SAP Intelligent Asset Management (IAM)

SAP Asset Performance Management Overview

THE BEST RUN **SAP**

SAP Portfolio for Intelligent Asset Management and Field Service Management

Increase Asset Performance, Reduce Maintenance Costs and Deliver Service Excellence

Closed-Loop strategy, planning and execution processes to optimize **Asset Performance Management**
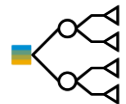
Synchronize maintenance and service across the **enterprise** for responsive customer care and supply chain **resilience**

Adopt new **collaborative** processes and 'products-as-a-service' business models across **Networks**
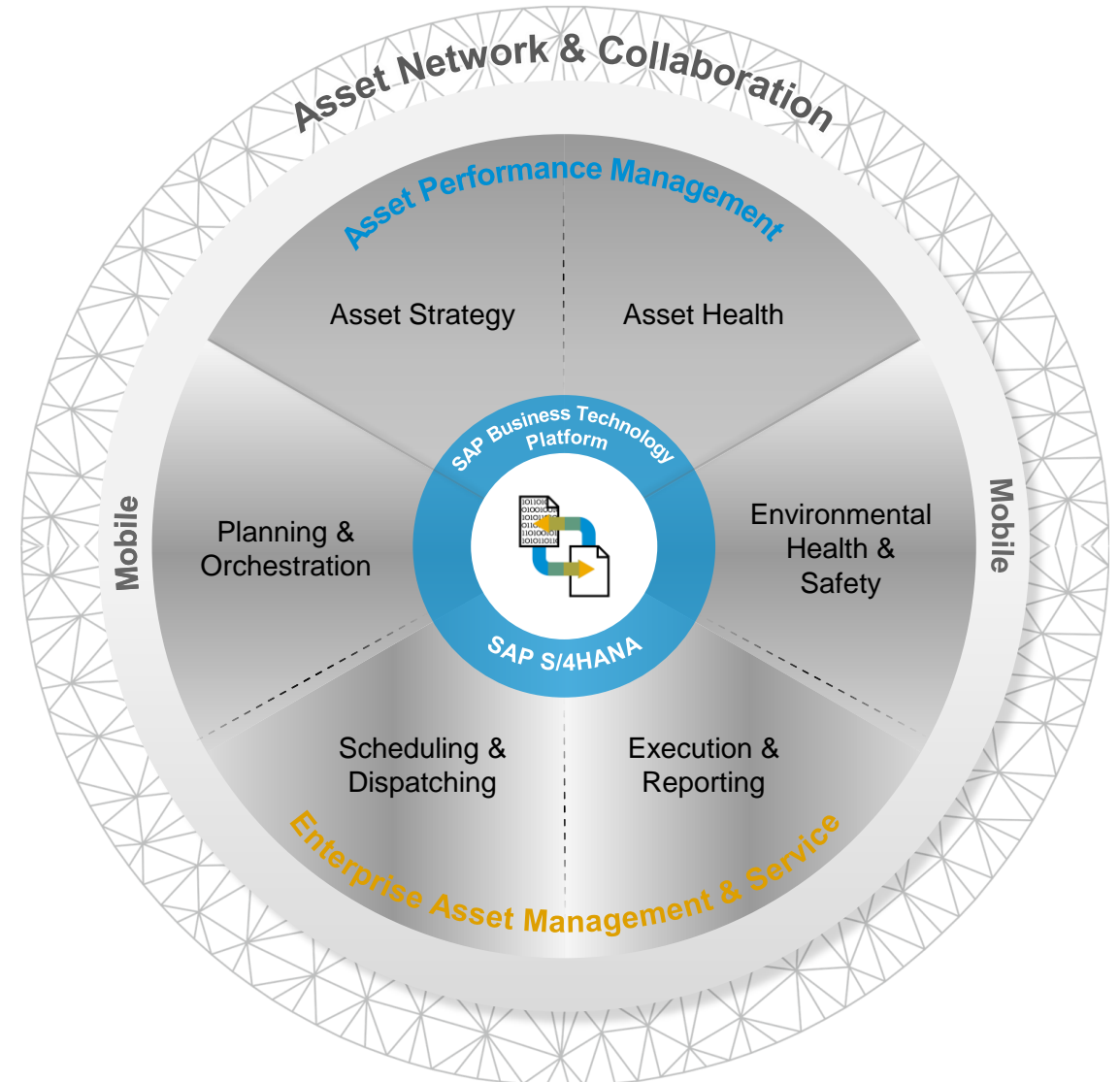
Manage asset health with **Industry4.0** for real time predictive maintenance and service
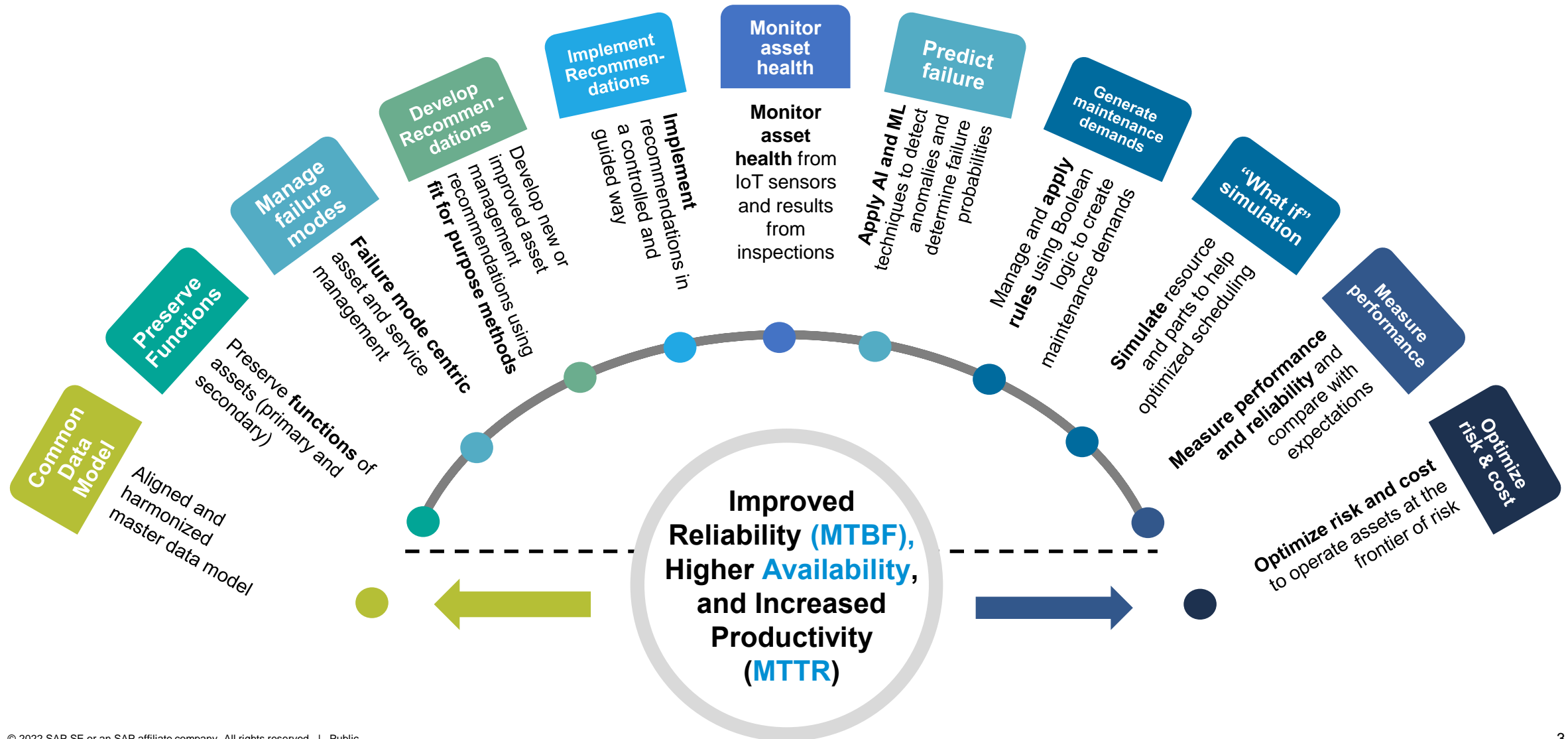
Optimize maintenance and service with **intelligent scheduling** and **crowd sourced** resource management

Empower users with **Mobile** asset intelligence, work automation and safe sustainable **EH&S** policies

Asset Network & Collaboration

Asset Performance Management

Asset Strategy

Asset Health

SAP Business Technology Platform

Mobile

Planning & Orchestration

Environmental Health & Safety

SAP S/4HANA

Mobile

Scheduling & Dispatching

Execution & Reporting

Enterprise Asset Management & Service

Asset Performance Management helps with…

Common Data Model — Aligned and harmonized master data model

Preserve Functions — Preserve **functions** of assets (primary and secondary)

Manage failure modes — **Failure mode centric** asset and service management

Develop Recommen-dations — Develop new or improved asset management recommendations using **fit for purpose methods**

Implement Recommen-dations — **Implement** recommendations in a controlled and guided way

Monitor asset health — **Monitor asset health** from IoT sensors and results from inspections

Predict failure — **Apply AI and ML** techniques to detect anomalies and determine failure probabilities

Generate maintenance demands — Manage and **apply rules** using Boolean logic to create maintenance demands

"What if" simulation — **Simulate** resource and parts to help optimized scheduling

Measure performance — **Measure performance and reliability** and compare with expectations

Optimize risk & cost — **Optimize risk and cost** to operate assets at the frontier of risk

Improved Reliability (MTBF), Higher Availability, and Increased Productivity (MTTR)

The Old Way

The Right Tasks
Asset Performance Management
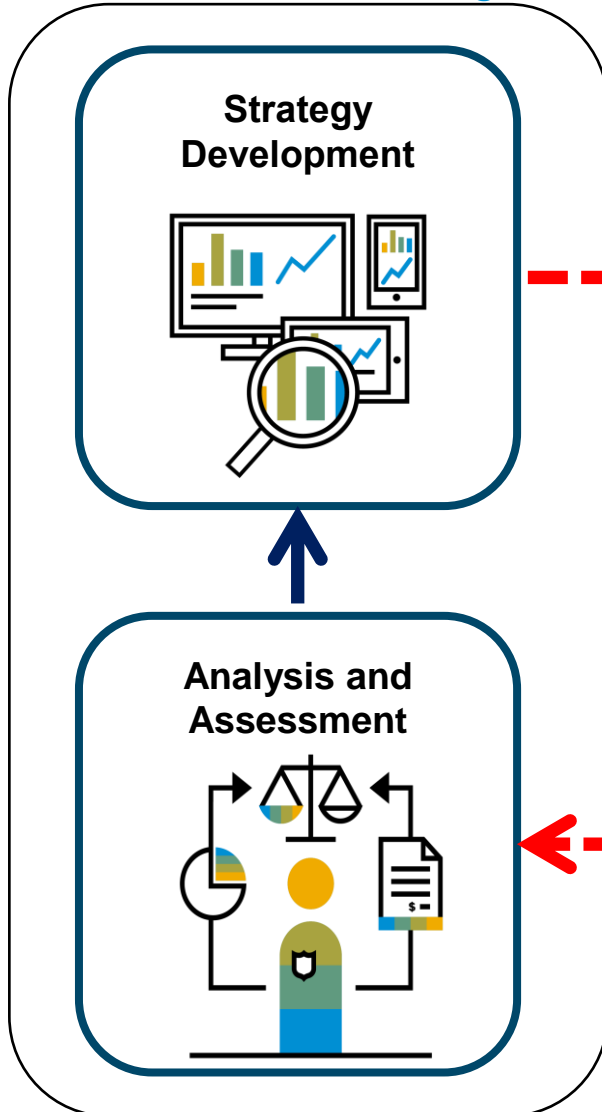
Executed Well
Enterprise Asset Management

Strategy Development

Maintenance Planning
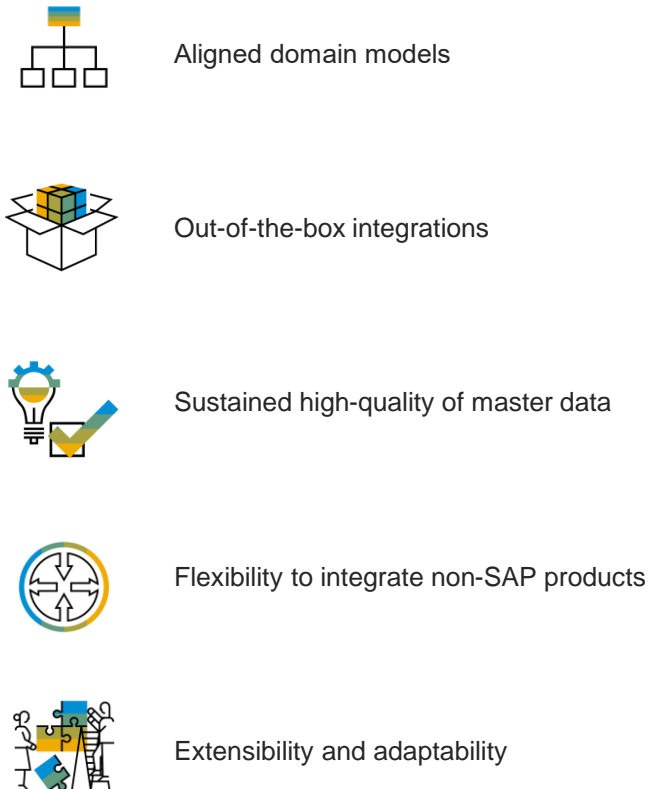
Scheduling Work

Analysis and Assessment

Work History

Work Execution
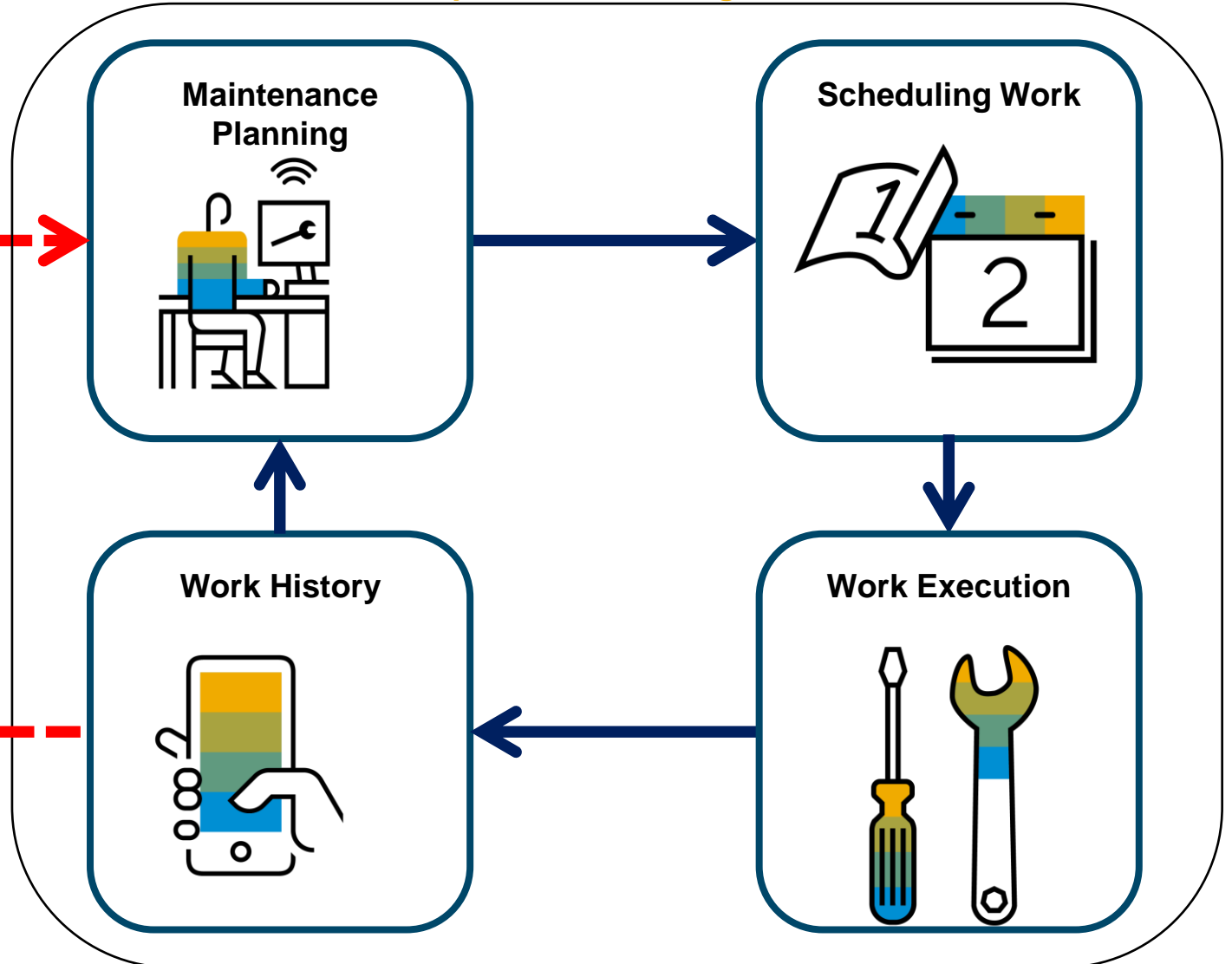
The New Way: Intelligent Asset Management

How to realize the end-to-end closed loop story?

What SAP's customers are demanding!

- Aligned domain models
- Out-of-the-box integrations
- Sustained high-quality of master data
- Flexibility to integrate non-SAP products
- Extensibility and adaptability

SAP's Strategic Direction

Establishing One Domain Model (ODM) for communication across SAP applications

Motivation
Aligned domain models are an enabler for consistent APIs and reduced dependency on middleware to translate data structures and values

Vision
Creation of aligned data models for all key domains throughout most of the SAP applications and processes

User Story
Users will find support on Domain Model Alignment (DMA) and initiate the alignment of data objects that are relevant in an integration scenario

S/4HANA supplier data model domain

Fieldglass supplier data model domain

Ariba supplier data model domain

Extensions are **overlaps** of attributes shared between applications

Attributes **only locally** used

Core includes must-have attributes, intrinsic to defining domain basics

Core master data attributes

Application specific master data attributes
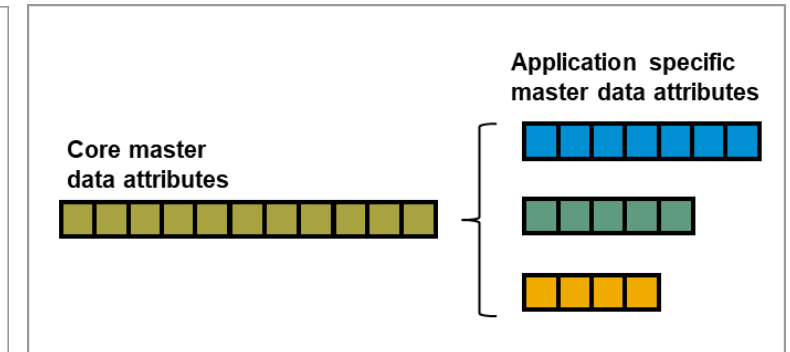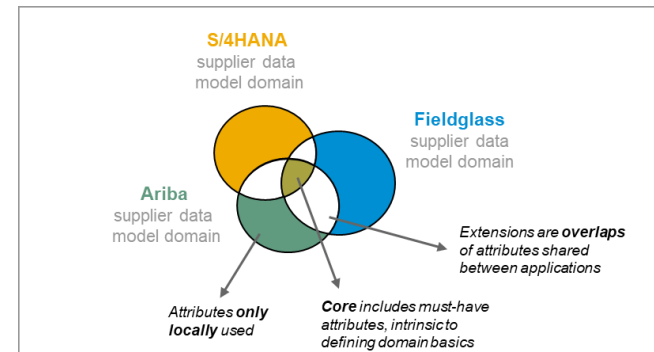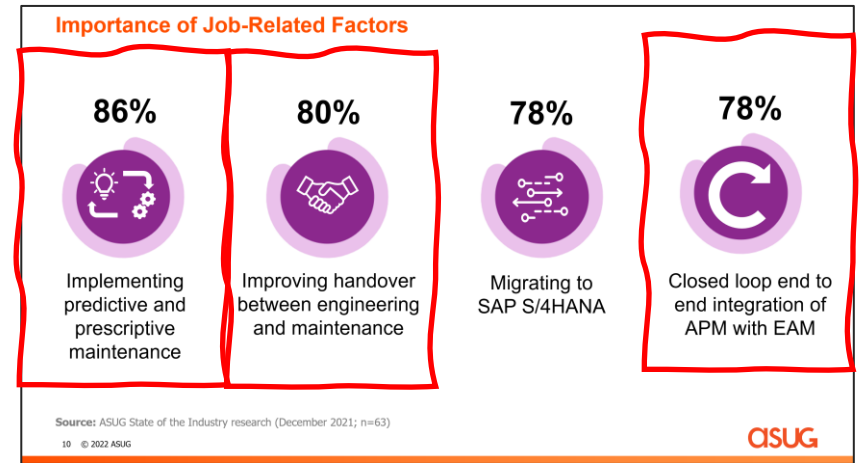
SAP One Domain Model

Define the language applications use to communicate with each other

**Lower integration efforts due to aligned objects used across products**
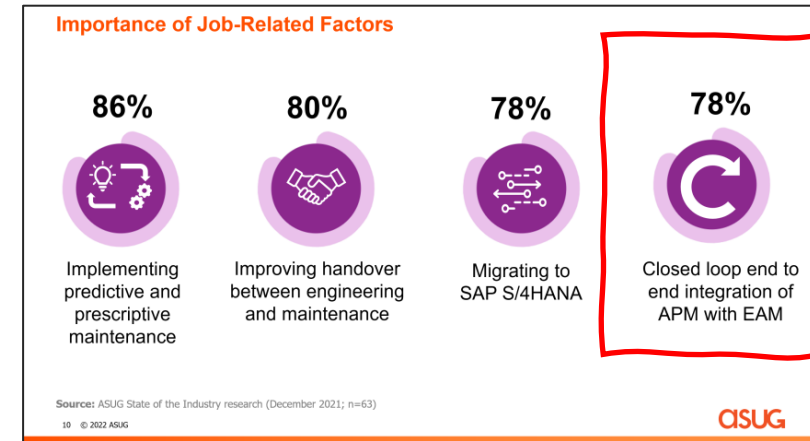
The New Way: Intelligent Asset Management
Converge Strategy and Execution

Asset Performance Management

Capabilities to **constantly** assess and improve **asset availability and its output**, to extend asset life, including **risk** and **reliability management**, **predictive** and **prescriptive maintenance**, and asset **integrity management**.
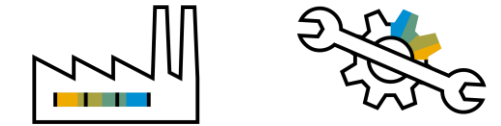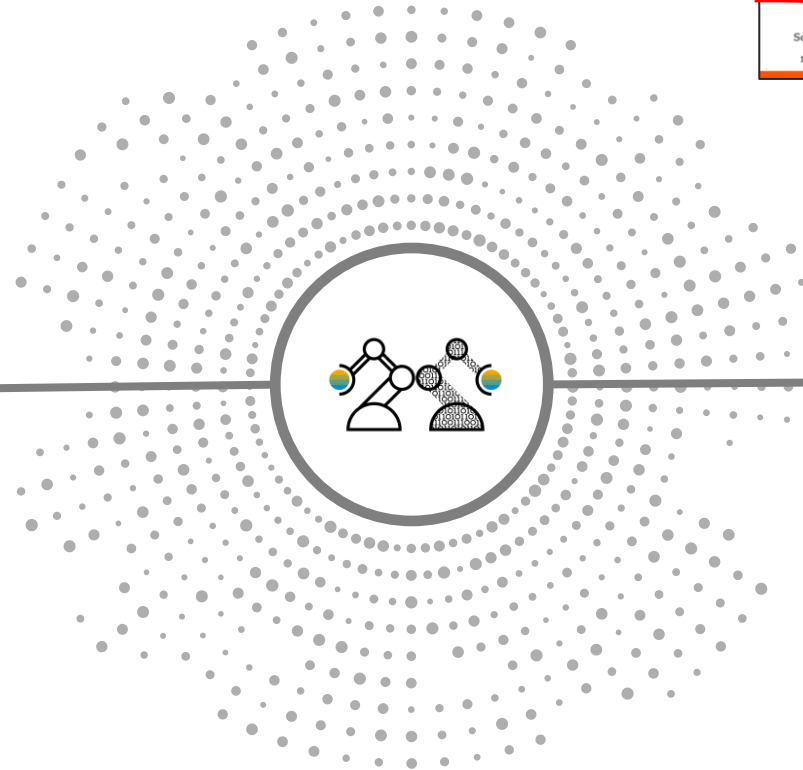
Enterprise Asset Management & Service

Capabilities for **managing maintenance operations** including planned and unplanned maintenance, scheduling work and resources, work order management and reporting, mobile support for maintenance technicians; it also covers solutions for asset acquisition and life cycle management, capital portfolio and project management, and environment, health and safety

Drive Business Outcome by Converging Strategy & Execution

Our Vision

> 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.**
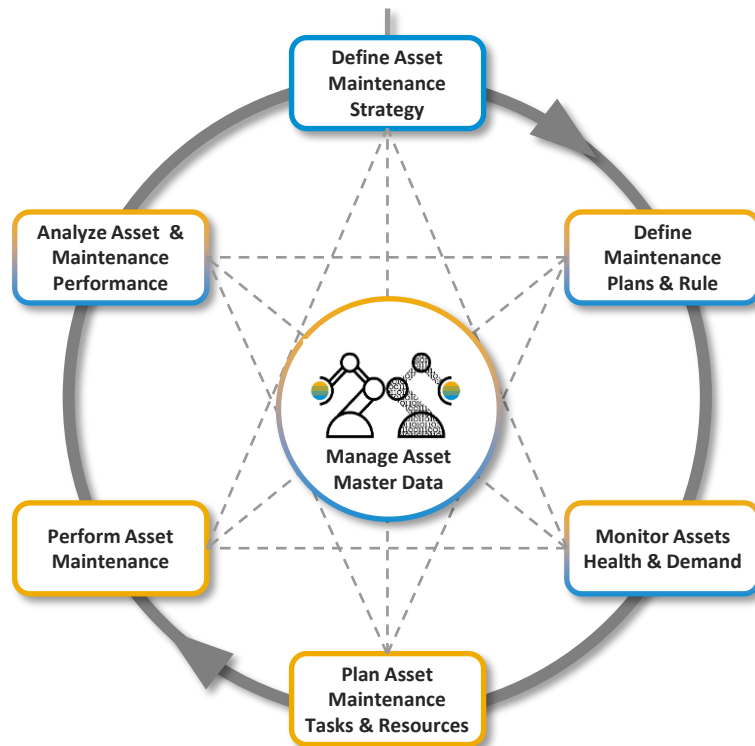
1 — **Define Asset Maintenance Strategy**
- Define risk and criticality for assets
- Develop maintenance strategies

2 — **Define Maintenance Plan & Rule**
- Define time- and usage-based maintenance
- Define condition-, predictive/prescriptive-, risk-based Maintenance

3 — **Monitor Asset Health and Maintenance Demand**
- Manage asset alerts
- Initiate / screen maintenance demand

4 — **Plan Asset Maintenance, Tasks & Resources**
- Order planning, incl. all needed resources
- Order scheduling

5 — **Perform Asset Maintenance**
- Order execution (also mobile)
- Order/notification close-out

6 — **Analyze Asset & Maintenance Performance**
- Analyze maintenance strategy versus execution in efficiency and effectiveness

0 — **Manage Asset Master Data**
- Manage asset and asset related master data semantically aligned for both disciplines to provide a 360° view in form of a Digital Twin

Harmonized Asset Data
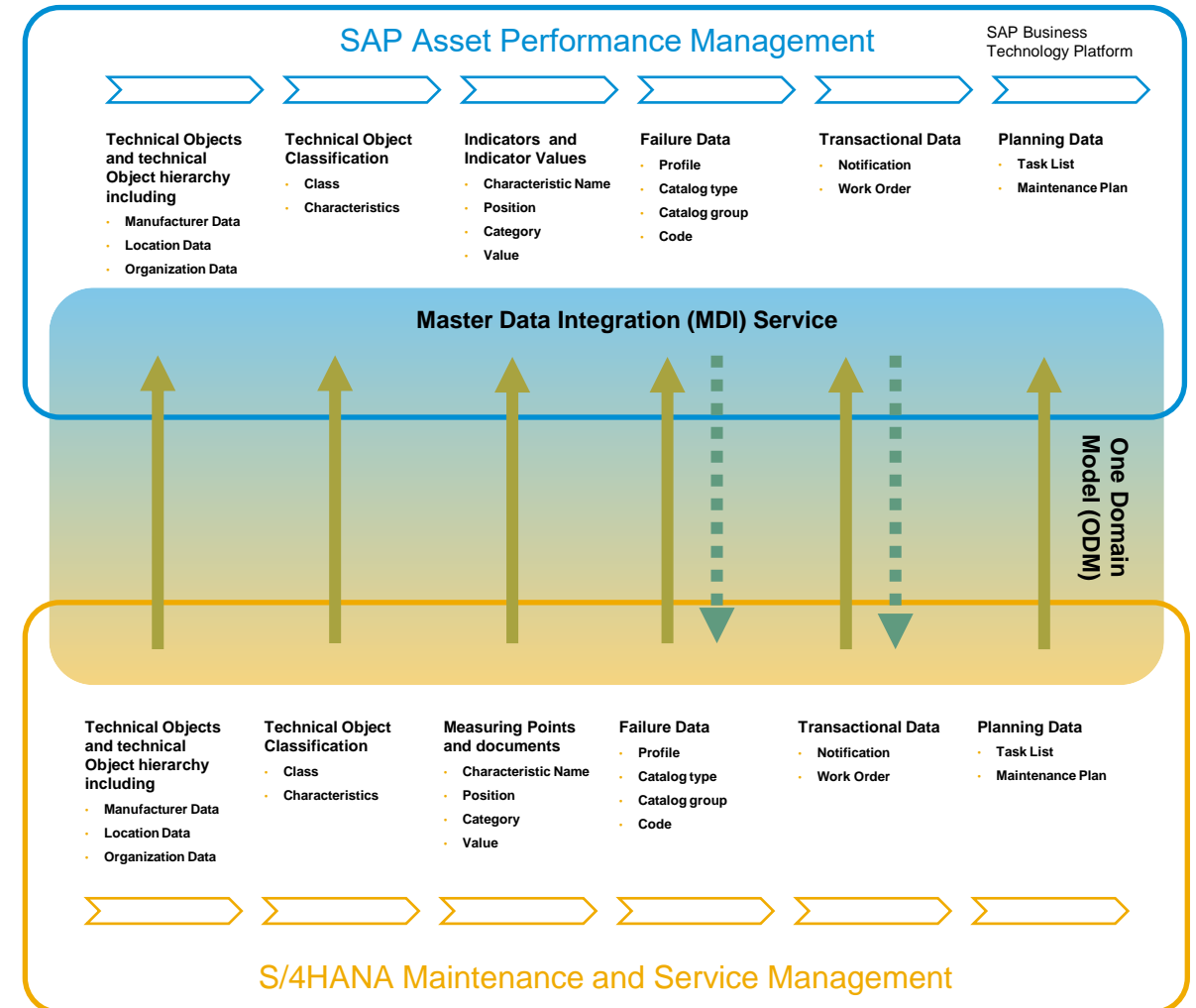## Asset Performance Management and Enterprise Asset Management

Aligned and harmonized domain model between S/4HANA Maintenance and Service Management and SAP Asset Performance Management

Out of the Box integration using Master Data Integration Service on SAP BTP

Inbound and Outbound integration scenarios supporting end to end process integration

SAP Asset Performance Management

SAP Business Technology Platform

Technical Objects and technical Object hierarchy including	Technical Object Classification	Indicators and Indicator Values	Failure Data	Transactional Data	Planning Data
• Manufacturer Data	• Class	• Characteristic Name	• Profile	• Notification	• Task List
• Location Data	• Characteristics	• Position	• Catalog type	• Work Order	• Maintenance Plan
• Organization Data		• Category	• Catalog group		
		• Value	• Code		

Master Data Integration (MDI) Service

One Domain Model (ODM)

Technical Objects and technical Object hierarchy including	Technical Object Classification	Measuring Points and documents	Failure Data	Transactional Data	Planning Data
• Manufacturer Data	• Class	• Characteristic Name	• Profile	• Notification	• Task List
• Location Data	• Characteristics	• Position	• Catalog type	• Work Order	• Maintenance Plan
• Organization Data		• Category	• Catalog group		
		• Value	• Code		

S/4HANA Maintenance and Service Management

→ **Inbound**

⇢ **Outbound**

SAP Asset Performance Management
Define Asset Maintenance Strategies

Risk & Criticality Assessment

Segment the assets to focus on critical equipment by applying a risk-based maintenance (&service) approach

Reliability Engineer

Maintenance & Service Strategy Development by Assessment

Define the right maintenance & service strategy for assets considering critical failure with the help of standard reliability methodologies
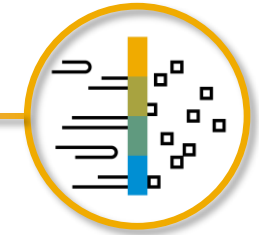
Reliability Engineer
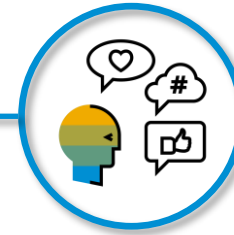
Strategy and Recommendation Management

Holistically manage failure mitigating recommendations by reviewing, consolidating and promoting them for implementation

Reliability Engineer

Maintenance & Service Recommendation Implementation

Use the promoted maintenance & service recommendations to bring them into execution

Planner

SAP Asset Performance Management
Monitor Asset Health and Maintenance Demand

Asset and Asset Performance Data

Use indicator time series, asset master data or transactional data like historic notifications, alerts from SAP IoT and SAP Maintenance or Service Management as a foundation to monitor asset health and create maintenance/service demand

Data specialist / Scientist

AI models to derive insights

Leverage AI models like anomaly detection or Weibull algorithm to derive insights such as an anomaly score or probability of failure

Data specialist / Scientist

Data Usage and Monitoring

Set up rules to automate turning data into defined actions such as alerts or maintenance/service demand or examine and view the data in dashboards or overview pages

Engineer   *Planner*

Demand Generation

Automatically create maintenance or service demand in a well pre-scribed way using rules or by manually converting alerts into dedicated demands

Engineer

Asset Maintenance Demand Processing

Overview a harmonized backlog of maintenance and service demands being either IoT-based, manually created or driven by regular maintenance schedules

Gate Keeper / Coordinator

SAP Analytics Cloud - Embedded Analytics Use Cases
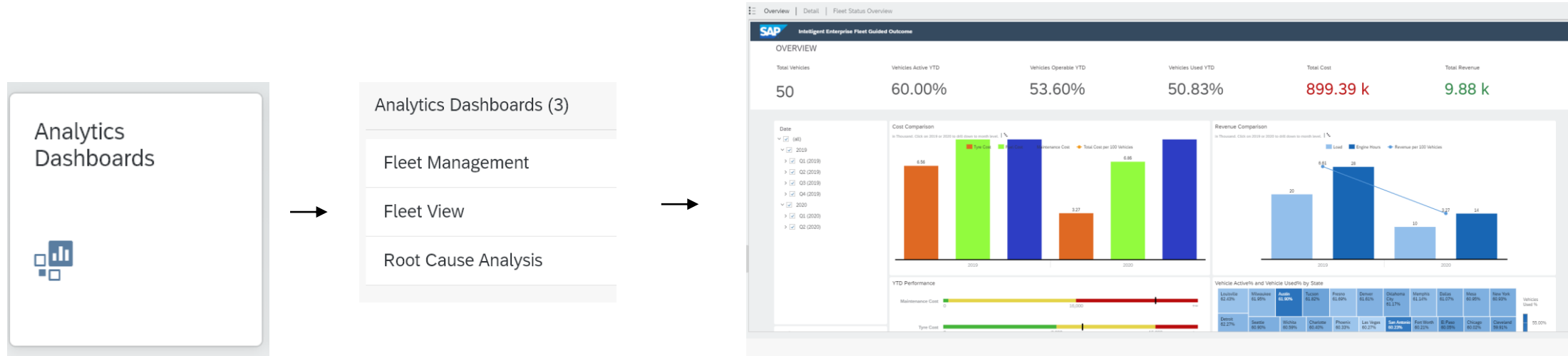
- **Standard data sources as part of APM integration**

  - Technical Objects, Positions, Categories, Alert Types, Alerts, Indicators, Indicator Thresholds, Indicator time series aggregates (count, sum, avg, min, max)

- **Requires customer Owned HANA instance**

  - Supports live connections

  - Support custom calculations

Asset Performance Management Technical Architecture

- Offered as a SaaS application with monthly releases and self service features like automated onboarding, tenant provisioning, user management, etc.

- Domain model alignment to achieve Closed-loop e2e processes, using technologies like One domain model (ODM)

- OData, Events and MDI based integration to achieve seamless integration between applications S/4HANA Maintenance Management (OP and Cloud), SAP ERP, APM, SAP IoT and other applications.

- Microservices and BTP based cloud solution to manage industrial scale assets. A true multitenant solution which isolates tenant resources including storage.

- Optimal granular APIs for integration with SAP and non SAP products. Side-by-side extensibility

- Security: Highly secure application following SAP's secure software development lifecycle (SDLC) . ISO27001 certification underway, SOC certification on roadmap
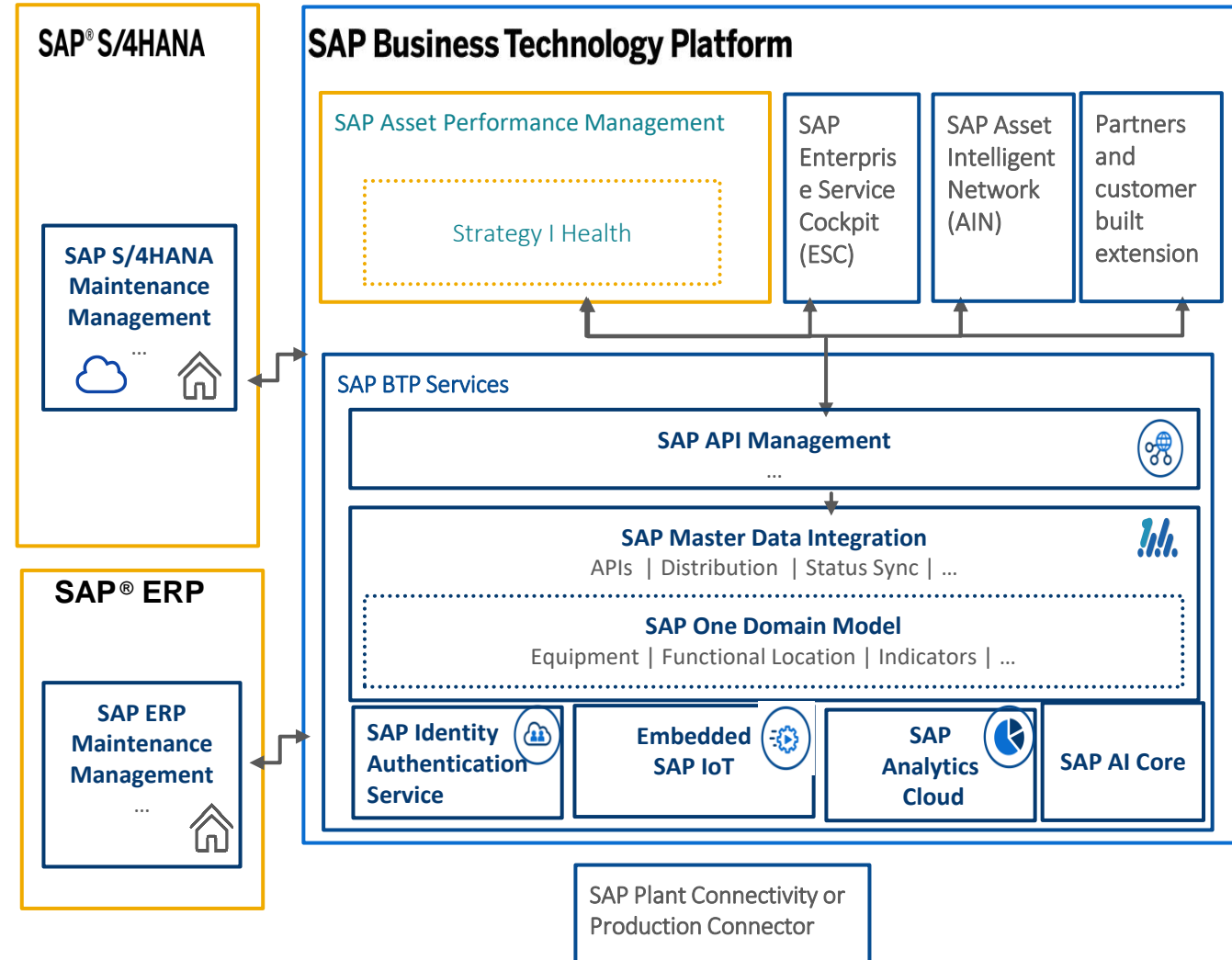
Intelligent Asset Management: Business Benefits

Asset Performance Management
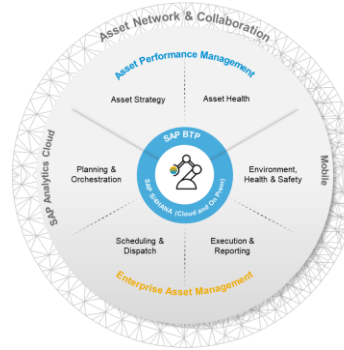
Enterprise Asset Management

End-2-End Business Processes

- Deploy APM capabilities, such as strategy management (e.g. RCM) or condition-based, prescriptive maintenance, seamlessly integrated with maintenance & service planning and execution in the ERP system

- Enable a true, end-2-end "failure mode centric", Intelligent Asset & Service Management by converging strategy and execution while shifting from time-& usage-based maintenance to condition-based, predictive/prescriptive maintenance

Better Decision Making

- Aligned data models between APM and Asset & Service Management to enable unified views on asset and maintenance & service performance for better decision making along process steps

- Enable a holistic Asset & Service Management to continuously assess asset performance and improve maintenance & service effectiveness for higher asset reliability at lower risk and lower cost

Improved User Experience

- Provide consistent information to the end user on asset and maintenance/service performance for higher user productivity

Easy Adoption of APM Solution

- Customers with S/4HANA (or ECC) can quickly deploy APM capabilities, fully integrated with planning and execution in the ERP system, based on aligned data model (One Domain Model)

- Reduce overall deployment complexities and initial application set-up time

Improve Reliability/ Reduce Failure Rate of:
- Pressure vessels, pipelines
- Rotating equipment
- Safety instrument systems

Manage Compliance to:
- Environmental Regulations
- Safety Laws

Increase Production Throughput:
Increased production throughput from improved availability

Improve Productivity from:
Reduction in Labor/ Services Costs:
- Less travel time, information searching, parts searching

Reduction in Parts Costs:
- Optimized spare parts, tools policies

Thank you

For more information:
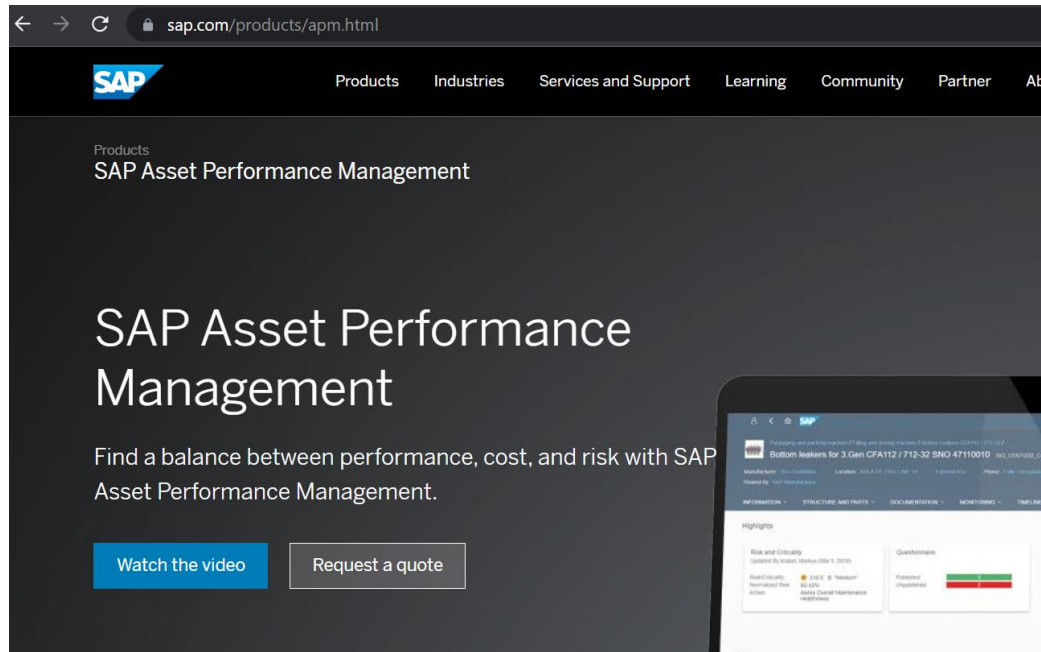
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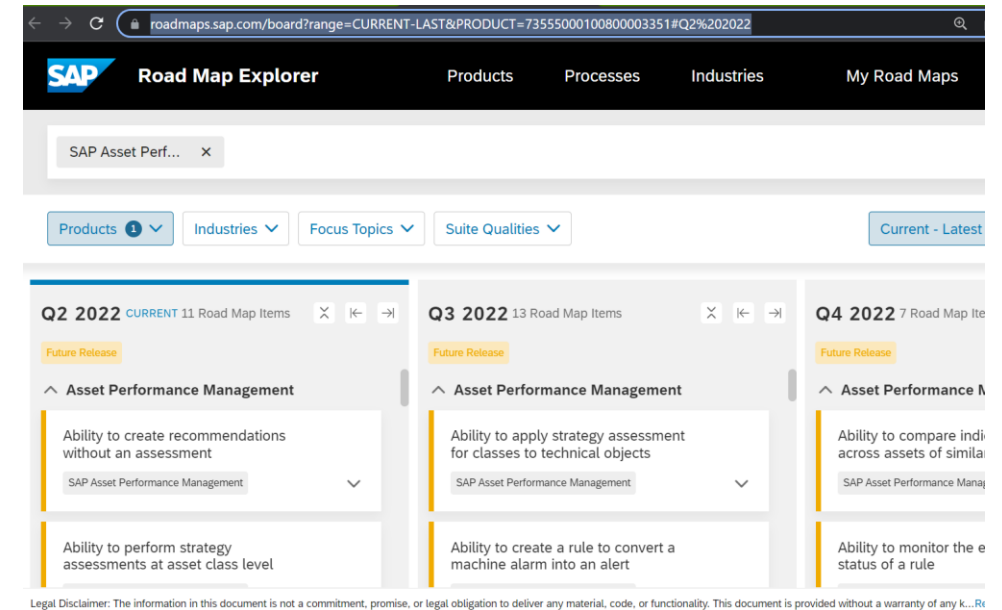
Roadmap

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