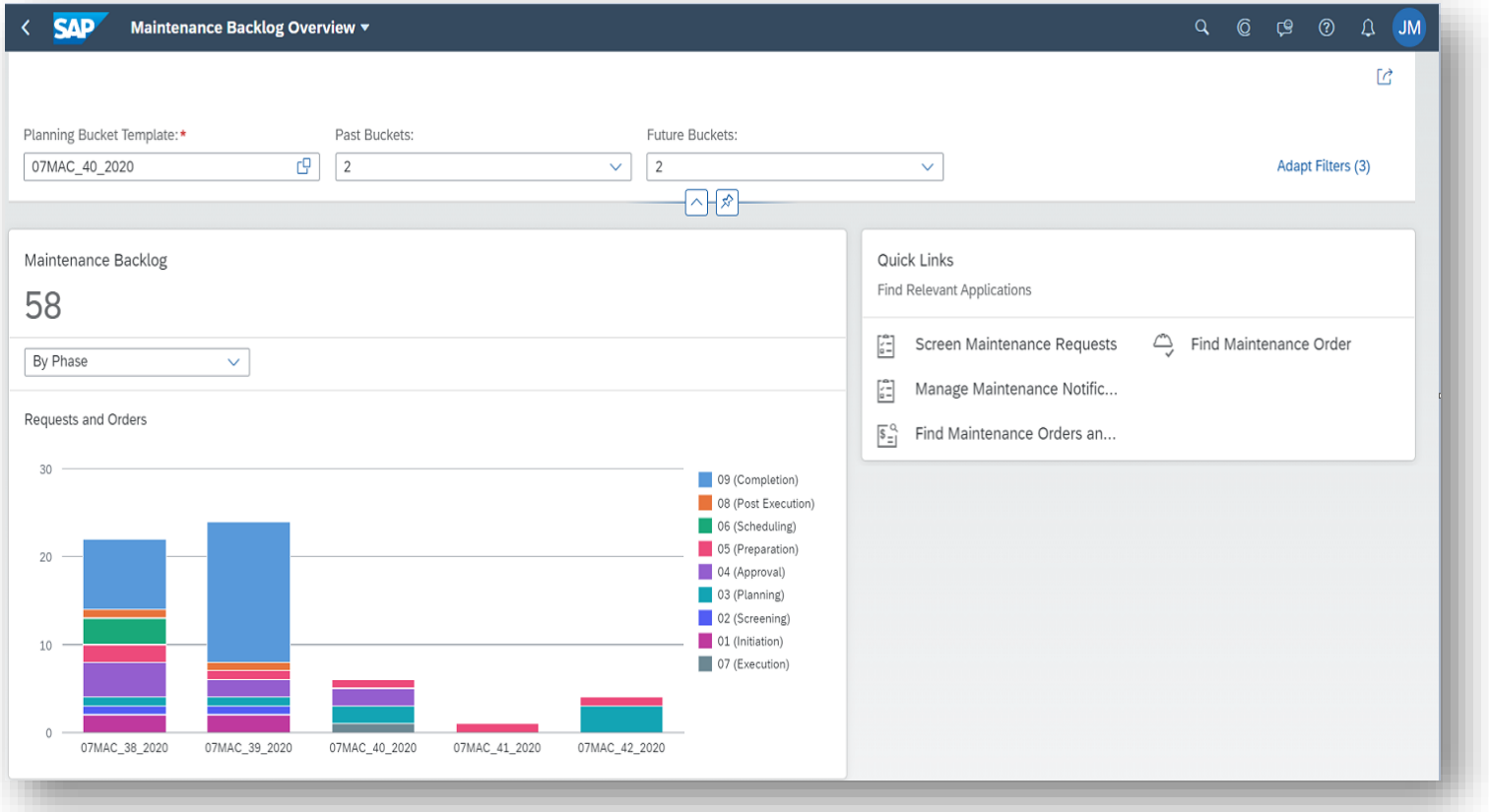
Prepare maintenance backlogs before they are scheduled for execution and achieve improved visibility into:

- The latest acceptable completion dates and the availability of resources to execute planned backlog items
- Availability of non-stock parts required for each maintenance work order
- Services procured and confirmed dates from subcontractors

Benefit

- Increased wrench time for technicians
- Improved schedule compliance

USER EXPERIENCE



Key innovations do not reflect licensing

SAP S/4HANA 2021 for Asset Management

Innovation Highlights

Maintenance Planning

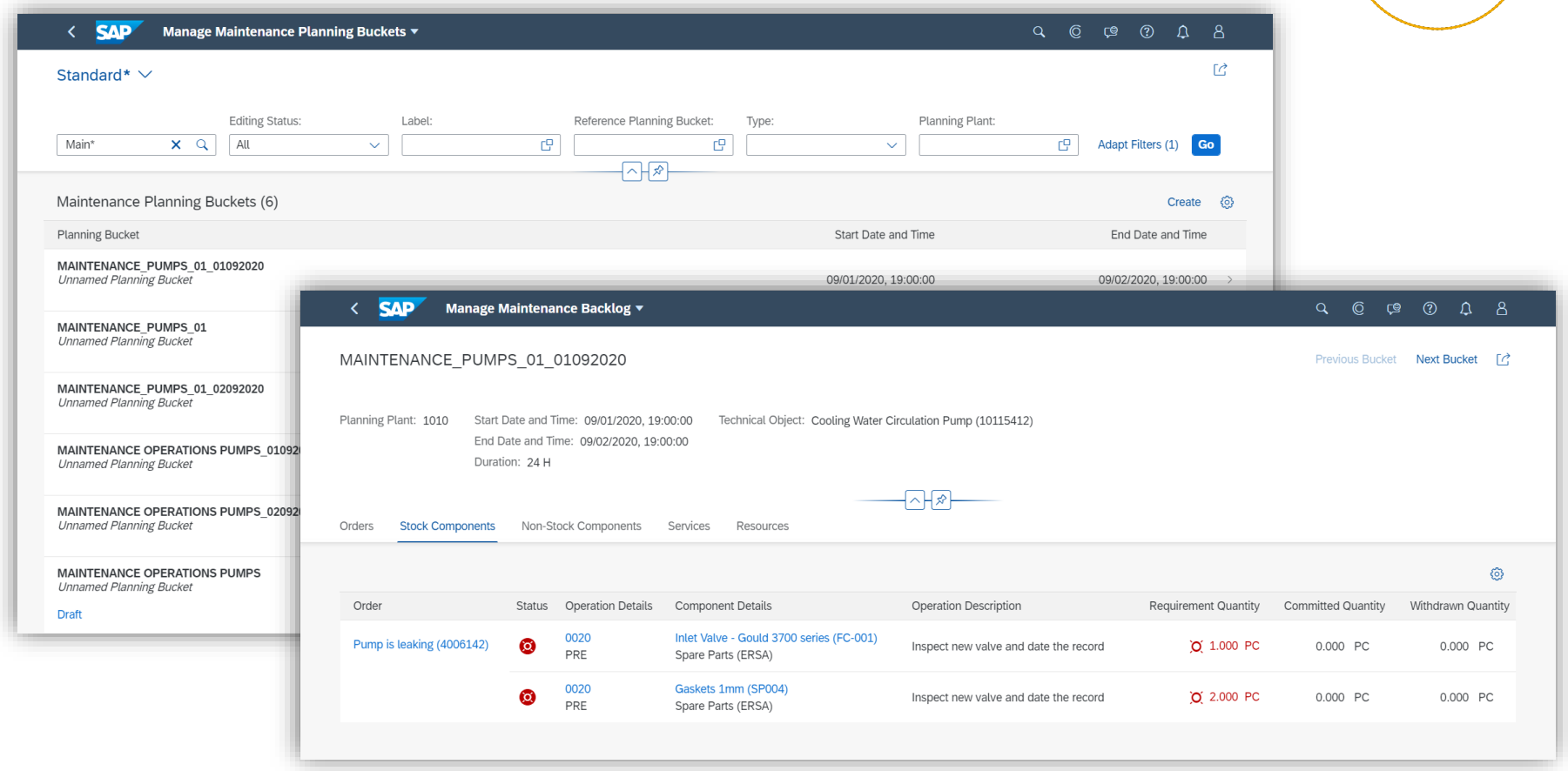
Recurring and Nonrecurring* planning buckets to manage operational maintenance backlog

- Define recurring maintenance periods (such as maintenance windows) with time and scope
- Review maintenance work that can be executed during a maintenance opportunity
- Define planned outages (such as plant revisions) for a time period and location

Benefit

- Standardized and optimized management of the maintenance backlog for recurring maintenance periods
- Support shutdown planning with a dedicated planning instrument for grouping maintenance orders

USER EXPERIENCE



Key innovations do not reflect licensing

* **Note**: For this innovation new scope items will be provided. It will not be available with scope items:
- Corrective Maintenance (BH1)
- Emergency Maintenance (BH2)
- Preventive Maintenance (BJ2)

SAP S/4HANA 2021 for Asset Management

Innovation Highlights

Maintenance Planning

Definition of final due date in maintenance requests and maintenance orders

- Rule-based determination of the LACD based on several parameters such as:
  - Priority
  - Origin of request
  - Risk and criticality of a technical object
- Provision of alerts based on the latest acceptable completion date and corresponding basic start and end dates for maintenance backlogs
- Simplified configuration of rules for determining the latest acceptable completion date in the administrator settings
- Ability to track and manage every change to the latest acceptable completion date in a deferral process

USER EXPERIENCE

Benefit

- Improved planning efficiency and schedule compliance
- Better deployment of the workforce for important backlogs
- Optimized coordination between procurement and other logistics support teams

Best practice – proactive maintenance process (4HI)

Proactive maintenance allows you to prevent the failure or breakdown of an asset by implementing preventive maintenance and using proactive measures.

- End-to-end best practice process definition and documentation for on-premise (OP) systems for standard proactive maintenance

Benefit

- Clearer understanding of the standard proactive maintenance best practice

☞ Click here to access the SAP Best Practice Explorer.

Best practice – reactive maintenance process (4HH)

This is a comprehensive nine-phase process to support maintenance from the creation of a maintenance request to its completion. Reactive maintenance process allows you to perform asset maintenance whenever a breakdown or a failure occurs.

- En-to-end best practice for process definition and documentation for on premise systems for standard reactive maintenance

Benefit

- Clearer understanding of the standard reactive maintenance best practice

☞ Click here to access the SAP Best Practice Explorer.

Key innovations do not reflect licensing

SAP S/4HANA 2021 for Asset Management

Innovation Highlights

Maintenance Planning

OData API for maintenance bill of material on premise

- Deliverable: (API, type: OData Service) for SAP S/4HANA Cloud
  - Operation:
  - Create
  - Read
  - Update
- Support provided by the API for general maintenance task lists as well as equipment task lists and functional location task lists

Benefit

- Increase process flexibility using predefined interfaces for processing maintenance task lists
- Save time by automating the creation and updating of maintenance task lists

INTEGRATION

Business events for maintenance task list

Triggering of business events for maintenance notifications when:

- Maintenance notifications are created
- Maintenance notifications are set to “In Process”
- Maintenance notifications are set to “Completed”

Benefit

- Enable subscription to business events by external systems

INTEGRATION

Enabling extended warehouse management with maintenance order

- Improved capabilities to manage stock parts needed for maintenance orders from extended warehouse

Benefit

- Better tracking of parts issued from warehouse
- Easy identification of location where parts can be delivered for each recipient

Key innovations do not reflect licensing

SAP S/4HANA 2021 for Asset Management

Innovation Highlights

Maintenance Planning

•Proposal of the material item category in maintenance bills of material

- The item category is automatically proposed when adding components to maintenance bill-of-materials, based on the plant and material type for the added component

Benefit

- Improved master data maintenance process due to fewer inputs required by the user

OData API for maintenance task list (CRUD)

- Deliverable: (API, type: OData Service) for SAP S/4HANA Cloud
- Operation:
  - Create
  - Read
  - Update
- Support provided by the API for general maintenance task lists as well as equipment task lists and functional location task lists

Benefit

- Increase process flexibility using predefined interfaces for processing maintenance task lists
- Save time by automating the creation and updating of maintenance task lists

Maintenance Execution

Business events for maintenance order confirmation

Triggering of business events for maintenance notifications when:

- Maintenance notifications are created
- Maintenance notifications are set to “In Process”
- Maintenance notifications are set to “Completed”

Benefit

- Enable subscription to business events by external systems

Key innovations do not reflect licensing

SAP S/4HANA 2021 for Asset Management

Innovation Highlights

Maintenance Demand Processing

Leverage machine-learning (ML) algorithms to provide system support in maintenance notifications

Leverage machine learning algorithms to proactively manage your maintenance activities:

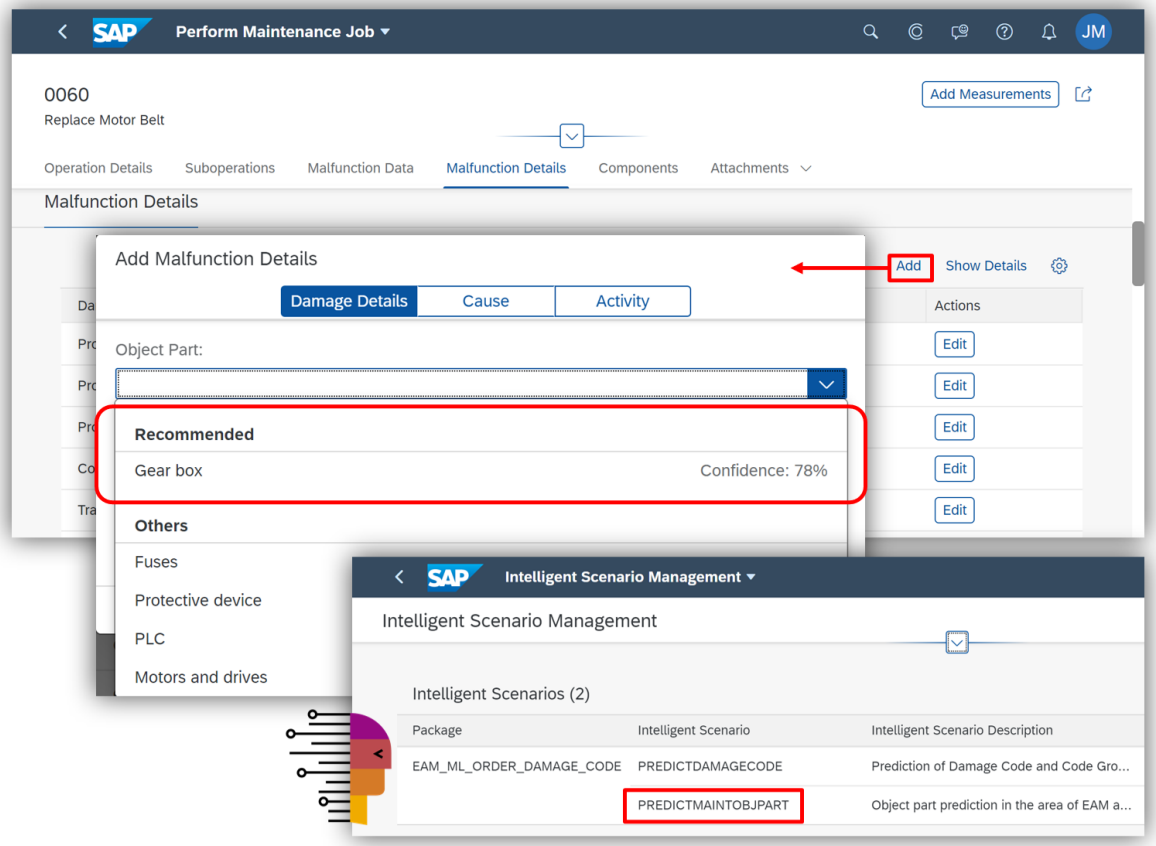
- Interpret the long text in work notifications and suggest failure codes
- Interpret the long text in work notifications and display lists of work notifications and work orders that resolved a similar problem

Benefit

- Decrease the time needed to analyze an incident
- Reduce downtime for the asset

ARTIFICIAL INTELLIGENCE

Click here to watch the video and see how Machine-Learning provides system support.



Key innovations do not reflect licensing

SAP S/4HANA 2021 for Asset Management

Innovation Highlights

Maintenance Execution

Machine learning–based suggestions for object part code or damage code in notifications to maintenance technicians

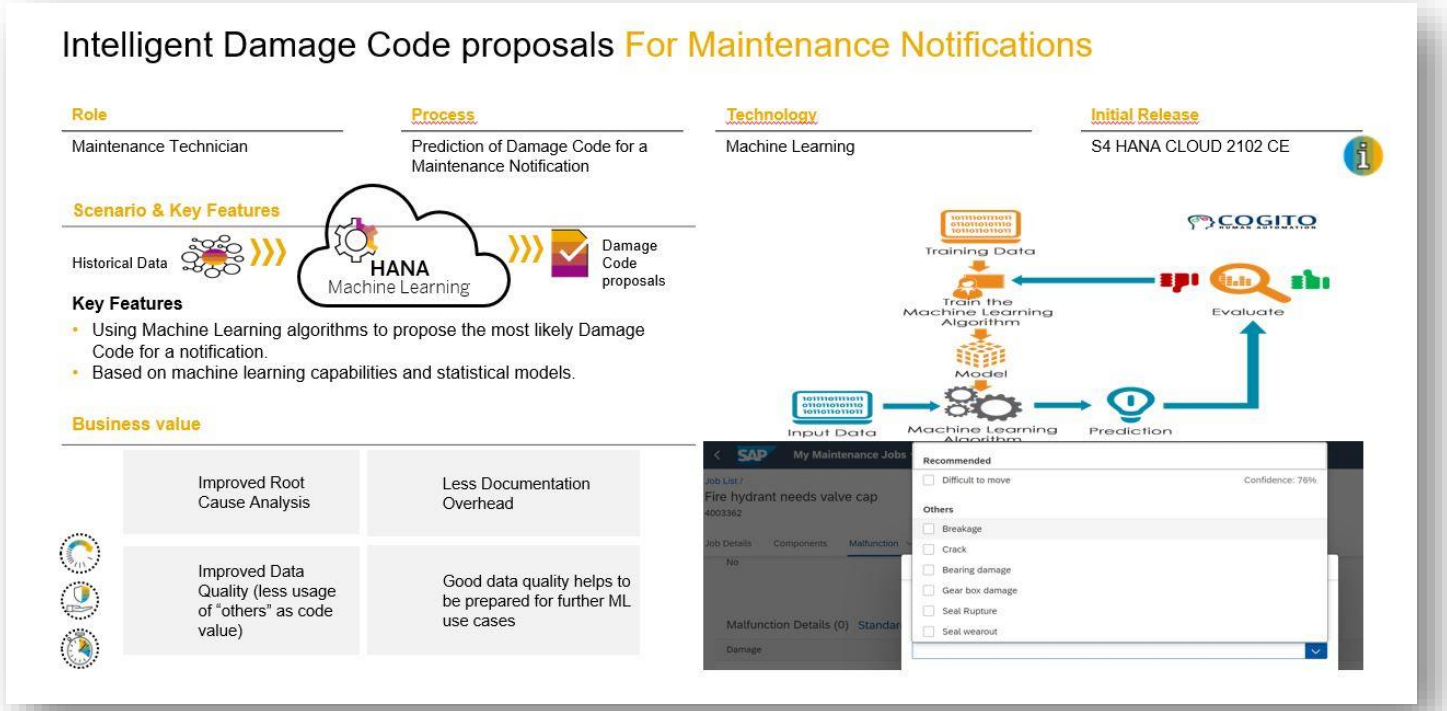
- Interpretation of the short text and the long text of a maintenance notification to suggest a damage code during the closeout of a maintenance job

***Note**: This feature is designed to work only within the scope of the "best practice" processes for Reactive Maintenance (4HH) and Proactive Maintenance (4HI).*

Benefit

- Decrease the time needed to analyze an incident
- Reduce downtime for the asset

ARTIFICIAL INTELLIGENCE



Click here to watch the video and see how Machine-Learning provides system support.

Key innovations do not reflect licensing

SAP S/4HANA 2021 for Asset Management

Innovation Highlights

Maintenance Execution

Inspection checklists for technical objects on maintenance order operation

- Maintain inspection plans as checklist templates
- Enable customer checklist functions for order type or plant combinations and specify object list, checklist generation, and follow-up settings
- Define checklist type on an operation level for checklist generation
- Object list generation manually or automatically at order creation
- Checklist generation manually or automatically at order release or mass processing with new transaction IW92, Checklists: Generation
- System statuses representing status of checklist process
- New tab "Checklists" in maintenance order transactions
- New transaction IW91, Checklists: Result Overview: list display of checklists and functions to record results and make usage decision
- New transaction IW93, Checklists: Collective Usage Decis.: mass processing to make usage decision for checklists, including tolerated defect classes
- Print checklists anytime during the maintenance order process or as a follow-up action after usage decision
- Create measurement documents as a follow-up action after usage decision
- Enable checklist APIs and Archive checklists
- Enable business add-ins (BADIs) for influencing the checklist process

Benefit

- Digitize inspections and checks with legally binding documentation
- Reduce efforts for master-data maintenance and operational execution:
- Support an end-to-end process from inspection plan to result recording and follow-up actions
- Develop a lean master data model by defining one inspection plan for a type of checklist for an object type used in the inspection process for all similar technical objects
- Add the ability to analyze the history of checklist results for a technical object

Key innovations do not reflect licensing

SAP S/4HANA 2021 for Asset Management

Innovation Highlights

Maintenance Execution

Collective time confirmation – enhanced download with selected operation data, on premise

For collective time confirmation, the download was enhanced to:

- Include the data of the selected maintenance order operations
- Better identify the operations for which order confirmations are entered

Benefit

- Improved usability due to better identification of downloaded order operations
- Reduced data entry errors

Report and Repair Malfunction app – allow assignment of multiple work items to the same maintenance technician

- Ability to assign multiple work items in a single maintenance order to the same maintenance technician in the report-and-repair-malfunction process

Benefit

- Increased usability
- Improved process coverage through the ability to assign multiple work items to the same maintenance technician

OData API for maintenance order time confirmation (CRUD)

- Create time or final confirmation for a maintenance order and an operation
- Create mass time or final confirmations for multiple maintenance orders and operations
- Cancel time confirmation

Benefit

This ODATA V2.0 API provides the following benefits:

- Helps you maintain time or final confirmation for one or more orders and operations, invokable by a remote client
- Supports cancellation of one or more posted time confirmations
- Enables you to filter, search, or sort time confirmations

Key innovations do not reflect licensing

SAP S/4HANA 2021 for Asset Management

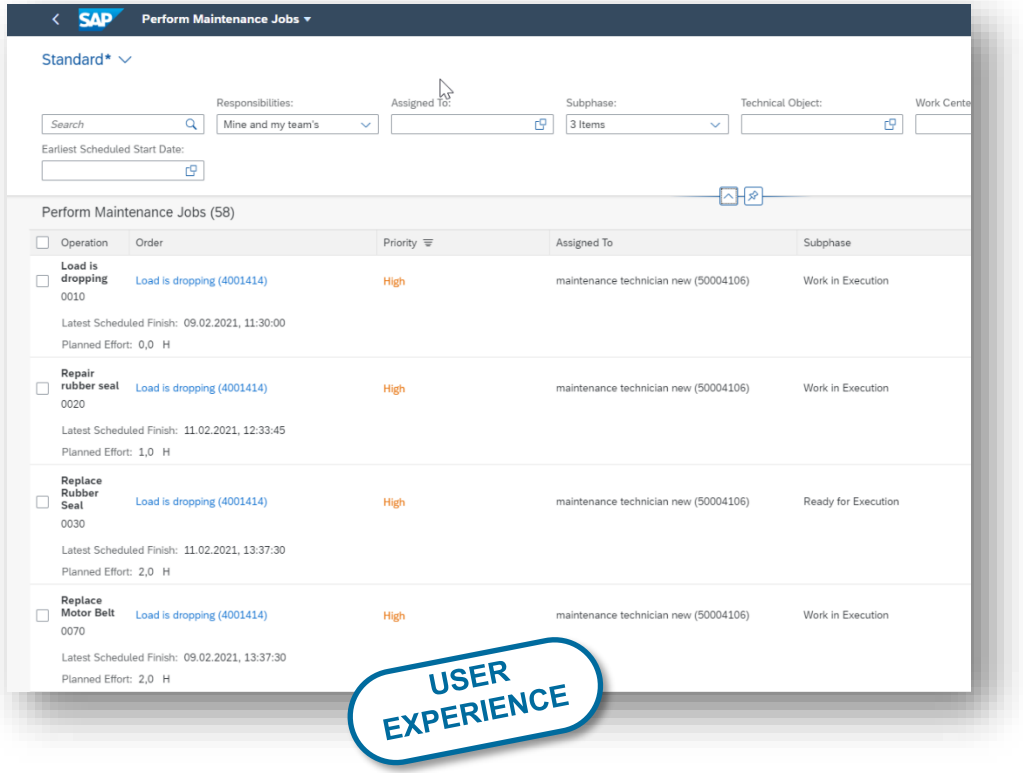
Innovation Highlights

Maintenance Execution

Allowing maintenance technicians to access outstanding maintenance jobs and document the executed maintenance work

- A list of outstanding maintenance jobs provided to maintenance technicians
- Detailed view of each maintenance job, including technical object affected, malfunction details (in case of reactive maintenance), supporting documents, or required spare parts
- Entry of time confirmation for the actual work performed
- Ability of authorized maintenance technicians to directly issue reserved as well as unplanned parts from the local warehouse
- Option for each maintenance technician to plan the return of unused spare parts to the warehouse
- Entry of measurement readings related to the technical objects of the specific maintenance job or the maintenance order which have been taken by the maintenance technician during maintenance
- Recording of malfunction details by maintenance technicians after the completion of maintenance work
- Option to create follow-on maintenance request with reference to existing maintenance order / notification

Note: This feature is designed to work only within the scope of the "best practice" processes for Reactive Maintenance (4HH) and Proactive Maintenance (4HI).



Benefit

- Use a one-stop application to provide the maintenance technician with all information to perform a maintenance job
- Improve usability by renovating the user interface
- Enhance flexibility by enabling the task on different devices such as desktop computers, smartphones, and tablets

Key innovations do not reflect licensing

SAP S/4HANA 2021 for Asset Management

Innovation Highlights

Maintenance Execution

Maintenance backlog overview – visibility of procurement of parts and services

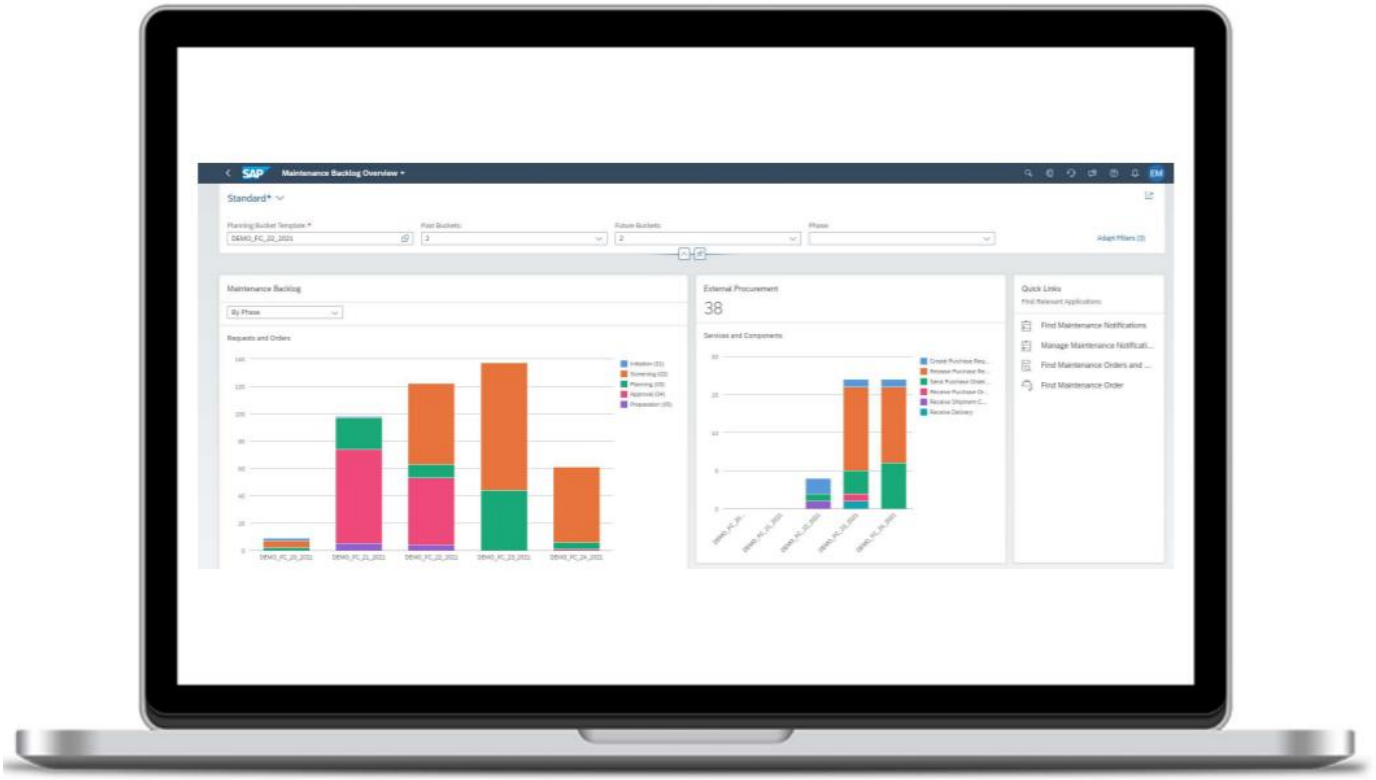
Prepare work orders effectively to help ensure streamlined scheduling and execution of maintenance work:

- New analytical card enabling proactive review of procurement processes to buy parts and services
- New rework analysis card identifying repetitive reactive maintenance requests to start identification of potential root causes

Benefit

- Improve schedule compliance by proactively preparing resources needed to execute maintenance
- Improve wrench time by ensuring provisioning of all parts and services
- Identify bad actors by recognizing repetitive reactive maintenance requests within a short span of time

DATA TO VALUE



Key innovations do not reflect licensing

SAP S/4HANA 2021 for Asset Management

Innovation Highlights

Asset Geospatial Enablement

Linear asset management for split or merged technical objects

Functional enhancements in SAP S/4HANA 2021:

- Module for splitting and merging of maintenance notifications and measuring points for split or merged technical objects
- Support change documents for linear characteristics
- Support absolute distance of the markers from the start and end points of the linear data

Benefit

- Retain historical maintenance notifications for split and merged linear technical objects
- Transfer measuring points to the new functional locations for a linear functional location split into multiple functional locations
- Ensure that the changes to linear characteristics can be tracked
- Make the nearest marker to the start and end points of the linear data easier to pick

USER EXPERIENCE

Maintenance Demand Processing

Long-texts in maintenance notification

Advanced solution for long-text maintenance notifications:

- Option to create separate long texts to parlay different points of information instead of providing a single long text to relay varied information in a single field
- Individualized long texts that serve a certain purpose or describe a particular dimension so that the entered information is aligned for the actual purpose of the long text
- Customers enabled to create their own long texts

Benefit

- User support for entering the appropriated information through multiple long texts
- More-efficient analysis of captured information with separate long texts, which leads to better results

USER EXPERIENCE

Maintenance Planning

Estimated, planned and actuals costs of resources in maintenance orders

- Collect estimated costs and planned costs based on the planned resources indicated in a maintenance work order
- Identify operational assets that consume large amounts of financial resources
- Monitor actual maintenance costs incurred for each maintenance work order and how far they deviate from planned costs

Benefit

- Improved maintenance costs and compliance to the maintenance budget
- Proactive identification of assets performing poorly that require an improved strategy for maintenance or replacement

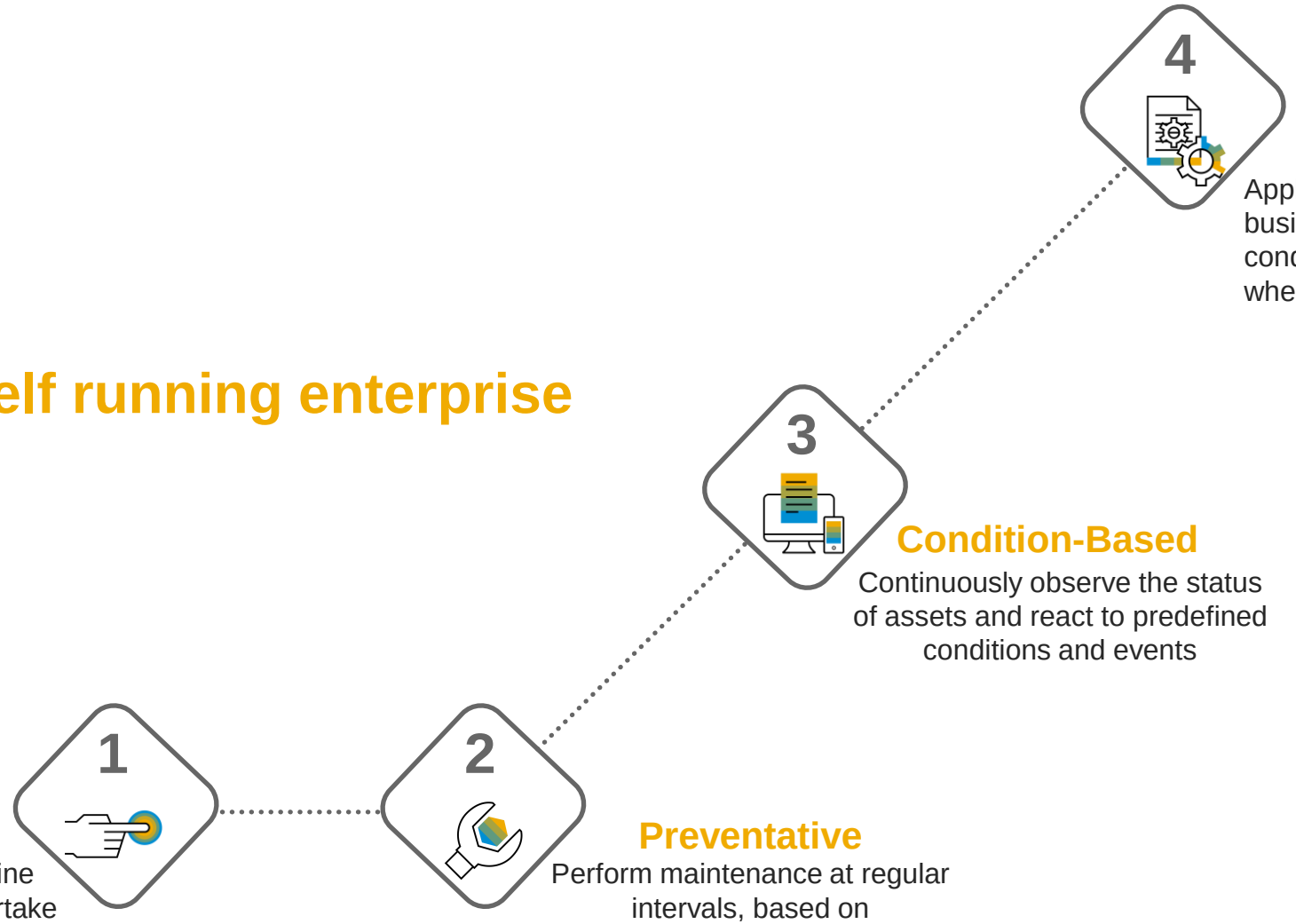
USER EXPERIENCE

Key innovations do not reflect licensing

Maintenance Journey and Asset Optimization

Where are maintenance operations heading?

Vision: Self running enterprise



Exemplary view, for more customer stores see SAP S/4HANA Customer Story Finder

Achieving Value with SAP S/4HANA Asset Management

Ansaldo Energia S.p.A.

Industry
Cross Industry

Additional SAP Solutions
SAP Cloud Platform, SAP Predictive Maintenance and Service

With SAP S/4HANA, Ansaldo Energia S.p.A. achieved:

- 75% reduction in paper based quality controls
- Expected 5%–8% drop in the cost of equipment maintenance
- 80% less time and effort to onboard new customers in the services portal

Power-generation leader Ansaldo Energia S.p.A. manages complex projects around the world, but suboptimal, siloed processes were limiting operational visibility. The company is rolling out SAP S/4HANA and at the same time, enabling predictive asset service resulting in a dual digital transformation.

Click here for Ansaldo Energia S.p.A.´s source reference

Tasmanian Networks Pty. Ltd

Industry
Utilities

Additional SAP Solutions
SAP Ariba, SAP SuccessFactors

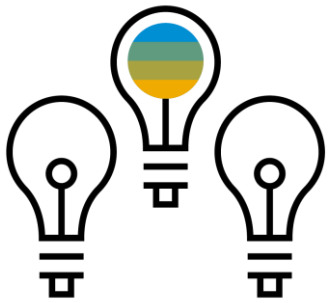
With SAP S/4HANA, Tasmanian Networks Pty. Ltd achieved:

- A $68 million in quantifiable business benefits
- Increased transparency, enabling managers to measure performance
- Better maintenance planning, resulting in fewer power outages

Following a merger of electricity distribution and transmission businesses, Tasmanian Networks Pty. Ltd. needed to establish a single data platform to standardize processes and consolidate more than 60 legacy systems.

Click here for Tasmanian Networks Pty. Ltd´s source reference

SAP S/4HANA Asset Management Solution Simplification



- **Scheduling of Maintenance Plan** – Transaction IP30 replaced by transaction IP30H (SAP Note: 2270078)
- **Mobile Asset Management (MAM)** - replaced by SAP Work Manager (SAP Note: 2270080)
- **Enterprise Search in EAM** - the search models are now replication free models (using HANA DB tables instead) within SAP Enterprise Asset Management SAP EAM) (SAP Note: 2270123)
- **Changes In List Reports For Order and Notification** - Prerequisite for executing the list reports for orders and notifications in SAP S/4HANA are the performance improvements described in notes 393393 and 551133 (SAP Note: 2270108)
- **Batch Input for Enterprise Asset Management (EAM)** - transaction IBIP is outdated and is being removed (SAP Note: 2270108)
- **Deprecation of EHS Data Series and Amounts** -These data objects were renovated and their information now is stored in different tables (SAP Note: 2338405)
- **Deprecation of 'Inspect Safety Control' Fiori app** (SAP Note: 2343825)
- **Simplification of Authorizations in Incident Management** - the concept was renovated and authorization objects were replaced (SAP Note: 2350330)
- **Changed data model for listed substances** - a new table has been introduced (SAP Note: 2376165)
- Complete list of simplifications see here

NEW *New in 2021*
UP *Update in 2021*

Exemplary view, most current list see Fiori Apps Library

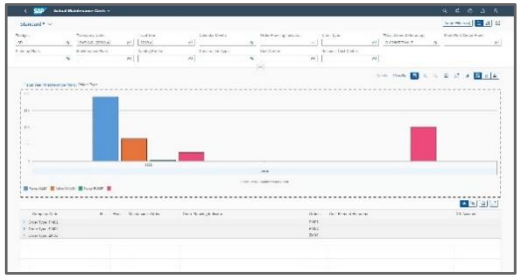
SAP S/4HANA Asset Management: Fiori Apps

Maintenance Mgmt.

Employee - Maintenance Info
- PM Notification Re-Use Library
- Request Maintenance

Maintenance Planner
- Actual Maintenance Cost Analysis
- Create Mass Time Confirmations
- Display Maintenance Item (Planner)
- Display Master Data Information Center (Planner)
- Find Maintenance Items
- Find Maintenance Plans
- Maintenance Backlog Overview NEW
- Maintenance Planning Overview
- Manage Maintenance Plan and Item List
- Manage Notification List
- Manage Order List
- Manage Orders and Notifications in Information Center
- Mass Schedule Maintenance Plans
- My Inbox – Maintenance Management
- Process Linear Reference Pattern
- Process Maintenance Notification (Planner)
- Process Maintenance Order
- Process Maintenance Plan
- Process Measurement Document (Planner)
- Process Measuring Point
- Process Object Network
- Process Task List (Planner)
- Process Technical Object
- Schedule Material Availability Check UP
- Technical Object Breakdown Analysis

Maintenance Technician
- Confirm Jobs
- Create Maintenance Request NEW
- Display Job List
- Display Maintenance Item (Technician)
- Display Maintenance Order
- Display Maintenance Plan
- Display Master Data Information Center (Technician)
- Display Measuring Point
- Display Task List (Technician)
- Display Technical Object
- Find Maintenance Notification UP
- Find Maintenance Order
- Find Maintenance Order and Operation
- Find Maintenance Order Confirmation
- Find Technical Object UP
- Process Maintenance Notification (Technician)
- Process Measurement Document (Technician)
- Report and Repair Malfunction



Asset Operations and Maintenance

Maintenance Planner - Resource Scheduling
- Assign Maintenance Order Operations
- Analyze Work Center Utilization
- Maintenance Scheduling Board UP
- Manage Schedules UP
- Manage Work Center Utilization UP
- Resource Scheduling for Maintenance Planners UP
- RSH EAM - Reuse Project UP
- Schedule Maintenance Order Operations
- View Maintenance Schedule for Assets UP

Thank you!

Rachel Romanoski
rachel.romanoski@sap.com

SAP Solution Management
Asset & Service Management
Houston,TX