Transform Asset Management with SAP S/4HANA

Martin Janssen – Solution Manager – Line of Business Asset Management, SAP SE
October 2017

CUSTOMER

SAP Run Simple

Legal disclaimer

The information in this presentation is confidential and proprietary to SAP and may not be disclosed without the permission of SAP. This presentation is not subject to your license agreement or any other service or subscription agreement with SAP. SAP has no obligation to pursue any course of business outlined in this document or any related presentation, or to develop or release any functionality mentioned therein. This document, or any related presentation and SAP's strategy and possible future developments, products and or platforms directions and functionality are all subject to change and may be changed by SAP at any time for any reason without notice. The information in this document is not a commitment, promise or legal obligation to deliver any material, code or functionality. This document is provided without a warranty of any kind, either express or implied, including but not limited to, the implied warranties of merchantability, fitness for a particular purpose, or non-infringement. This document is for informational purposes and may not be incorporated into a contract. SAP assumes no responsibility for errors or omissions in this document, except if such damages were caused by SAP´s willful misconduct or gross negligence.

All forward-looking statements are subject to various risks and uncertainties that could cause actual results to differ materially from expectations. Readers are cautioned not to place undue reliance on these forward-looking statements, which speak only as of their dates, and they should not be relied upon in making purchasing decisions.

- Context
- EAM in S/4HANA
- User Interface
- Strategies and Processes in Asset Management
- Integration aspects
- Summary and Q&A

Context Trends in Asset Management

SAP Line of Business Asset Management

Trends in Asset Management

- **ISO 55001**, ISO 14001, ISO 45001,...
- Optimizing **cost, risk, and performance**
- Balancing **OPEX** with **CAPEX**
- Meeting **stakeholder expectations**
- **Empowerment of practitioners**
- **Collaboration** between EPCs, OEMs, service providers, and operators

Business Driver

Technology Enablers

- **Internet of Things (IoT)** to scale connectivity
- **Big Data** for getting insight from IT and OT
- **Analytics** for prediction and simulation
- **Machine Learning** to improve on business decisions
- **Enterprise Mobility** to empower employees
- **Cloud** for collaboration

Context Logical Architecture

SAP Line of Business Asset Management

Supporting Asset Management processes end-to-end

Portfolio and Project Management

- Idea Management
- Portfolio Management
- Project Management
- Resource Management
- Project Connectivity

Asset Operations and Maintenance

- Asset Information Governance
- Maintenance Planning and Scheduling
- Maintenance Execution
- Mobile Asset Management

Environment, Health, and Safety

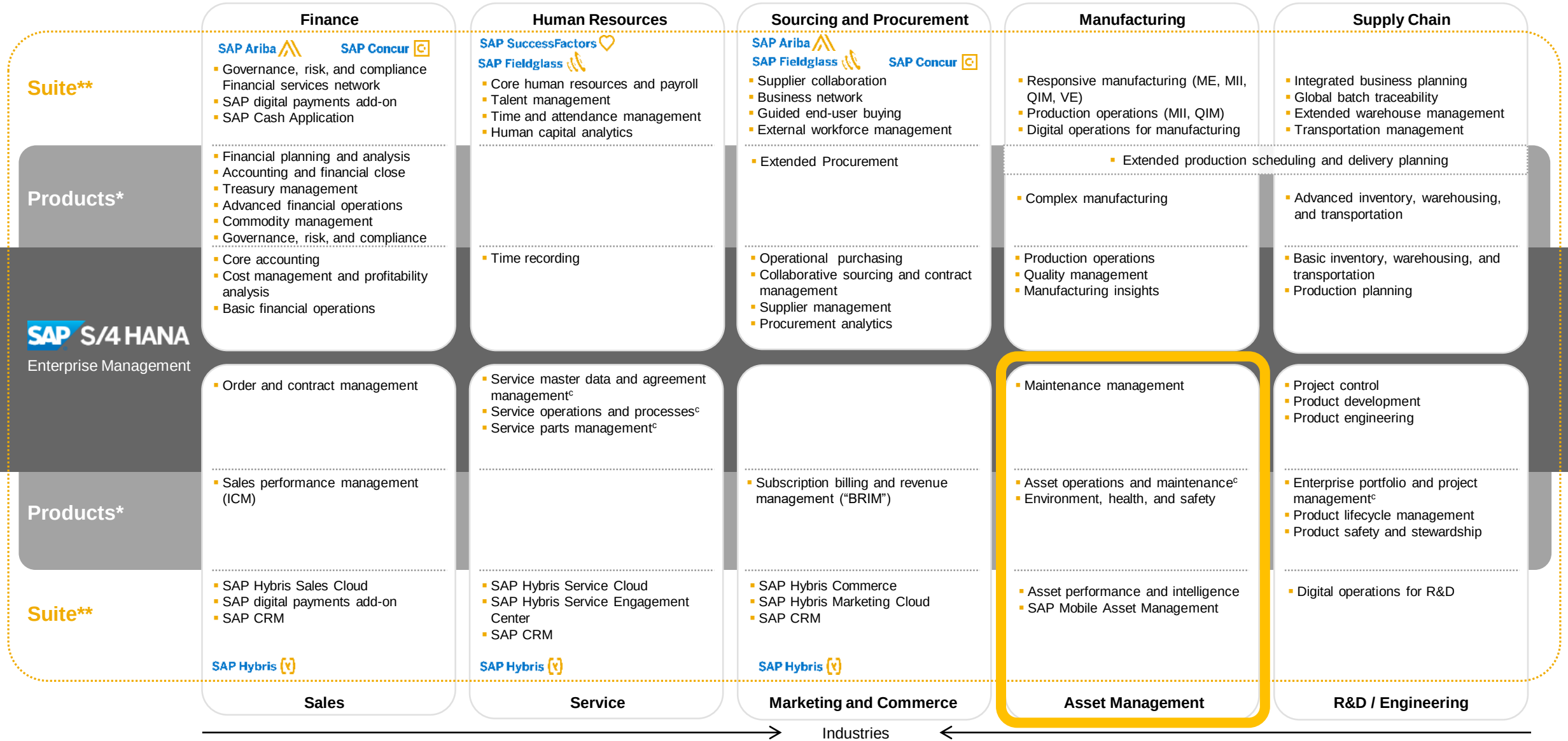
- Incident Management
- Health and Safety Management
- Environment Management
- Management of Change
- Maintenance Safety and Permit to Work

Asset Performance and Intelligence

- Asset Strategy and Performance
- Asset Network and Collaboration
- Asset Prediction and Optimization

Solution EAM in SAP S/4HANA

SAP S/4HANA



SAP's vision for Asset Management

Provide best-in-class user experience seamlessly on all devices.

- UI harmonization
- Roadmap for mobile apps
- EAM and EH&S in S4/HANA
- Geospatial Enablement Framework
- Multiresource Scheduling
- Customer Connection

Help ensure accuracy of master data and allow for sharing master data alongside the value chain.

- Data Services and Information Steward
- Master Data Governance EAM extension
- Visual Enterprise
- EAM workbench in development

Establish a business network for OEMs, service providers, operators, and other contributors.

- Asset Intelligence Network

Make operational data available for comprehensive analytics and insight-to-action, leveraging the IoT.

- Predictive Maintenance and Service on-premise and in the cloud

User Interface

SAP User Interfaces

Evolution

SAP S/4HANA: what does it look like?

Single entry point

- The **SAP Fiori launchpad** will be the single entry point to access all apps
- **KPIs driven** business with realtime insights

Domain specific insights and actions

- Users quickly get an overview of what needs their attention with
- **Overview Pages**, **List Reports,** and **Work Lists**,
- **Trigger** *quick actions* or **drill down** to the next level of detail

Enter details and explore in depth

- **Key and differentiating use cases** will be re-imagined
- **"Classic" transactions** will have the SAP Fiori visual theme

Use Search, Links, Collaboration & Adaptability

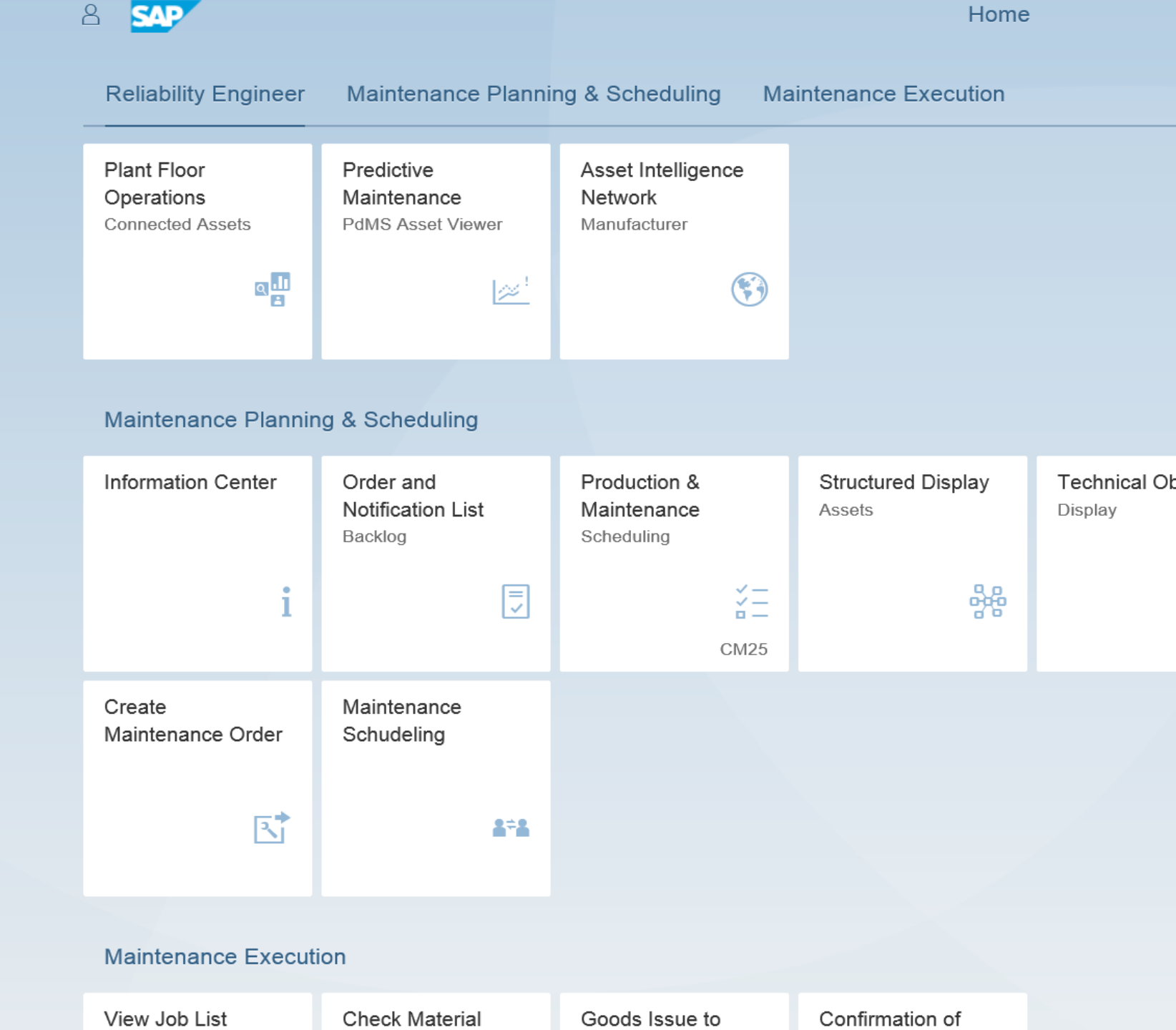
- For **intuitive navigation and individualization** if needed
- Use **CoPilot** for Collaboration with Quick Actions & Embedded Objects

Access the *relevant* Maintenance apps from the FIORI Launchpad

Users will quickly get an *overview* of what needs their attention with Work Lists and can trigger *quick* actions

All related App´s have been visual harmonized supporting end to end process in an visual harmonized UI

overview about the different objects via search, list and navigation capa-bilities



Launchpad features:

- Tiles based on role(s) that can be adapted
- List views
- Maintenance request
- Information centers
- Favorites
- Comprehensive list of EAM transactions available

Strategies for Asset Maintenance

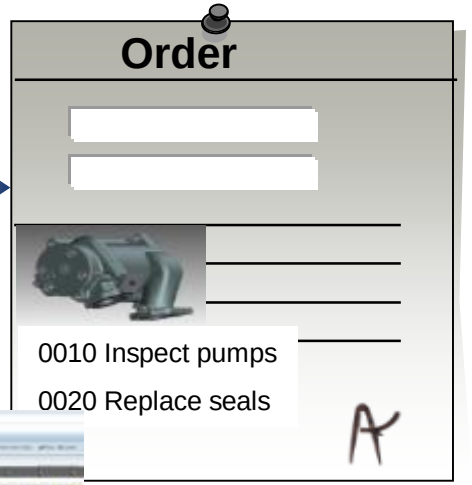
Strategy: run-to-failure = (corrective) breakdown maintenance

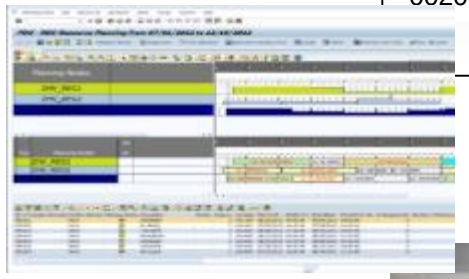
Operations / Asset

Call / create notification

Supervisor / Planner

Create order





Maintenance workcenter

Fix problem

Technician

Confirm and complete order

Technician / Backoffice

Strategy: Preventive maintenance

WHEN?
Time-/counter-based strategies

WHAT?
Task lists

WHERE?
Objects

Maintenance plan

- Single cycle
- Strategy
- Multiple counters

Maintenance Planning

schedule plan

Order

0010 Inspect pumps

0020 Replace seals

Maintenance workcenter

Execute job

Technician

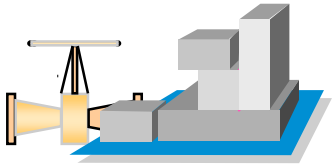
Confirm and complete order

Technician / Backoffice

Strategy: Condition Based Maintenance

Inspections/rounds

Machine integration



- PCo
- MII
- IoT Conn.

based on

Countervalues / Thresholds

Maintenance plan

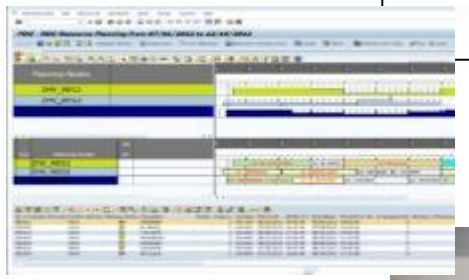
- Single cycle
- Strategy
- Multiple counters

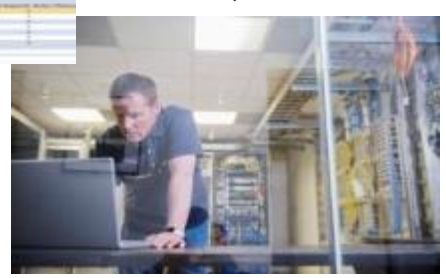
Create work order

Order

0010 Inspect pumps

0020 Replace seals





Maintenance workcenter

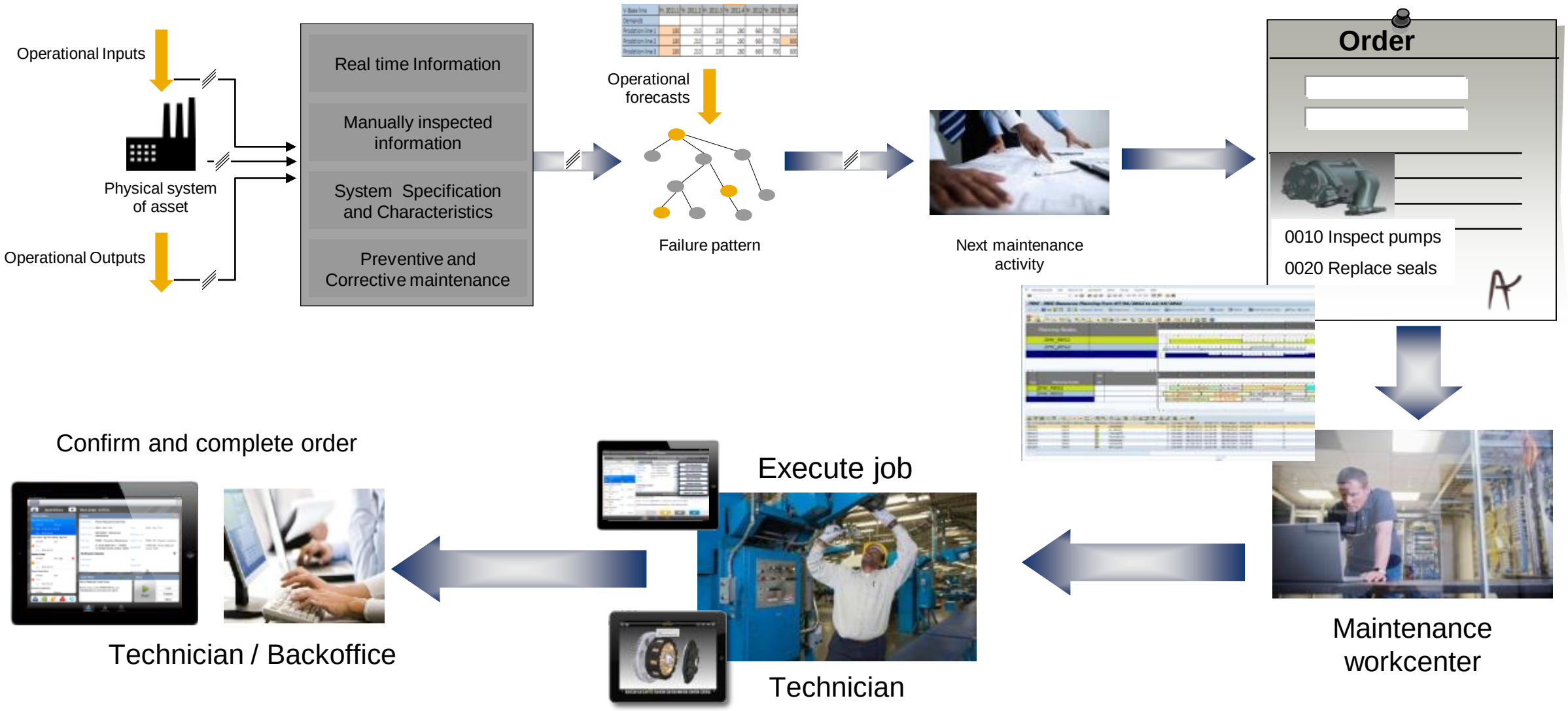
Execute job

Technician

Confirm and complete order

Technician / Backoffice

Strategy: Predictive Maintenance



Maintenance Journey & Asset Optimization

Organizations are maturing their maintenance strategies

Digital Twin

Reactive	Preventive	Condition-based	Predictive
Wait until a machine fails and then undertake maintenance.	Perform maintenance activities based on regular intervals (time or counter based)	Continuously observe the status of assets and react to predefined conditions and events.	Apply advanced analytics of operational and business data to help determine the condition of specific equipment and predict when to perform maintenance.

Companies are moving from a **reactive** to a **proactive** approach, leveraging machine data for better insights.

Technology is changing our approach to maintenance

*Use of Maintenance Strategy – Today

*Use of Maintenance Strategy – Future

Although still relevant, **preventive** maintenance typically results in over-maintaining assets and high cost

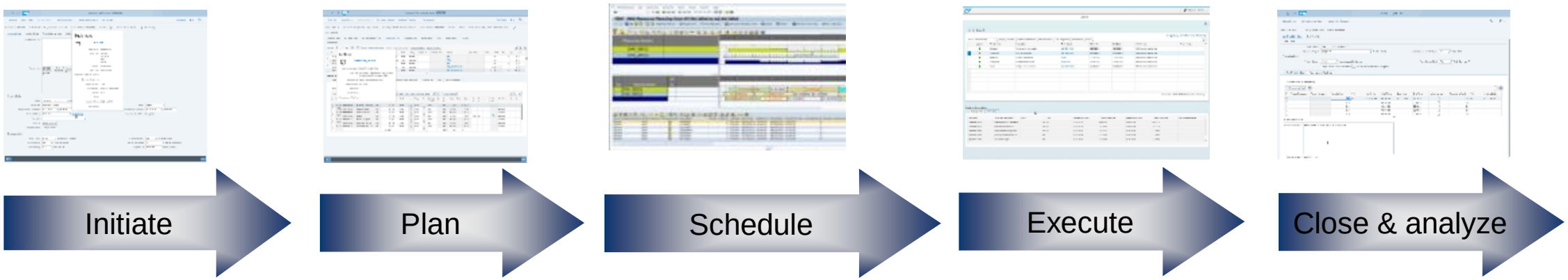
The Internet of Things is leading to increased use of **on-condition** and **predictive** maintenance strategies

The goal is to
increase the use of advanced maintenance strategies and reduce reactive maintenance events

*Proportion of maintenance strategies are for illustration purposes only and will vary based on many factors

Processes in Asset Management

The maintenance process



Initiate

How is Maintenance Work Generated?

Maintenance Notification

- Manual order creation

Direct Order Creation

- Inspection/Rounds

Scheduled PM

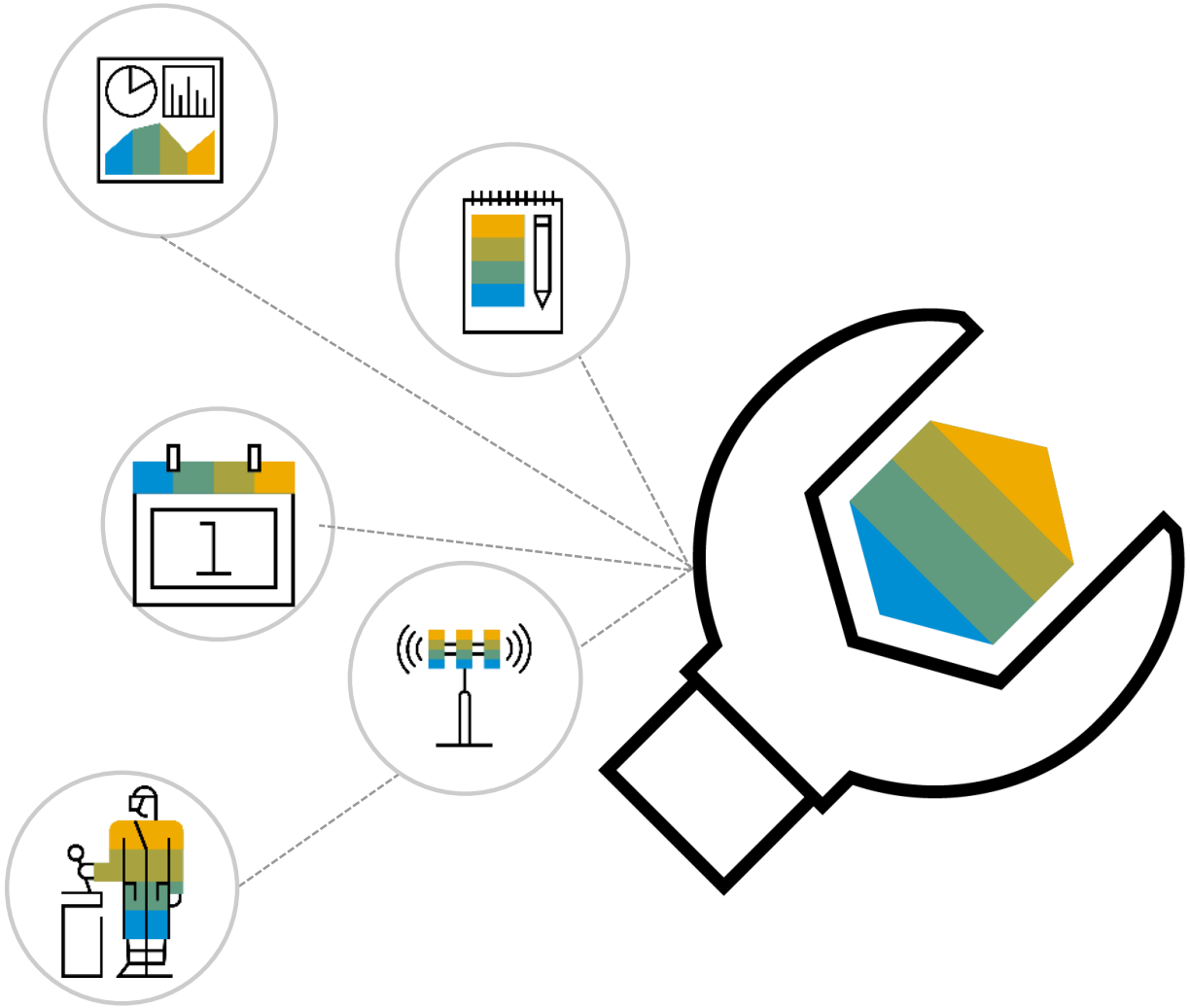
- Time/Counter Strategy

Condition Based

- Inspection/Rounds
- Machine Integration
- Real Time

Predictive

- Forecasts and Failure Patterns



Notification

Technical Object: 10000000 (Centrifugal Pump)

Details | Current Notifications (3)

*Type: M1 (Maintenance Request)

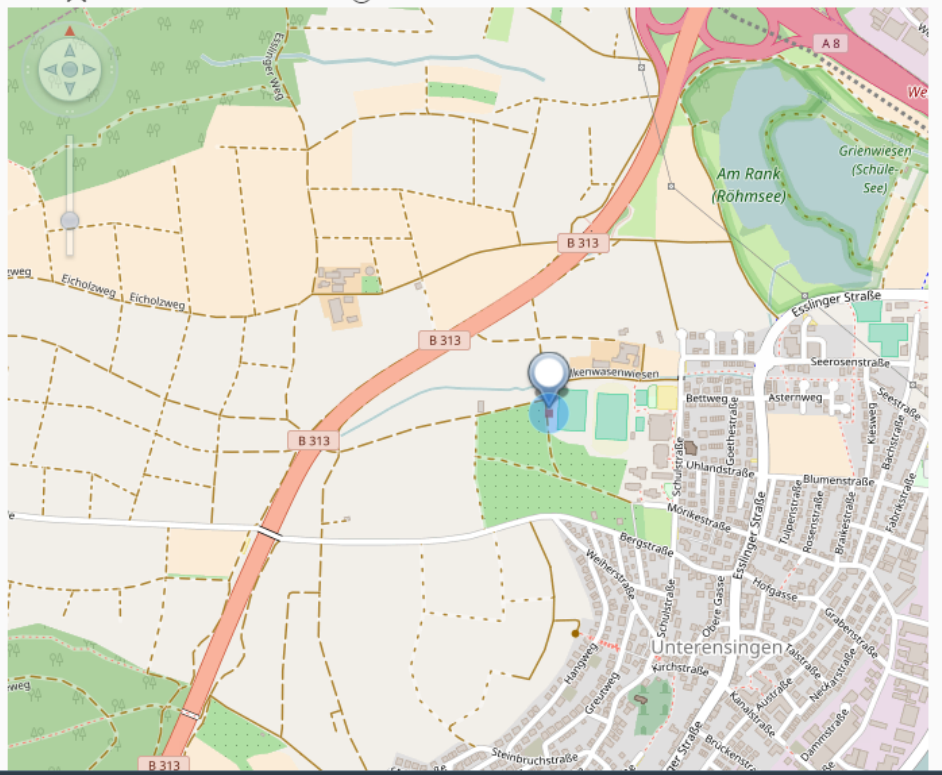
*Description: Issue with Pump

Use Template

Long Text:
Please describe the problem:
add details here
When did the problem start?
today
What did you do after identifying the problem?

Location: 9.3501336;48.6616037;0

Map 9.3501336, 48.6616037



Submit Notification List

Malfunction Report

*Technical Object: 10071536

Details Current Notifications (28)

*Description: Break Down

Long Text: *Describe the problem in more detail*

Failure Mode: broken (B2)

Effect: Production breakdown (3)

Current Location: *Describe the current location of the technical object*

Reported On: 06/08/2017 07:10:16

*Reported By: MAINTENANCE_TECHNICIAN

Assign To: 50000387

Attachments (1)

Add a URL +

prairie-pumpjack-slide3.jpg

Uploaded By: Maintenance_Technici John · Uploaded On: 08-06-2017 23:10:43 · File Size: 313.5 KB

Project Status: Draft · Source: DMS

Save Cancel

Create Order : (Maintenance Order)

Order Type PM01 Entered by Created on Created At 00:00:00 System Status CRTD MANC NTUP

Check | Save | Check Material Availability | Release | Complete Technically | Print | All Details

- Order Main View
- Operations and Compo (Order Main View)
- Location and Assignments
- Address Data
- Related Services
  - Create Goods Issue
  - Create Goods Receipt
  - Enter Goods Movement

General

Description: | Long Text

Priority: | UserStatus:

Basic start date: 06/09/2017 | Basic finish date: 06/09/2017 | Show Scheduling Dates

MaintActivType: 103 Repair

SystemCondition:

Reference Object

Functional loc.: AU-L AU All Locations | Structure List | Details

Equipment: AU-1000-N001 Unit 001 | Structure List | Details

Assembly:

Material Number:

Object Information

Responsibilities

Planner group: 103 | Planning plant: 1000

* Main WorkCtr: MECH01 Mechanics | Plnt WorkCenter: 1000

Personnel No.: 9191 Armando Urias

Revision:

First Operation

Opr. short text:

Work center: MECH01 | Plant: 1000

Activity Type: 1410 | Control key: PM01

Work: 0.0 | Unit for work: HR

Normal duration: 0.0 | Norm.duratn un.: HR

Number: 0

Calculation key: Calculate duration

Planning

MaintenancePlan: | MaintItem:

1 Order/Confirmation Data | 2 Goods Movement | 3 Equipment Inst./Dismant. | 4 Review and Save | 5 Completed

Order data

Description: [ ] Long Text

* Basic start date: 06/09/2017 / 00:00:00

Work: 0.0 Unit: HR

* Main WorkCtr: MECH01 / 1000

Personnel no.: 00000000

Basic finish date: 06/09/2017 / 24:00:00

Complete Technically: [ ]

Activity Type:

MaintActivType: 102

Planning plant: 1000

Business Area: 9900

Functional loc.: AU-L — AU All Locations

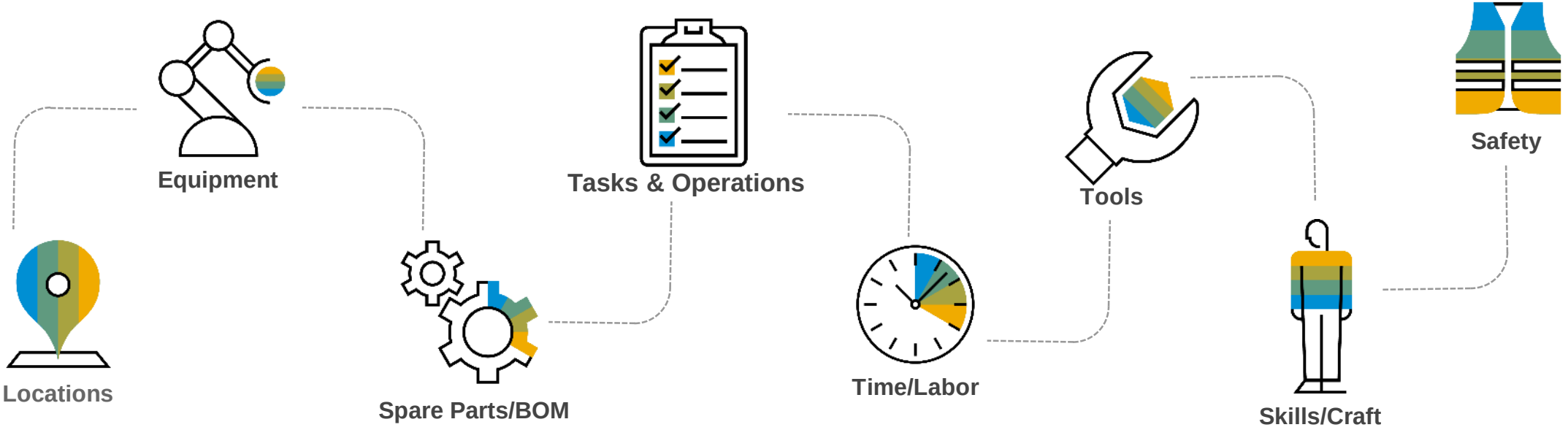
Equipment: AU-1000-N001 — Unit 001

< Back | Goods Movement >

Plan

How can we proactively manage work packages?

- Comprehensively manage master data for technical objects
- Build preventive maintenance plans, review past execution, and account for the requirements of the work package
- Gain real-time visibility into current performance of assets



Order and Notification List

Side Panel

My Backlog (32) | Order and Notification List # Default (13) | Order List - Default (13) | Notification List - Default (0) | Order and Operation List - Default (0)

Change Query | Define New Query | Personalize

View: * My KPI's Backlog | Set Order Status | Print Order | Add to Favorites | Mass Change | Print Version | Export | Refresh

Scheduled Date Monitor	Date Monitor	Cost Monitor	Order	Order Type	Description	Priority Descr.	Total act.costs	TotalPlnndCosts	Tech. Object	Start Date	End Date
			822121	PM01	Test WJ 2	High	0.00	0.00	P-1000-N001	04/03/2017	04/07/2017
			822140	PM01	PM Order	Medium	0.00	703.52	AU-1000-N001	04/20/2017	05/11/2017
			822142	PM01	CM Break		299.72	343.29	AU-1000-N001	04/20/2017	04/20/2017
			822143	PM01	PM Order		0.00	2,414.55	AU-1000-N001	04/20/2017	04/20/2017
			822260	PM01	Condition Alert Detected +/- 8% !!!	Very high	0.00	0.00	AU-1000-N001	05/31/2017	06/01/2017
			822262	PM01	0010 - Leaking Oil	Very high	0.00	0.00	AU-1000-N001	05/31/2017	06/01/2017
			822263	PM01	PM 10,000 Hrs Maintenance	High	0.00	2,924.15	AU-1000-N001	05/31/2017	06/07/2017
			822264	PM01	0010 - Leaking Oil	Very high	135.98	2,924.15	AU-1000-N001	06/01/2017	06/02/2017
			822265	PM01	PM 10,000 Hrs Maintenance	High	0.00	0.00	AU-1000-N001	06/01/2017	06/08/2017
			822266	PM01	Condition Alert Detected +/- 8% !!!	Very high	0.00	0.00	AU-1000-N001	06/01/2017	06/02/2017

Last Refresh **06/09/2017 05:33:20 CET** Refresh

Details for order 822264

General Data | Location Data | Organization Data

Long Text:

Mobile status set to RECEIVED by user I808035 on 2017-06-01 16:17:37

Mobile status set to STARTED by user I808035 on 2017-06-01 18:30:28

General Data

Description: 0010 - Leaking Oil

Priority: Very high

Technical Object Options | Refresh | Synchronize | Navigator Settings | Additional Functions

Technical Object K1 > Technical Object P-1000-N001

Equipment P-1000-N001 **Object Description** Electric pump 001 - Test CODELCO

Structure

Object	Object ID	Description
	K1	Clarification plant
	K1-ZPW	Inlet pump plant
	K1-M	Mechanical purification
	K1-B	Biological cleaning
	K1-B01	Pump station
	K1-B01-1	Pump test Codelco
	P-1000-DF01	Electric pump 001
	P-1000-DF02	Electric pump 001
	P-1000-DF03	Electric pump 001
	P-1000-N001	Electric pump 001 - Test CODELCO
	P-2000-N002	Electric pump 001
	K1-B01-1A	Valve 1
	K1-B01-1B	Valve 2
	K1-B01-2	Pump set 2
	K1-B01-3	Pump set 3
	K1-B01-9	Pump Codelco
	K1-B02	Filter building
	K1-BR1	1st biological cleaning
	K1-BR2	2nd biological cleaning
	K1-KWT	Clarified water test tank-fish culture
	K1-SLB	Sludge processing
	K1-CNT	Container -> Deposit site

General Data | Orders/Notifications | Task Lists | Task List and Operations | Characteristics | Documents | Maintenance Items | Measuring

Basic Data

Technical Object Type: Equipment
Technical Object: P-1000-N001 Electric pump 001 - Test CODELC
System Status: INST
Valid From: 04/14/1999 Valid To:

Long Text: Memo Long Text

Basic Data

Subtype: 1000 Water pump
Construction Type:
Weight/Unit: 26.500 KG
Size/Dimension:
Inventory Number:
Start-Up Date:

Reference Data

Acquisition Value: 1,285.16 EUR
Acquisition Date:

Manufacturer Data

Manufacturer: Vereinte Mechanische Werke AG
Country of Manufacture:
Model Number: P-I
Month/Year of Construction:
Manufacturer Part Number: EP-3445-GH1
Manufacturer Serial Number:

Change Maintenance Order: 822264

Side Panel

Save | Read Only | Check Entries | Status Information | Set System Status | Additional Functions | You can also

Order 822264 Description 0010 - Leaking Oil Order Type PM01, Maintenance Order Technical Object AU-1000-N001 Priority Very high
System Status LRRA REL GMPS MACM MOBI PRC SETC 0 Document(s)

General Data | Location Data | Organizational Data | **Operation Data** | Relationships | Object List | Costs | Documents | Permits | Safety Plan

Operations

View: RR'S View | New | Assign Visual Instructions | Display Visual Instructions | Assign Task List | Create Task List

Suboperation	O...	Work Center	Plant	Status	Control Key	Work	Unit	Number of ...	Quantity	Price	Acti...	...	...
	0010	MECH01	1000	REL	PM01	1.0	HR	1	1.000	0.00		1.0	HR
0010	0010	MECH01	1000	REL	PM01	0.0	HR	1	1.000	0.00	1410	0.0	HR
						0.0		0	0.000	0.00		0.0	
						0.0		0	0.000	0.00		0.0	
						0.0		0	0.000	0.00		0.0	

Details: Operation 0010

Operation Details | Requirements | Materials | Relationships | Production Resources/Tools | External Data | Limits | Service Packages

Materials

View: RR's View | Select from Structure List | Select from Catalog | Select using Visual Enterprise Viewer | Add Safety Measure | Display Material

N...	Material	Description	Item Cat...	Quantity	Unit	Plant	Storage Location	Price	C...	P... O...	P... G...	V...	Purchase Requisition	G/L A...	G
0010	100-100	Casings	Stock ...	1.000	PC	1000	0001	135.98	EUR					890000	
0020	100-400	Electronic	Non-st...	1.000	PC	1000		2,300.81	EUR	1000	007		10048791	415000	
				0.000				0.00							
				0.000				0.00							

BILL OF MATERIAL | HISTORY | ALL MATERIALS

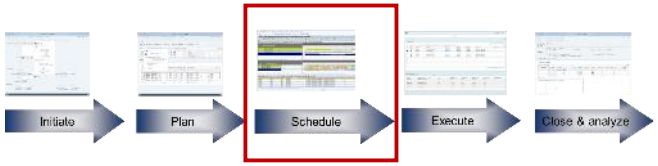
Availability check executed for plant 1010.

Results for Technical Object "10071536" | Standard

Material	Image	Quantity in BOM	In Stock	Quantity	Actions
STB-BEARING2		2 PC	Available	− 2 + PC	Add
STB-SCREW		1 PC	Available	− 1 + PC	Add
STBVALVE-1		1 PC	Available	− 1 + PC	Add
STBVALVE-156		1 PC	Not Available	− 1 + PC	Add
STBVALVE-244		1 PC	Not Available	− 1 + PC	Add
STBVALVE-288		1 PC	Not Available	− 1 + PC	Add
STBVALVE-333		1 PC	Not Available	− 1 + PC	Add
STBVALVE-35		1 PC	Available	− 1 + PC	Add
STBVALVE-68		1 PC	Available	− 1 + PC	Add

Schedule

How do we build and dispatch the work package?



Manual Planning

- Manual assignment creation in the Planning Board (via drag & drop)
- Manage potential resource conflicts with contextual alerts
- Further features like Qualification Matching, Tool Planning, Travel Times, Clocking Data, Capacitive Planning

Resource Selection

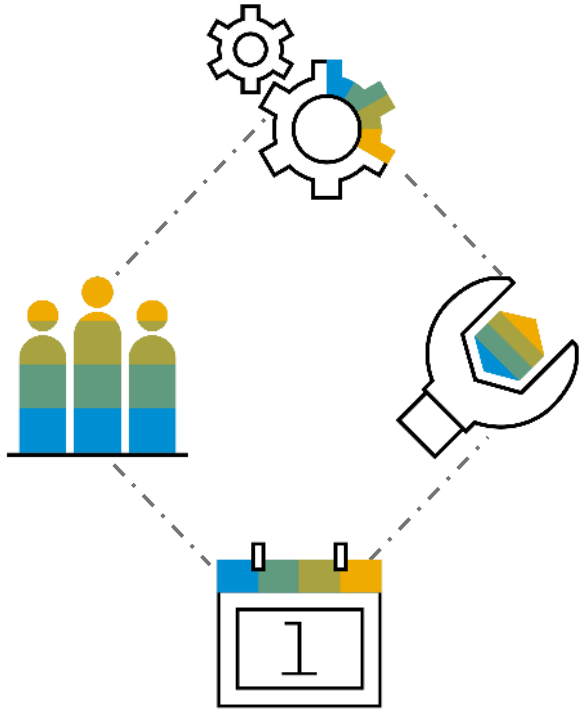
- Identical to manual planning but with pre-selection of resources based on different criteria

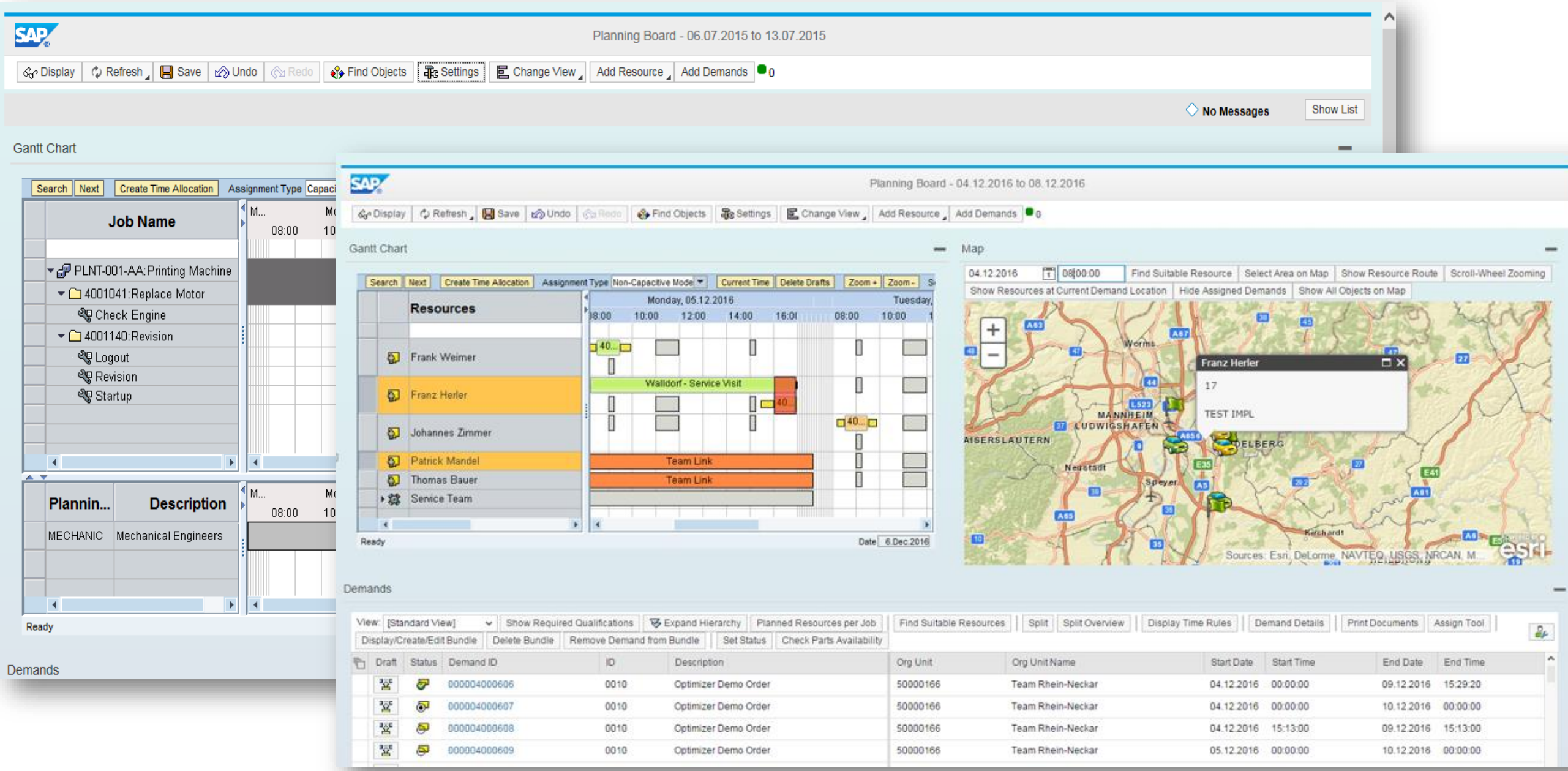
Automatic Planning

- Automatic Scheduling based on availabilities and qualifications
- Utilization based automatic scheduling
- Intelligent shifting

Optimization

- An optimization engine proposes an optimized schedule (travel times, SLA dates, etc.)





Resource Scheduling for Maintenance Planners

Standard

Adapt Filters

Due Maintenance Orders by Priority

With operations in the next 4 weeks

Priority	Description	Description
2	2-High	2
3	3-Medium	2
4	4-Low	1
	No Priority	2

Showing 4 of 4

Utilization Based on Maintenance Order Operations

Work Center	This Week	Next Week
RSH_CK01	97.00%	3.00%
RSH_MN1	0.00%	0.00%
RSH_WEST	0.00%	0.00%

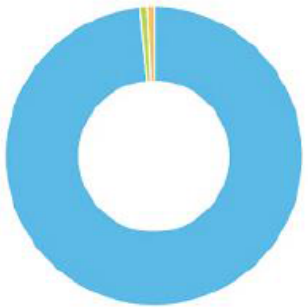
Showing 3 of 3

Open Maintenance Orders

With operations that ended in the past 6 months

135

By Processing Status



Due Maintenance Orders by Priority

With operations in the next 4 weeks

7

2
2-High 2

3
3-Medium 2

4
4-Low 1

Showing 3 of 7

Execute and Confirm

Perform the work quickly, correctly, and safely?

- Access to prioritization, asset location, repair history, work order details, documentation, notes, and required materials
- Create additional notifications or sub-work orders
- SAP 3D Visual Enterprise Viewer embedded for work instructions
- Inspection rounds data capturing
- Issuance and consumption of materials, including material search
- Timesheet data entry with e-signature
- Complete work orders and capture all relevant data

Standard

Jobs: Mine only

Assigned To:

Status:

Technical Object:

Search

Adapt Filters (1) Go

Maintenance Jobs (102)

Issue	Work Item	Assigned To	Planned Effort	Status	Technical Object
Repair Pump 10000543	atp bh2 0010	Maintenance_Technici John	10.0 H	Created	Cooling Water Circulation Pump (210100091)
	atp 0010	Maintenance_Technici John	1.0 H	Created	Cooling Water Circulation Pump (210100091)
PG Water dripping from inlet 10000012	PG Water dripping from inlet 0010	Maintenance_Technici John	2.1 H	Ready for Work	Inlet Water Pipes (1010-CWS-CTW-CTW02-IWPS)
atp 10000013	atp 0010	Maintenance_Technici John	1.0 H	Work Is Done	Cooling Water Circulation Pump (210100091)
test 10000040	test 0010	Maintenance_Technici John	0.0 H	Created	Cooling Water Circulation Pump (210100091)
ATP check 10000090	ATP check 0010	Maintenance_Technici John	1.0 H	Created	Cooling Water Circulation Pump (210100091)
21212 10000091	21212 0010	Maintenance_Technici John	10.0 H	Work Is Done	Cooling Water Circulation Pump (210100091)
1212 10000100	1212 0010	Maintenance_Technici John	1.0 H	Work Is Done	Cooling Water Circulation Pump (210100091)
21212 10000110	21212 0010	Maintenance_Technici John	1.0 H	Work Is Done	Cooling Water Circulation Pump (210100091)
121212 10000120	121212 0010	Maintenance_Technici John	1.0 H	Work Is Done	Cooling Water Circulation Pump (210100091)

Job List

Job List - Default (0) | Job List (13)

Change Query | Define New Query | Personalize

View: [Standard View] | Display Job Card | Additional Information | Start Processing | Edit Assignment | Print Version | Export

Urgency	Priority Descr.	Description	Tech. Object	Start Date	Start Time	WkCtr Descr.	Person Resp.	WP Phase	Work Permit
	Medium	Monthly shutdown	1000-HAM-FL-03	05/25/2017	08:00:00				
	High	test order	1000-MAC-AA-02	11/19/2014	00:00:00				
		Maintenance of Pump	P-1000-N001	02/24/2015	00:00:00	Mechanical maintenance	Stephan Bergler		
		Pump Repair	P-1000-N001	03/02/2015	00:00:00	Mechanical maintenance	Stephan Bergler		
	High	Preventive Maintenance of Pump	P-1000-CF01	08/04/2015	00:00:00	Mechanical maintenance			
		Generated by MOC on 2015/08/24	10006769	08/24/2015	00:00:00				
	High	Leakage of pump	P-1000-CF01	09/16/2015	00:00:00	Mechanical maintenance			
	High	Abnormal noise of pump	P-1000-N002	10/08/2015	00:00:00	Mechanical maintenance	Albert Repasi		
	High	Track Inspection	BN00000650	12/21/2015	00:00:00				
	High	Investigate temperature rise in pump	P-1000-CF02	03/10/2016	00:00:00	Mechanical maintenance			

Last Refresh **06/09/2017 05:45:06 CET** Refresh

Details for Selected Job

General Data | Work Items

References

Reference Document: 821000 Pump Repair

Technical Object: P-1000-N001 Electric pump 001

Responsibilities

Work Center: MECHANIK Mechanical maintenance

Pump leaking 10000458

Malfunction | Job Details | Attachments

Bearing broken 1	ME03	EL03	Yes	
Contact corroded 2	EL01	EL00	No	
Chipped 3	ME00	ME00	No	
4 inch crack 4	ME01	ME00	No	

Job Details

Work (1) | Standard

Work Item	Work Center	Assigned To	Planned Effort	Actual Effort	Finally Confirmed	Status	Actions
Pump leaking 0010	Mechanics (RES-0100)	Maintenance_Technici John	0.0 H	0.000 H	No	Work Is Done	

Parts (1) | Standard

Image	Material	Planned Quantity	Quantity Issued	Actions
	**Stop valve bellow seal PN40 DN15 flange** STBVALVE-288	1.000 PC	0.000 PC	

Complete

Process Malfunction Report

Pump leaking 10000458

Malfunction | Job Details | Attachments

Bearing broken 1	ME03	EL03	Yes	
Contact corroded 2	EL01	EL00	No	
Chipped 3	ME0			
4 inch crack 4	ME0			

Job Details

Work (1) | Standard

Work Item	Work Center		Actions
Pump leaking 0010	Mechanics (RES-0100)	k Is Done	

Parts (1) | Standard

Image	Material	Planned Quantity	Quantity Issued	Actions
	**Stop valve bellow seal PN40 DN15 flange** STBVALVE-288	1.000 PC	0.000 PC	

Complete

Add Work Item

*Work Center/Plant:

RES-0200 1010

Description:

Electrical Fix

Planned Effort:

3.0 Hour

Assign To:

50008313

Save Cancel

Pump leaking 10000458

Malfunction | Job Details | Attachments

Bearing broken 1	ME03	EL03	Yes	
Contact corroded 2	EL01			
Chipped 3	ME0			
4 inch crack 4	ME0			

Job Details

Work (2) | Standard

Work Item	Work Center		Actions
Pump leaking 0010	Mechanics (RES-0100)		k Is Done
Electrical Fix 0020	Electric (RES-0200		dy for Work

Parts (1) | Standard

Image	Material	Planned Quantity	Quantity Issued	Actions
	Stop valve bellow seal PN40 DN15 flange STBVALVE-288	1.000 PC	0.000 PC	

Complete

Confirm Actual Effort

Work Center:
Mechanics (RES-0100)

Assigned To:
Maintenance_Technici John

Description:
Pump leaking

Planned Effort:
0.0 H

Actual Effort:
5.0HR Hour

Posting Date:
06/09/2017

Final Confirmation:
☐

Save Cancel

Pump leaking 10000458

Malfunction | Job Details | Attachments

Work (2) Standard

Work Item	Work Center	Assigned To	Planned Effort	Actual Effort	Finally Confirmed	Status	Actions
Pump leaking 0010	Mechanics (RES-0100)	Maintenance_Technici John	0.0 H	5.000 H	No	Work Is Done	
Electrical Fix 0020	Electric (RES-0200)	Rachel Posner	3.0 H	0.000 H	No	Ready for Work	

Parts (1) Standard

Image	Material	Planned Quantity	Quantity Issued	Actions
	**Stop valve bellow seal PN40 DN15 flange** STBVALVE-288	1.000 PC	0.000 PC	

General Data

Show Order Bar Code

Order:
4000867

Attachments

Complete

Pump leaking 10000458

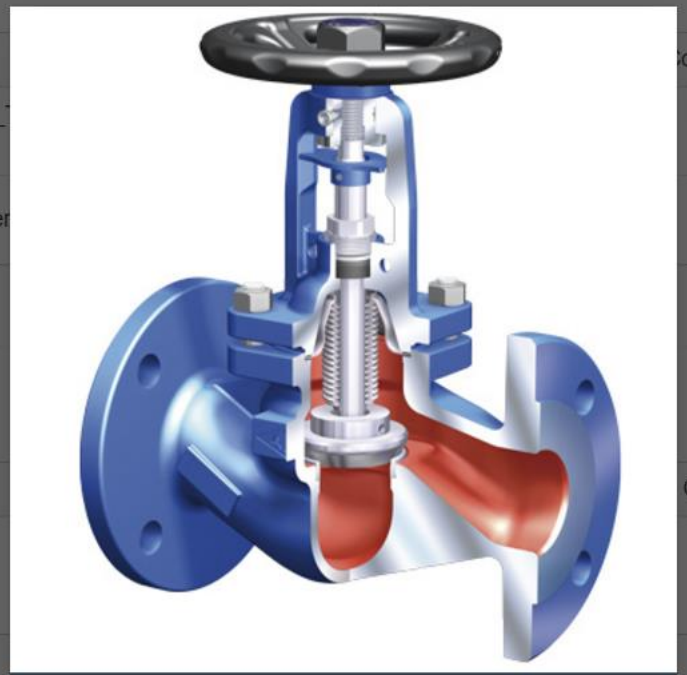
Malfunction | Job Details | Attachments

Work (2) Standard

Work Item	Work Center	Assigned To	Confirmed	Status	Actions
Pump leaking 0010	Mechanics (RES-0100)	Maintenance_1 ci John		Work Is Done	
Electrical Fix 0020	Electric (RES-0200)	Rachel Posner		Ready for Work	

Parts (1) Standard

Image	Material	Quantity Issued	Actions
	**Stop valve bellow seal PN40 DN15 flange** STBVALVE-288	0.000 PC	



Stop valve bellow seal PN40 DN15 flange
STBVALVE-288
Close

General Data

Show Order Bar Code

Order:
4000867

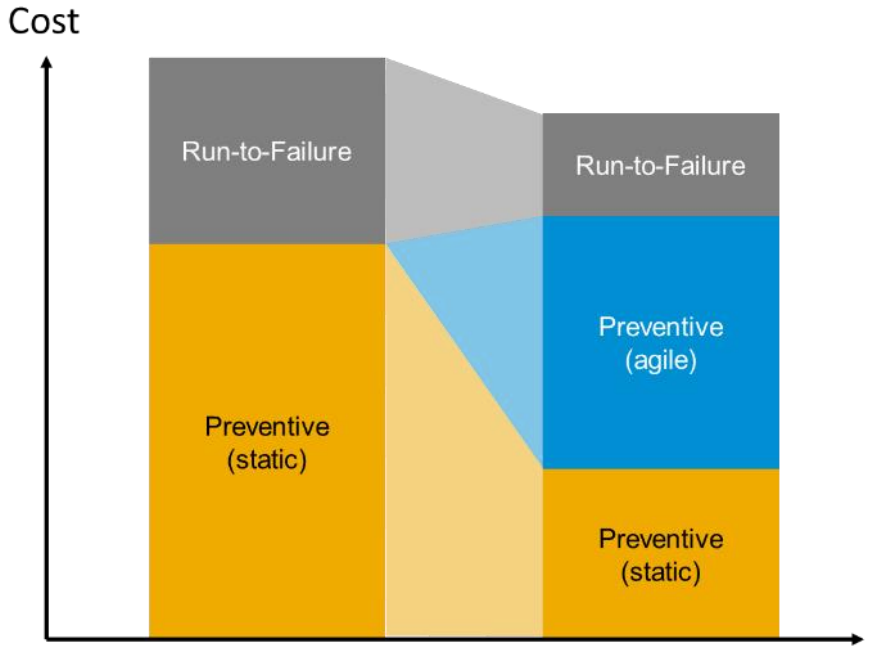
Attachments

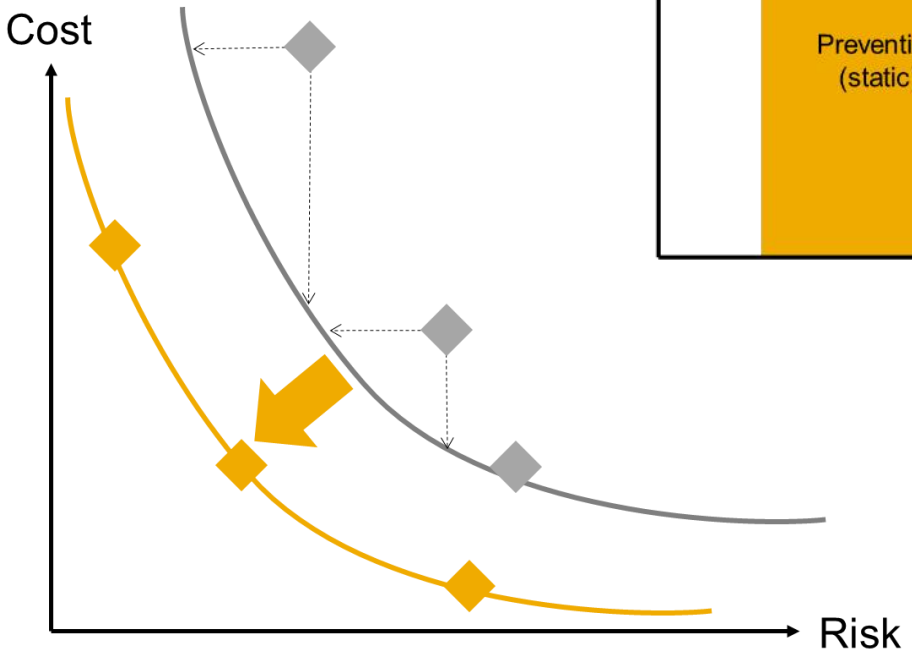
Complete

Close & Analyze

How is the work tracked and managed?
How can we continue to improve?

- Optimization can be reached by changing the maintenance strategy to a more agile approach.
- Condition data allows for a ranking of assets according to a health score.
- For “healthier” assets the service interval can be prolonged while it can be shortened for others.
- This results in less failures while reducing maintenance cost.

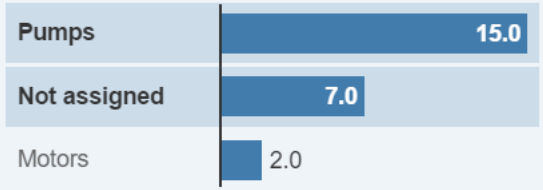




Standard *

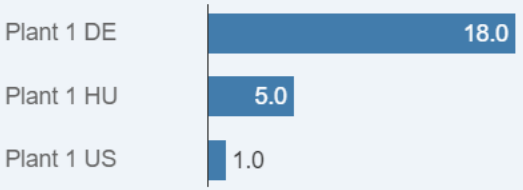
Filters (2)

Breakdowns Reported by O… Selected (2)

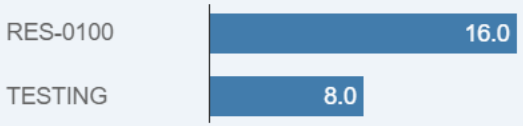


Breakdowns Reported by A… Selected (1)

Breakdowns Reported by Planning Plant

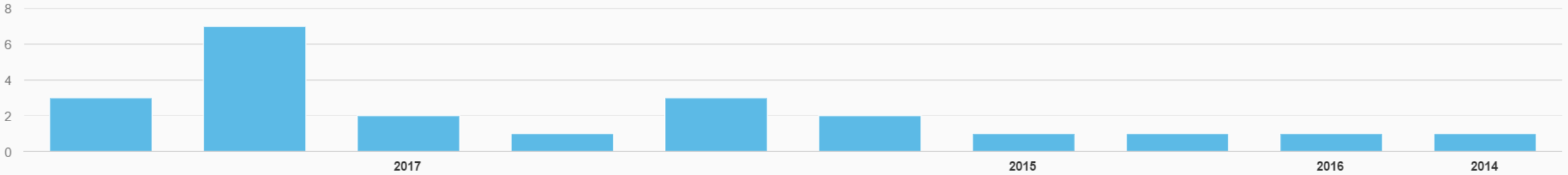


Breakdowns Reported by Main Work Cen…



Breakdown Year / Breakdown Quarter / Equipment

Details Drill Down



Breakdown Year / Breakdown Quarter / Equipment

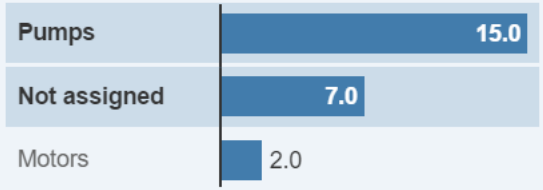
Breakdowns Reported

	Mainte…	Object Type	Leading..	Breakdowns Reported	Time To Repair (H)	Time Between Repair (H)	Mean Time To Repair (H)	Mean Time Between Repai…
>	Maintenance Plant: 1010			15	810.000 HUR	45,044.000 HUR	54.000 HUR	3,003.000 HUR
>	Maintenance Plant: 1710			1	0.000 HUR	1,685.000 HUR	0.000 HUR	1,685.000 HUR
>	Maintenance Plant: 2110			3	21.000 HUR	1,052.000 HUR	7.000 HUR	351.000 HUR
>	Maintenance Plant:			3	368.000 HUR	1,360.000 HUR	123.000 HUR	453.000 HUR
				22	**1,200.000 HUR**	**49,142.000 HUR**	**55.000 HUR**	**2,234.000 HUR**

Standard *

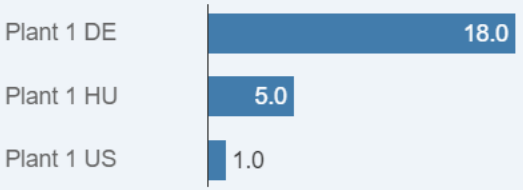
Filters (2)

Breakdowns Reported by O… Selected (2)

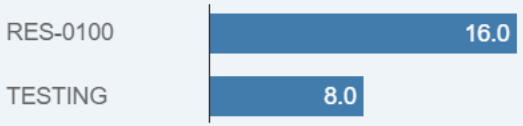


Breakdowns Reported by A… Selected (1)

Breakdowns Reported by Planning Plant

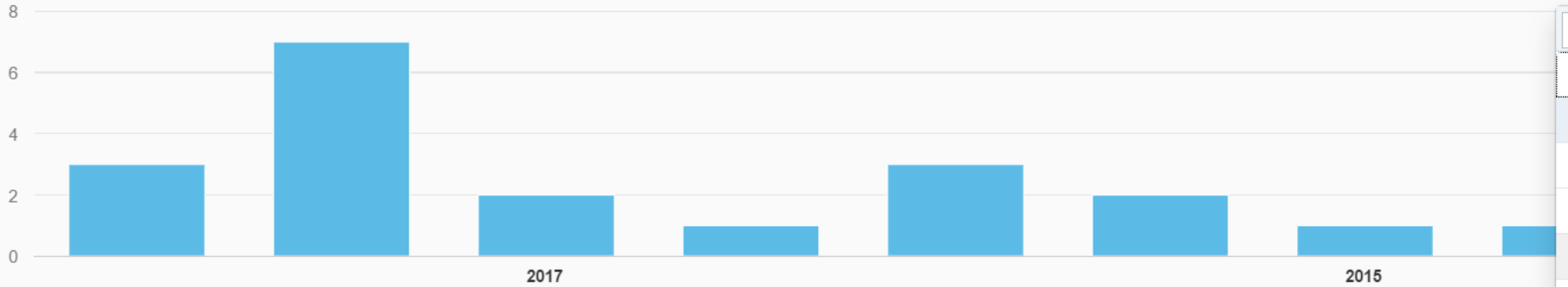


Breakdowns Reported by Main Work Cen…



Breakdown Year / Breakdown Quarter / Equipment

Details Drill Down



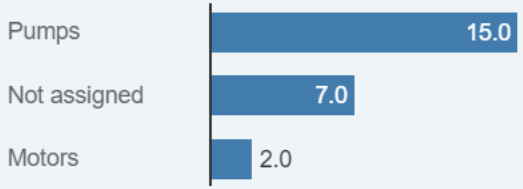
Search in Chart Types

- Bar Chart
- Column Chart
- Line Chart
- Pie Chart
- Doughnut Chart
- Heat Map
- Bullet Chart
- Vertical Bullet Chart
- Stacked Bar Chart
- Stacked Column Chart
- 100% Stacked Bar Chart
- 100% Stacked Column Chart
- Waterfall Chart
- Horizontal Waterfall Chart

Mainte…	Object Type	Leading..	Breakdowns Reported	Time To Repair (H)	Time Between Repair (H)
Maintenance Plant: 1010					
Object Type: 9500					
Object Type:					
1010			**15**	**810.000 HUR**	**45,044.000 HUR**
Maintenance Plant: 1710			1	0.000 HUR	1,685.000 HUR
			22	**1,200.000 HUR**	**49,142.000 HUR**

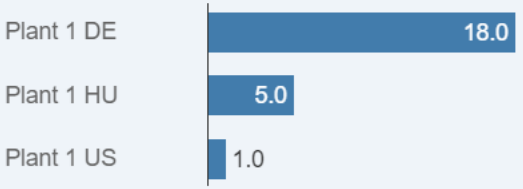
Standard *

Breakdowns Reported by Object Type



Breakdowns Reported by ABC Indicator

Breakdowns Reported by Planning Plant



Br
RE
TE

Breakdown Year / Breakdown Quarter / Equipment

Details Drill D

Co-Pilot to communicate and collaborate

2017 / 1 / Tamas test equi (10051240) 2017 / 2 / Cooling Water Circulation Pump (210100091) 2017 / 2 / ZTK test equi for EAM analytics #01 (10061376) 2017 / 2 / STb Goulds pump (1007

Mainte…	Object Type	Leading Notificati…	Breakdowns Repo…	Time To Repair (H)	Time Between Repair (H)
Maintenance Plant: 1010					
	Object Type: 9500		11	127.000 HUR	27,576.000 HUR
	Object Type:		4	683.000 HUR	17,469.000 HUR
	1010		**15**	**810.000 HUR**	**45,044.000 HUR**
Maintenance Plant: 1710			1	0.000 HUR	1,685.000 HUR
Maintenance Plant: 2110			5	36.000 HUR	1,778.000 HUR
			24	**1,215.000 HUR**	**49,868.000 HUR**

7.000 HUR 356.000 H

51.000 HUR 2,078.000 H

Look at the break down analysis for…

Invite

Today 12:15 AM

Look at the break down analysis for our plant

Technical Object Breakdowns
06/09/2017 12:15 AM
Screenshot

Support Information

Type a note...

Enter

https://ccf-715.wdf.sap.corp/ui#

Refresh | Set System Status | Additional Functions | You can also

Order: 4000867 Description: Pump leaking Order Type: YBA1, Corrective Maintenance Technical Object: 10071536 System Status: REL PCNF JIPR MSPT PRC SETC 0 Document(s)

General Data | Location Data | Organizational Data | Operation Data | Object List | Costs | Documents | Permits

Estimated Costs: 0.00 EUR

Costs

Cost Category	Description	Estimated Costs	Planned Costs	Actual Costs	Currency
YB1	Internal Activity	0.00	80.52	134.20	EUR
YB2	Stock Material	0.00	540.00	0.00	EUR
YB3	3rd party Material	0.00	0.00	0.00	EUR
YB4	3rd party Services	0.00	0.00	0.00	EUR
		0.00	0.00	0.00	

Settlement Rules

Number	Settlement Category	Settlement Receiver	Receiver Description	%	Equivalence Number	Settlement Type	Amount	Currency
001	Cost center	10101701	Plant & Maint (DE)_A	100.00	0	Full Settlement	0.00	
002	Cost center	10101701	Plant & Maint (DE)_A	100.00	0	Periodic Settlement	0.00	
000				0.00	0		0.00	
000				0.00	0		0.00	
000				0.00	0		0.00	

Asset Centric Mobility

SAP Work Manager

Complete work orders and capture all relevant data

Access to asset location, repair history, work order details, materials needed

Create notifications or work orders

Master data integration

- Create, update, display equipment and functional locations unrelated to work orders and notifications
- Install and uninstall of equipment
- Edit equipment and functional location characteristics
- View equipment and functional related data

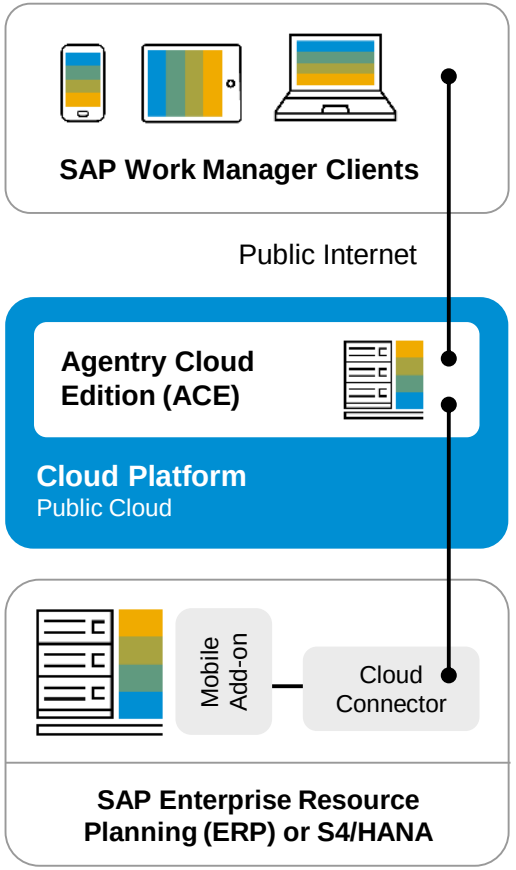
Upload and download of attachments

Linear asset management

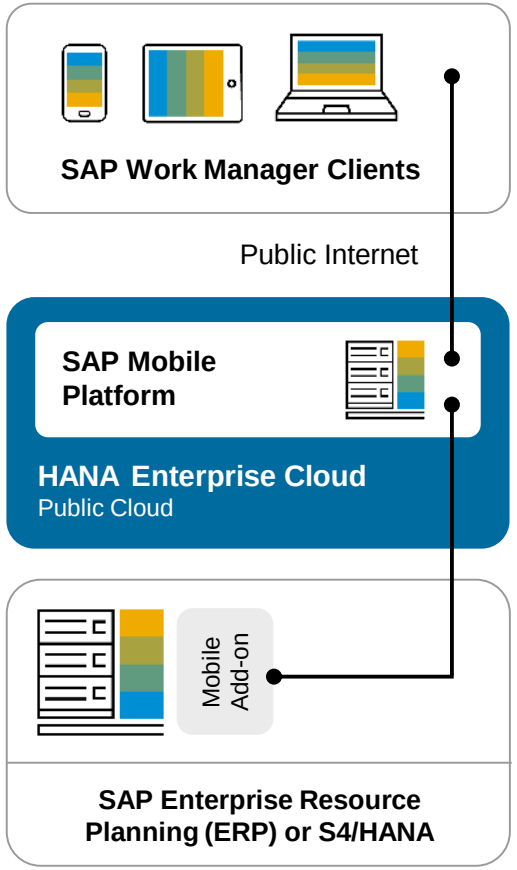
Inspection rounds

SAP Work Manager, Deployment Options

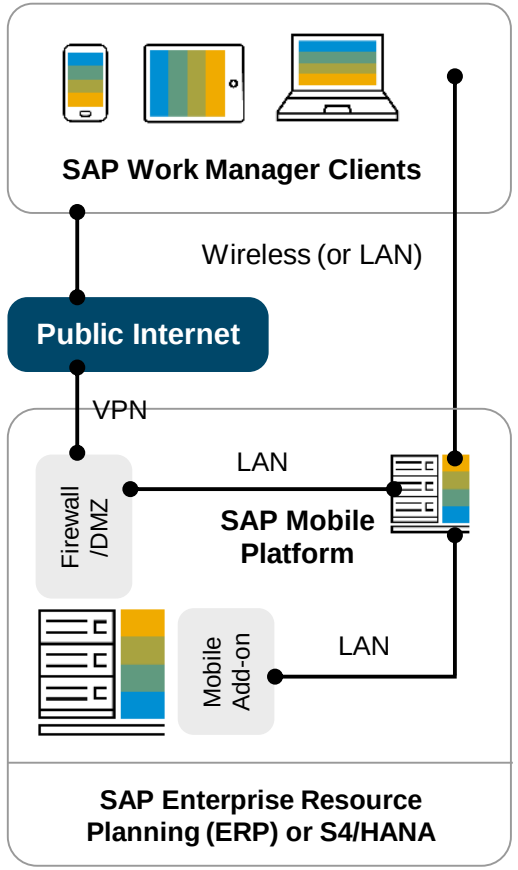
SAP Work Manager, Cloud Edition



SAP Work Manager, HEC



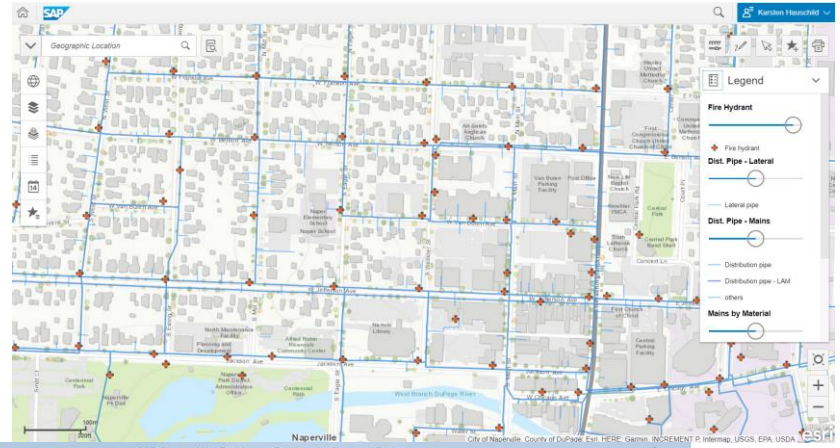
SAP Work Manager, On-Premise

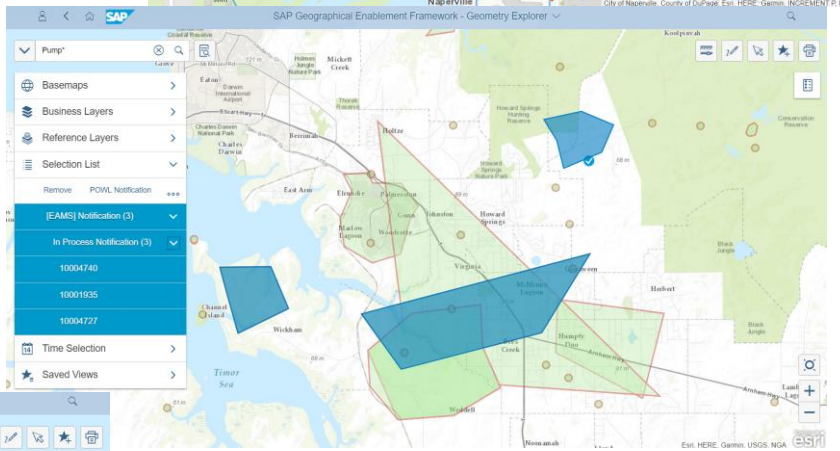


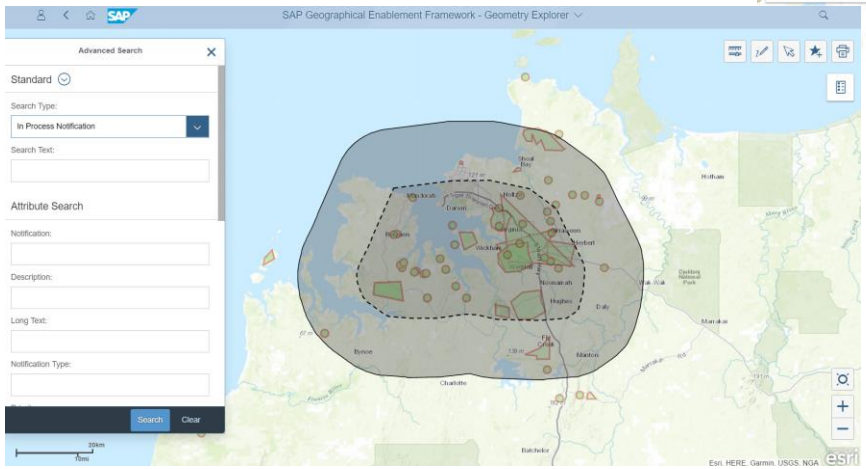
SAP Geographical Enablement Framework

Spatial centric business processes

- Data federation between GIS and SAP
- SAP Geographical Enablement Framework at the center of geo-enabling SAP business applications
- SAP HANA is the spatial data store
- Simplification of the GIS / SAP landscape

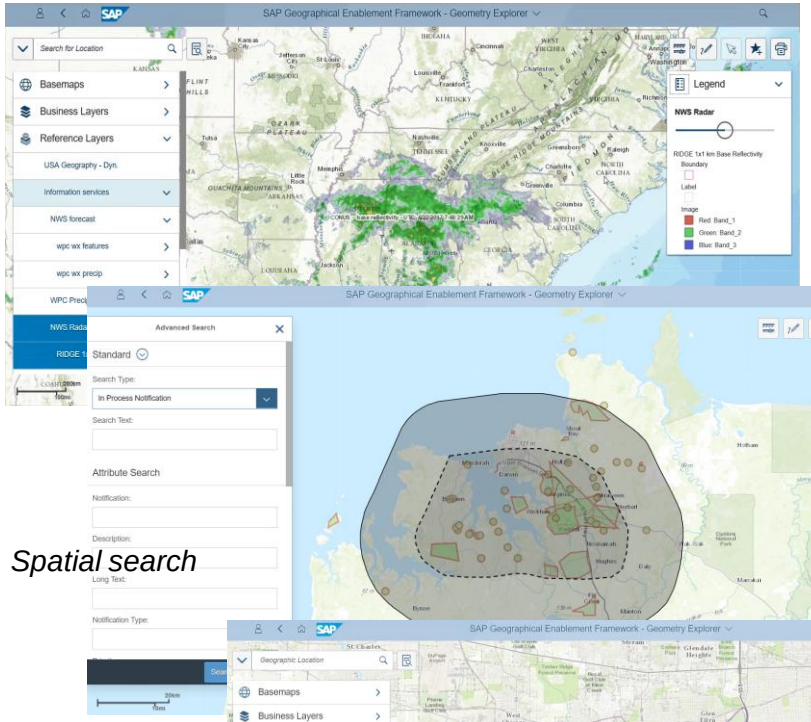






SAP Geographical Enablement Framework for SAP S/4HANA
Scope for SAP S/4HANA 1709

- Foundation to enrich business data with geometric attributes
- Exposure of geometries and attributes of geo-enabled SAP business objects as REST-based feature classes to be consumed using standard GIS map editing tools**
- Comprehensive customization that allows geo-enablement of any SAP business object and feature, such as adjusting map UIs for different user groups and scenarios, configuring application launching functionality from the map, and setting up external GIS connections
- Standalone web-based Geometry Explorer with streamlined, new UI design to view both business data from geo-enabled S/4HANA functions and data from Enterprise GIS systems** on the same map
- Standalone web-based Geometry Editor to search, view, and update geometry for any geo-enabled SAP business object.
- Time-dependent geometries for geo-enabled SAP objects
- Mass actions, custom backend actions, reference layer actions and dialog action parameters
- Measurement tools
- Navigation from and to an application with list of objects
- Combined spatial and attribute search for objects on the map
- Personalization (save locations and/or search variants)
- Temporary sketches and comments
- Import of shapefiles
- Other various improvements



Reference layer from external GIS sources

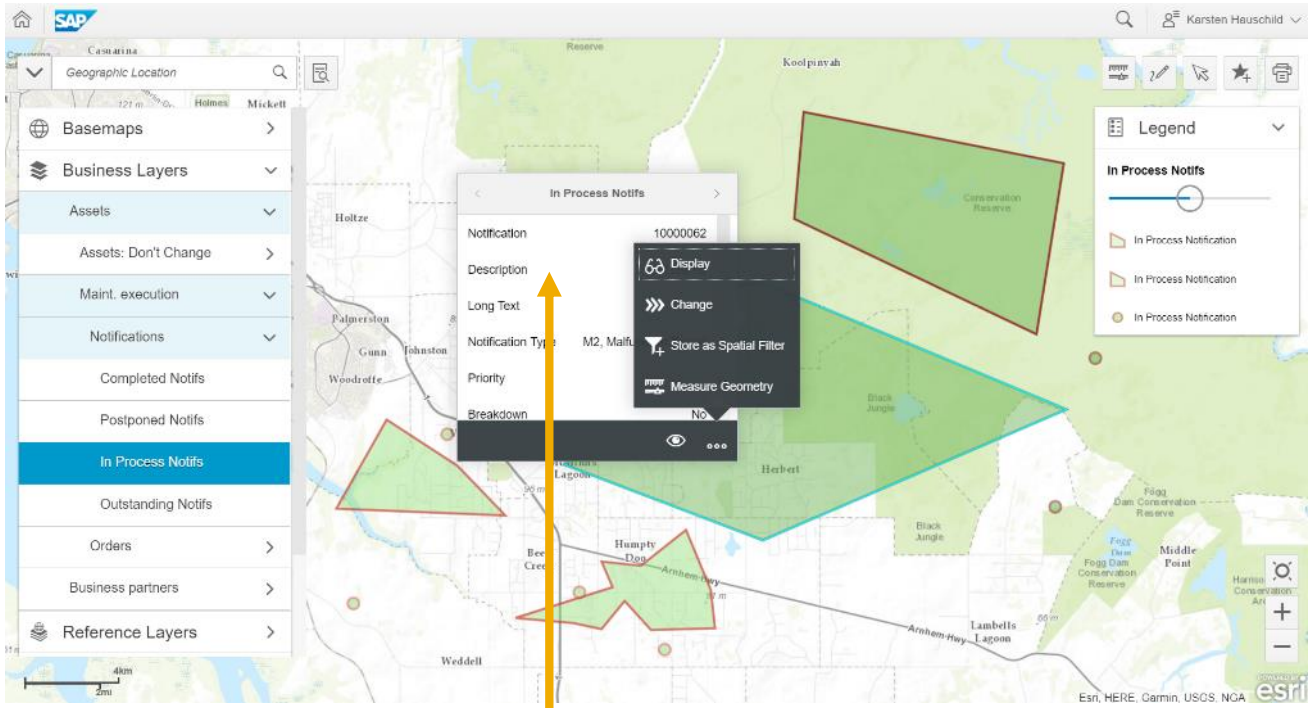
Spatial search

Time-dependent geometries

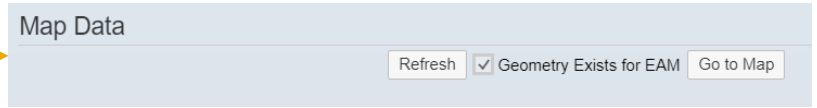
** Additional Installation & License*
*** Support for Esri ArcGIS as default*

SAP Geo Framework for SAP EAM / S/4HANA Asset Management

Run geo-enabled EAM business processes

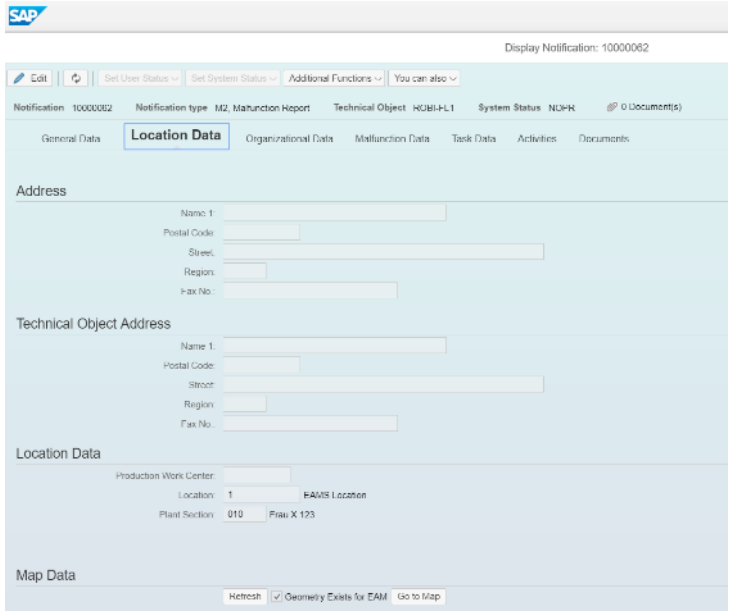


Example: Drill-down into SAP EAM backend system directly from the map



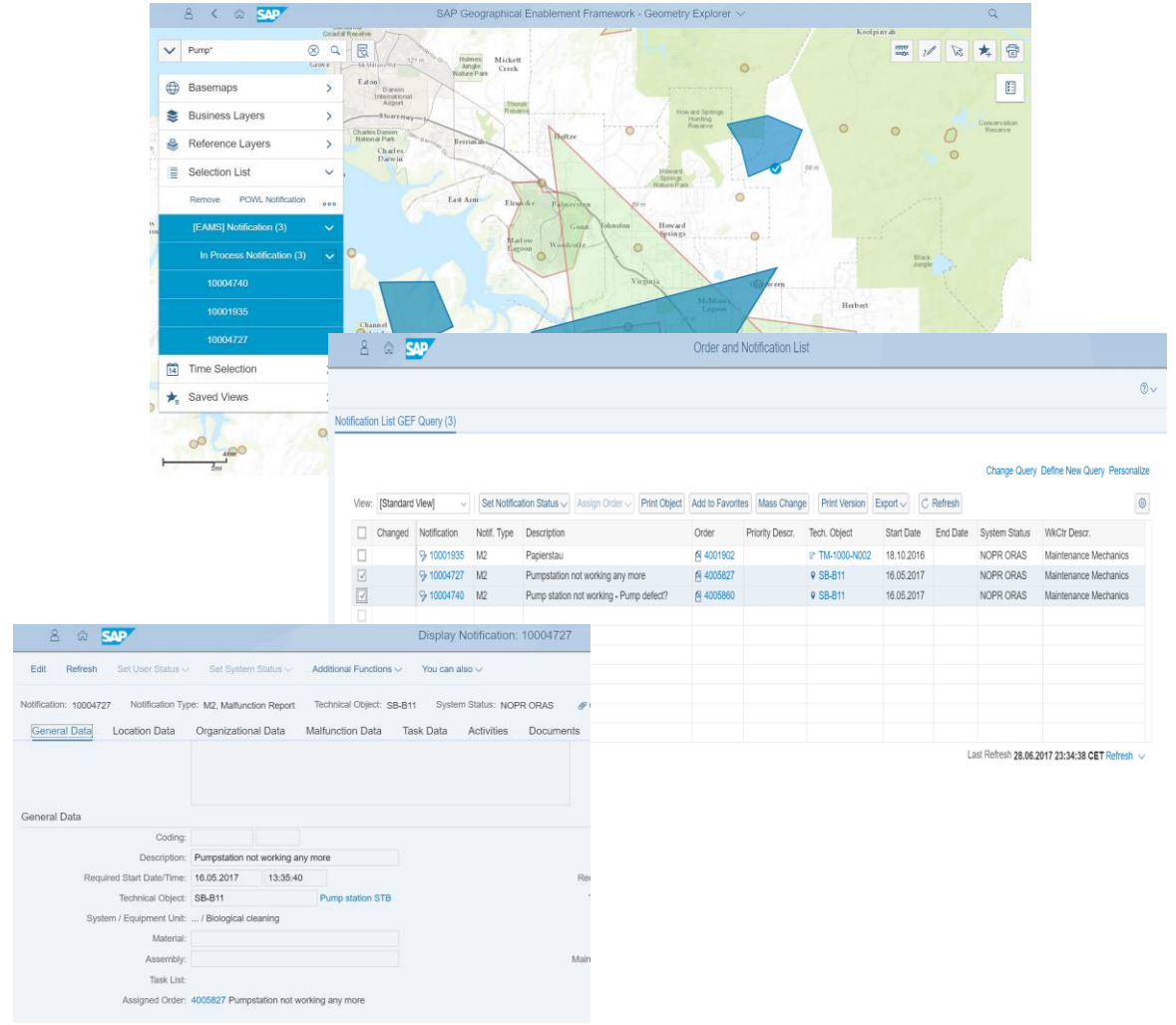
Supported EAM business objects *

- Equipment
- Functional location
- Maintenance order
- Maintenance notification



SAP Geo Framework for SAP S/4HANA Asset Management
Scope for SAP S/4HANA 1709

- Includes SAP Geographical Enablement Framework for SAP S/4HANA
- Bidirectional navigation between Geo Framework and S/4HANA Asset Management solution
- Manually create and change geometries of selected business data
- Geo-enabled technical objects*: Equipment, functional location
- Geo-enabled business transactions: PM notification, PM order
- Automatically copies geometry from superior technical objects
- Automatically copies geometries from technical objects and/or PM notifications to PM order.
- Automatically copies geometries from technical object to PM notification.
- Single action: Initiate creation of PM notification and PM order from a technical object via Geo Explorer
- Mass action: Selection of geo-enabled master data and transaction via the Geo Explorer with further processing within the backend Order and Notification List



Linear Asset Management and time-based geometry not supported

* *Additional Installation & License*

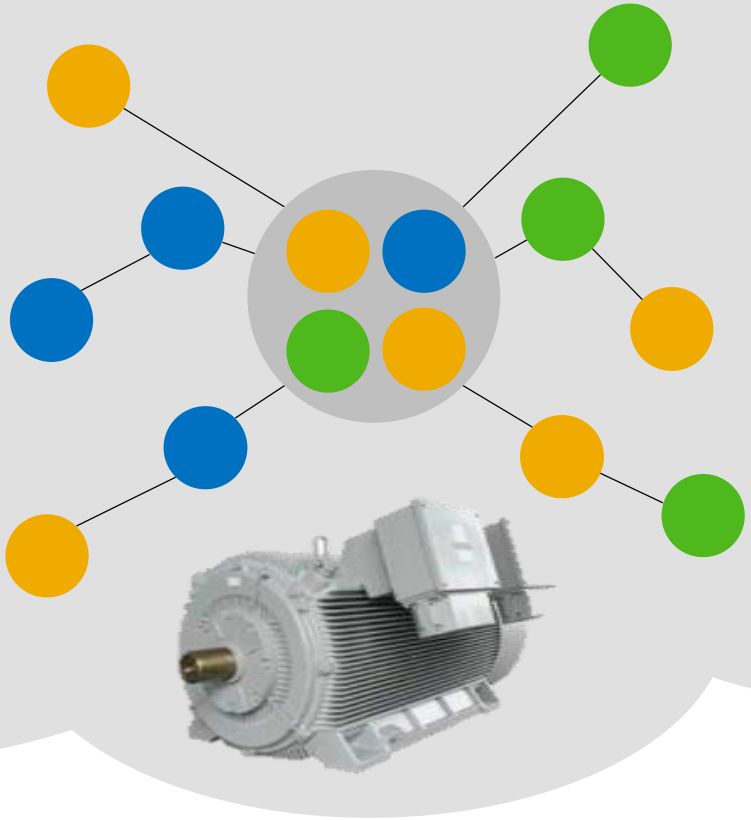
Integration into Asset Management

SAP Asset Intelligence Network

Cloud-based platform for asset information exchange

www.sap.com/ain

- Nameplate info
- Maintenance strategy
- 3D parts # / BOM
- Service bulletins & revs
- Failure modes
- Recalls
- Safety controls
- Process controls
- Service bulletin
- Designs and drawings
- Design improvements
- Sensor definition
- Licensing
- Operating instructions
- Maint instructions
- Safety instructions
- Product training

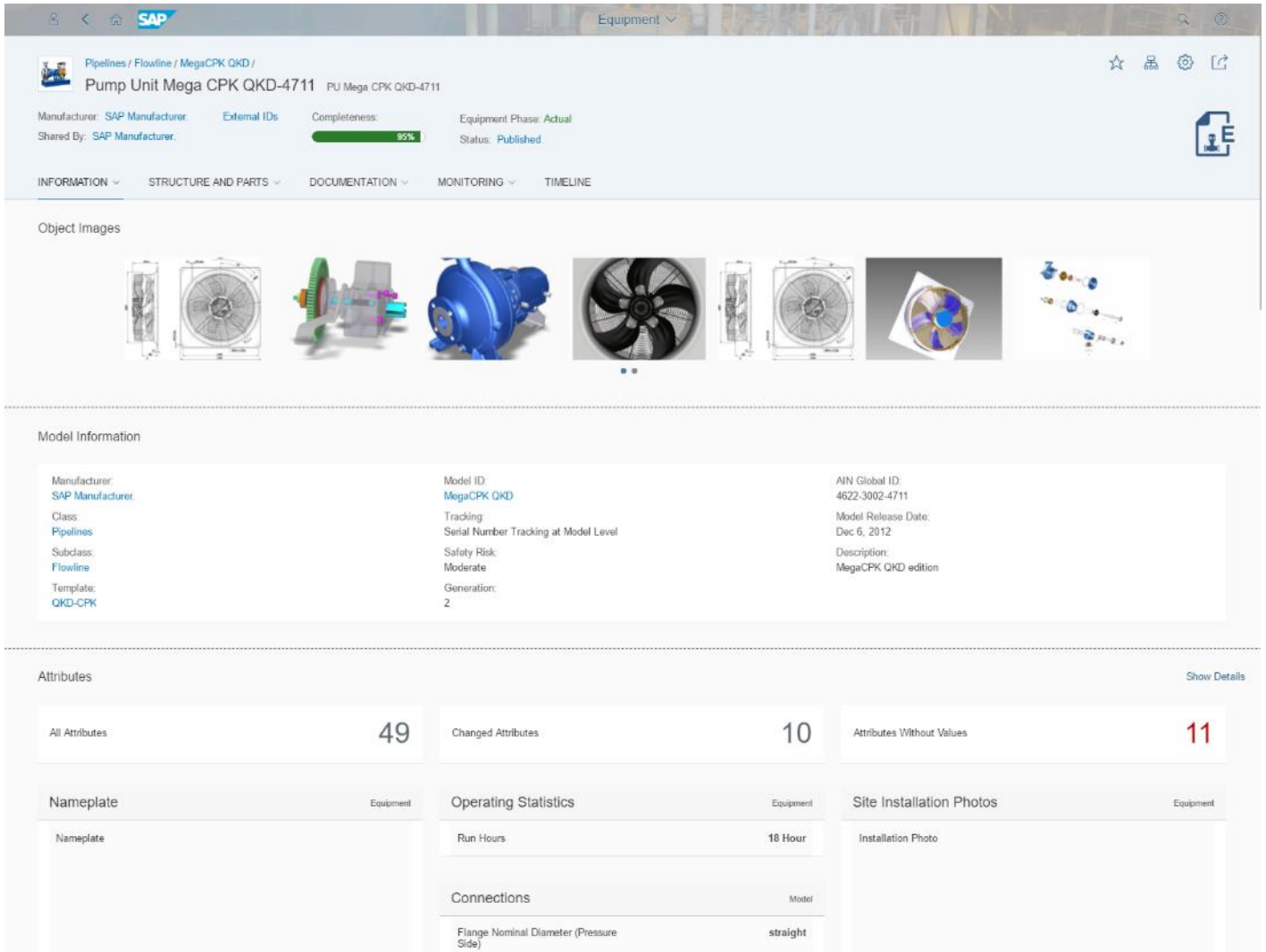


- Service bulletin receipt
- Service bulletin processed
- Usage information
- Installation information
- Failure / incident data
- Design recommendations
- Risks and controls
- Measurement documents
- Telemetry

Manufacturer | **Service provider** | **Operator**

SAP Asset Intelligence Network

Sharing Model and Equipment Information



Information
- Model Information
- Model Attributes
- Equipment Attributes
- Installation Information
- Life Cycle Information

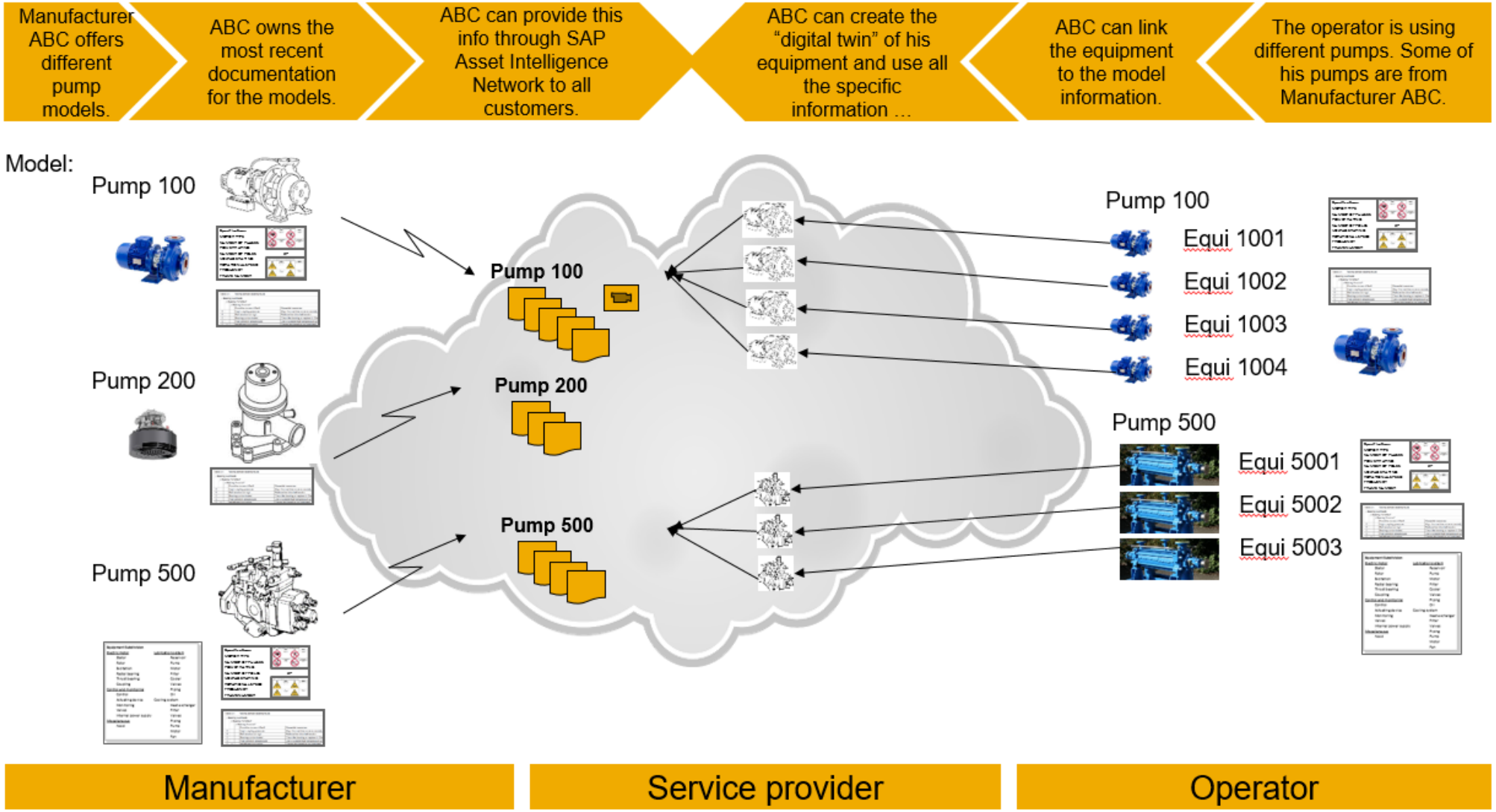
Structure and Parts
- Structure
- Spare Parts

Documentation
- Model Documents
- Equipment Documents
- Instructions
- Announcements

Monitoring
- Measuring Points
- Error Codes
- Improvement Cases
- Time Line

SAP Asset Intelligence Network

Cloud-based platform for asset information exchange



Solutions Predictive Maintenance

SAP Predictive Analytics

Gain completely new insights from your assets

Telemetry data

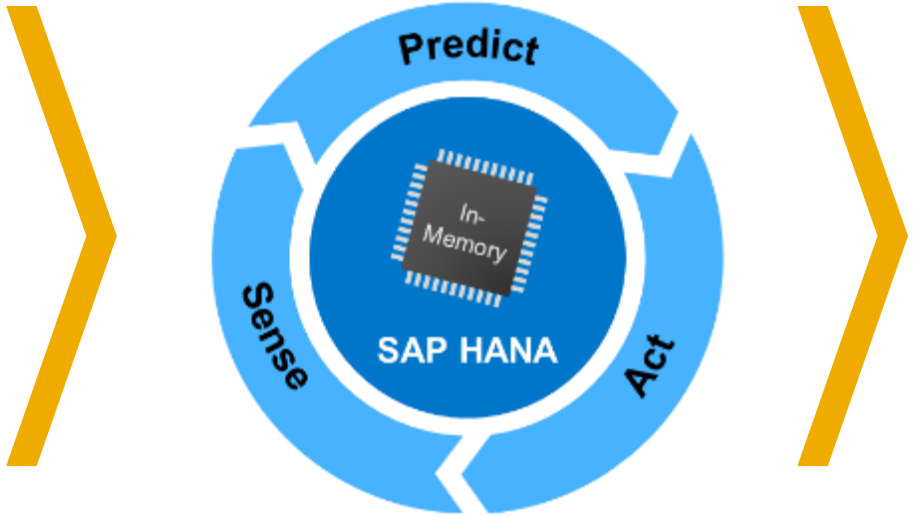
- Sensor measurements
- Geospatial data
- Diagnostics
- Events

Business data

- Warranty information
- Maintenance/ service history
- Customer profile
- Dealer events
- Cost and risk

Third-party data …

- Structured and unstructured, such as a weather forecast



Design improvements

Selling performance / pay per use

Machine health and early warnings to prevent downtime

Prioritizing maintenance and service activities

Optimized warranty and spare parts mgmt.

Benchmarking

SAP Predictive Maintenance and Service

From Sensor to Insight to Outcome

Sensor

Connected assets

- Onboarding
- Connectivity
- Device management
- Security

Data

IT/OT Convergence

- Big Data ingestion
- Big Data infrastructure
- Merging sensor data with business information

Insight

Data analysis

- Root cause analysis
- Asset health monitoring
- Machine learning
- Anomaly detection
- Triggering of corrective actions

Action

Maintenance activities

- Prioritized maintenance and service activities
- Optimized warranty and spare parts management
- Prescriptive Maintenance
- Quality improvements

Outcome

Business Value

- Customer experience
- Increased quality
- Lower costs
- Operational efficiency
- R&D effectiveness
- Material procurement

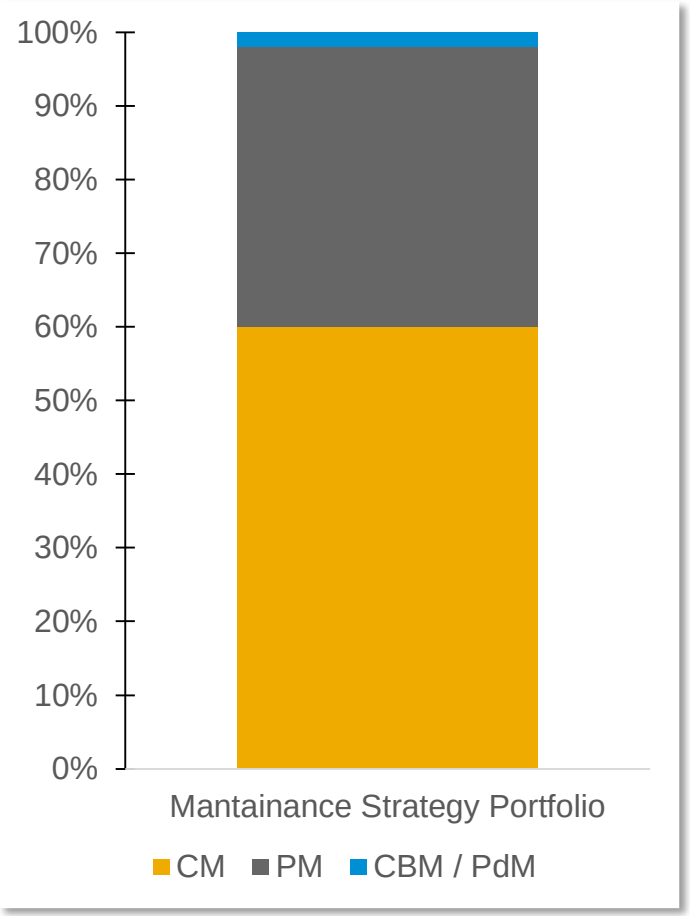
Solutions Asset Strategy and Performance Management

SAP Asset Strategy and Performance Management

"Support the asset management organization in **defining**, **planning** and **monitoring** the **optimal maintenance strategy** for physical assets by providing the required level of **collaboration** and **integration** as well as the needed **data** and **analytics**"

Vision: optimizing the maintenance strategy portfolio

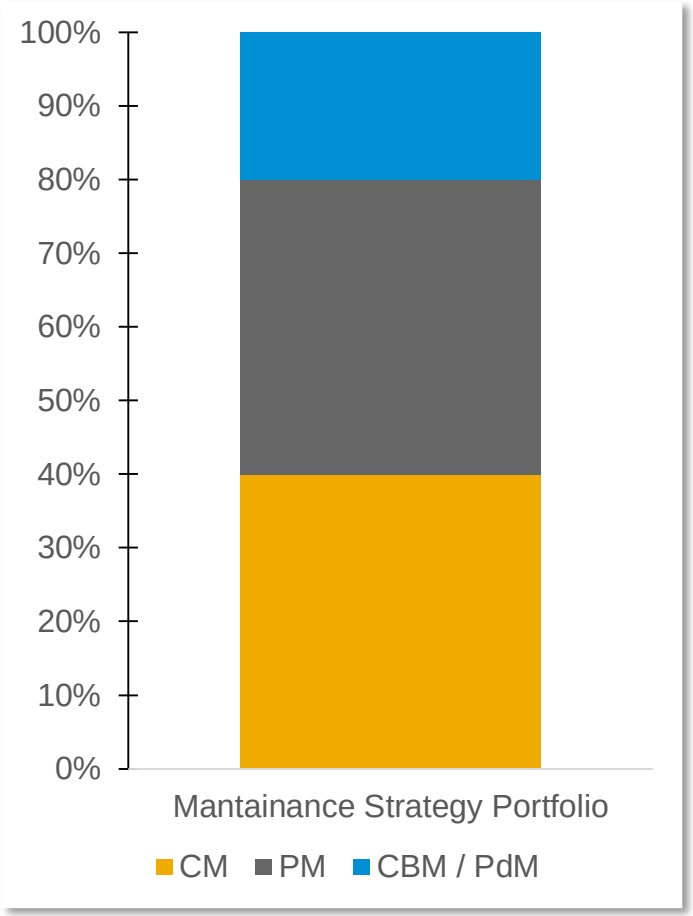
Current Maintenance Strategy



Collaboration
Integration
IoT
Analytics

SAP Asset Strategy and Performance Management

Optimal Maintenance Strategy



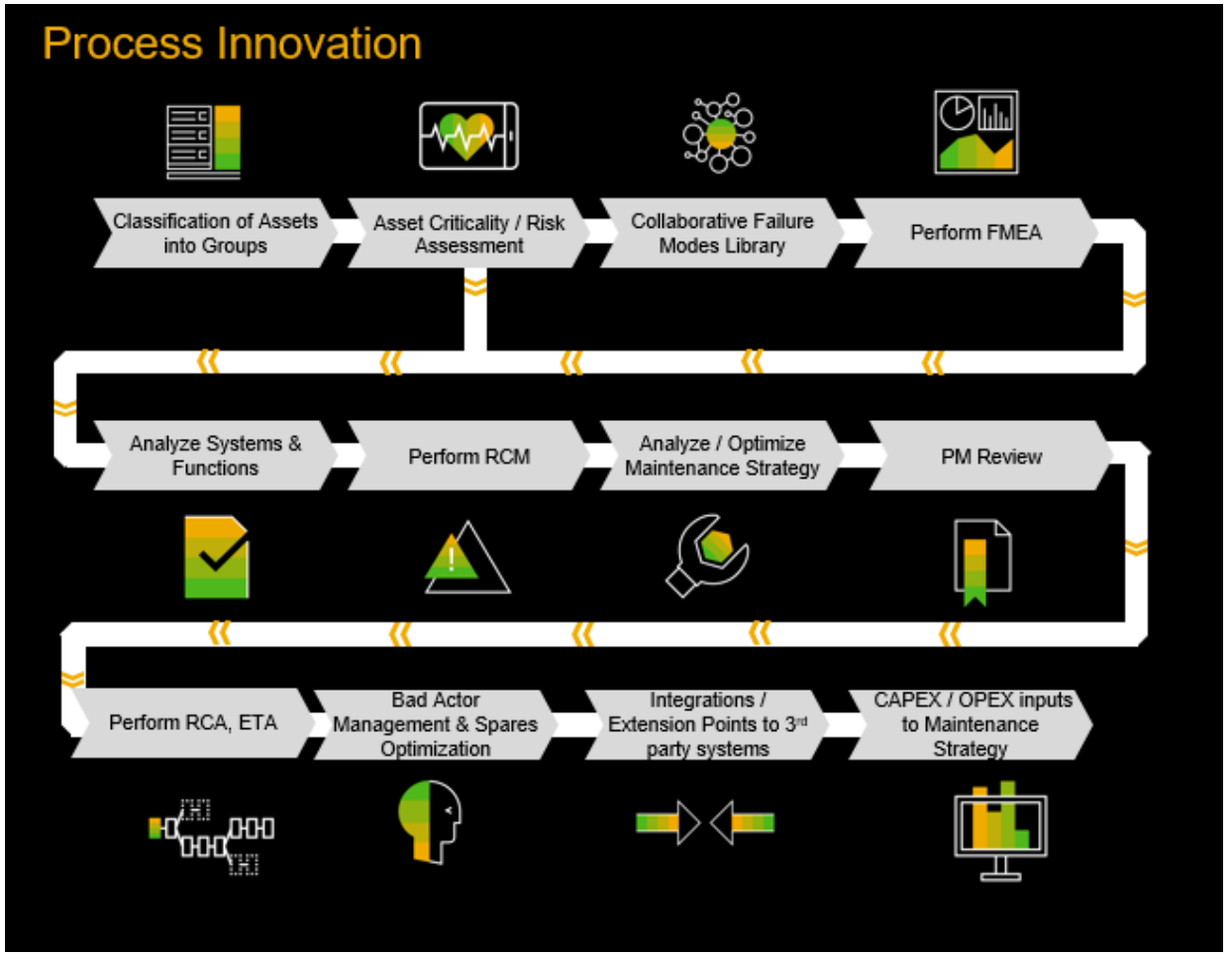
- Maximize asset productivity and availability
- Drive safe operations
- Minimize costs

This is the current state of planning and may be changed by SAP at any time.

SAP Asset Strategy & Performance Management

End-2-End Process Enablement to optimize maintenance strategies

- Increase overall asset availability
- Reduced MTBF - Increase equipment reliability
- Better utilization of assets
- Control Maintenance spend
- Reduce work backlog
- Identify savings opportunities through preventive and predictive maintenance
- Reduction of capital tied-up in spare parts inventory
- Adopt a proactive and targeted maintenance strategy
- Ability to change the sequence of the process using Point Apps



Asset Criticality Assessment

Asset Criticality Assessment

Asset Criticality Assessment

Which are the critical assets? Which assets are likely to benefit most from application of which analytical processes (i.e. RCM, FMEA)?

- Description:
  Assessment of asset (i.e. equipment, location and group of) criticality based on risk score.
  Informed assessment based on historical maintenance data and relevant KPIs (EAM/PdMS integration).
  Calculation of risk score based on different dimensions and scales and for different impact categories.
  Supporting the selection of the most appropriate analytical process (i.e. RCM/FMEA, PM review, CM) based on the result of the criticality assessment.

Asset Management Strategy

Asset Management Strategy

Asset Management Strategy

What asset management strategy (CM, PM, CBM, PdM) is appropriate at asset and, eventually, failure mode level? How can the current maintenance strategy be improved?

- Description:
  Supporting the identification of recommended actions at asset and, eventually, failure mode level by providing RCM/FMEA capabilities.
  Supporting PM review and optimization.
  Integrating OEM/3rd party content libraries.
  Enabling collaboration with manufacturers and service (e.g. content) providers on failure modes, recommended actions, etc.
  Identifying the optimal maintenance strategy among different scenarios based on risk, cost and performance objective functions.

Asset Management Monitoring

Asset Management Monitoring

Asset Management Monitoring

How is the asset and the asset management strategy performing?

- Description:
  Providing dashboards and reporting capabilities to monitor asset performance in terms of relevant KPIs for different categories (reliability, availability and maintainability, capacity, output quantity, output quality, safety and environment impact, etc.)
  Providing dashboards and reporting capabilities to monitor the efficiency and effectiveness of asset management strategy.
  Triggering and supporting informed updates of asset management strategy

Summary Key Takeaways

Digital Transformation in Asset Management driven by IoT, cloud, and business networks

What does Digital Transformation mean for Enterprise Asset Management?

Connect to the asset

- Bring together information from operational and business systems (IT/OT convergence)
- Leverage IoT for scaling transparency without neglecting existing information sources

Predict the asset system behavior

- Avoid unplanned downtime and major operational consequences through simulation and prediction
- Discover patterns of failure and preserve operational integrity
- Blend business IT information with operational (OT) data

Share asset information and collaborate

- Activate the ecosystem of OEMs, EPCs, service providers, and operators
- Make sure there is one version of truth on asset master data
- Use a business network to enable integrated processes in the cloud
- Optimize your maintenance strategies to move from reactive to proactive

Thank you!

More information:

www.sap.com/eam
www.sap.com/roadmaps
www.sap.com/solutionexplorer

http://scn.sap.com/community/eam

Martin Janssen
Solution Manager EAM
Line of Business Asset Management

SAP SE
Dietmar-Hopp-Allee 16
69190 Walldorf, Germany

T +49 6227 7-61996
F +49 6227 78-29169
M +49 170 8 555 123
E martin.janssen@sap.com