

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



Authors

- Stefan Weidner
- Robert Häusler
- Chris Bernhardt
- Babett Ruß



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.

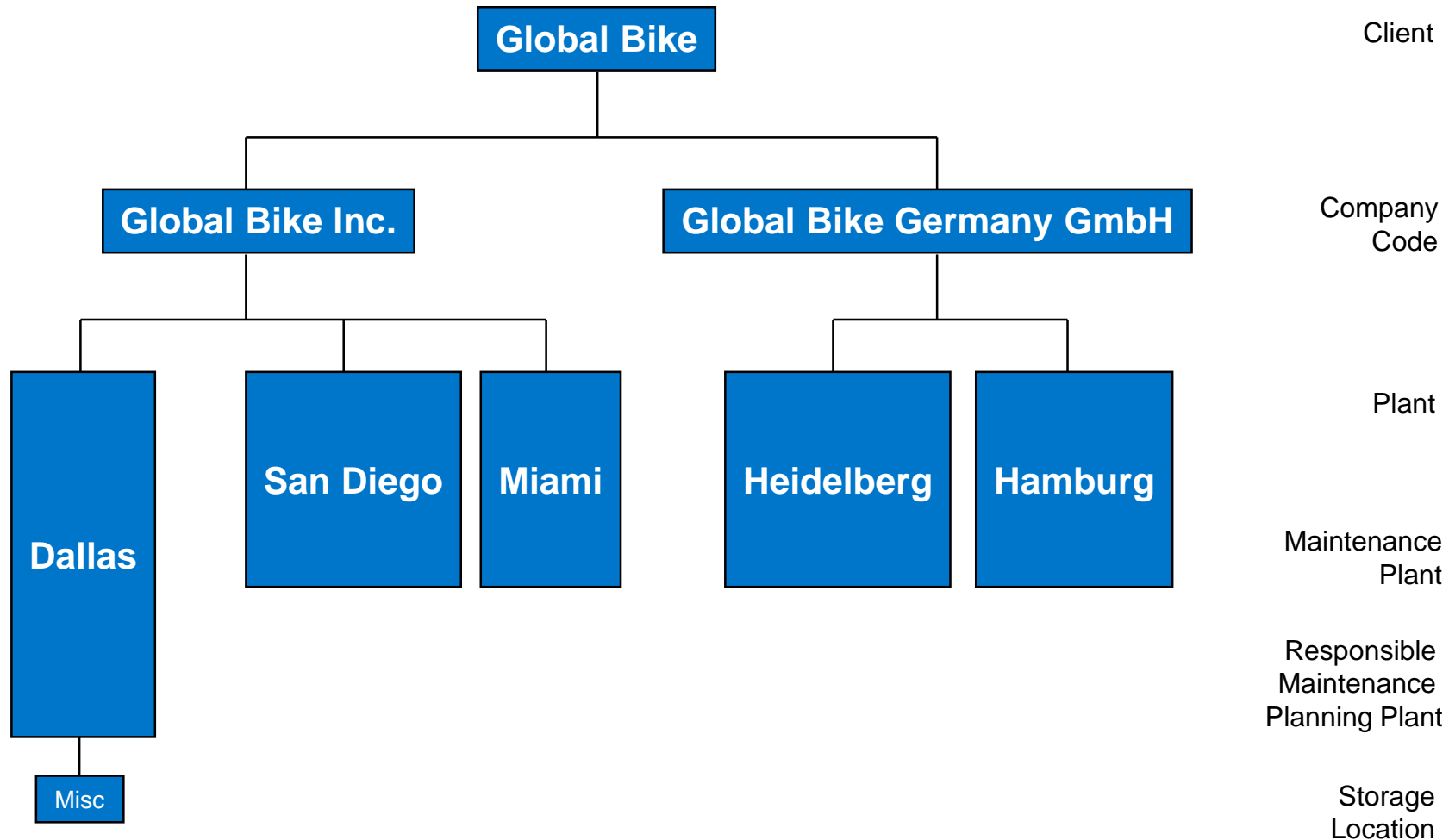
Functionality

- 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



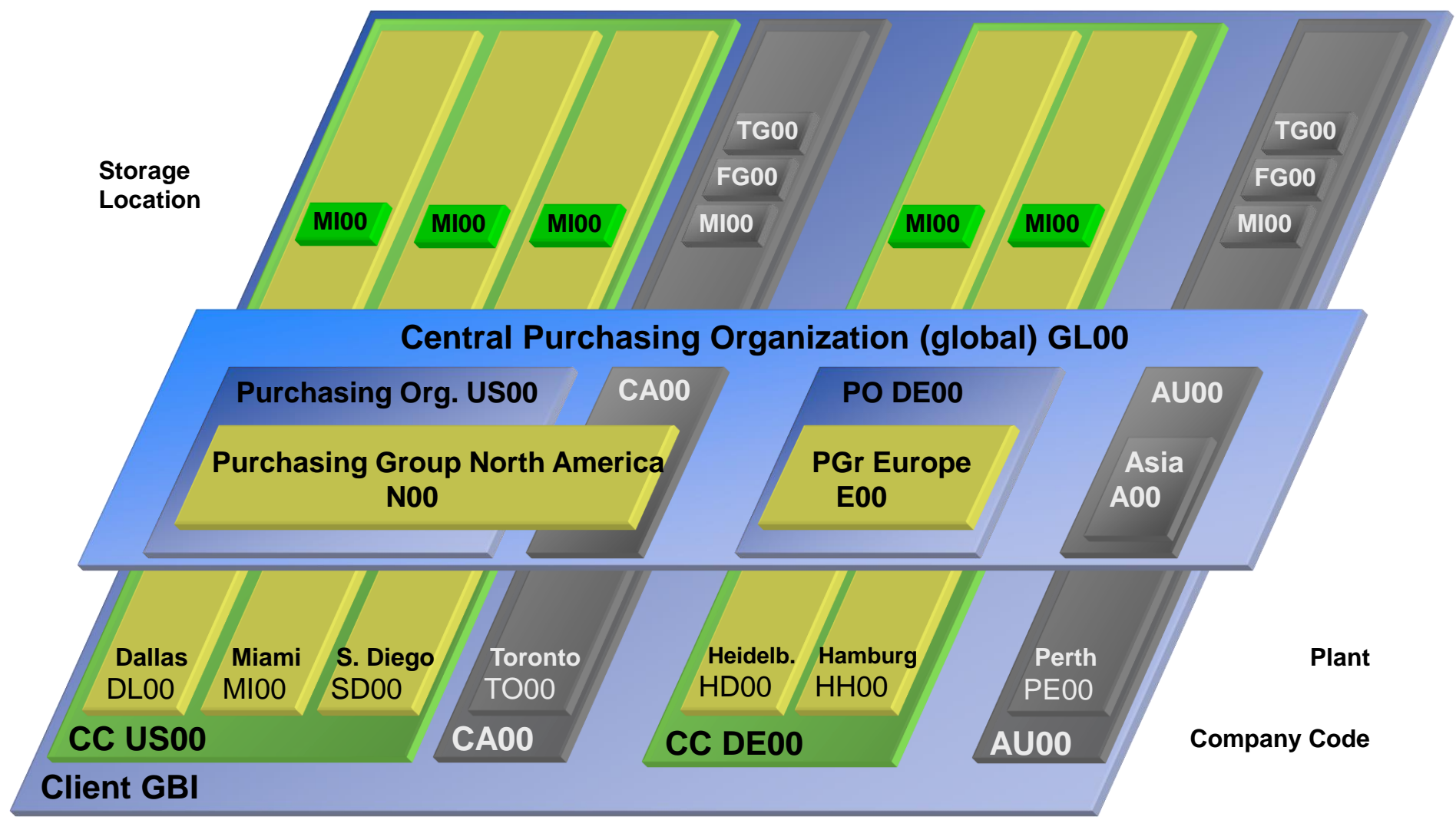
EAM Organizational Structure

- 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)

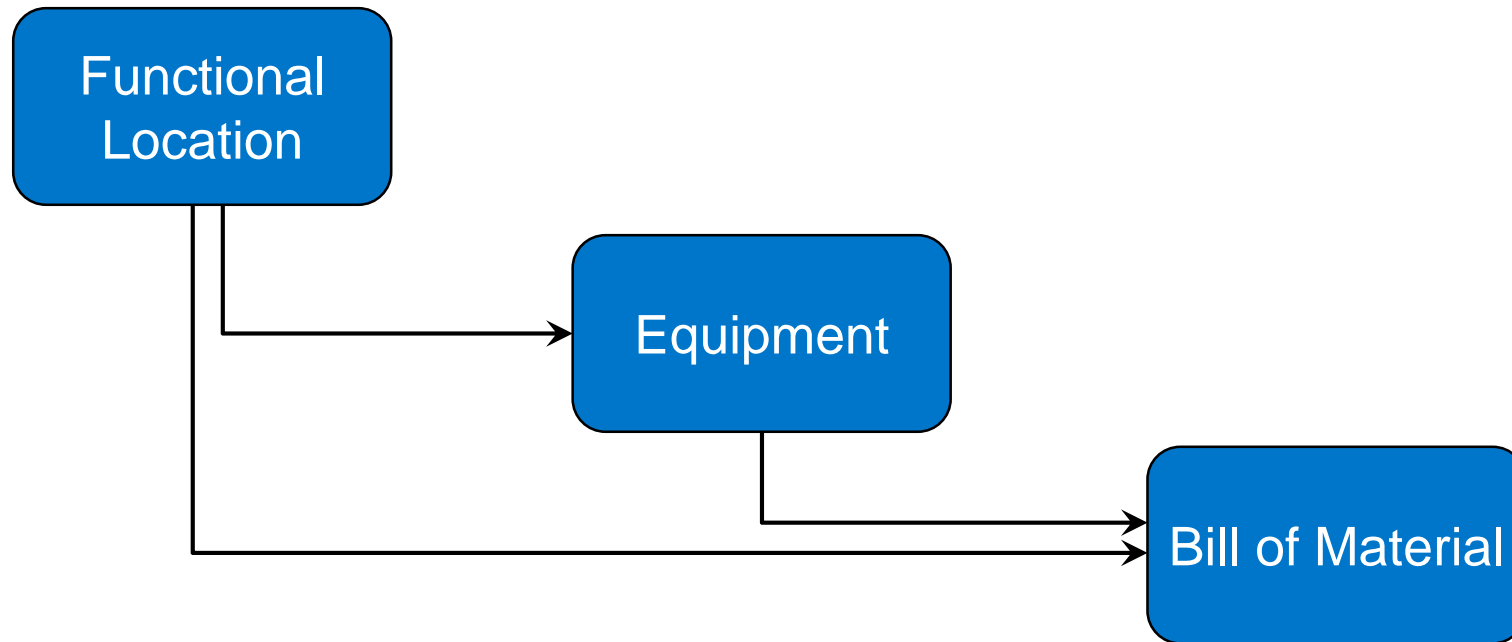


Agenda

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

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

The screenshot displays the SAP 'Display Functional Location: Master Data' interface. The 'Organization' tab is selected, showing the following data:

- Functional loc.:** DL00-S-SHFL1000
- Description:** Shop Floor
- Status:** CRTE
- Account assignment:**
 - Company Code: US00 (Global Bike Inc. Dallas)
 - Business Area: BI00 (Bikes)
 - Asset: /
 - Cost Center: NAPH1000 / NA00 (Plant Main Costs)
 - WBS Element: /
 - StandgOrder: /
 - SettlementOrder: /
- Responsibilities:**
 - Planning Plant: DL00 (Plant Dallas)
 - Planner Group: P00 (Dallas Group 972-555-3000)
 - Main WorkCtr: MANT1000 / DL00 (Maintenance)
 - Catalog Profile: /

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

The screenshot displays the SAP 'Display Equipment: Location' interface. At the top, there's a navigation bar with the SAP logo and tabs for 'Object info...', 'Address...', 'Partners', 'Structure list', 'Class overview', 'More', and 'Exit'. Below this, the main data area shows fields for 'Equipment' (10000000), 'Category' (G - Equipment/Assets), 'Description' (Circulation Fan), 'Status' (INST), 'Valid From' (01.01.2009), and 'Valid To' (31.12.9999). A tabbed interface below these fields includes 'General', 'Location' (selected), 'Organization', and 'Structure'. The 'Location data' section contains fields for 'MaintPlant' (DL00 - Plant Dallas), 'Location' (DALLAS TX - GBI MFG), 'Room', 'Plant Section' (1 - Hiro Abe - 972-555-3000), 'Work center' (MANT1000 - Maintenance), 'ABC Indic.' (C - Relatively unimport.), and 'Sort Field'. The 'Address' section at the bottom has fields for 'Name', 'Street', 'Location', 'Telephone', and 'Fax'.

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

Agenda

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

EAM Process (Planned Repair)

1. Notification

2. Planning

3. Controlling

4. Implementation

5. Completion

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

The screenshot displays the SAP 'Create PM Notification: Malfunction Report' interface. At the top, there's a navigation bar with a back arrow, the SAP logo, and the title 'Create PM Notification: Malfunction Report'. Below this is a toolbar with buttons: 'Display object', 'Put in process', 'Postpone', 'Complete...', 'Partners', 'Partner', and 'More'. The main form area is divided into several sections. The top section contains fields for 'Notification' (with a dropdown showing 'M2' and a text field 'Circulation fan defective'), 'Notific. Status' (with a dropdown showing 'OSNO'), and 'Order' (with a dropdown). Below this is a tabbed interface with tabs: 'Notification', 'Reference object', 'Malfunction, breakdown', 'Location data', 'Items', 'Tasks', and 'Activities'. The 'Reference object' tab is active, showing fields for 'Functional loc.' (DL00-S-SHEL1000), 'Equipment' (10000000), and 'Assembly'. The 'Subject' section has fields for 'Coding', 'Description' (Circulation fan defective), and 'Subject Long Text' (Circulation fan does not work correctly, Exchange filter). The 'Responsibilities' section includes fields for 'Planner Group' (P00 / DL00), 'Main WorkCtr' (MANT1000 / DL00), 'Department resp.', 'Person respons.', 'Reported By' (Learn-706), and 'Notif. Date' (17.05.2018 12:02:46). The 'Malfunction data' section has fields for 'Malfunc. Start' (17.05.2018 12:02:46), 'Malfunc. End' (00:00:00), and 'Breakdown dur.' (00:00:00). The 'Item' section includes fields for 'Object part' (VENT 1003), 'Damage' (VENT 1002), 'Text', 'Cause' (PM-2000 1004), and 'Cause Text' (High dust accumulation). At the bottom right, there's a status bar showing 'Entry: 1 frm: 0'.

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

The screenshot displays the SAP 'Create Maintenance order : Central Header' interface. The top navigation bar includes the SAP logo and the title. Below the title, there are tabs for 'Schedule', 'Determine costs', 'Material availability, overall', and 'More'. The main form area is divided into several sections: 'HeaderData' (active), 'Operations', 'Components', 'Costs', 'Partner', 'Objects', 'Additional Data', and 'Location'. The 'HeaderData' section contains fields for 'Order' (PM01 4000030), 'Circulation fan defective', 'Sys. Status' (REL MANC PRC), 'Person responsible' (PlannerGrp: P00 / DL00, Dallas Group), 'Mn. wk. ctr.' (MANT1000 / DL00, Maintenance), 'Person respon...', 'Notifctn' (10000006), 'Costs' (0,00 USD), 'PMActType' (001 Inspection), 'SystCond.', and 'Address'. The 'Dates' section includes 'Bsc. start' (08.05.2018), 'Basic fin.' (08.05.2018), 'Priority', and 'Revision'. The 'Reference object' section shows 'Func. Loc.' (DL00-S-SHFL1000, Shop Floor), 'Equipment' (10000701, Circulation Fan), and 'Assembly'. The 'Malfnctn data' section includes 'Malfnctn data', 'Damage', and 'Notif. dates'. The 'First operation' section contains 'Operation' (Circulation fan defective), 'WkCtr/Pint' (MANT1000 / DL00), 'Ctrl key' (PM01), 'Work durtn' (2,0 HR), 'Number' (1), 'Person. no.', 'Calc. key' (1 Calculate duration), 'Acty Type' (MLABOR), 'Oprtn dur.' (2,0 HR), and 'Comp.'. The bottom of the screen shows the copyright notice '© 2017 SAP SE / SAP UCC Magdeburg. All rights reserved.' and the page number '25'.

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

Agenda

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

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

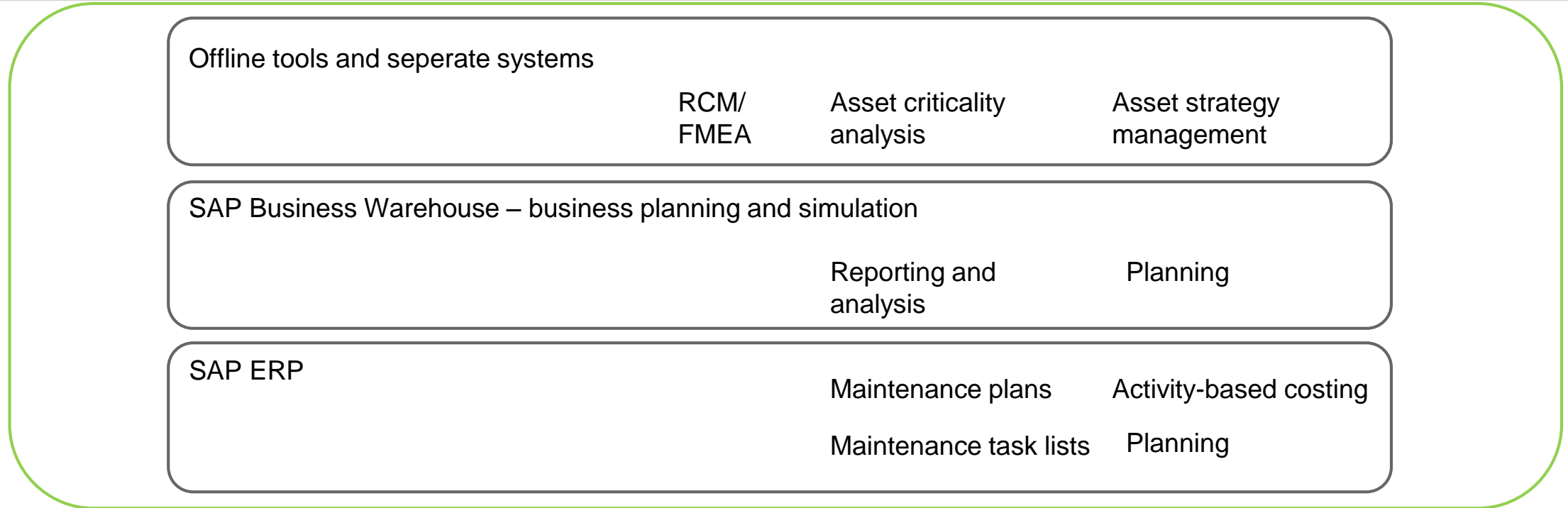
Innovations in S/4HANA in EAM

Predictive Maintenance and Service

- Powered by SAP HANA in-memory technology
- Analyzes large volumes of sensor data (such as temperature, 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

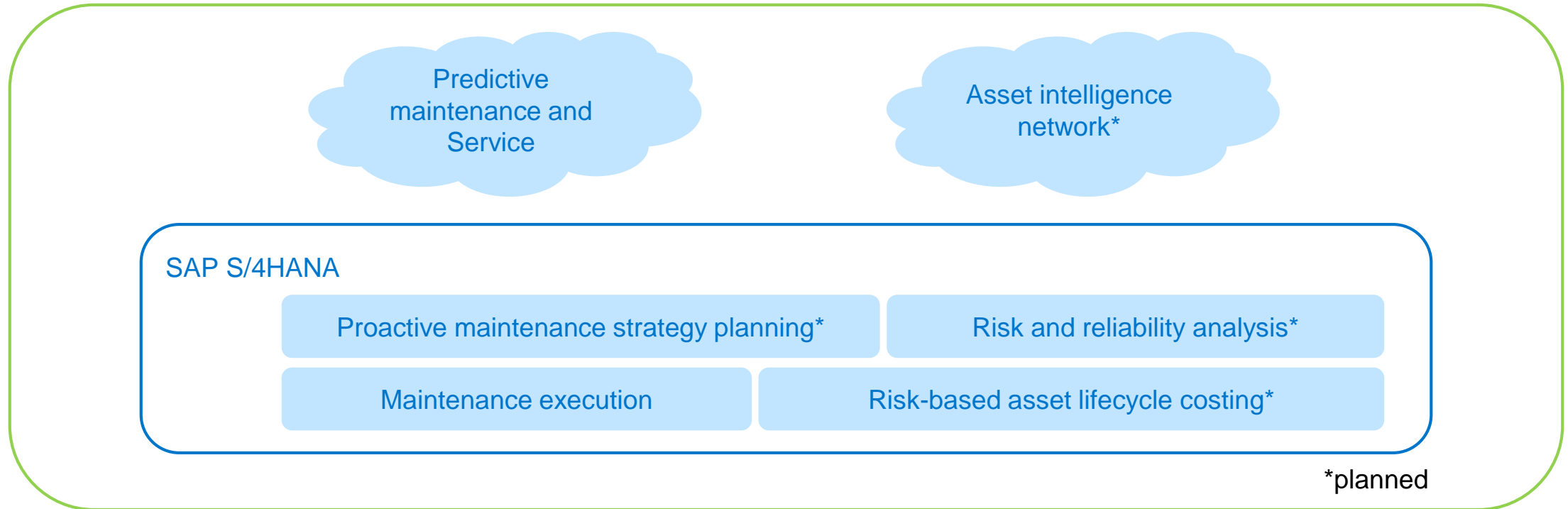
EAM – Traditional system



- Lack of insight due to disparate systems and incomplete reporting capabilities
- 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!

