

Intelligent Asset Management

SBN Asset Management Day

Dirk Kempf, May, 25th 2021

Intelligent Asset Management with SAP

Maximize Return on Assets:

Highest Asset Availability - Resilient and Safe Operations - Reduced Costs

- **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.



SAP Intelligent Asset Management

Capabilities & Solutions



Maintenance Management (aka “PM”)

Plan, schedule and execute maintenance activities to ensure optimal operations



Asset Health Prediction and Optimization

Bring together information from operational and business systems using IoT to predict and simulate asset failure



Asset Strategy and Performance

Drive smarter decisions, improve reliability, and optimize maintenance strategies



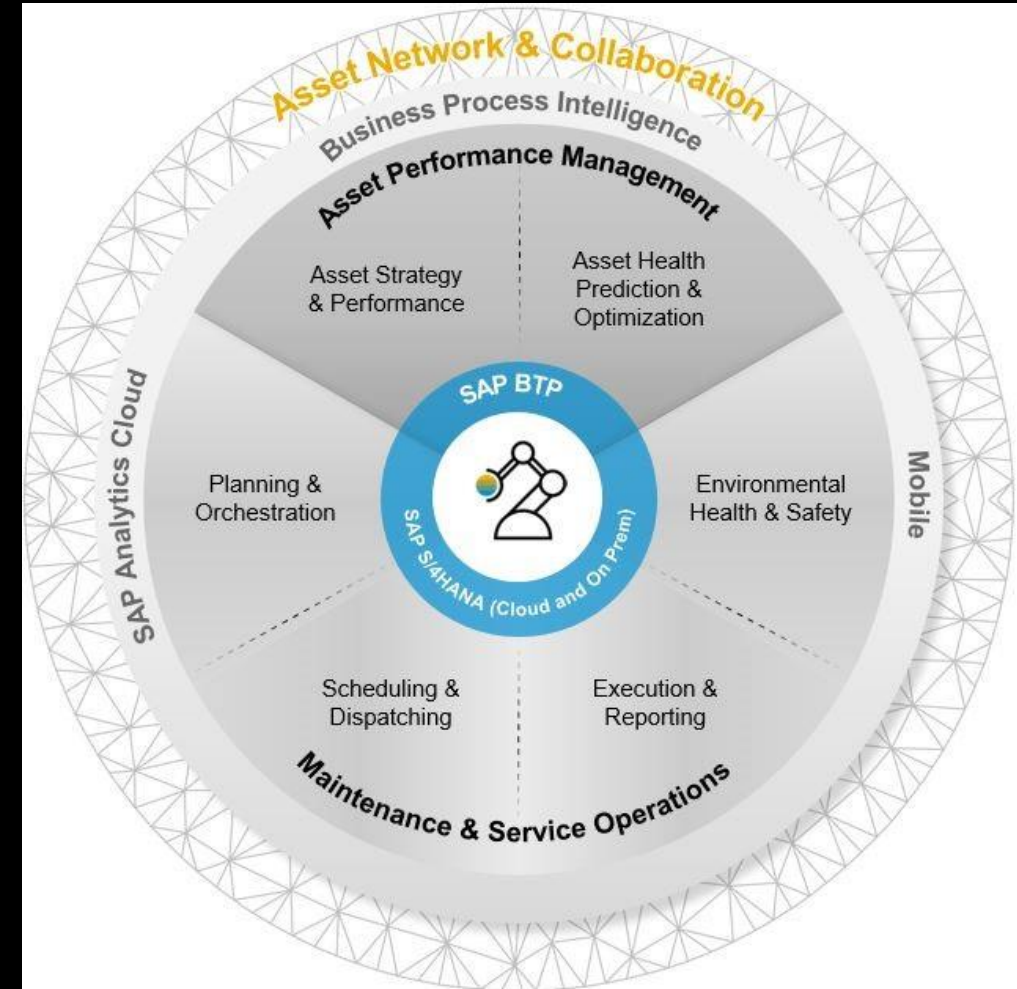
Asset Network and Collaboration

Share asset information, access one version of the truth, and collaborate on a cloud-based business network



Mobile Asset Management

Leverage mobile technologies to enable new asset management business processes anywhere and anytime

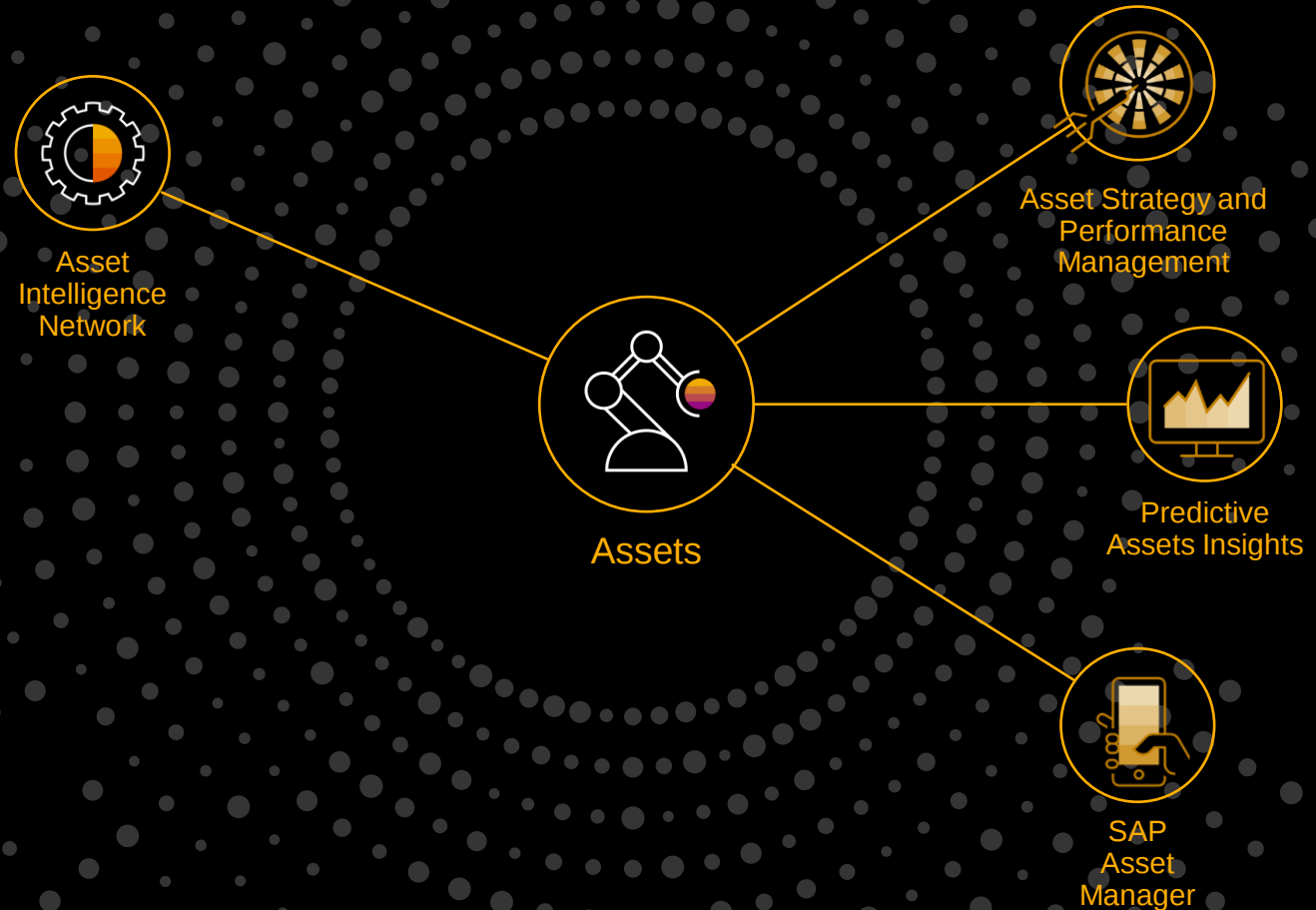


Intelligent Asset Management **Solutions**

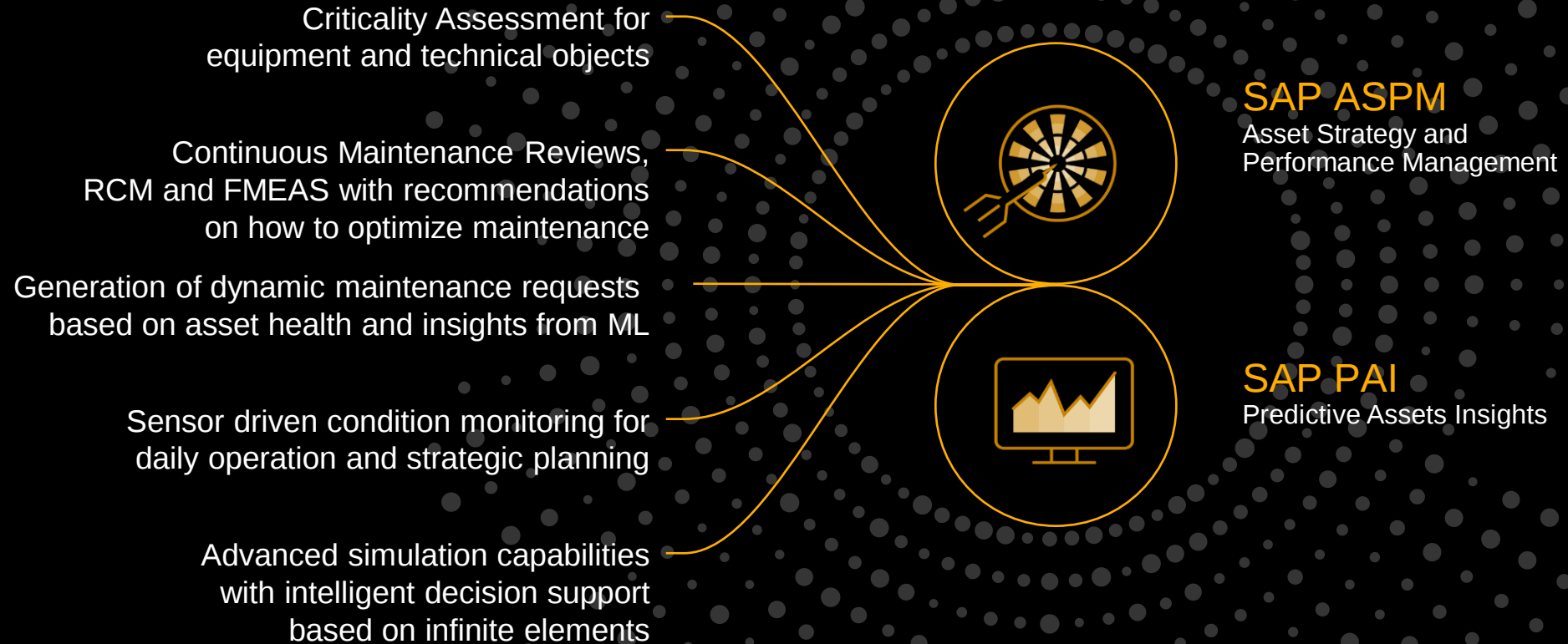
S/4HANA is the Digital Core and manages the asset master data embedded in core applications from procurement, finance, project management, HR etc. across the entire Asset Lifecycle

SAP BTP is the Business Technology Platform in the Cloud enabling for example IoT connectivity with complementary applications and collaborative scenarios

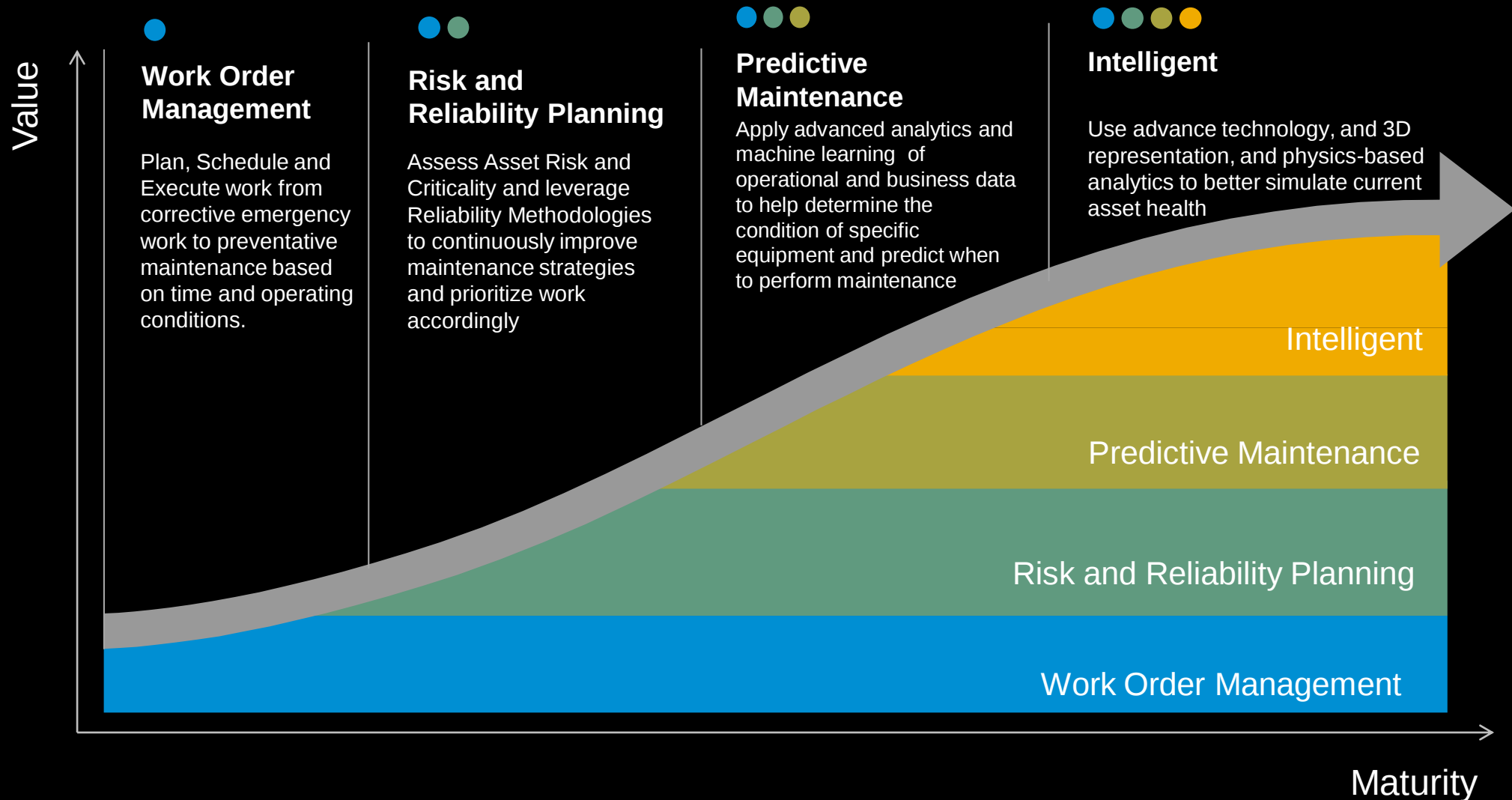
SAP Asset Manager is the native mobile App for technicians and mobile workforce



Asset Performance Management



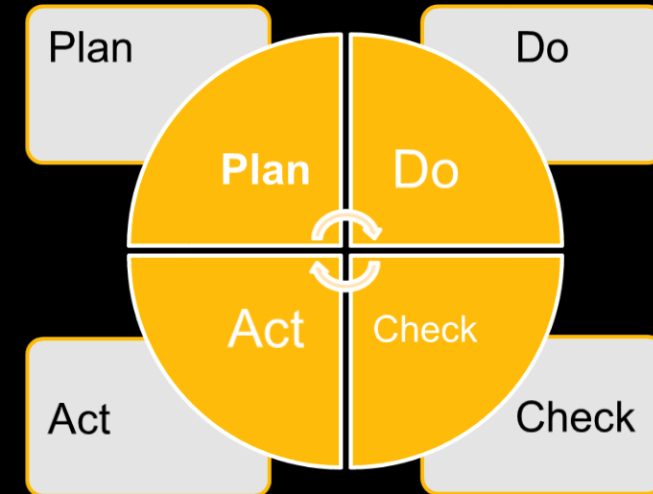
Digital Transformation of Enterprise Asset Management



Strategy of Asset Management going forward

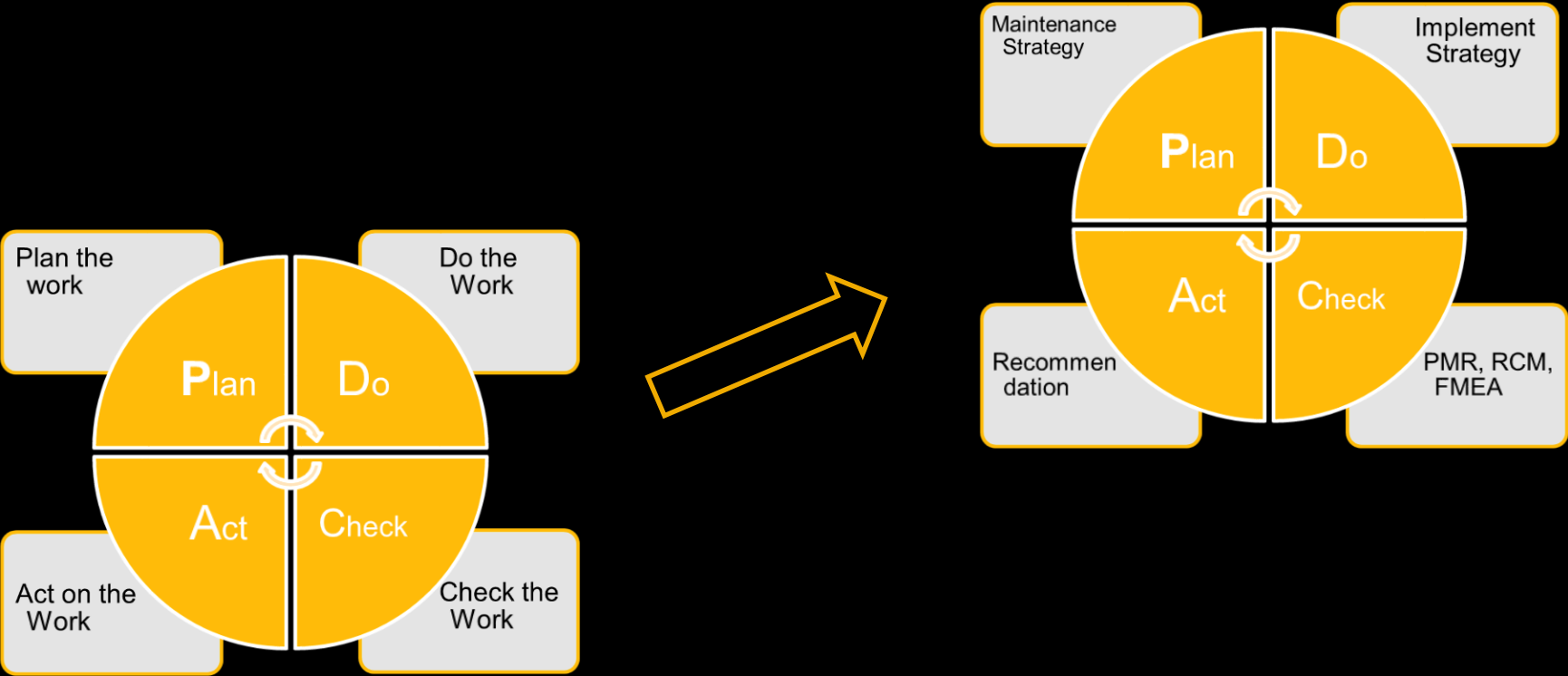
Closing the loops

- From Sensor to Technician
- From Asset Strategy to Maintenance Execution
- From S/4HANA to BTP



Asset Performance Management and Maintenance Management

Continuous Improvement on operational and strategic Level



Asset Performance Management and Maintenance Management

Converge Maintenance Strategy and Execution



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 Business Process activities (round boxes) with respective Business Capabilities

SAP Intelligent Asset Management

Predictive Asset Insights

Decision Support for Asset Management & Reliability Professionals

A 360 Degree
View of Assets



A comprehensive view across asset model, master, transactional and performance data

Advanced Analytics for
Decision Support



Advanced analytics to support maintenance execution and strategy decisions

Intuitive and Scalable
Machine Learning



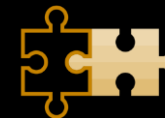
Machine learning for maintenance professionals...
“machine learning for the masses”

Simulation-based Digital
Twins



Feed IoT data into system level engineering models to simulate and predict operational performance

Business Process
Integration



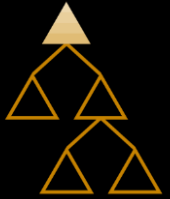
Part of a comprehensive asset management portfolio

What's new in PAI 2105



Transformer health analysis

- Gain insights into the health status of transformers using dissolved gas analysis and Duval triangles
- Monitor health for a single transformers or for a fleet of transformers



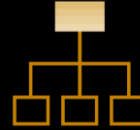
Health monitoring for functional locations

- Display top functional locations in the Map analysis tool and compare time-series data of multiple functional locations.
- View the alerts and threshold related to a functional location.
- Display indicator charts on the alert page for functional location alert.



Integration to multiple ERP systems

- Integrate with multiple SAP ERP/ SAP S/4 HANA systems with the same subaccount
- Synchronize and replicate data between PAI and all ERP systems at the same time.



Support for org units

- Filter pieces of equipment and alerts by planning plant, planner group and maintenance plant in the corresponding list views
- Org units are part of the equipment sync between PAI and the ERP system



Enhanced explanations of alerts

- Display violated and related indicators on the alerts page
- Display violated and related indicators in initial load of the Indicator Chart
- Include violated and related indicators in the e-mail generated from rules



Preview landscape

- Explore and test the new functionalities of SAP Predictive Asset Insights before the official release date.



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Manage



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INFORMATION ▾

STRUCTURE & PARTS ▾

DOCUMENTATION ▾

MONITORING ▾

MAINTENANCE & SERVICE ▾

ASSESSMENT ▾

ANALYTICS ▾

TIMELINE

Transformer Health

Dissolved Gas Analysis

Duval Triangle 1 ▾



☐	Sample Date	Status	C2H6	CH4	C2H4	C2H2	H2	Duval Triangle 1	Duval Triangle 4	Duval Triangle 5
☒	May 3, 2021		48	59	62	98	144	D2	S	C
☒	May 2, 2021		167	26	171	184	116	D2	ND	T3
☐	May 2, 2021		10	139	183	121	37	DT	C	T3
☐	May 2, 2021		155	168	107	108	113	D2	S	ND
☐	May 1, 2021		36	120	108	174	74	D2	C	C
☐	May 1, 2021		32	160	126	84	92	D2	C	T3
☐	May 1, 2021		39	71	123	187	138	D2	S	C
☒	Apr 30, 2021		193	43	26	192	44	D1	ND	
☐	Apr 30, 2021		191	143	188	106	63	DT	ND	T3
☐	Apr 30, 2021		99	118	102	180	42	D2	S	ND
☒	Apr 29, 2021		24	173	4	58	47	D1	C	

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ASSESSMENT ▾

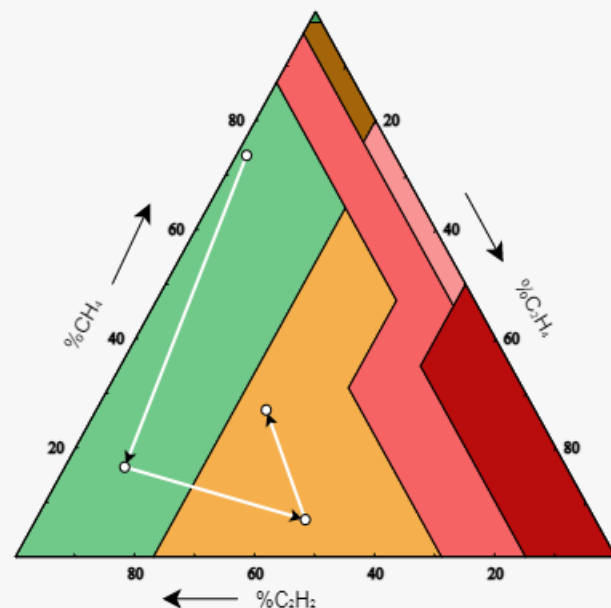
ANALYTICS ▾

TIMELINE

Transformer Health

Dissolved Gas Analysis

Duval Triangle 1 ▾



- D1: Low energy discharges
- D2: High energy discharges
- T2: Thermal faults of 300°C to 700°C
- T3: Thermal faults > 700°C
- PD: Corona partial discharge
- T1: Thermal faults < 300°C
- DT: Thermal and electrical faults

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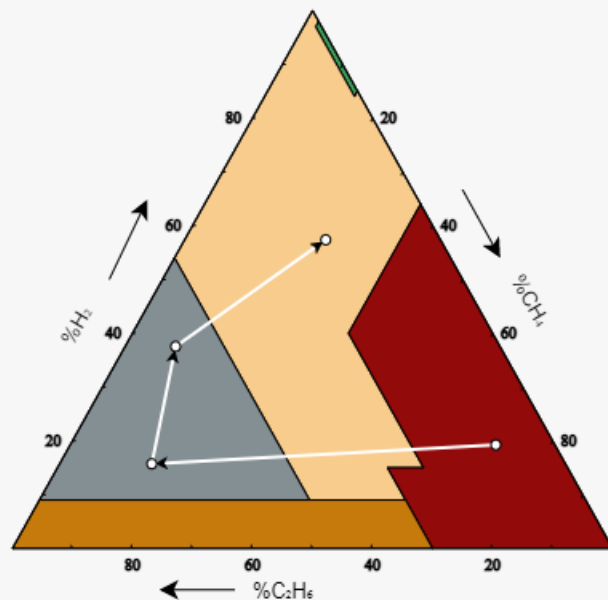
ANALYTICS ▾

TIMELINE

Transformer Health

Dissolved Gas Analysis

Duval Triangle 4 ▾



C: Thermal faults T3-C, T2-C, and T1-C, with carbonization of paper

O: Overheating < 250°C

S: Stray gassing of mineral oil

PD: Corona partial discharge

ND: Not determined

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Manage    

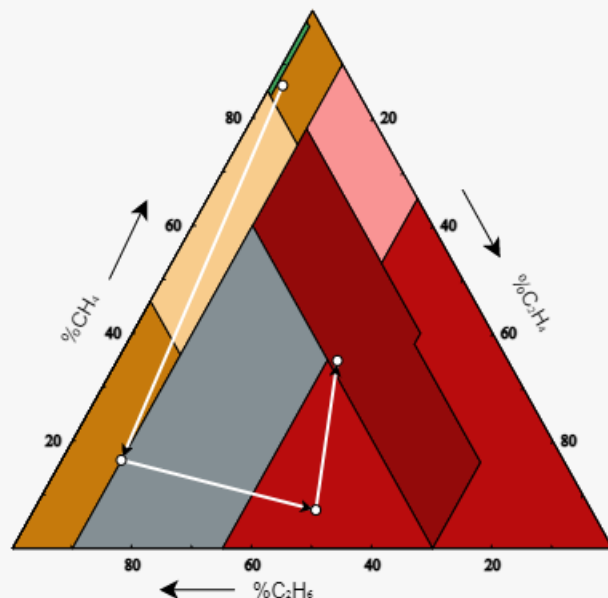
INFORMATION ▾ STRUCTURE & PARTS ▾ DOCUMENTATION ▾ MONITORING ▾ MAINTENANCE & SERVICE ▾ ASSESSMENT ▾ ANALYTICS ▾ TIMELINE

Transformer Health

Dissolved Gas Analysis

Duval Triangle 5 ▾



-  T2: Thermal faults of 300°C to 700°C
-  T3: Thermal faults > 700°C
-  C: Thermal faults T3-C, T2-C, and T1-C, with carbonization of paper
-  O: Overheating < 250°C
-  S: Stray gassing of mineral oil
-  PD: Corona partial discharge
-  ND: Not determined

What's new in ASPM 2105



Enhanced assessments

- On choosing a scale, view long description in matrix view of questions and answers when choosing a scale in a risk & criticality assessment.
- View scale/answer option in list view of questions and answers when choosing the info button in a risk & criticality assessment.
- Upload and preview multiple attachments, like documents and images, specific to the RCM assessment scope description.



Integration to multiple ERP systems

- Integrate with multiple SAP ERP/ SAP S/4 HANA systems with the same subaccount
- Synchronize and replicate data between ASPM and all ERP systems at the same time.



Failure data handling

- View, assign, or remove functions assigned to a piece of equipment, model, location, and system under the functions section of the corresponding object pages.
- Assign and remove spare parts to a failure mode instance of a piece of equipment, model, and system.



Preview landscape

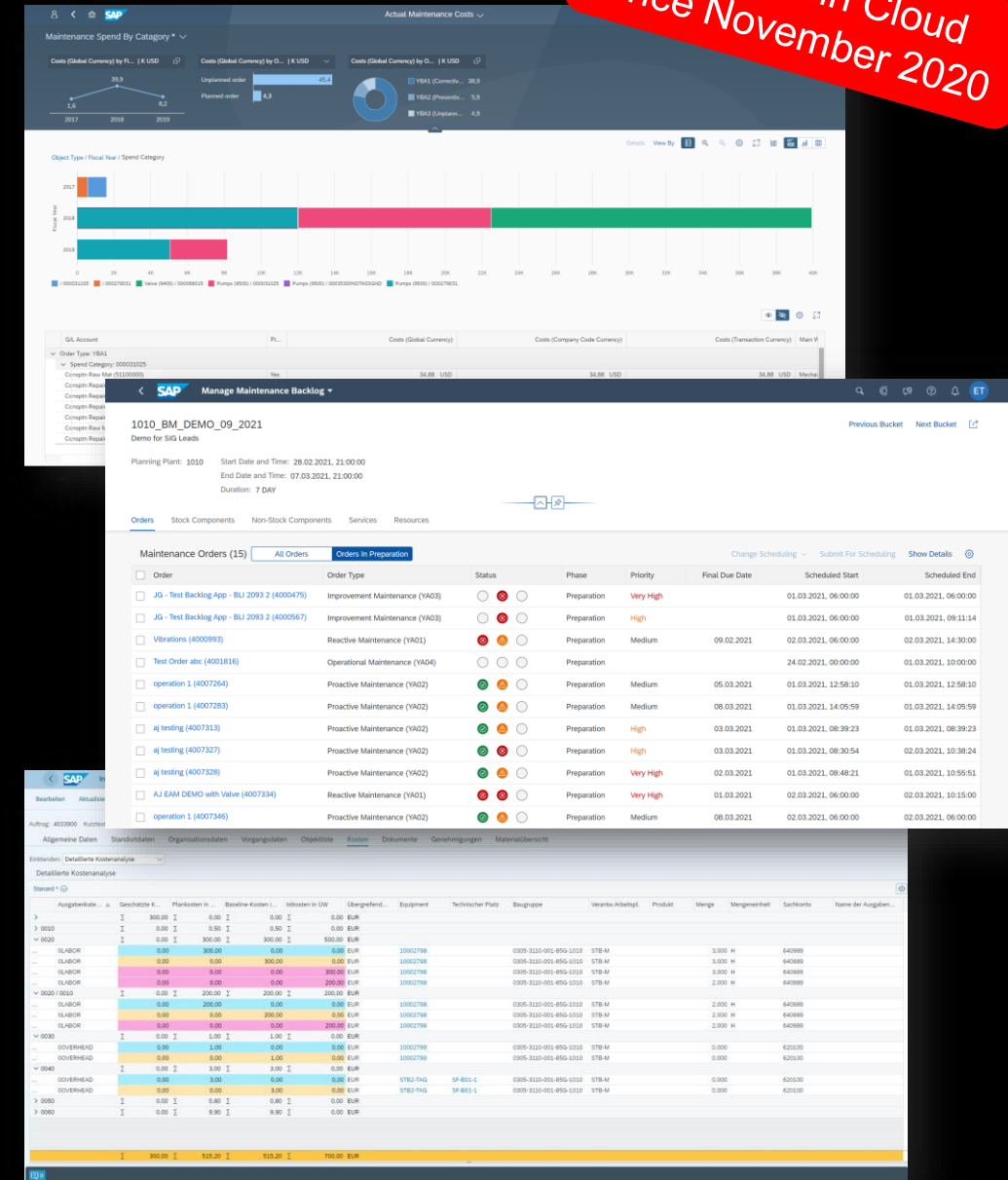
- Explore and test the new functionalities of ASPM before the official release date.

S/4HANA - Maintenance Management

„Best Practice“ Selected new features

- New standard user role: **Supervisor**
- SAP Fiori Launchpad Home Pages for all Maintenance roles
- Convenient planning with Planning Buckets
- Easy management of Maintenance Backlog
- Out-of-the box app to analyze maintenance costs
- Improved process control via process phases

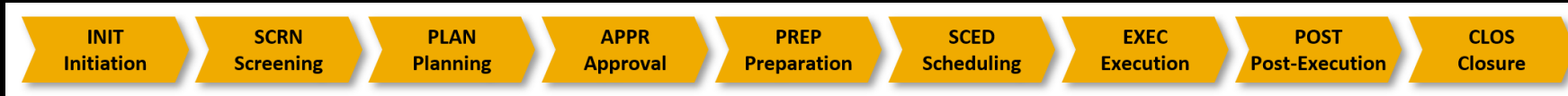
Available in Cloud
since November 2020



S/4HANA Maintenance Management

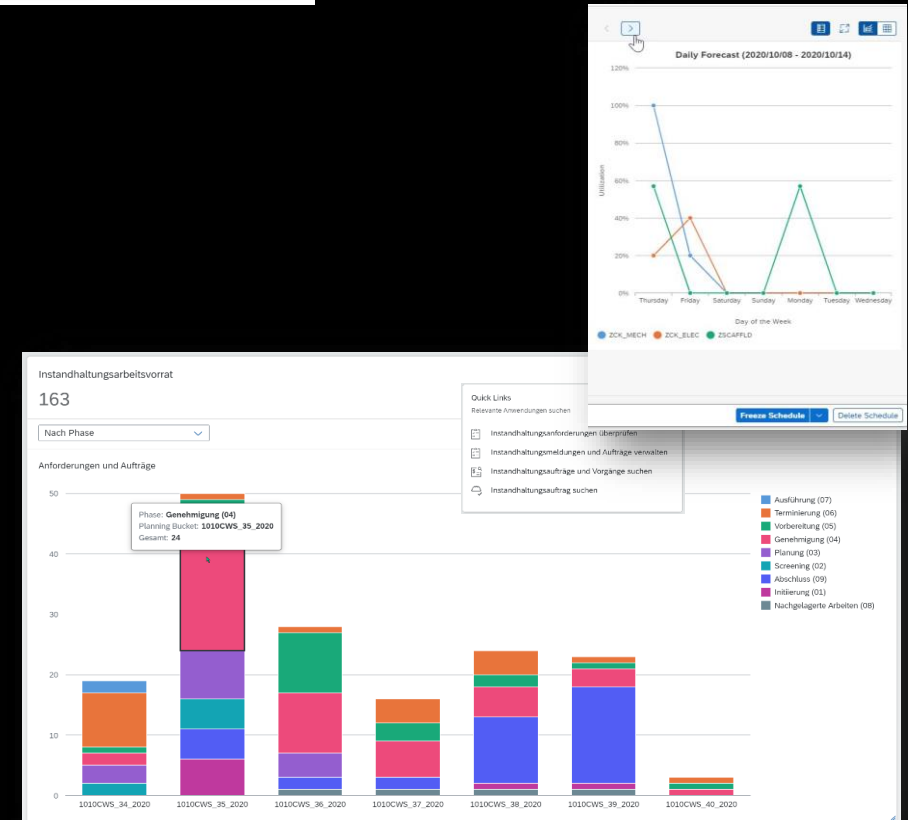
Best Practice with improved process control

Available in Cloud
since November 2020



Simplified processes with new Fiori Apps

- Create Maintenance Request
- My Maintenance Requests
- Screen Maintenance Requests
- Manage Maintenance Work (Work Requests & Orders)
- Prepare Maintenance Backlogs
- Manage Maintenance Planning Buckets
- Maintenance Backlog Overview
- Maintenance Job - My Job List
- Analyze Maintenance Costs

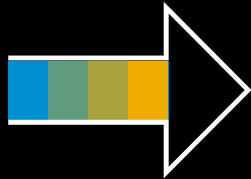


S/4HANA - Maintenance Management

Leverage Machine Learning (ML) Algorithms

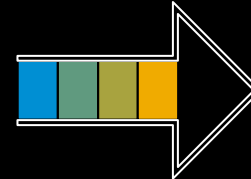
Pain Points

- Reporting Failure Data is time consuming
- Technicians do not want to spent too much time in SAP System
- Codes like “Other” and “N/A” are chosen too often
- Consistency and data quality are critical



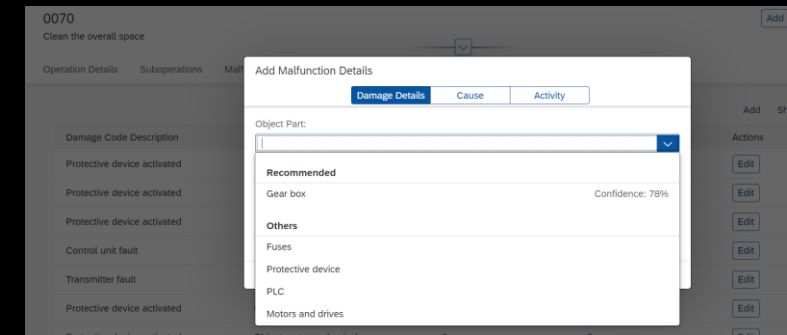
Information is Already Being Collected During the Maintenance Process

- Notes from the Requestor, Planner, and Technician are captured
- Spare parts ordered and issued from warehouse are documented
- Repair history for equipment already exists in the database



Propose Damage Codes and Object Part

- Use Machine Learning algorithms (RDT - Random Decision Tree) to propose the most likely damage code* and object part*



*sorted by confidence (%)

Release Planning

Planned Key Innovation for Asset Performance Management

2111 – Planned Q4/2021*



2202 – Planned Q1/2022*



2205 – Planned Q2/2022*



2208 – Planned Q3/2022*

Roadmap Map Explorer

Intelligent Asset Management with SAP

Maximize Return on Assets, Enable Resilient and Safe Operations, at Reduced Costs

Summary

- Connect assets with the help of **Industry 4.0** for real time insights, predictive and prescriptive maintenance
- Integrate **Strategy** and **Execution** to optimize asset performance and costs
- **Integrate** maintenance operations across the enterprise, removing **silos** in the company
- Ensure **safety** by embedding EHS into maintenance planning and operations
- **Empower maintenance technicians** with **mobile** access and **augmented reality** – anytime and anywhere
- Openness, see api@sap.com





Openess API@SAP.com

Thank you.





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