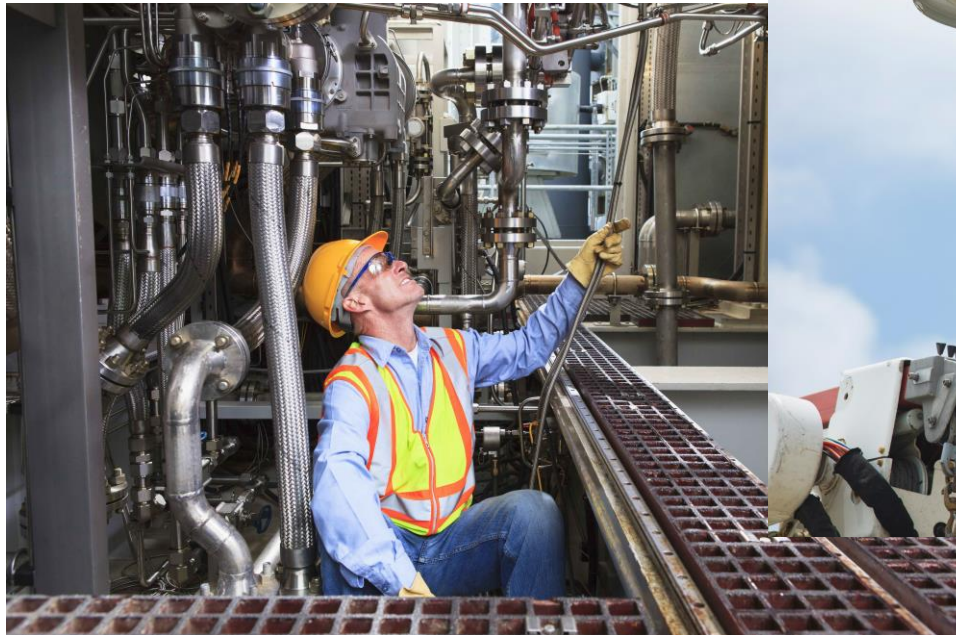


Closed Loop Asset Management with SAP: Increase Uptime, Reduce Cost, Improve Asset Performance

Dieter Hässlein, SVP, Head of Asset & Service Management, SAP SE

SAP Asset & Service Management

Our mission is to make the world's assets effective
and unleash people to differentiate in service



THE BEST RUN



Intelligent Asset Management with SAP

Maximize Outcome and Return on Assets:

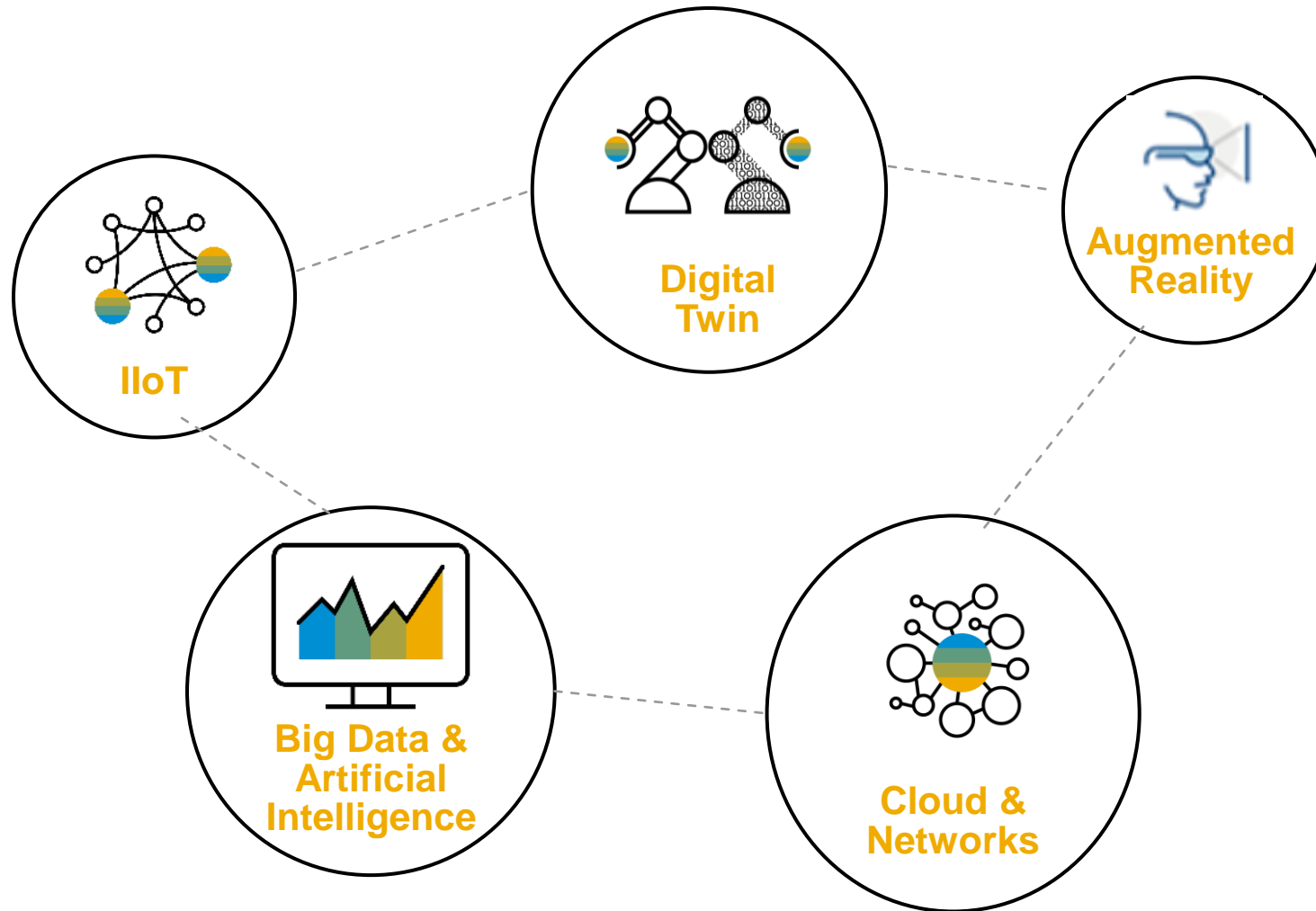
Highest Asset Availability - Resilient and Safe Operations - Reduced Costs

Strategic Topics:

- **Closed-loop** integration of **maintenance strategy** and **maintenance execution**: optimize asset performance, continuous learning and improvement.
- **Connected assets with Industry 4.0**: real-time health monitoring, predictive and prescriptive maintenance.
- **Business partner network** for asset management: Collaborate with 3rd party service providers and equipment manufacturers.
- **Embedded Environment, Health and Safety**: Ensure safety and sustainability in maintenance planning and operations.
- **Mobile and augmented reality**: Empower maintenance workers at their place of work – anytime and anywhere.



Today's Disruptive Technologies are the Key to Solving Tomorrow's Challenges...



“New technologies yield up to 30 percent **in maintenance cost reductions.**”

McKinsey

“New maintenance technologies yield up to **50% reduction in machine downtime.**”

McKinsey

SAP Asset & Service Management

Capabilities & Solutions



SAP Asset Performance Management

Bring together operational and business information using IoT to predict and simulate asset failure, improve reliability and optimize maintenance strategies



SAP S/4HANA Asset Management (aka "PM")

Plan, schedule and safely execute maintenance and service activities to ensure high equipment availability at low cost



SAP Field Service Management

Intelligent scheduling and dispatching of technicians, crews and external partners to execute service and maintenance work



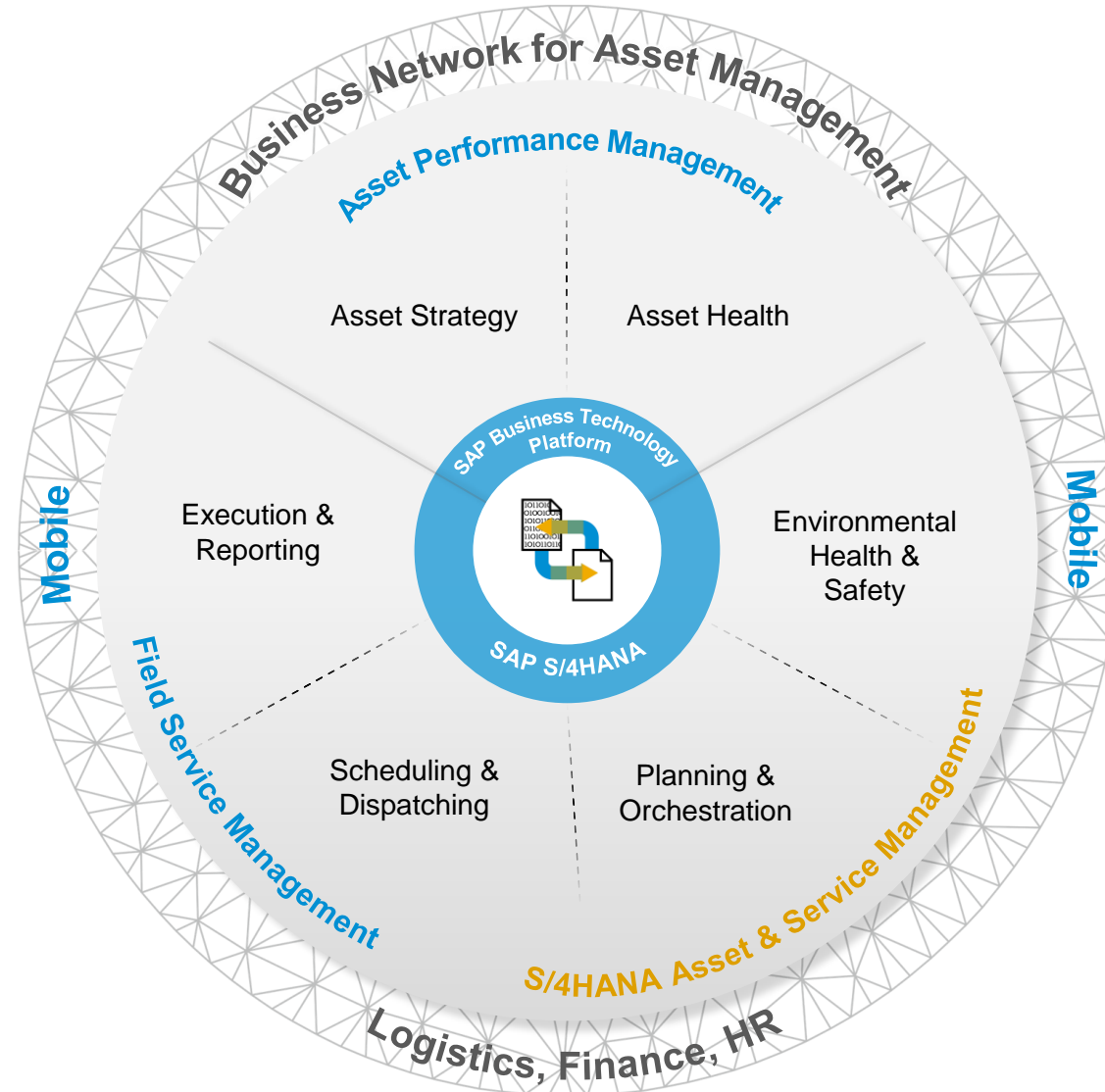
SAP Business Network for Asset Management

Share asset information, and collaborate with service partners



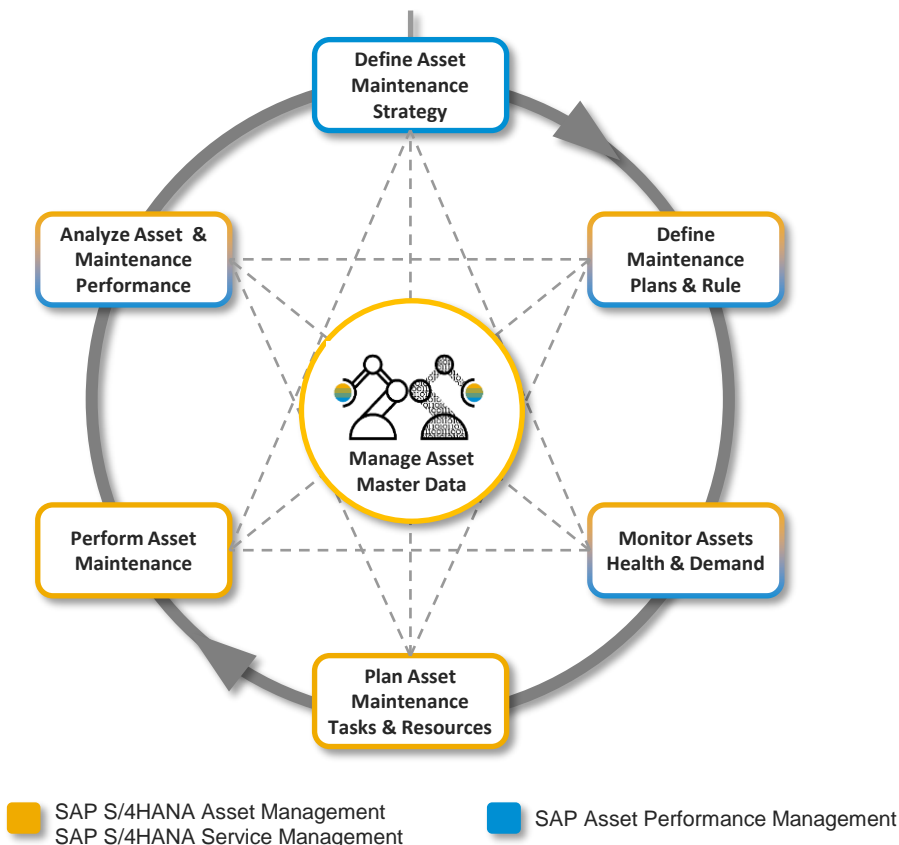
SAP mobile Service & Asset Manager

Leverage mobile technologies to enable the efficient and effective execution of maintenance and service jobs anywhere and anytime



Intelligent Asset Management with SAP: Converging Strategy & Execution

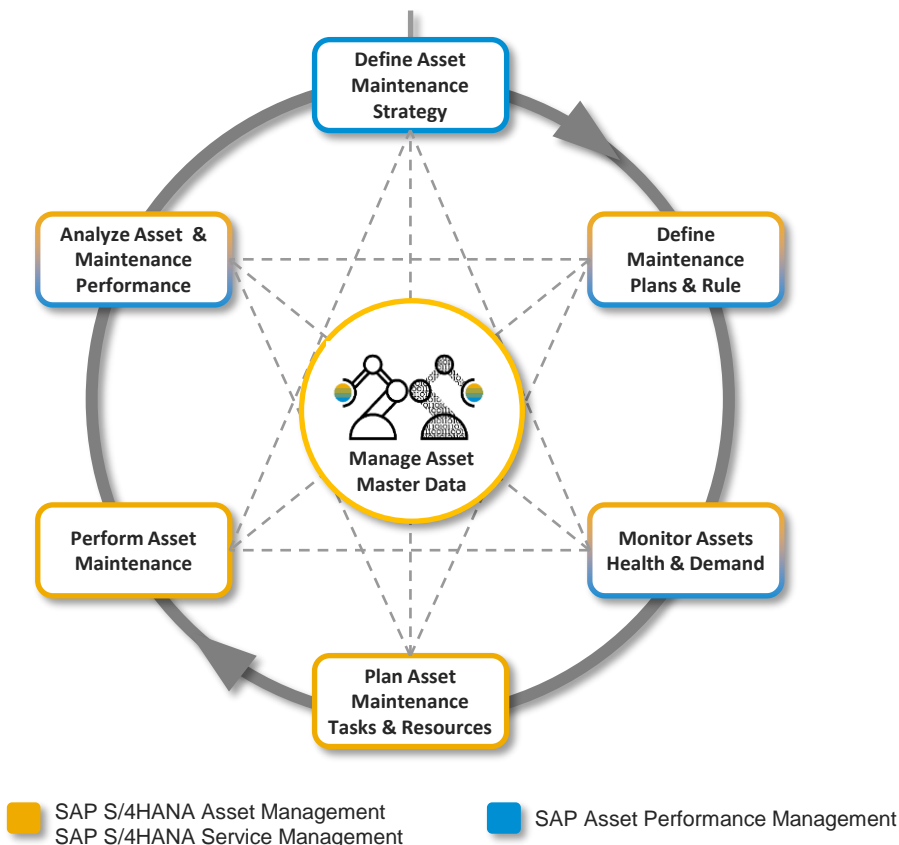
Seamlessly extend **Enterprise Asset Management** with **Asset Performance Management** along end-to-end processes to close the loop between maintenance strategy and execution to **define, implement, execute and monitor the optimal asset maintenance**.



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 - Manage asset and asset related master data semantically aligned for both disciplines to provide a 360° view in form of a Digital Twin

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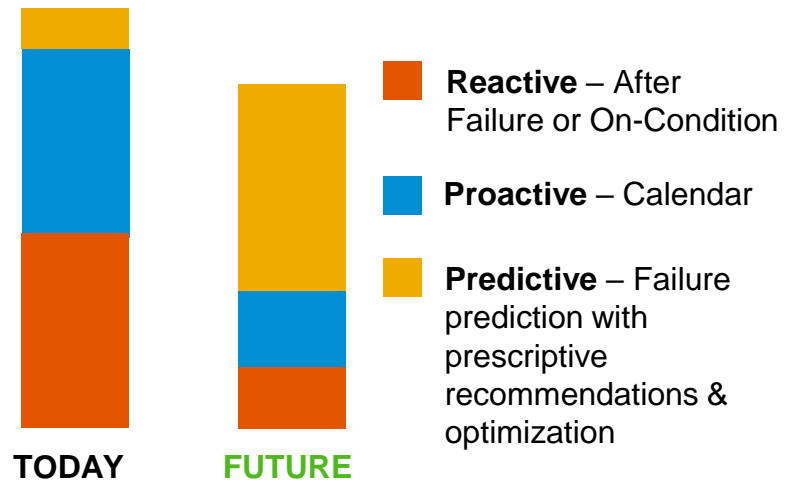
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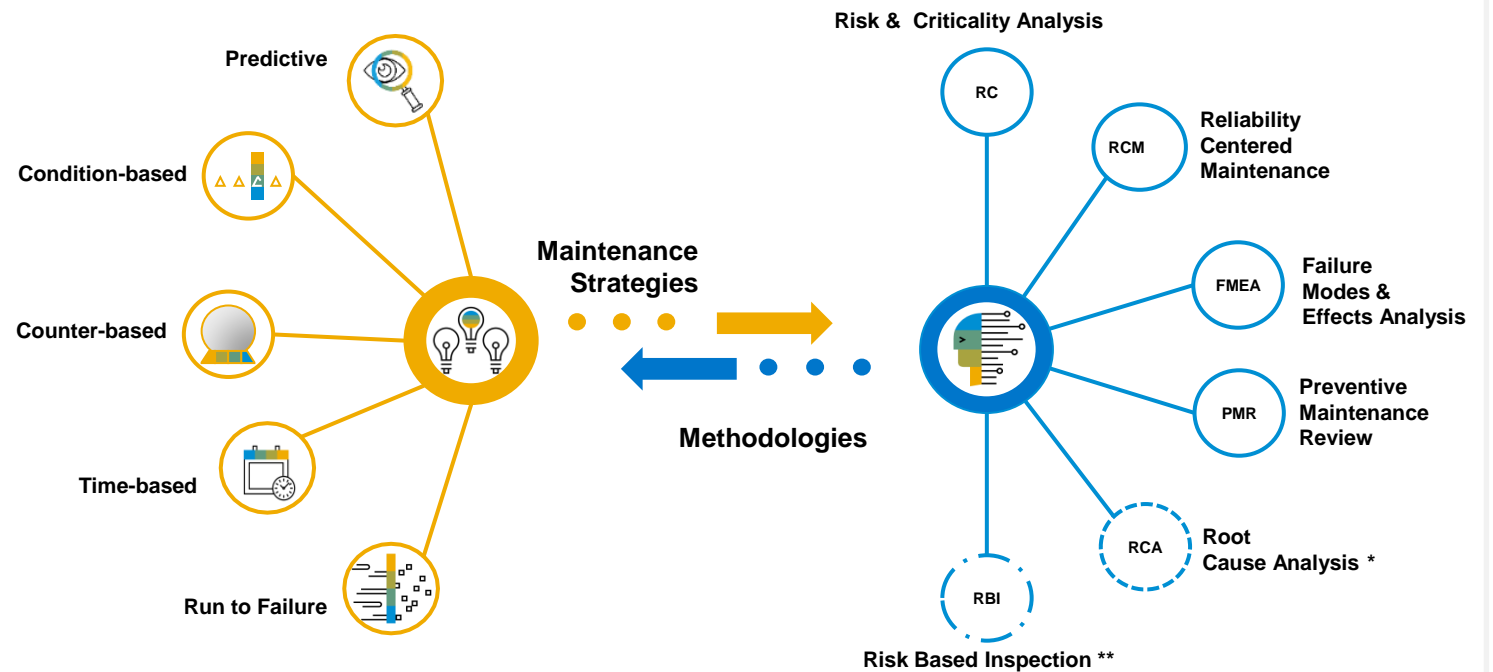
Evolve from reactive to reliability-centered & prescriptive maintenance

Calendar-based maintenance results in **over-maintaining** assets at higher costs / less availability

Reactive-based maintenance is too late for efficient planning and optimization



Intelligent Asset Management supports **data-driven proactive** strategies with execution and optimization based on reliability & other goals. This achieves the delicate balance of **profitability, asset health** and **availability**



*Future Functionality
** Partner Solution

SAP Asset Performance Management

Risk and Criticality Assessment

Risk and Criticality Assessment

RC Assessment: Lifters

AS.PM.22

Status: Published

Manage

Risk Score: 8.38

Criticality: B "Medium"

Risk Type: Current Risk

Assessment Template: AT.PM.17

Assignments: 3

INFORMATION

ASSIGNMENTS

DOCUMENTATION

QUESTIONS AND ANSWERS

Safety

Swap Axis

S: Likelihood of a body injury

8

S: Explosion hazard

1

Extremely inse...	11.00	9.00	7.00	5.00	3.00	2.00
Insensitive exp...	13.00	11.00	9.00	7.00	5.00	4.00
Minor explosio...	14.00	12.00	10.00	8.00	6.00	5.00
Fire hazard & ...	16.00	14.00	12.00	10.00	8.00	7.00
Projection haz...	18.00	16.00	14.00	12.00	10.00	9.00
Mass explosio...	20.00	18.00	16.00	14.00	12.00	11.00
	Likely	Occasional	Seldom	Unlikely	Remote	Rare

S: Likelihood of a body injury

Risk Details

Impact	Risk	Financial Risk
Safety	9	
Environmental	2	
Purchasing	10	
Overall Risk	8.38	

Safety

Assign Dimensions Remove Edit

Dimension	Question Text	Axis	Answer	Scale / Answer Options
S: Likelihood of a body injury DM.PM.14	What is the likelihood of a body injury?	1 - X	SC.PM.6	6
S: Explosion hazard DM.PM.11	What is the class of the explosion hazard?	2 - Y	SC.PM.7	6

Purchasing

Assign Dimensions Remove Edit

Dimension	Question Text	Axis	Answer	Scale / Answer Options
P: External Services cost DM.PM.15	What is the cost of external services?	1 - X	SC.PM.8	5
P: Spare parts purchase cost DM.PM.12	What is the spare parts purchase cost?	2 - Y	SC.PM.8	5

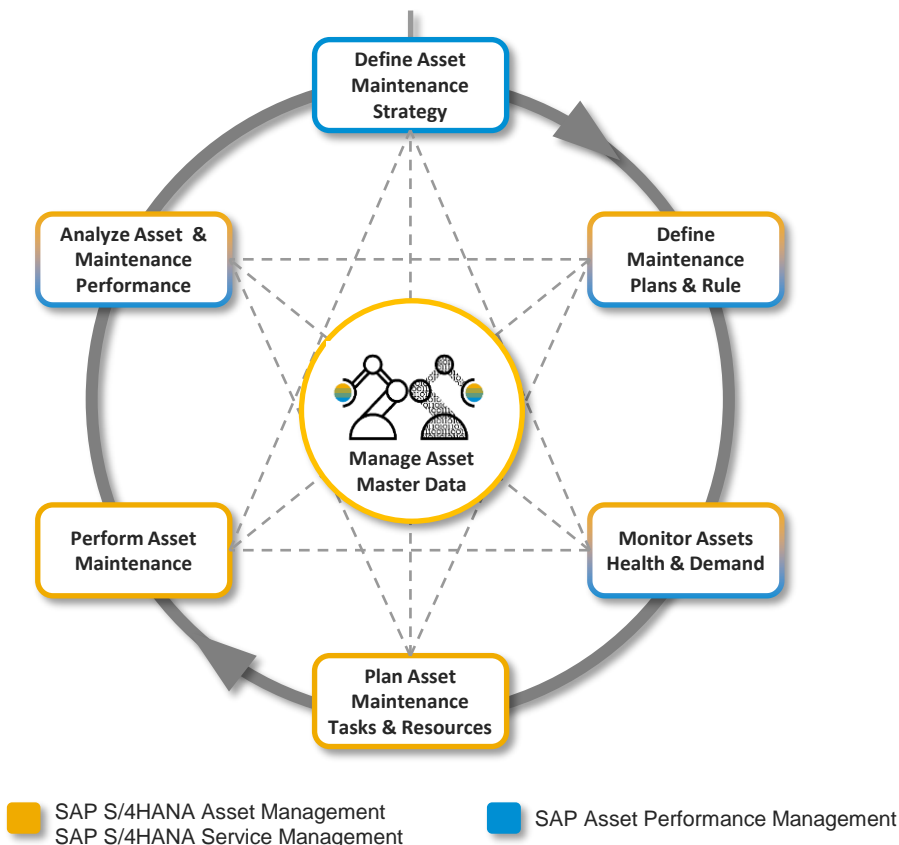
Environmental

Assign Dimensions Remove Edit

Dimension	Question Text	Axis	Answer	Scale / Answer Options
E: Pollution risk DM.PM.16	What is the pollution risk?	1 - X	SC.PM.6	6
E: Air pollution level DM.PM.13	What is the level of the possible air pollution?	2 - Y	SC.PM.9	6

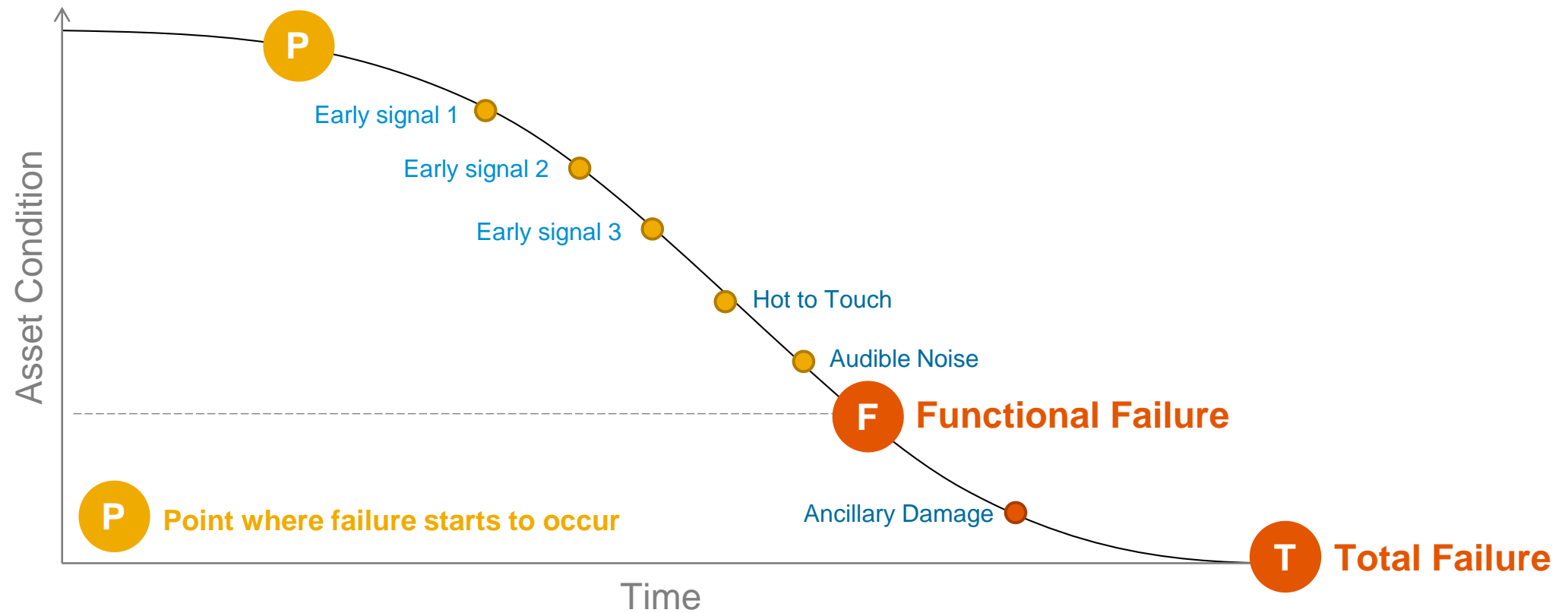
Intelligent Asset Management with SAP: Converging Strategy & Execution

Seamlessly extend **Enterprise Asset Management** with **Asset Performance Management** along end-to-end processes to close the loop between maintenance strategy and execution to **define, implement, execute and monitor the optimal asset maintenance**.

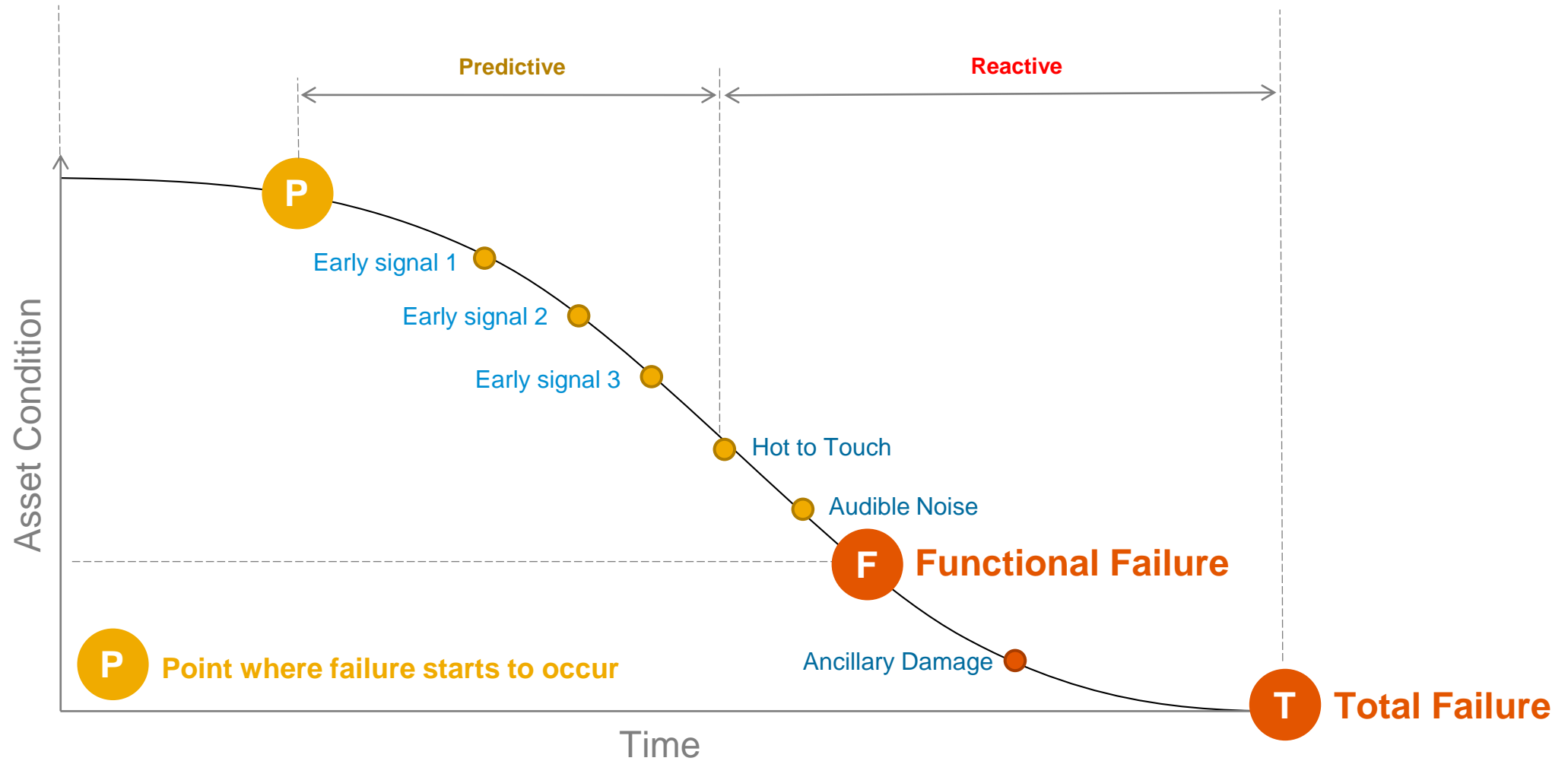


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PF Curve as a starting point for Proactive Maintenance

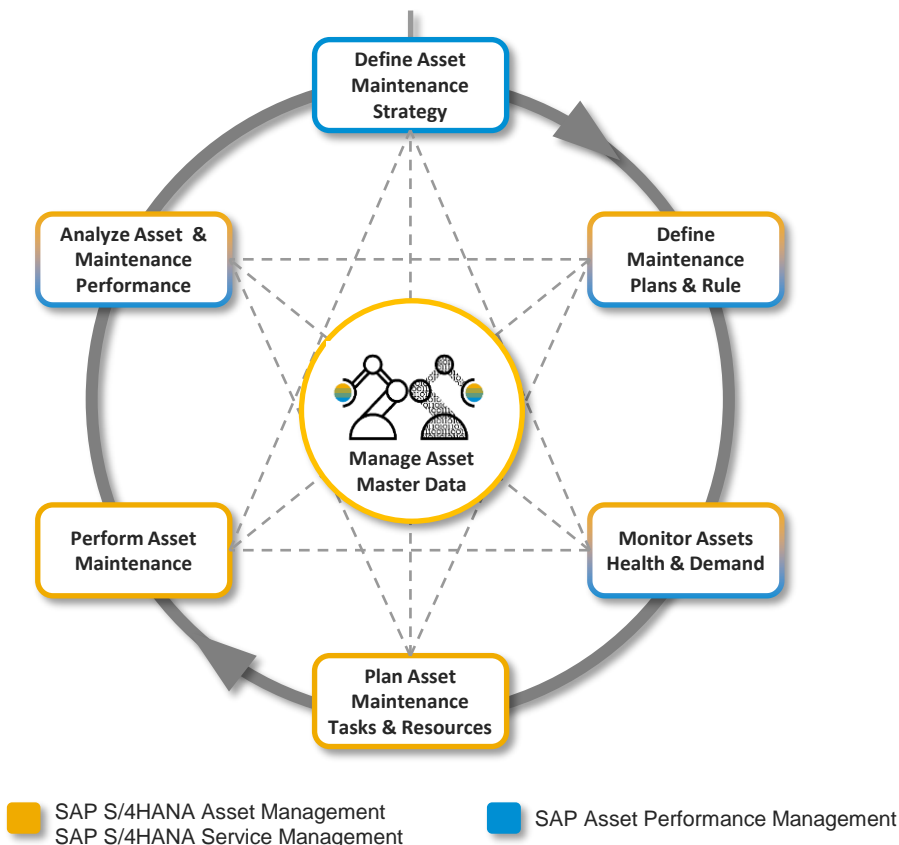


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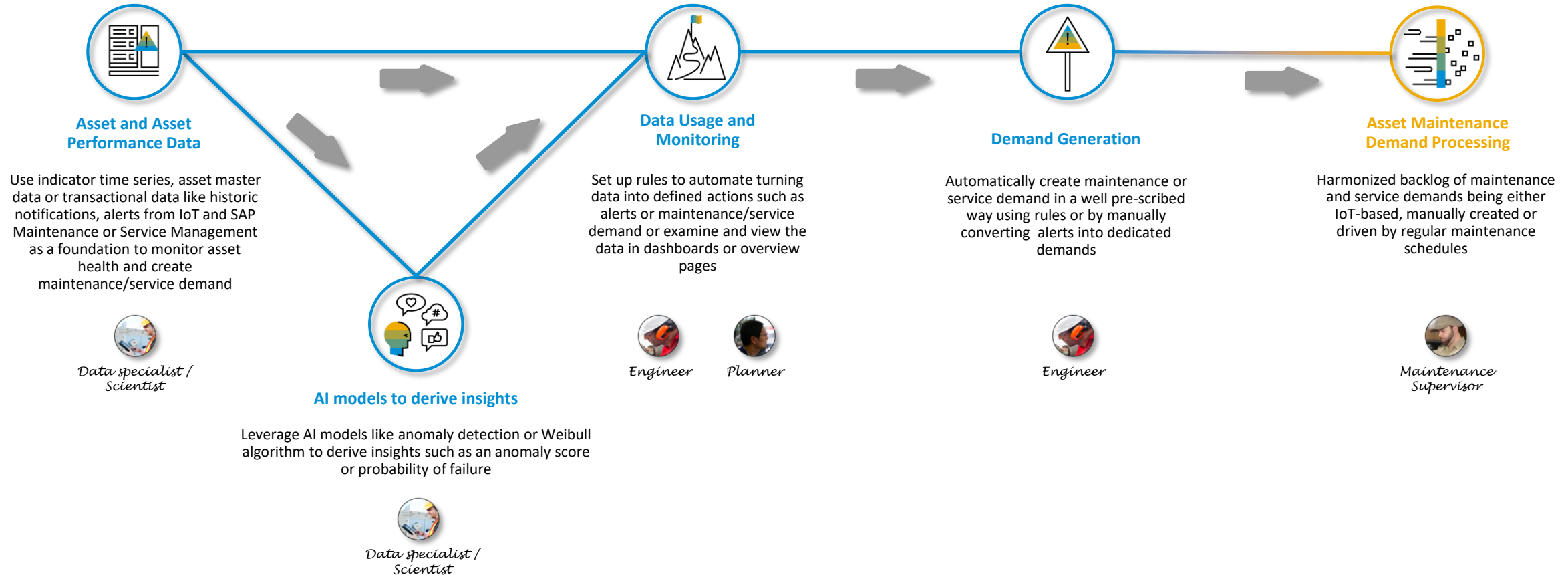
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SAP Asset Performance Management

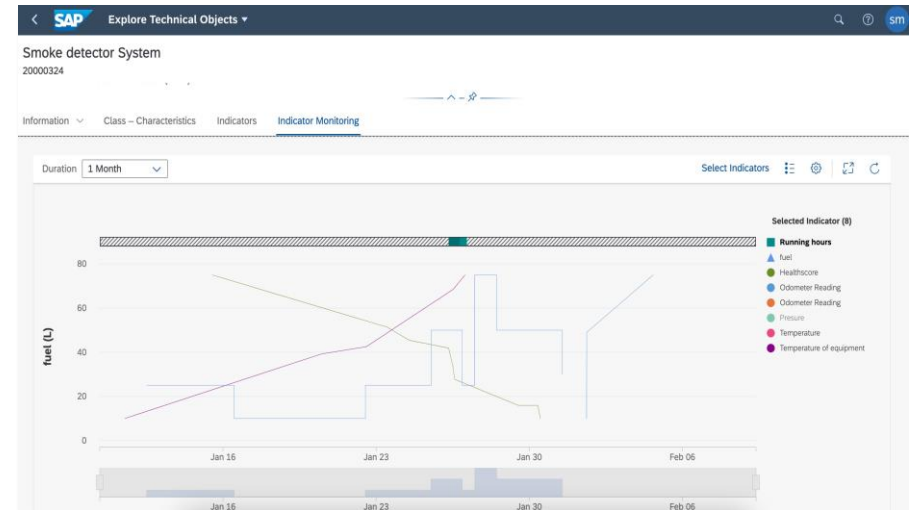
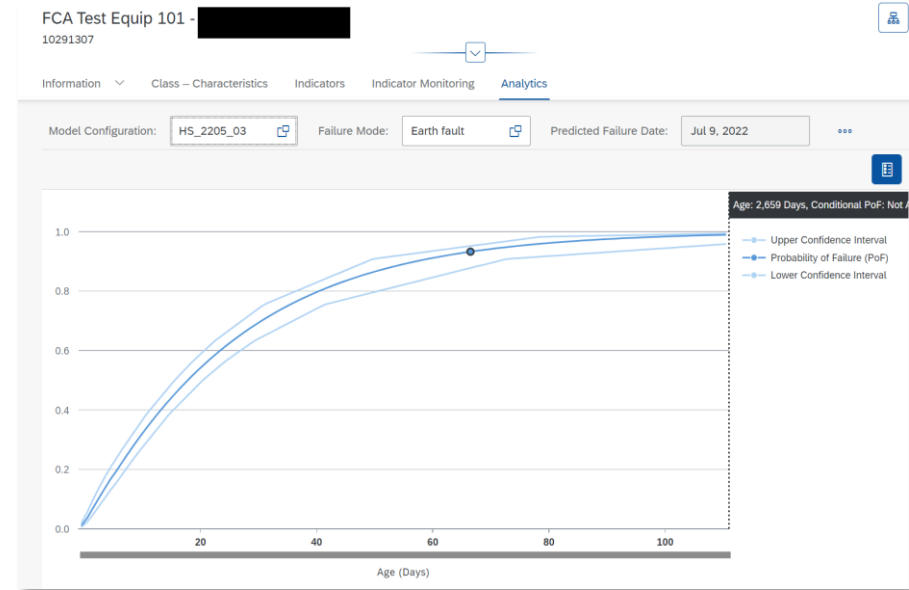
Monitor Asset Health and Trigger Maintenance Demand



SAP Asset Performance Management

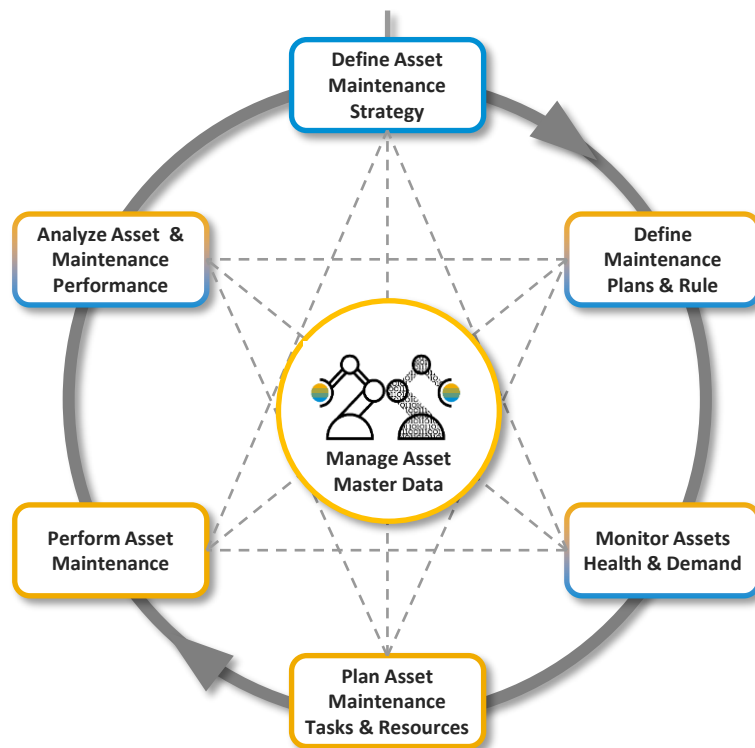
Monitor Asset Health and Trigger Maintenance Demand


- Out of the box re-use of **aligned asset master data** including measuring points, counters and characteristics between APM and EAM
- Set up **indicators for your assets** and configure thresholds and value ranges
- Use **out of the box AI models like anomaly detection or Weibull algorithm** to process raw data
- Derive data like **anomaly score or probability of failure**
- Create rules of **different types** (calculated rules, scheduled rules, hierarchical aggregation rules, triggered rules, streaming rules) using **operators** for a set or individual technical objects
- Use rule outputs to **create notification** with assigned task lists or alerts and emails




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 SAP S/4HANA Asset Management
SAP S/4HANA Service Management

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SAP S/4HANA Asset Management for resource scheduling

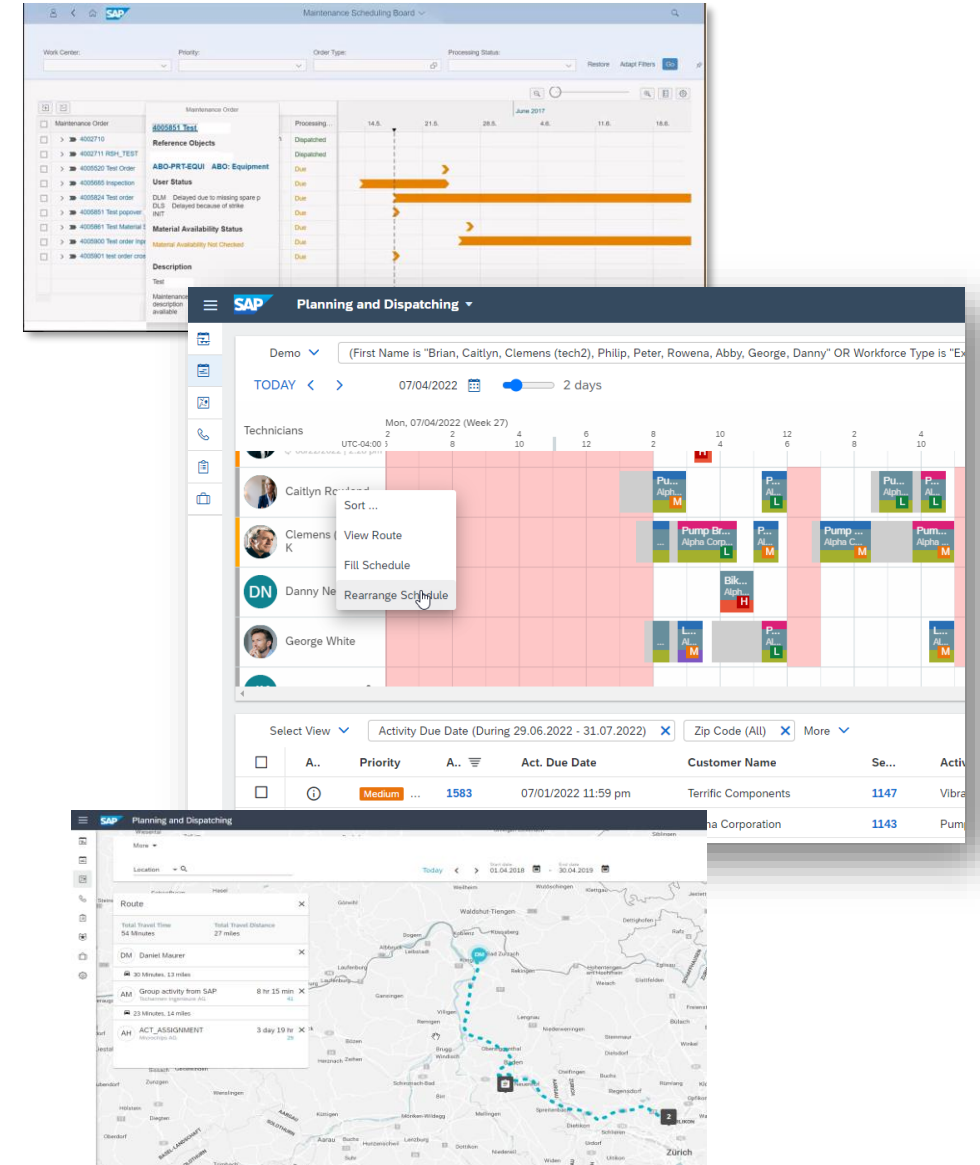
SAP Field Service Management

These solutions extend the S/4HANA digital core to the planning, scheduling and dispatching of maintenance and service technicians:

- Rough-cut scheduling of work for work centers and time buckets, eg weeks
- Detailed scheduling, dispatching and optimization of individual technicians and crews for day, hour and location

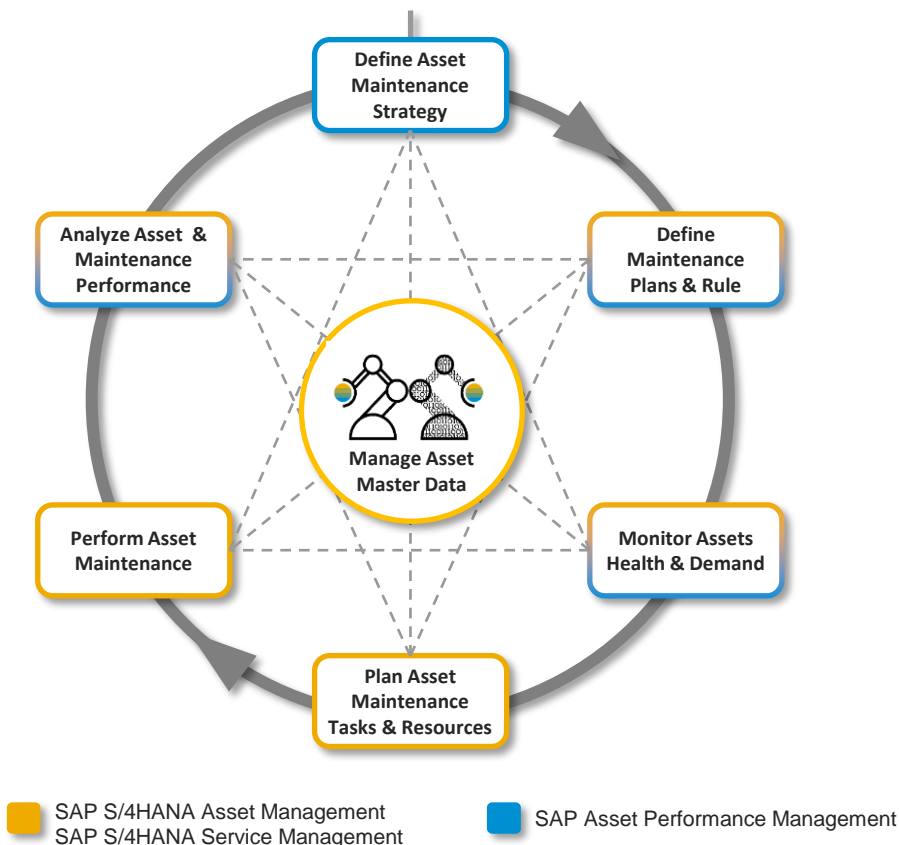
Key Capabilities

- Monitor and analyze maintenance workload
- Build weekly schedules considering “versions” and “simulations”
- Identify capacity bottlenecks of maintenance work centers
- Consider operations and maintenance plans
- Gain insights with graphical representation, list views and operations on timelines
- AI based planning and dispatching of individual resources, teams, crews and external workforce
- Track schedule attainment
- Extensibility for customer-specific and partner extensions



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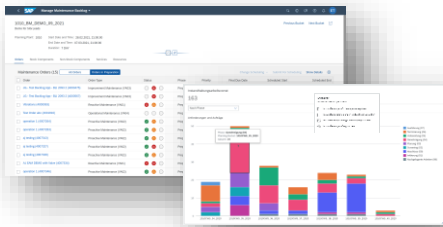


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S/4HANA Asset Management

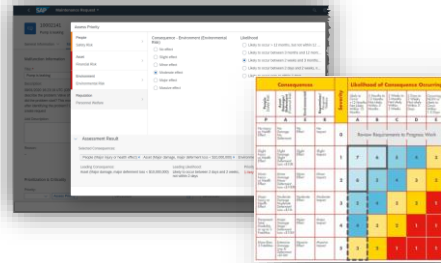
Selected New Innovations

Planning Buckets



Define recurring planning buckets and manage the maintenance backlog

Prioritization Matrix



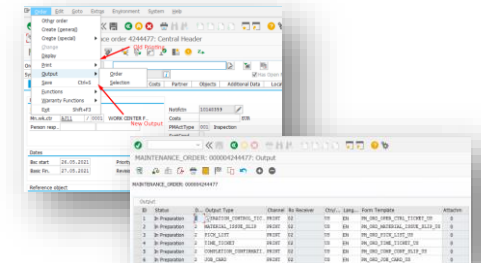
Assess the priority and final due date of a Maintenance Request

Inspection Checklists



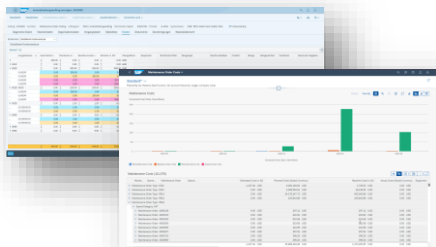
Manage Checklists and Perform inspections and checks of assets

Output Management



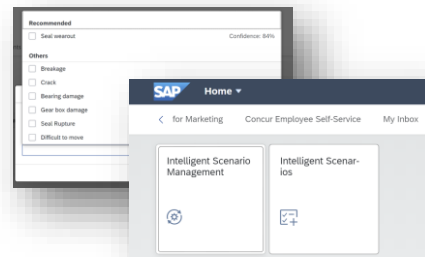
Manage output for notifications, order and job packages

Order Costs Analysis



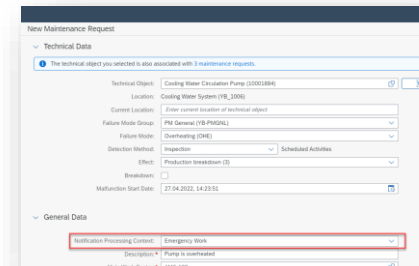
Monitor and evaluate estimated-, baseline-, planned- and actual costs

Smart Recommendations



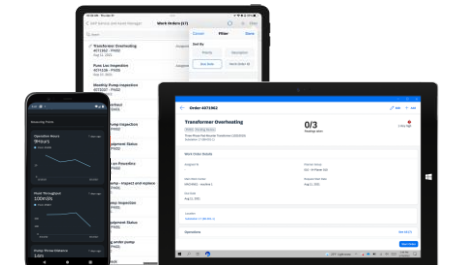
Machine Learning algorithms to propose damage code and object part

Emergency Work



Skip several phases of the Reactive Maintenance E2E Process

Mobile

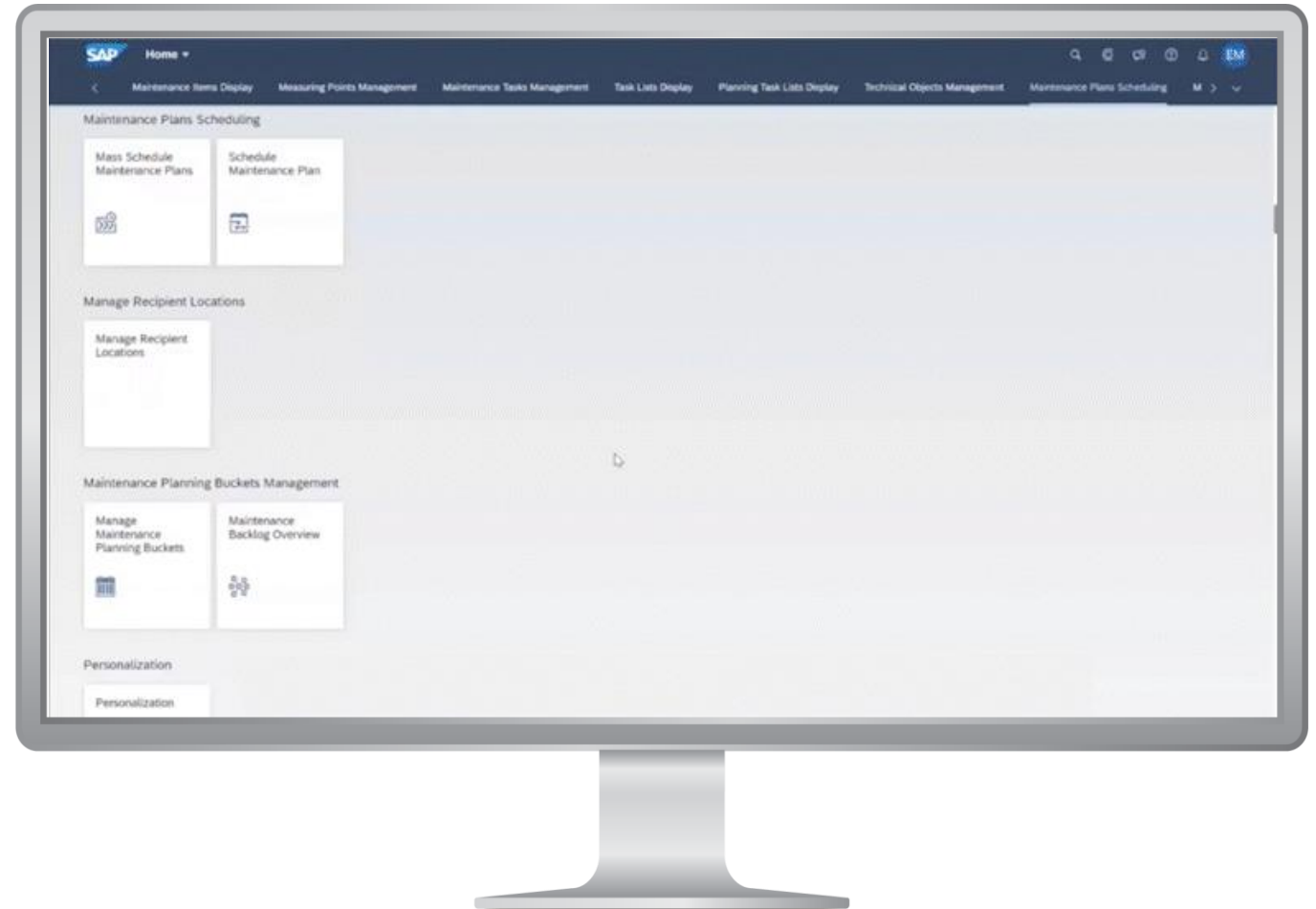


One mobile solution for maintenance and service technicians

Maintenance Management in SAP S/4HANA Asset Management

App: Maintenance Backlog Overview

Define recurring planning buckets and manage the maintenance backlog

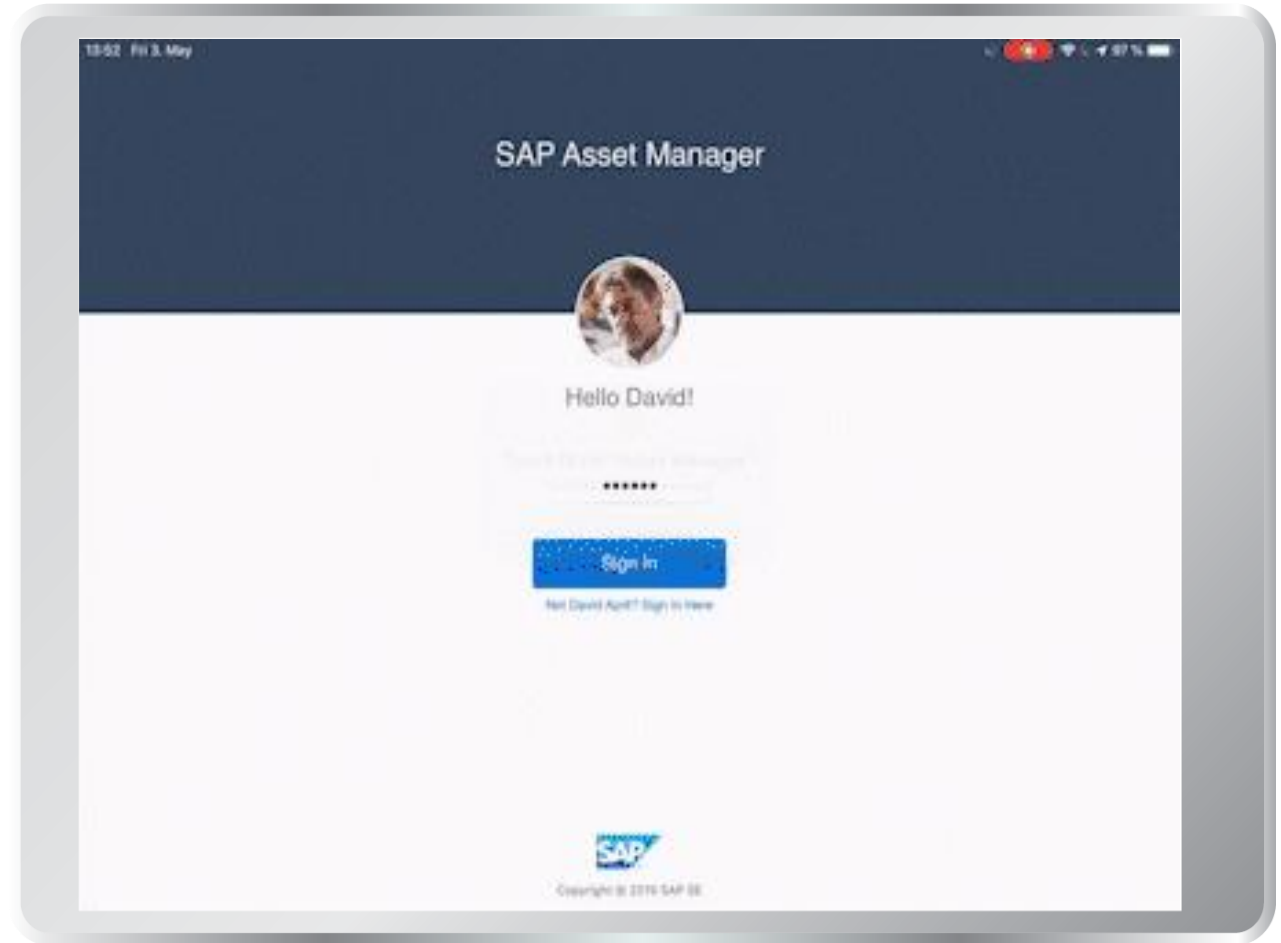


Mobile Asset and Service Management

SAP Service and Asset Manager

Enables easy and timely execution of end-to-end service and asset management on the go

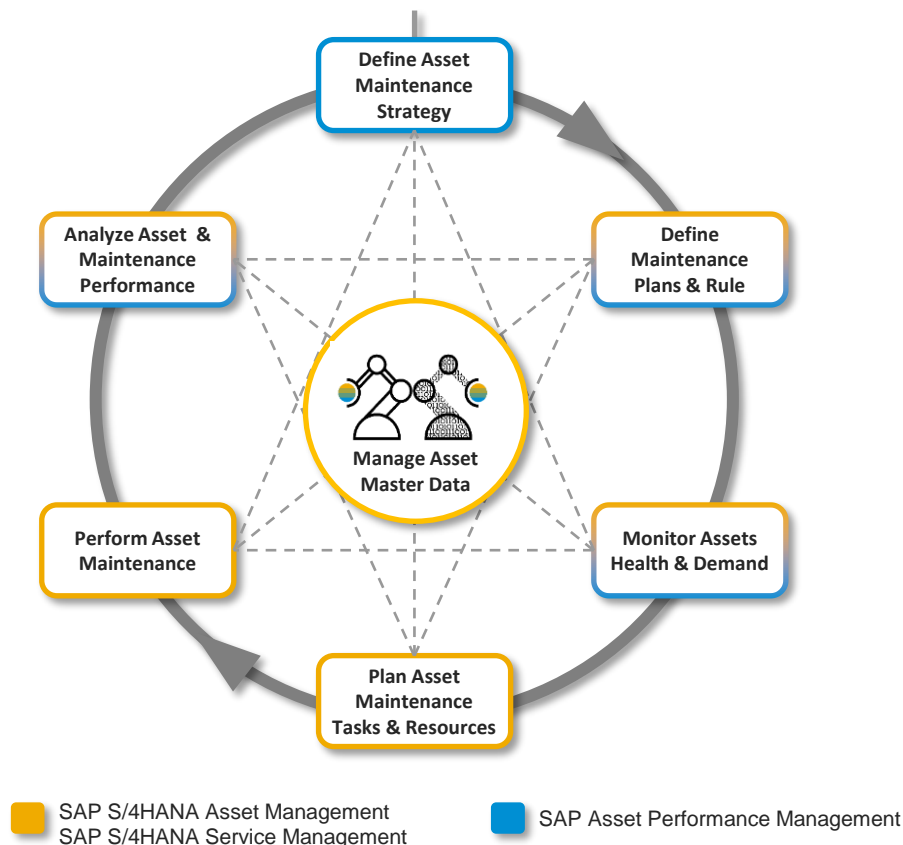
- Management of work orders and notifications, time, measurement readings and attachments
- Integration with geographic information systems with context-rich visualization and actionable insights
- Enabling repair work by providing operations and management of parts and tools
- Persona specific UX for Maintenance Technicians, Inventory Clerks and Service Technicians
- Native integration with SAP S/4HANA On premise, S/4HANA Private Cloud Edition, S/4HANA Public Cloud* and SAP ECC



**SAP Maintenance Assistant is offered for S/4HANA Public Cloud*

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Analyze Asset & Maintenance Performance

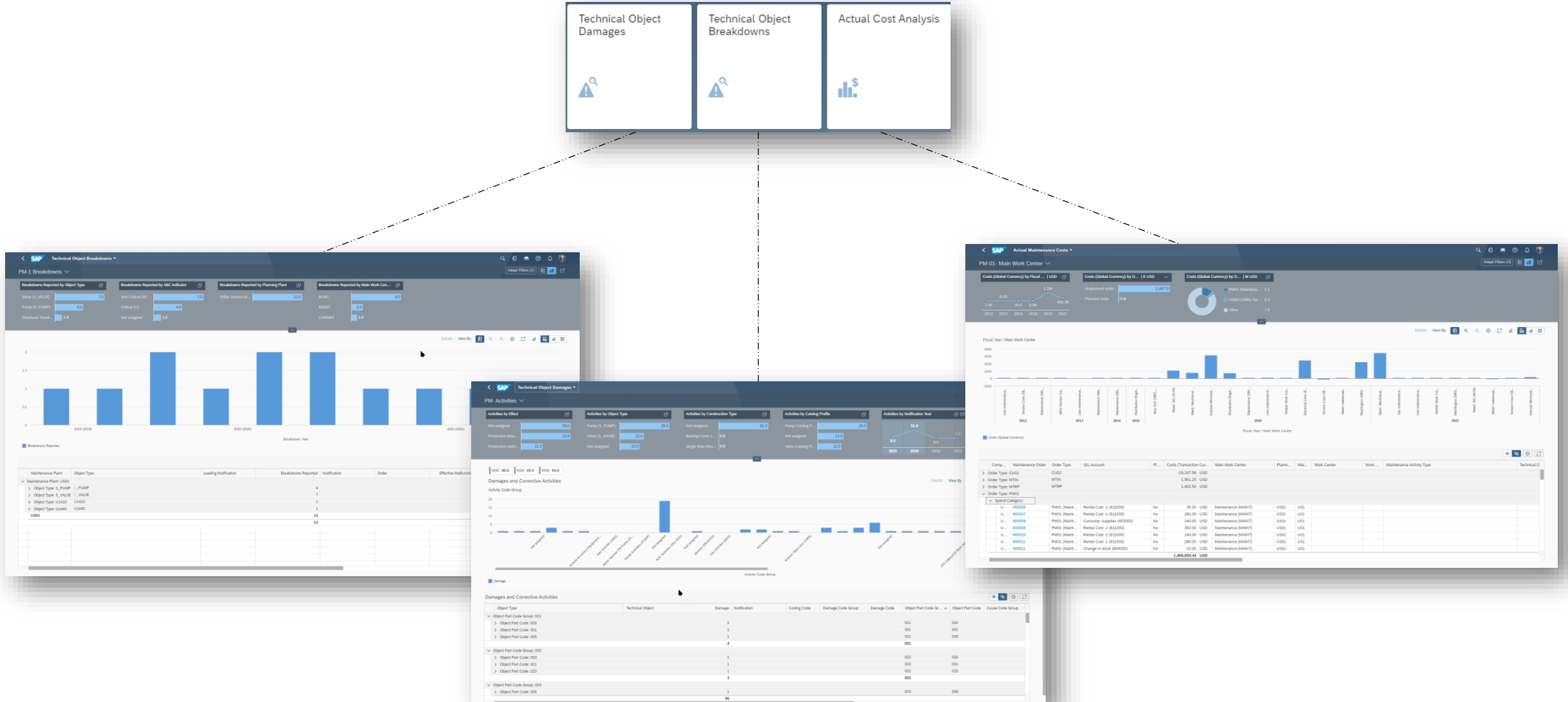
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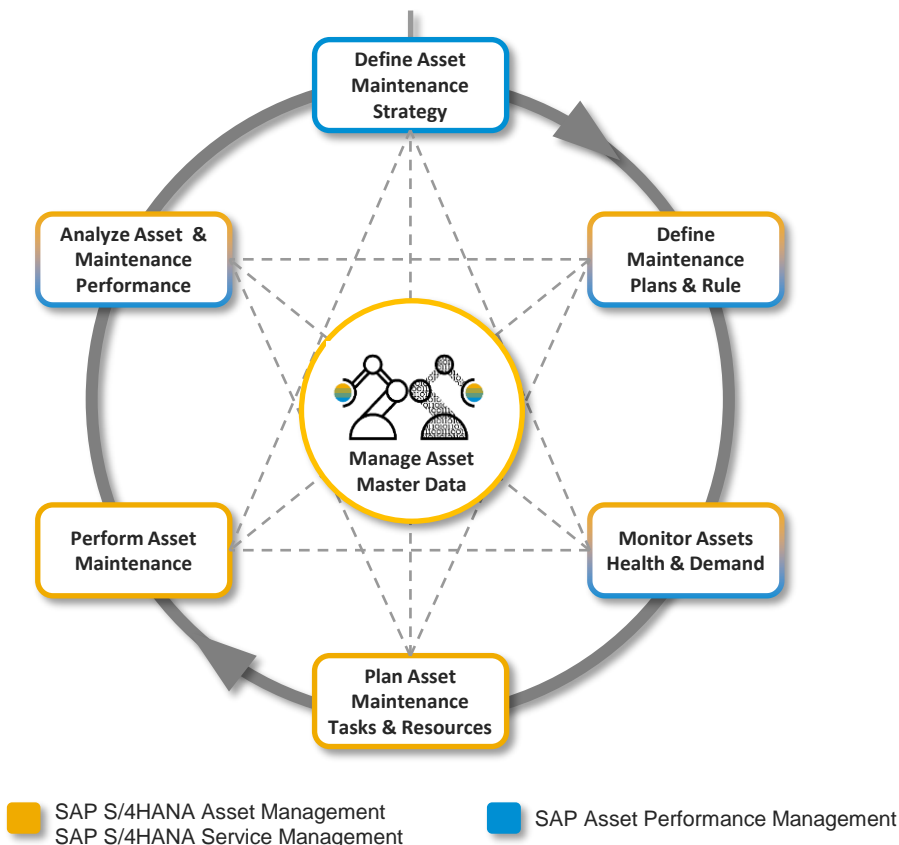
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Analyze maintenance performance – identify areas for improvement



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Q&A



How to Connect with Me

Dieter.Haesslein@sap.com