



# SAP Digital Manufacturing Cloud at an Adhesive Producer

Jan Woelken, SAP  
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Public



# **Manufacturing in Cloud – How?**

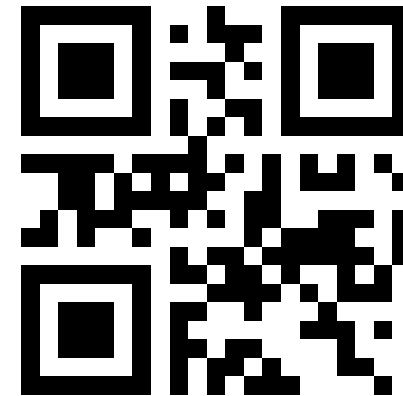


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# SAP Digital Manufacturing Cloud implementation at an Adhesive Producer

## Our Customer

- ❑ International Adhesive Producer
- ❑ Plants in Europe, Asia and US
- ❑ One SAP S/4HANA
- ❑ Local Manufacturing Execution (ME) solutions

## The Why - Customer Problem Statement

- ❑ Lacking of inventory transparency
- ❑ Wide-spread paper-based business processes in place requiring a lot of manual synchronization activities
- ❑ Limitation of current ME solutions to support innovative intelligent business processes

## Implementation Partner

- ❑ Co-Innovation Project with SAP Consulting



# SAP Digital Manufacturing Cloud in a Nutshell

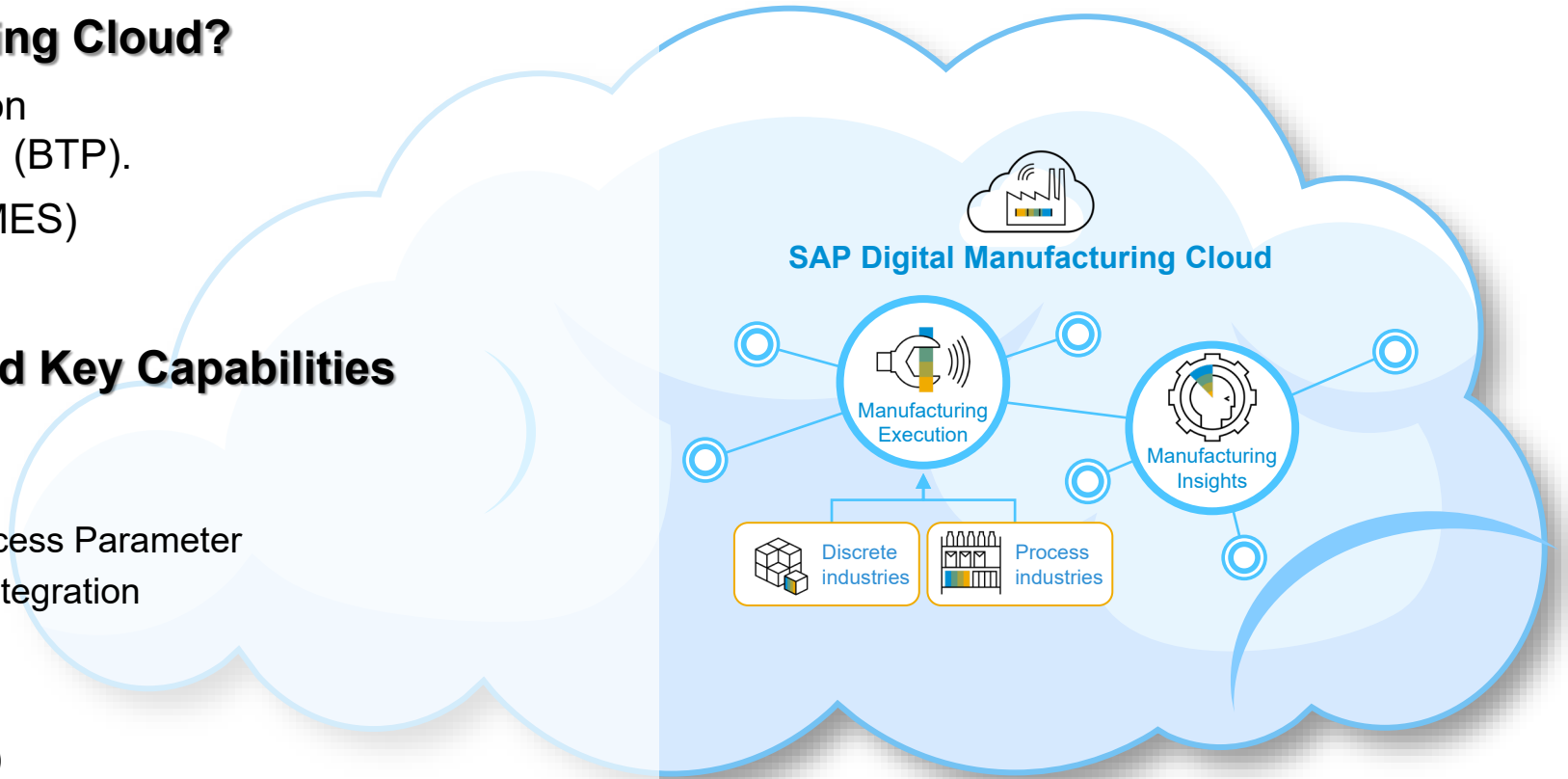
## Product overview

### What is SAP Digital Manufacturing Cloud?

- ❑ SAP public cloud solution running on SAP Business Technology Platform (BTP).
- ❑ Manufacturing execution system (MES) following Industry 4.0 approach.

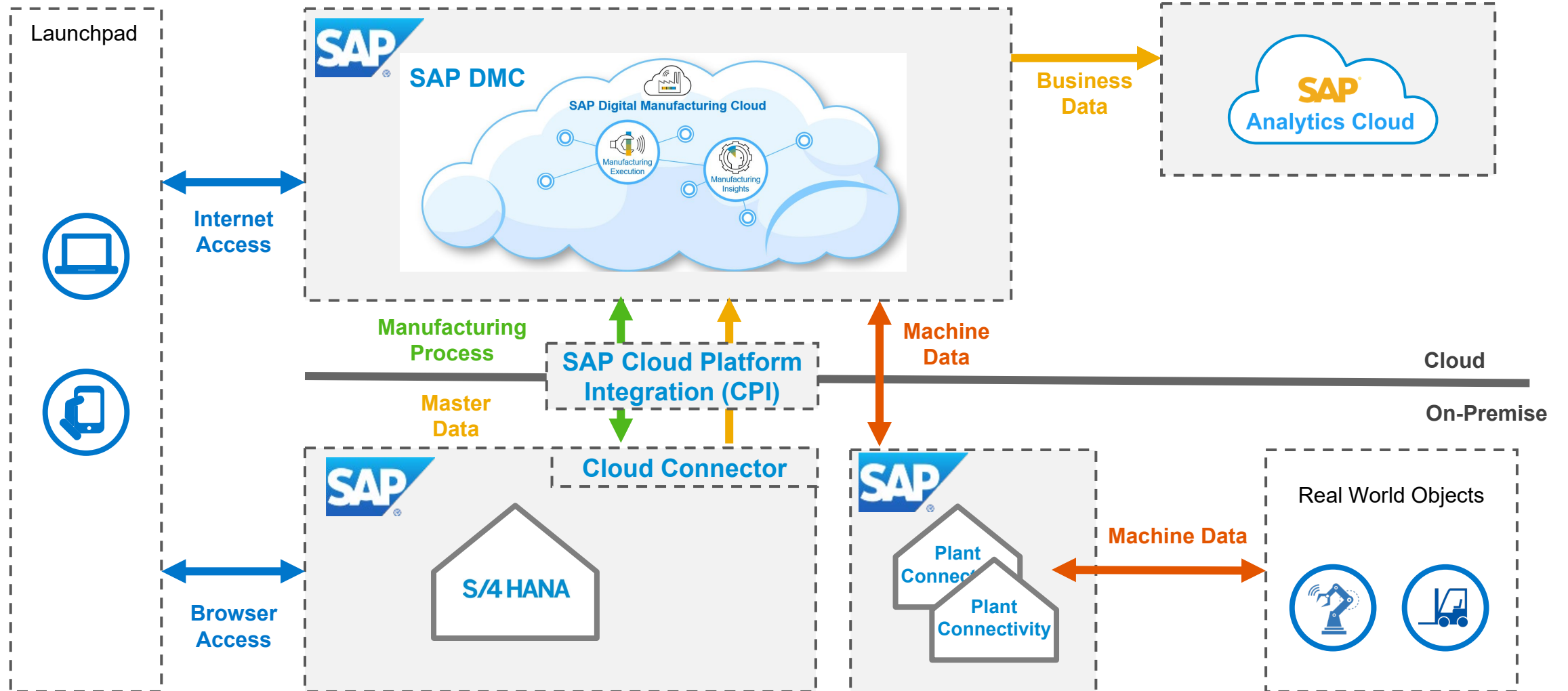
### SAP Digital Manufacturing Cloud Key Capabilities

- ❑ **Manufacturing Execution**
  - Production Operator Dashboard (POD)
  - Work Instructions, Data Collection, Process Parameter
  - Process automatization and machine integration
  - SAP ERP integration
- ❑ **Manufacturing Insights**
  - Overall Equipment Effectiveness (OEE)
  - Root cause analysis
  - Personalized KPIs
  - Alert management



# SAP Digital Manufacturing Cloud in a Nutshell

## Architecture



# #smartFactory Implementation – Phases and Scope



# 1

## Phase 1

- Integration SAP S/4HANA-DMC (Production Plannings, Material Management and Warehouse Management)
- Master data and order update
- Order POD enablement (filling)
- Order status management
- Batch Management

2022/23

# 2

## Phase 2

- Order POD (all manufacturing levels)
- DMC Insights (OEE)
- Edge scenarios
- Integration SAP S/4HANA-DMC (Quality Management)

2023

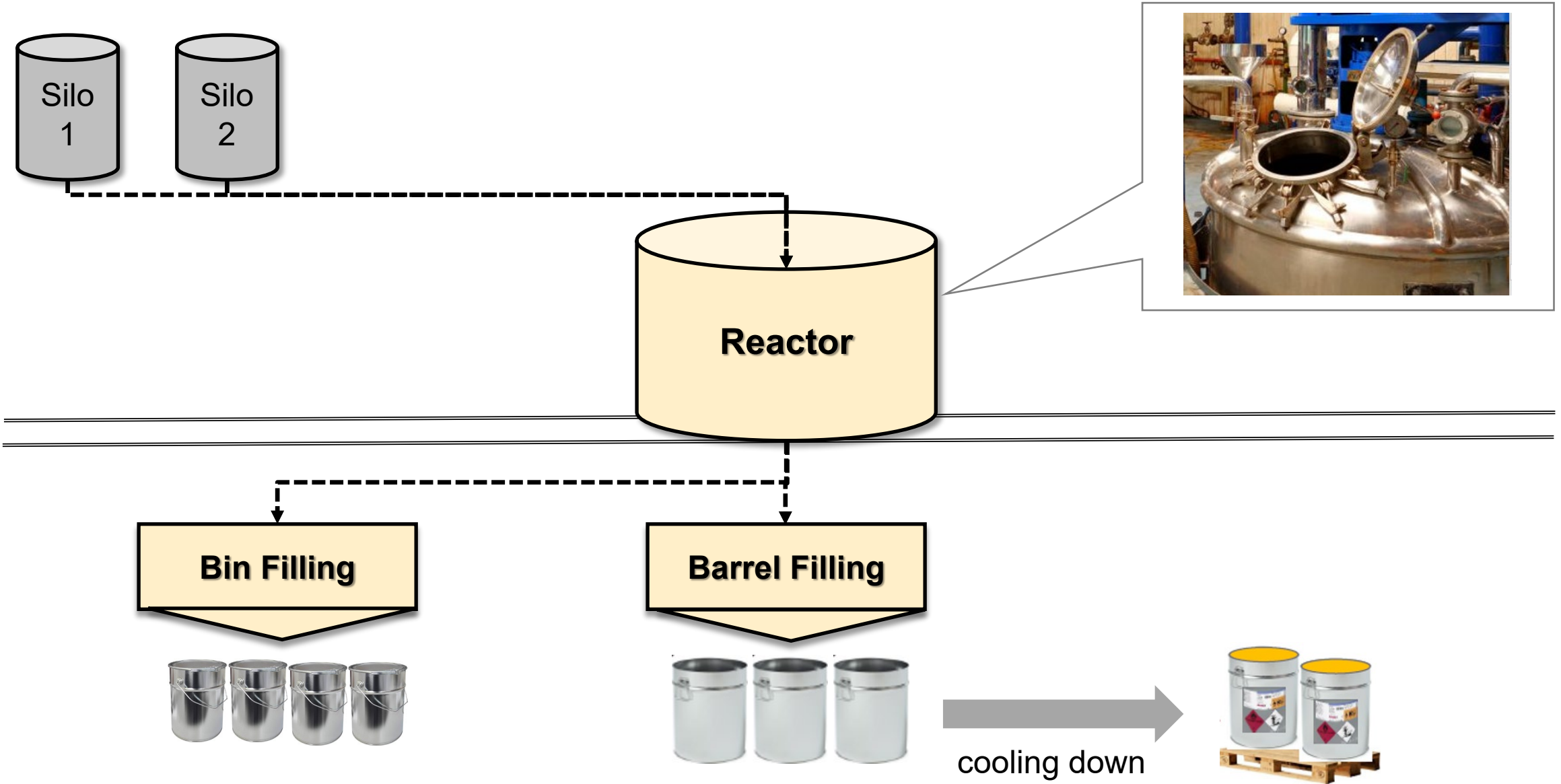
# 3

## Phase 3

- SCADA integration
- Process automatization
- Weighting integration
- Resource Orchestration (REO)

2024

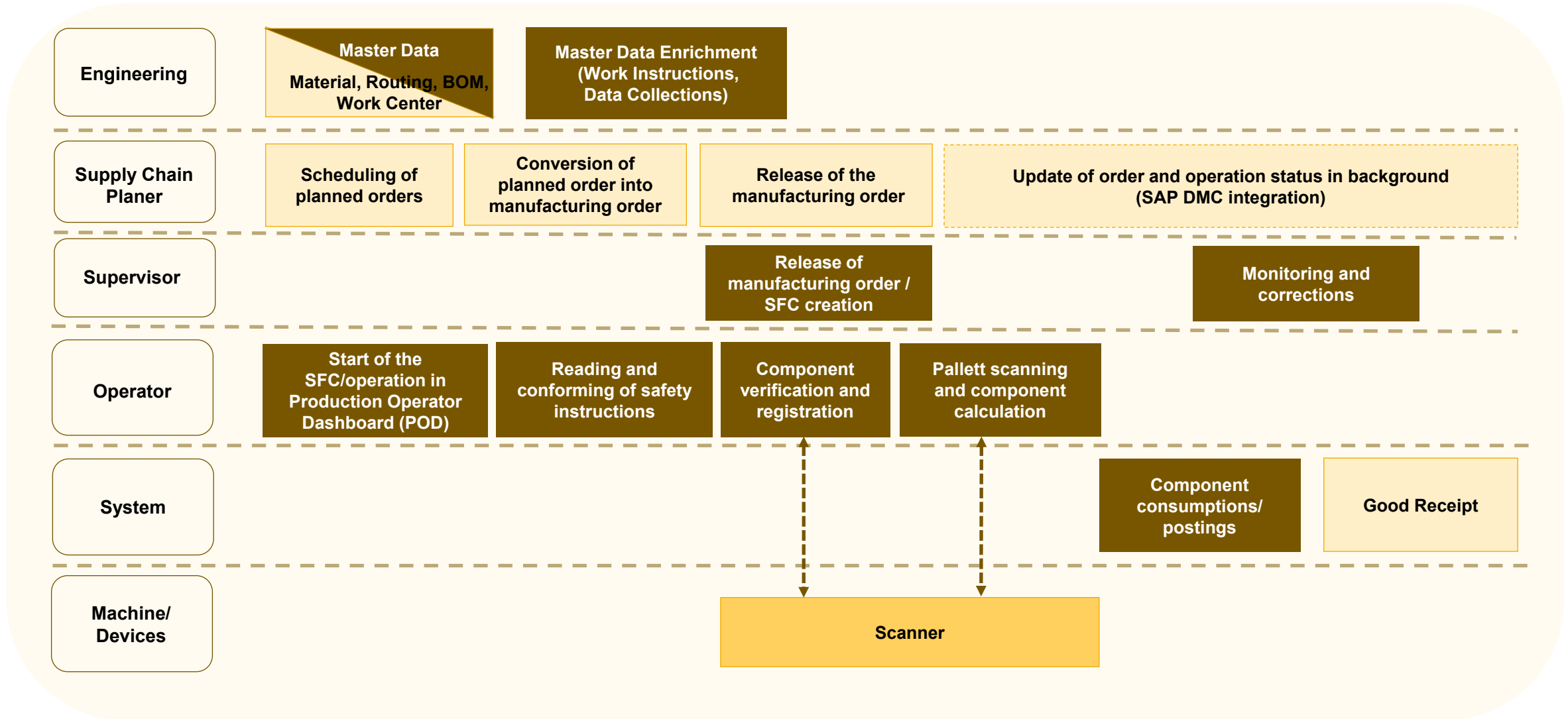
# #smartFactory Implementation – Process Overview





# #smartFactory Implementation – Filling Process

Phase 1



# #smartFactory Implementation – Filling Process Details

Example

Supervisor

Operator

The screenshot displays a web-based dashboard for Manufacturing Execution. At the top, it shows 'Home' and 'Plant: 1010 ( 1010 )'. A navigation bar includes links for 'Manufacturing Insights', 'Manufacturing Execution' (which is active), 'Personalized Dashboards, Reports, and KPIs', 'Manufacturing Master Data Management', 'Enterprise Hierarchy', 'Manufacturing Automation', and 'Manufacturing Insights Configuratio'. The main content area is titled 'Manufacturing Execution' and contains a grid of 24 functional tiles, each with an icon and a title:

- Dispatching and Monitoring 2.0
- Schedule Labor
- View Labor Schedule
- Order POD (Default)
- Schedule Tools
- Work Center POD (Default)
- Operation Activity POD (Default)
- OEE POD
- Post-Production Reporting POD (Default)
- Manage Holds
- Manage Resource Assignments
- Load Resources with Components
- Manage Floor Stocks
- Manage Staging
- Manage Staging 2.0
- Manage Orders
- Line Monitor POD (Default)
- Manage Cancellations
- Manage Tool Assignments
- Manage Logistics Orders
- Execute Logistics Orders
- Manage Transport Systems
- DMCPI - Process Order POD
- DMCPI - W&D Process Order POD

# #smartFactory Implementation – Filling Process Details

Example

Supervisor

Release of manufacturing order / SFC creation

Manage Orders Plant: 1010 ( 1010 ) Q 📄 ? 🔔 GS

## Orders

Release Status: Execution Status: Planned Start Date: Planned Completion Date: Scheduled Start Date: Scheduled End Date:

**300034**

Release **Edit** Copy Discard Hold Release Complete Refresh Order Status

Order Category: Process Order    Material: SP\_C\_SP01 / ERP001 ()    Production Version: PPG1    Release Status: Releasable    Execution Status: Not In Execution    Base Quantity: 250.000 L    Production Quantity: 250.000 L    Batch: 0000000250    Inspection Lot:



Order Information    Planned BOM    **Planned Phases**    SFCs    Custom Data    Order Schedule

Recipe / Version  
300034 / A

### Phases

| Phase              | Description    | Work Center | Recipe / Version |
|--------------------|----------------|-------------|------------------|
| 300034-000000-0011 | Add Premix     | SP_C_MIX    | 300034 / A       |
| 300034-000000-0012 | Mixing Phase   | SP_C_MIX    | 300034 / A       |
| 300034-000000-0013 | Cleaning Phase | SP_C_MIX    | 300034 / A       |

|        |                    |            |                  |           |                          |                             |                             |                    |            |   |
|--------|--------------------|------------|------------------|-----------|--------------------------|-----------------------------|-----------------------------|--------------------|------------|---|
| 300033 | CH_C_001 / ERP001  | Releasable | Not In Execution | 200.000 L | 300033-CH_C_001-1-1 / A  | Sep 28, 2022 – Sep 29, 2022 | Sep 28, 2022 – Sep 28, 2022 | 0.000 of 200.000 L | 0000000248 | > |
| 300030 | SP_C_SP01 / ERP001 | Released   | Not In Execution | 150.000 L | 300030-SP_C_SP01-1-1 / A | Sep 27, 2022 – Sep 28, 2022 | Sep 27, 2022 – Sep 27, 2022 | 1.000 of 150.000 L | 0000000245 | > |

# #smartFactory Implementation – Filling Process Details

Example

Operator

Start of the SFC/operation in Production Operator Dashboard (POD)

DMCPI - PROCESS ORDER POD Plant: 1010 ( 1010) 05:22:09

Work Center: \*  Resource:  Material:  Planned Start Date Range: \*  Go Clear

Process Orders (6) Search

| Order ID                        | Batch      | Material  | Material Description | Order Quantity | Planned Date Range          | Charge Status |
|---------------------------------|------------|-----------|----------------------|----------------|-----------------------------|---------------|
| <input type="checkbox"/> 300027 | 0000000241 | SP_C_SP01 |                      | 200.000 L<br>  | Sep 27, 2022 – Sep 28, 2022 | Completed     |
| <input type="checkbox"/> 300028 | 0000000242 | SP_C_SP01 |                      | 198.000 L<br>  | Sep 27, 2022 – Sep 28, 2022 | Completed     |
| <input type="checkbox"/> 300029 | 0000000243 | SP_C_SP01 |                      | 200.000 L<br>  | Sep 27, 2022 – Sep 28, 2022 | Completed     |
| <input type="checkbox"/> 300030 | 0000000245 | SP_C_SP01 |                      | 1.000 L<br>    | Sep 27, 2022 – Sep 28, 2022 | Active        |
| <input type="checkbox"/> 300036 | 0000000252 | SP_C_SP01 |                      | 0.000 L<br>    | Sep 28, 2022 – Sep 29, 2022 | In Queue      |
| <input type="checkbox"/> 300037 | 0000000253 | SP_C_SP01 |                      | 100.000 L<br>  | Sep 28, 2022 – Sep 29, 2022 | Completed     |

# #smartFactory Implementation – Filling Process Details

Example

Operator

Start of the SFC/operation in Production Operator Dashboard (POD)

Process order pod w&d Plant: 1010 ( 1010)

Main Page / PHASES

**Order ID - 300030**  
 Batch: 0000000245  
 Phase: 0011 - Add Premix  
 Material: SP\_C\_SP01 -  
 Planned Date: Sep 27, 2022 – Sep 28, 2022

Goods Receipt Quantity: 1,000 of 150,000 L

**Phases (3)**

| Phase ID               | Status | Action       |
|------------------------|--------|--------------|
| 0010 - Paint Mixing    |        |              |
| 0011<br>Add Premix     | ✓      | Completed    |
| 0012<br>Mixing Phase   | ✓      | Completed    |
| 0013<br>Cleaning Phase | ●      | <b>Start</b> |

Phase Details | Work Instruction List | Data Collection List | **Material Consumption** | Quantity Confirmation | Activity Confirmation | More

**Components (2)**

| Material             | Planned Batch | Default Storage Location | Threshold | Posted Quantity      |                        |
|----------------------|---------------|--------------------------|-----------|----------------------|------------------------|
| D2C_C_107<br>Premix  |               | 101B                     |           | 0.160 L<br>0.150 L   | Postings Consume Weigh |
| D2C_C_S01<br>Solvent |               | 101B                     |           | 4.500 L<br>150,000 L | Postings Consume Weigh |

# #smartFactory Implementation – Filling Process Details

Example

Supervisor

Monitoring and corrections

Post-Production Reporting POD (Default) Plant: 1010 (1010)

Main / Post-Production Reporting 05:31:49

**Order ID - 300031**  
CH\_C\_002

Default Settings **Operation Activity 0010 - Phase 0011** Operation Activity 0010 - Phase 0012 Goods Receipt

### Material Consumption

Save Data Clear Data Add Non-BOM Components

| Material                       | Threshold         | Posted Value | Action     | Batch Number | Storage Location | Quantity | Unit    | Posting Date Time         | Posted By |
|--------------------------------|-------------------|--------------|------------|--------------|------------------|----------|---------|---------------------------|-----------|
| CH_C_207<br>Sugar              | 0 of 20.000 KG    |              | View Posts |              | 101C             |          | KG - kg | Sep 28, 2022, 12:00:00 AM | P000215   |
| CH_C_S02<br>Carbonated Water   | 0 of 16.000.000 L |              | View Posts |              | 101C             |          | L - l   | Sep 28, 2022, 12:00:00 AM | P000215   |
| CH_C_204<br>Caramel Color      | 0 of 2.000.000 L  |              | View Posts |              | 101C             |          | L - l   | Sep 28, 2022, 12:00:00 AM | P000215   |
| CH_C_C02<br>Natural Flavorings | 0 of 1.000.000 L  |              | View Posts |              | 101C             |          | L - l   | Sep 28, 2022, 12:00:00 AM | P000215   |
| CH_C_C04<br>Phosphoric Acid    | 0 of 1.000.000 L  |              | View Posts |              | 101C             |          | L - l   | Sep 28, 2022, 12:00:00 AM | P000215   |

### Quantity Confirmation

Save Data Clear Data Send Final Confirmation Propose Component Quantities

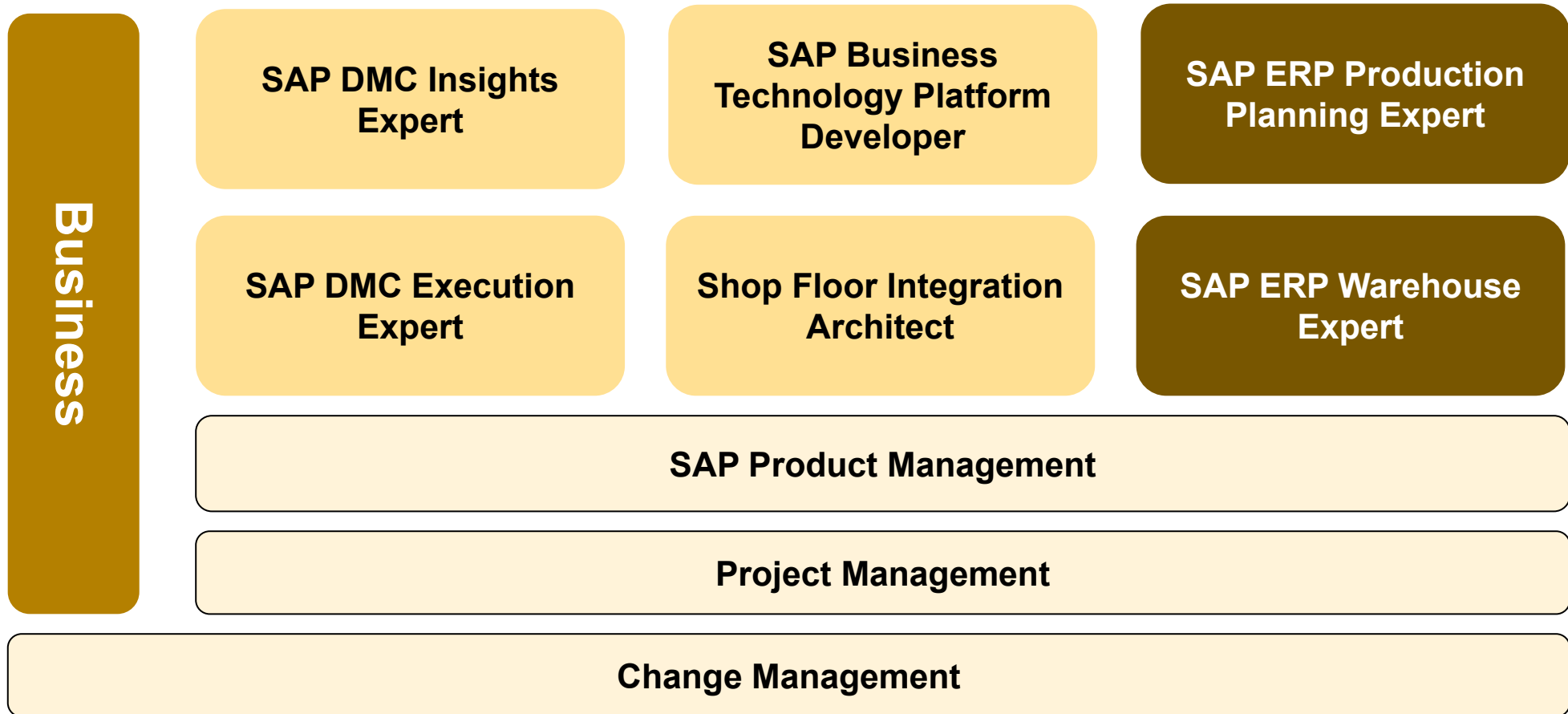
| Quantity Type | Posted Value | Action     | Quantity | Unit  | Posting Date Time         | Posted By |
|---------------|--------------|------------|----------|-------|---------------------------|-----------|
| Yield         |              | View Posts |          | L - l | Sep 28, 2022, 12:00:00 AM | P000215   |
| Scrap         |              | View Posts |          | L - l | Sep 28, 2022, 12:00:00 AM | P000215   |

### Activity Confirmation

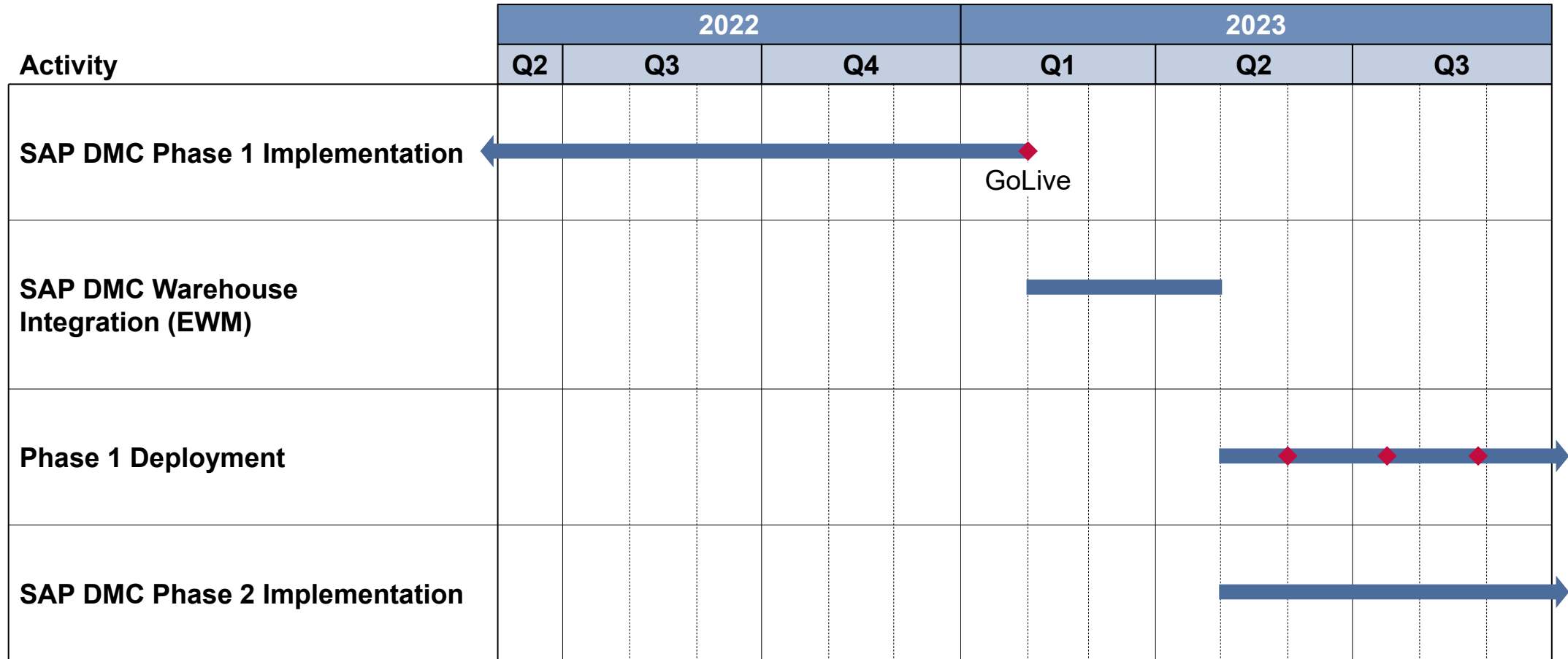
Save Data Clear Data

| Activity Type    | Standard Value | Posted Value | Action     | Value | Unit       | Posting Date Time         | Posted By |
|------------------|----------------|--------------|------------|-------|------------|---------------------------|-----------|
| SAP_02 (Machine) | 1.000 HR       |              | View Posts |       | HR - Hours | Sep 28, 2022, 12:00:00 AM | P000215   |
| SAP_03 (Labor)   | 2.000 HR       |              | View Posts |       | HR - Hours | Sep 28, 2022, 12:00:00 AM | P000215   |

# #smartFactory Implementation – Project Team



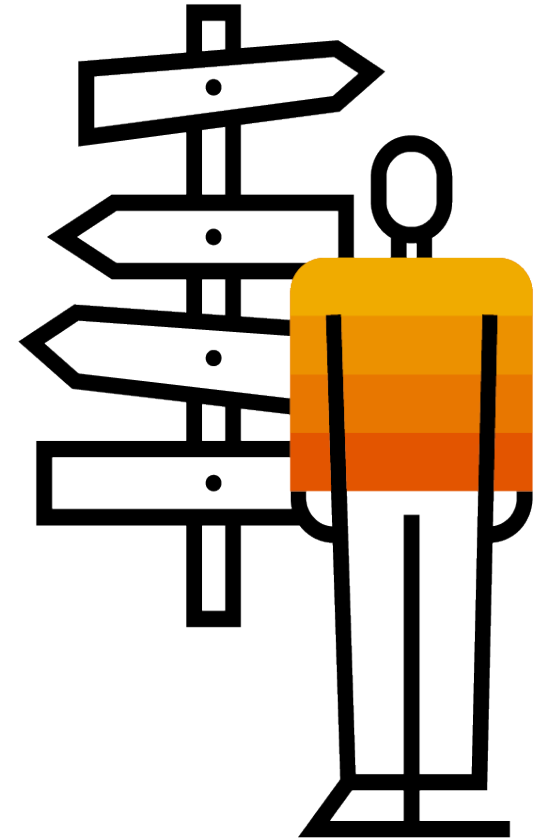
# #smartFactory Implementation – Timeline





# #smartFactory Implementation - Challenges and Learnings

- ❑ Time consuming master data and process changes in existing SAP ERP solution
- ❑ Customized filling POD required for component registration and calculation steps
- ❑ Learning curve because of new integration, configuration and extension concepts compared to SAP ERP
- ❑ Test automatization recommended (for regression testing)
  - SAP DMC release change every quarter
- ❑ Training of employees (end users) after a SAP DMC release change (the SAP DMC is continuously extended)



# Thank you.

Contact information:



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**THE BEST RUN** 