Enterprise Asset Management (EAM)

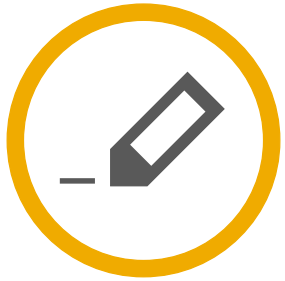
Curriculum: Introduction to S/4HANA using Global Bike

Teaching material - Information

Teaching material - Version

- 3.2 (May 2018)
- Software used
  - SAP S/4HANA 1709
- Model
  - Global Bike
- Prerequisites
  - No Prerequisites needed

Module Information



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Target Audience

- Beginner

Module Information

Learning Objectives

You are able to

- name some functionalities of the EAM module.
- define the central organizational structures of the EAM module.
- summarize the master data which is most important for the EAM module.
- explain a standard process of the Enterprise Asset Management.

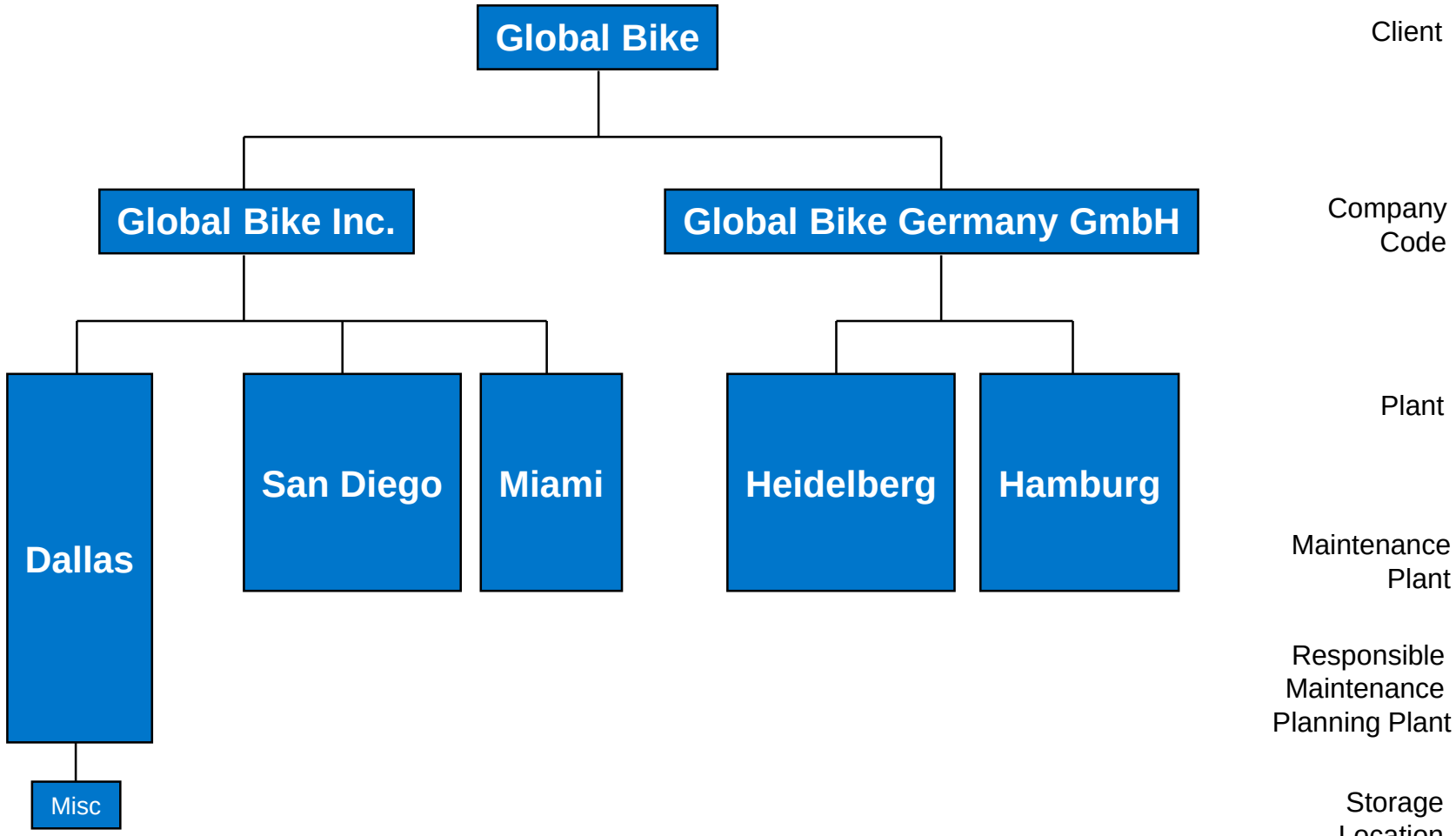
Functionality

- Planned Repair
- Instant Repair
- External Assignment
- Refurbishment
- Preventive Plant Maintenance
- Project oriented Plant Maintenance
- Shift Reports and Shift Notes

Agenda

- EAM Organizational Structure
- EAM Master Data
- EAM Processes
- S/4HANA What is new?

GBI Structure for Enterprise Asset Management



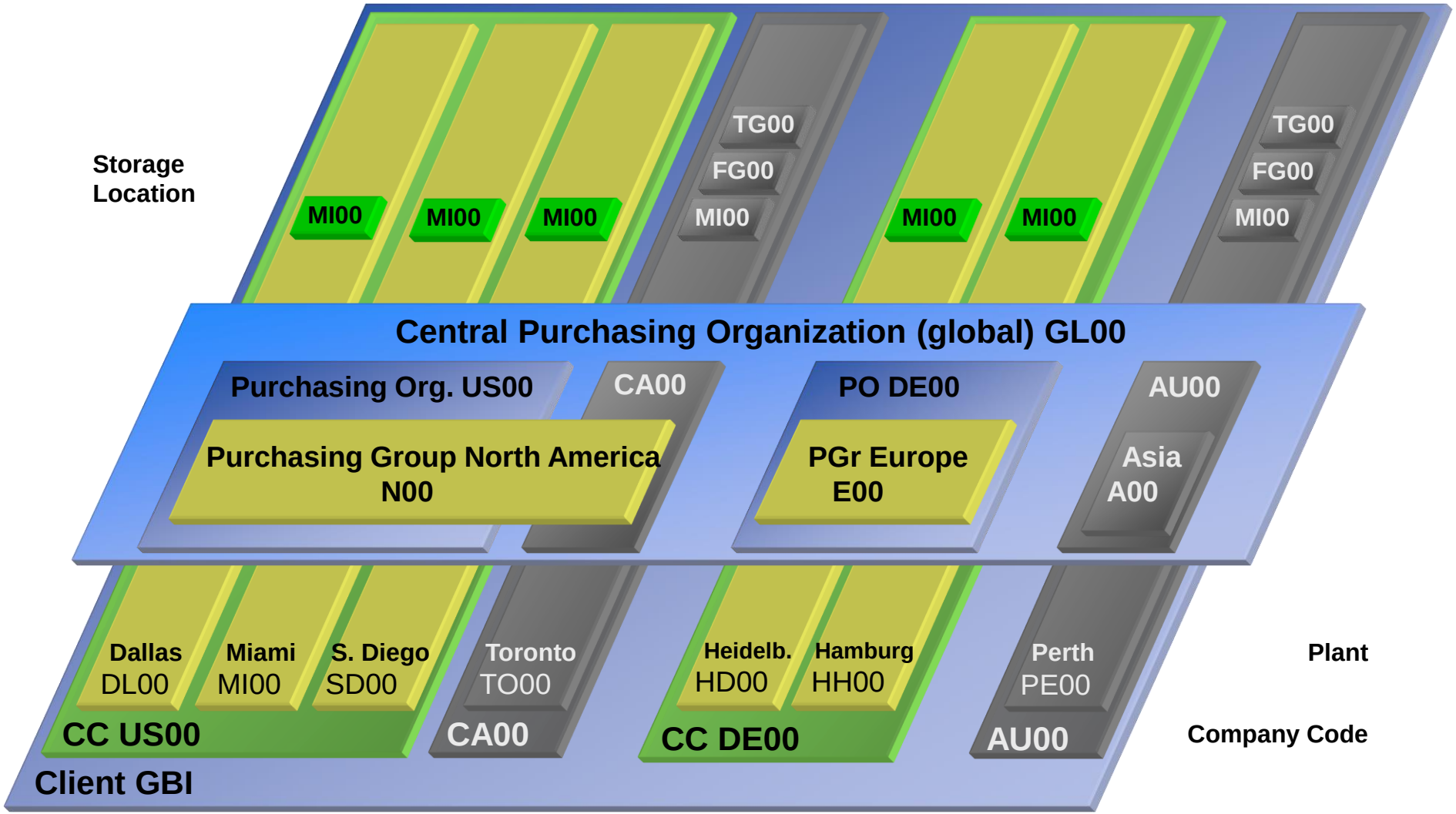
EAM Organizational Structure

- Client
  - An independent environment in the system
- Company Code
  - Smallest org unit for which you can maintain a legal set of books
- Plant
  - Operating area or branch within a company
    - Manufacturing, distribution, purchasing or maintenance facility
- Storage Location
  - An organizational unit allowing differentiation between the various stocks of material in a plant
  - Is required to store spare parts

EAM Organizational Structure

- Maintenance Plant
  - Plant in which the technical objects of a company are installed
- Maintenance Plant oriented organizational units:
  - Location (e.g. building number, coordinates)
  - Plant Section (responsibility for working assets)
  - Work Center (process measures of plant maintenance)
- Maintenance Planning Plant
  - Plant in which maintenance tasks are planned and prepared
- Planning Plant oriented organizational units :
  - Maintenance Planner Group (responsible for planning and processing maintenance tasks)
  - Work Center

GBI Enterprise Structure in SAP ERP (EAM)



Agenda

- EAM Organizational Structure
- EAM Master Data
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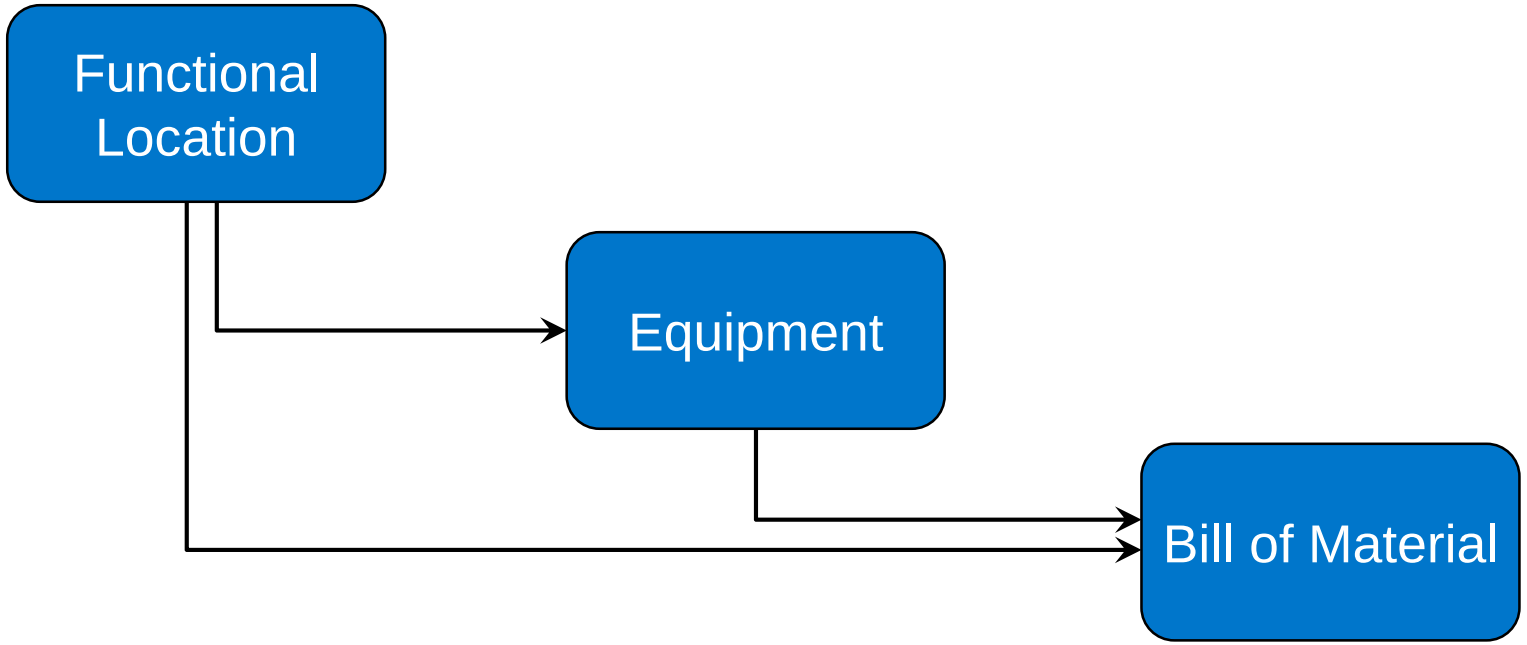
EAM Master Data

- Functional Location – Master Data
- Equipment – Master Data
- Bill of Material



Functional Location – Definition

- Hierarchically organized structure which represents e.g. a technical system, a building or a part of it
- Locations are normally fixed and do not move‘
- Structures maintenance objects according to following criteria:
  - spatial (e.g. buildings)
  - technical (e.g. pumping plant)
  - functional (e.g. production of bicycle frames)
- Functional locations can be used to sub-divide the objects into similar maintenance units
- Functional locations can contain different types of equipment

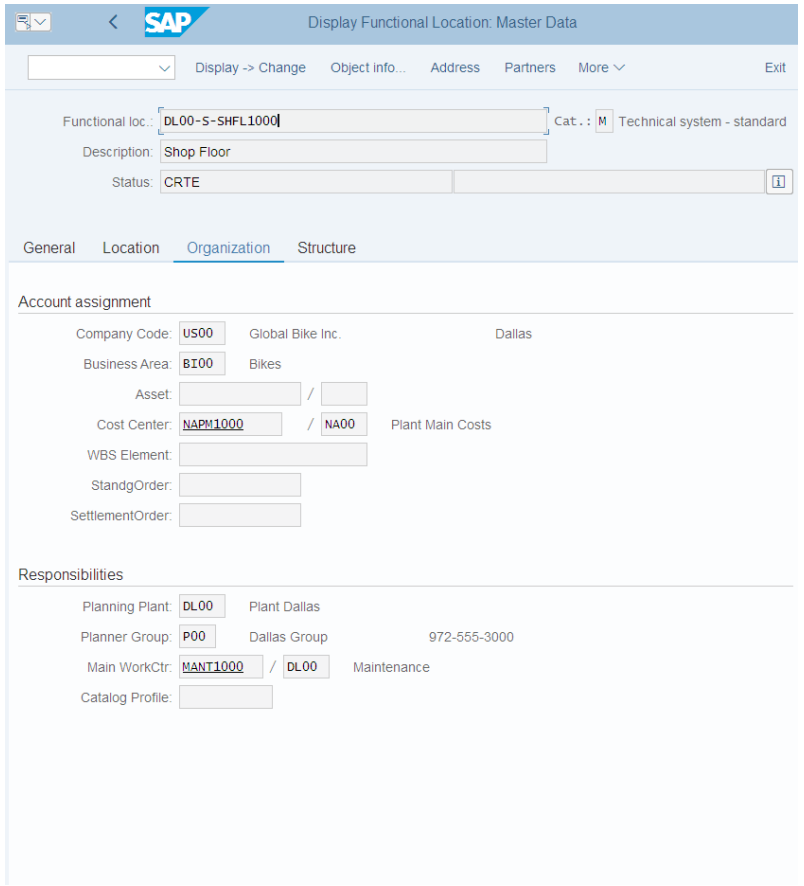
Functional Location – Advantages

- Structural depiction of a technical plant
  - Structure indicator makes hierarchy levels visible
- Planning and performing maintenance tasks
- Verification of maintenance tasks
- Data gathering for extended periods of time
- Cost monitoring
- Behavioral analysis individual areas under different conditions

Functional Location – Master Record

- Functional Location Master Data
  - contains all information about the functional location
  - Could be required in order to perform maintenance activities

- Information in four views:
  - General
  - Location
  - Organization
  - Structure



Equipment – Definition

- Individual and autonomous technical unit
- Physical object for which maintenance tasks are planned and performed
- Mobile character
- Examples: pumps, personal computers, circulation fan, engines
- Equipments can be placed in functional locations

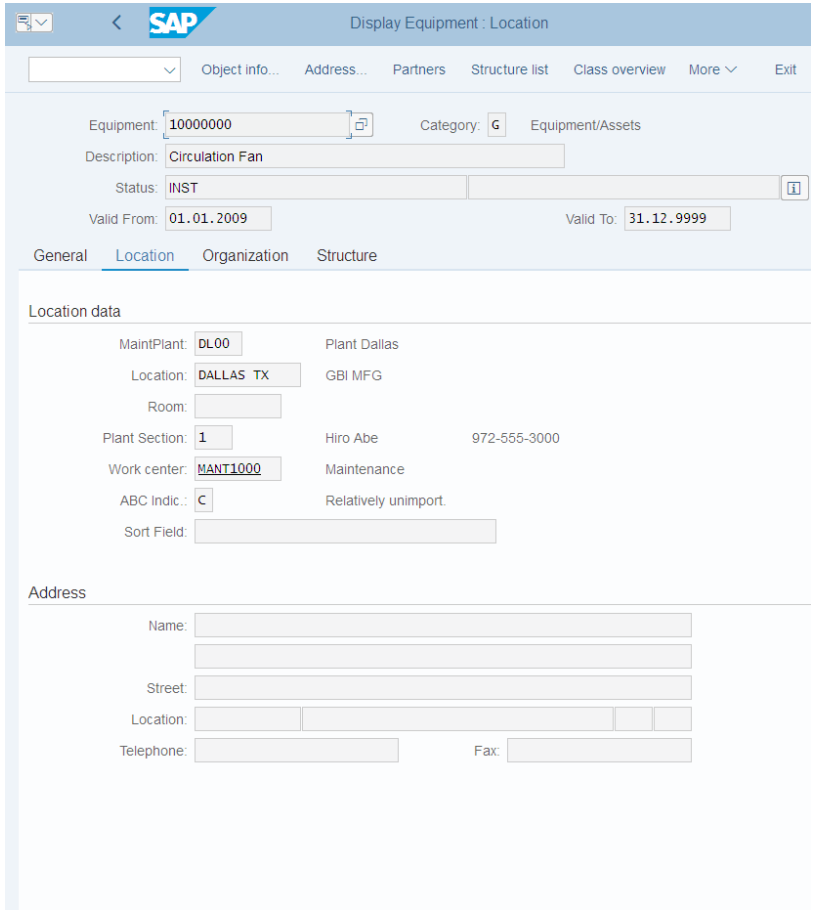
Equipment – Advantages

- Administration of individual objects and data
- Verification of maintenance tasks
- Object oriented cost monitoring
- Data gathering and analysis for extended periods of time

Equipment – Master Record

- Equipment Master Data
  - contains all information around equipment

- Information in four views:
  - General
  - Location
  - Organization
  - Structure



Bill of Material – Definition

- Complete formally structured list of all components
- Material BOMs can be allocated to functional locations or equipment
- Three types of BOMs in Enterprise Asset Management:
  - Material BOMs
  - Equipment BOMs
  - Functional location BOMs

Bill of Material – Advantages

- Structuring of objects
- Service parts planning in maintenance orders and maintenance task lists
- Within plant maintenance BOMs are used if there are similar objects that can be maintained

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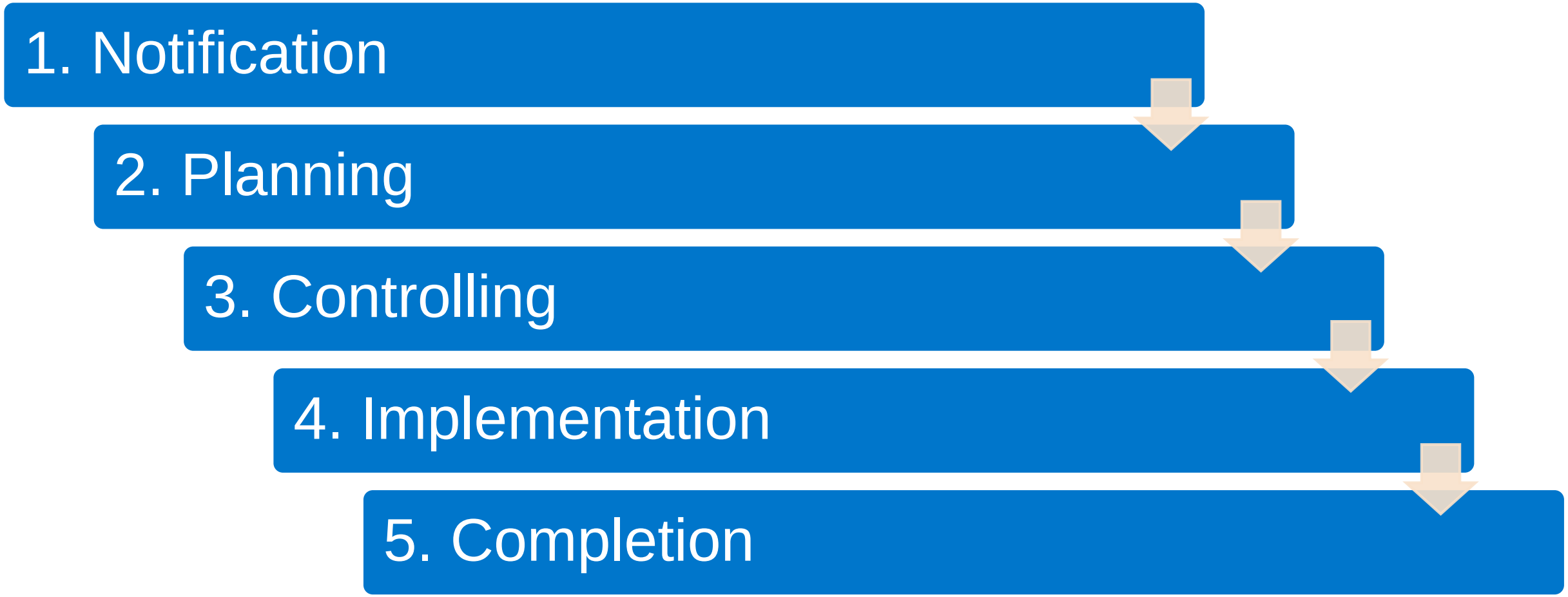
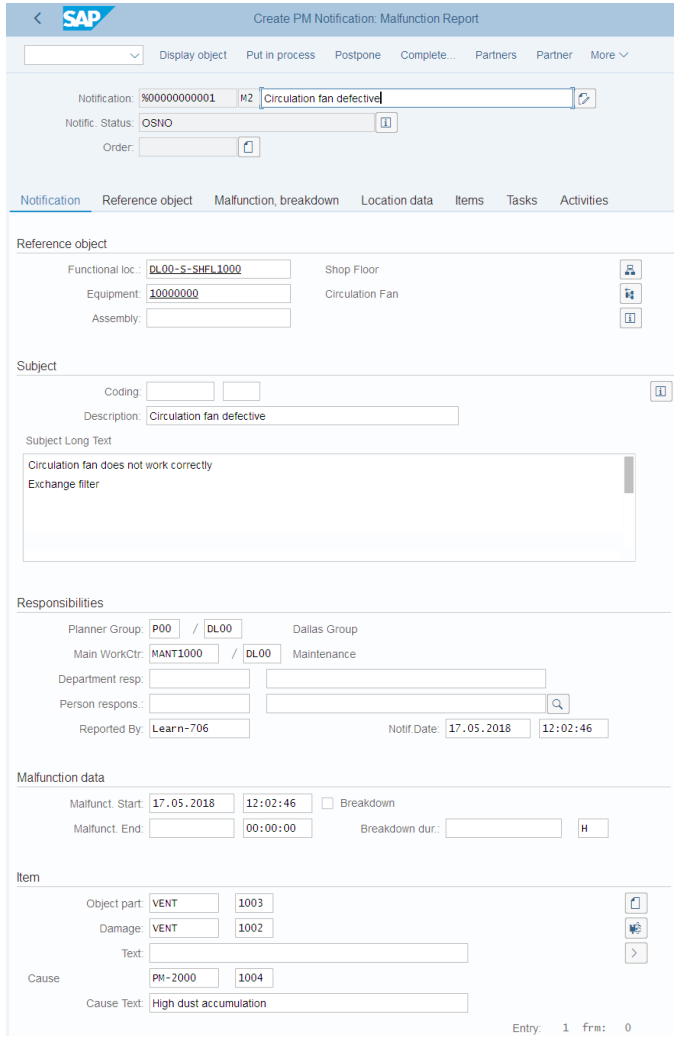
EAM Process (Planned Repair)



Notification

- Malfunctions and other requirements are gathered in notifications

- Content:
  - Technical object
  - Location data
  - Reported by
  - Description
  - Notification date
  - Breakdown
  - Damage location, damage cause code



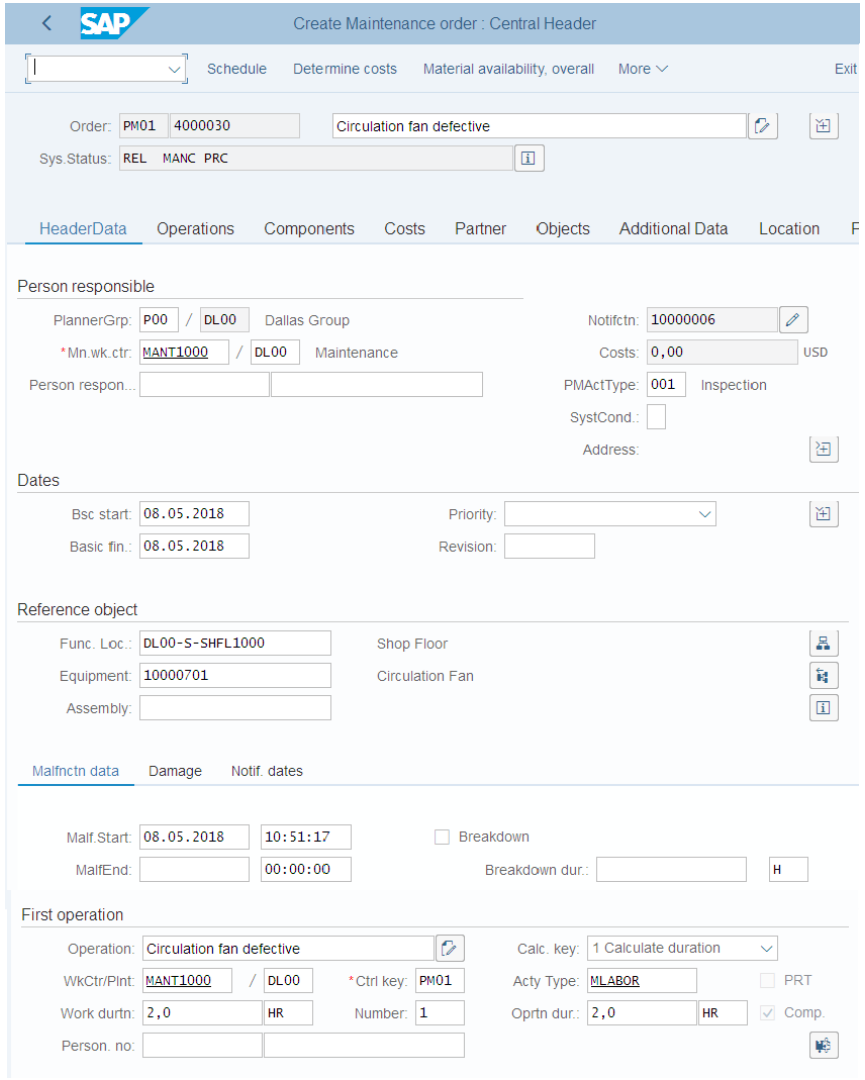
Notification

- Notifications are used to tell maintenance that something needs fixing
- They may or may not contain technical information
- They will often highlight a breakdown that needs to be actioned quickly
- Notifications can also be used to record works already carried out because a history needs to be maintained

Planning

- Order creation and order planning is normally triggered from a notification

- Order planning can include:
  - The steps to be Performed (Operations)
  - Required spare parts (Components)
  - Any specialized tooling



Planning

- Maintenance orders can be created from maintenance plans, notifications or created without any reference document
- Responsibilities for external or internal work are defined
- Material reservations take place order upon release
- Production resources like protective clothing and specialist tooling can be listed
- Planned costs are calculated based on internal activity rates and external service costs

Maintenance Order Control Functions

- Control functions for maintenance orders can vary depending on the type of order
- Order release is carried out once planning has been completed
- Maintenance orders provide the following functions:
  - Mass change or mass editing
  - Availability check for spare parts
  - Capacity requirements planning
  - Printing work instruction papers

Implementation and Completion

- Planned and unplanned material withdrawals (goods issue) are possible
- Order Completion Steps:
  - Time confirmation
  - Technical completion confirmation
  - Technical completion

- Customer billing can be performed after successful technical completion

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Innovations in S/4HANA in EAM

- Companies are moving more and more to proactive maintenance strategies
- **S/4HANA** enables real-time insights of asset performance for timely, relevant decisions
- Capabilities of **S/4HANA Asset Management**:
  - Simulate maintenance strategies with respect to cost, risk, and performance
  - Analyze data by machines and sensors (OT) to prevent downtime
  - Prioritize maintenance activities for scheduling

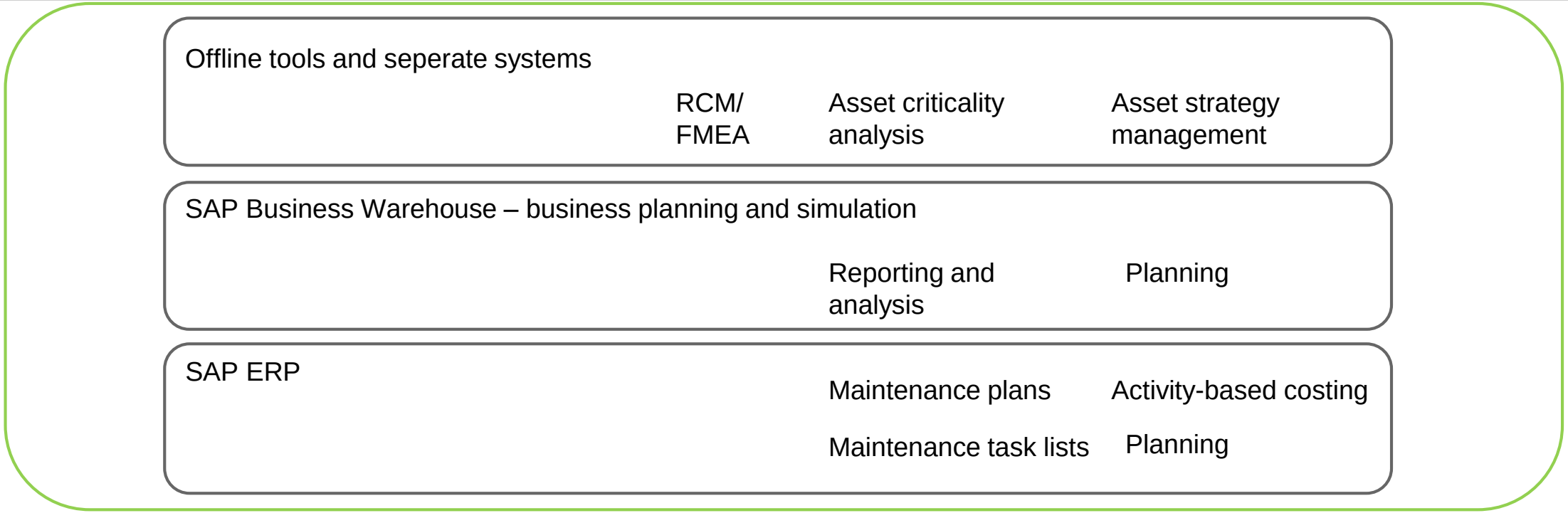
Innovations in S/4HANA in EAM

- Innovations:
  - Instant insight into asset system behaviour
  - combined view of IT and OT data
    - OT: Operational Technology is hardware and software that detects or causes a change by directly monitoring and / or controlling physical devices, processes, and events in the company
  - simplified user experience
- Goal: Added value through increased return on investment, increased customer satisfaction and lower maintenance costs

Innovations in S/4HANA in EAM
Predictive Maintenance and Service

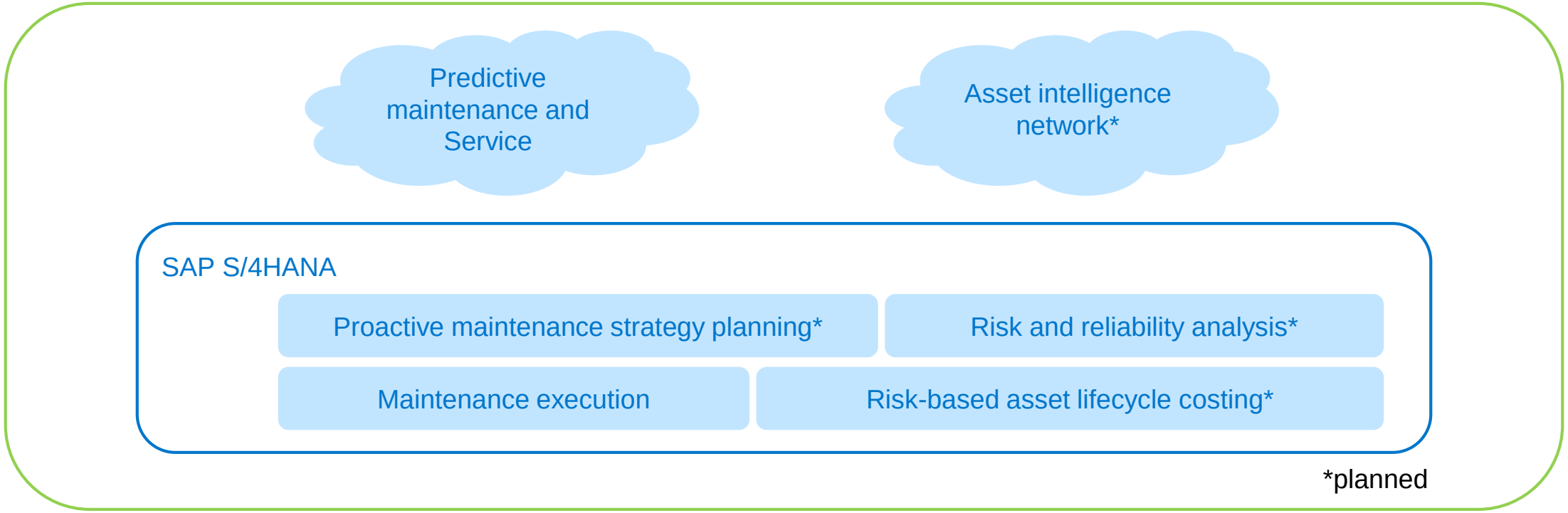
- Powered by SAP HANA in-memory technology
- Analyzes large volumes of sensor data (such as temeprature, vibration or rotation speed)
- Warning message long before a machine breaks down
- Internet of Things (IoT) solution uses real time machine data
  - Predict and prevent failures
  - Asset manufacturers can improve customer service – operators can maximize equipment uptime
- **From reactive to proactive maintenance**

Innovations in S/4HANA in EAM
EAM – Traditional system



- Lack of insight due to disparate systems and incomplete reporting capabilites
- Analysis based on past performance, not proactively driving asset strategies
- No real simulation and forecasting features
- Difficult to include OT data into condition-based maintenance plans
- Sophisticated analytics only available offline, hence losing transparency of strategy changes

Innovations in S/4HANA in EAM
With SAP S/4HANA



- Insight into asset performance, KPIs instantly refreshed
- Real-time view into ongoing maintenance activities with the ability to re-plan schedules multiple times a day
- Developing maintenance strategies based on reliability centered maintenance (RCM) and failure modes and effects analysis (FMEA) and asset criticality
- Planning and budgeting for lifecycle costs (capital expenditure/ operational expenditure) based on risk and performance
- Simulation, planning and optimization of maintenance activities
- Process integration with predictive maintenance and service and asset intelligence network

Thank you!