SAP Connected Manufacturing
Update on SAP Manufacturing Innovations and Roadmap

Jutta Wesemann-Ruzicka
SAP SE, Chief Product Expert Manufacturing

March 2016
Disclaimer

This presentation outlines our general product direction and should not be relied on in making a purchase decision. This presentation is not subject to your license agreement or any other agreement with SAP. SAP has no obligation to pursue any course of business outlined in this presentation or to develop or release any functionality mentioned in this presentation. This presentation and SAP's strategy and possible future developments are subject to change and may be changed by SAP at any time for any reason without notice. 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. SAP assumes no responsibility for errors or omissions in this document, except if such damages were caused by SAP intentionally or grossly negligent.
Main Building Blocks Manufacturing

Drivers of Change

- New program
- Engineering Change
- Query notes
- Design Changes
- Model Changes
- New Model
- Process Improvement
- Spec. Changes
- Tooling
- Work share/offload
- Work Centre Change
- Facility changes
- Condition of supply
- Production data
- In process rework
- Non Conformance
- Corrective action
- Certifications
- Service Reports
- ADG
- MRO

Change Records → Change Incorporation → MRP → Order Execution → Non-conformance → Product

Change Requests

© 2016 SAP SE or an SAP affiliate company. All rights reserved.
SAP’s Manufacturing Execution Suite extends the Digital Core

IBP
ABAP & Fiori
Supply Chain Planning
HCP / Business Networks
ECC or S/4 HANA
Warehouse Management
Quality Management, Plant Maintenance, Costing
R&D
Sales
Manufacturing
Delivery
Service

ABAP & Fiori
Manufacturing Engineering
Manufacturing Planning (MRP / PP/DS)
Manufacturing Orchestration

IBP
ABAP & Fiori
Supply Chain Planning

ECC or S/4 HANA
Warehouse Management
Quality Management, Plant Maintenance, Costing
R&D
Sales
Manufacturing
Delivery
Service

ABAP & Fiori
Manufacturing Engineering
Manufacturing Planning (MRP / PP/DS)
Manufacturing Orchestration

SAP CAMS
Computer Aided Process Planning
Shop floor Management
Etc..

SAP ME / MII
Manufacturing Execution
Manufacturing Integration & Intelligence

TCI/Tk

NW AS Java

SCADA / HMI
DCS PLC
Plant Historian
Sensors

SAP Plant Connectivity

© 2016 SAP SE or an SAP affiliate company. All rights reserved. Confidential
## 2016 Future Direction of Innovations in Manufacturing

<table>
<thead>
<tr>
<th>S/4 HANA for Manufacturing</th>
<th>SAP Manufacturing Execution Suite</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Manufacturing Engineering</td>
<td>• SAP ME</td>
</tr>
<tr>
<td>• Production Planning for Discrete (PP)</td>
<td>• Industry 4.0, HANA Analytics, Integration, Configuration</td>
</tr>
<tr>
<td>• Production Planning for Process (PP/PI)</td>
<td>• SAP MII</td>
</tr>
<tr>
<td>• Material Requirements Planning (MRP)</td>
<td>• Industry 4.0, Energy Monitoring, Analytics Content</td>
</tr>
<tr>
<td>• Quality Management</td>
<td>• SAP PCo</td>
</tr>
<tr>
<td></td>
<td>• Industry 4.0, Configuration, Performance</td>
</tr>
</tbody>
</table>
2016 Future Direction of Innovations in Manufacturing

S/4 HANA for Manufacturing

- Manufacturing Engineering
- Production Planning for Discrete (PP)
- Production Planning for Process (PP/PI)
- Material Requirements Planning (MRP)
- Quality Management

SAP Manufacturing Execution Suite

- SAP ME
  - Industry 4.0, HANA Analytics, Integration, Configuration
- SAP MII
  - Industry 4.0, Energy Monitoring, Analytics Content
- SAP PCo
  - Industry 4.0, Configuration, Performance
Manufacturing Engineering
Visual Manufacturing Planner for Handover Engineering to Production

**Description**

- Create and maintain Material BOMs and routings for Manufacturing from Engineering BOM (Document Structure, Material BOMs or PSM/iPPE)
- Enable easy rearranging of Engineering BOM structures for Manufacturing needs
- User 3D information for visualization

**Key Benefits**

- Fast processing by visual supported drag & drop
- Support manufacturing planning via 3D visualization
- Fully integrated into SAP ERP
- No system boarder between Engineering and Manufacturing

**Prerequisites:**

- SAP PLM CAD integration to create the document structure or Visual Data integration (using Visual Enterprise generator)
- Optionally: Visual Enterprise Instance Planner to link visuals to PSM (iPPE)
- Visual Enterprise Generator to create the RH viewing files
Description

- Configurable Visual Work Instructions
- Visual Enterprise Manufacturing Planner is able to create Visual Work Instruction
- In case the BOM is a variant BOM (150% BOM) the Visual Work Instructions will also contain all possible variants for Visual Work Instructions, i.e. the Visual Work Instructions will be configurable

Key Benefits

- Automatically create Visual Work Instructions according to the BOM and routing structure
- A variant Manufacturing BOM will result in a configurable Visual Work Instruction
Highlights of key business innovations in S/4 HANA

Re-architecting for in-memory platform

Responsive user experience design

Unifying functionality in core

Material Requirements Planning
Inventory Management
Material Valuation

Sales Representative (Order Management & Billing)
Procurement Clerk (Procurement)
Material Planner (Material Requirements Planning)

Available-to-Promise & Backorder Processing
Capacity Planning
Extended Warehouse & Transportation Management
SAP S/4HANA Enterprise Management

Key innovations 1511 mapped to Product Map

Use Cases enabled
- High volume Backflush (Parallel Production combined postings)
- Internet of Things Scenarios (real-time goods movements posting)
- Segment of one (Smaller lot sizes passing through logistic operations)
- Combined postings from offline devices (Fast parallel postings)

Parallel processing of inventory postings

Technical Innovation
...addressing the digital business as digital core

- Simplified Data Model (MATDOC = MKPF + MSEG + add. Columns for fast calculations)
- No aggregates: On-the-fly aggregation of inventories
- Insert only on DB Level, No DB locks anymore.
- Insert only on application level - Elimination of standard price (SPREIS) locking (taking rounding differences into account)
- One valuation method (Material Ledger) instead of 2 (MM-IM and ML)

Business Processes improved
- More effective Inventory Management like inventory turnover, inventory costs.
- More accurate Material Requirement Planning
- More efficient Procurement processes
- More accurate Sales Order Fulfillment and Delivery
- More efficient Production Execution and Easier implementation of new processes (like Just-In-Time, Kanban)
SAP S/4HANA Enterprise Management
Key innovations 1511 mapped to Product Map

**Business Challenges**
- Increasing customer service
- Low inventory accuracy
- Revenue losses due to stock-outs
- Poor on-time delivery performance
- Missing parts in production

**SAP S/4HANA Capabilities**
- Prioritized view on material flow issues
- Real-time alerting based on current stock requirements situation
- System-generated solution proposals
- MRP can run as frequently as required (up to 10x faster)
- Demand information is propagated faster through the supply chain

**Business Benefits**
- Clear visibility across the material flow
- Proactive decision making in response to changing demand
- Flexible tailoring of available capacities and receipts to meet required quantities
- Real time inventory monitoring and automating the creation of procurement proposals
Solution Today

MRP Apps – The new dashboard for the Material Planner.

- Monitor KPIs and alerts
- Identify most urgent and important issues, considering time to action and order values, priorities, and the like
- Choose from a set of pre-evaluated solution proposals
- Instant detection of critical situations in the material flow based on real time data
- Comprehensive impact analysis
- Evaluation of various solution proposals leading to well-founded decisions

Prerequisites:
- SAP EhP7 SP 3
- SAP HANA
Material Requirements Planning

**MRP Run**

**Performance improvement:**
- Scenario dependent **up to 10 times faster**
- **Data Storage reduction by 5 times**
- New mode supports procurement and in-house production, delivery schedules and configurable materials
- Classic mode for subcontracting, capacity planning and discontinuation

**Step1:** Read

**Step2:** Algorithm (Netting, Lotsizing...)

**Step3:** BOM Explosion/Configuration
- In-house production, subcontracting

**Step4:** Write

**MRP Analysis**

System analyzes material flow of all materials in real time & identifies:
- Disruptions in the material flow
- The impact of these issues
- Solution proposals for decision support
- The remaining time-to-action
- Role based KPI driven entry
- Running on any device
- Adoptable and easy to personalize

Solution Today
## SAP S/4HANA Enterprise Management

### Key innovations 1511 mapped to Product Map

<table>
<thead>
<tr>
<th>Procurement</th>
<th>Inventory Management</th>
<th>Material Valuation</th>
<th>Material Requirements Planning</th>
<th>Available to Promise</th>
<th>Capacity Planning</th>
<th>Order Mgmt. &amp; Billing</th>
<th>Industry to Core</th>
<th>Accelerated Financial Close</th>
<th>Universal Journal &amp; Central Finance</th>
</tr>
</thead>
</table>

### Business Challenges
- On-time delivery performance
- Days in inventory
- Revenue loss due to stock-outs
- Adapting to changing plant condition

### SAP S/4HANA Capabilities
- PP/DS side-by-side to SAP S/4HANA
- Integrated Production Planning and Detailed Scheduling (PP/DS) in SAP S/4HANA (planned innovations)
  - Advance planning and optimization and production planning and detailed scheduling
  - Live cache-based, finite-capacity planning as an integral part of SAP HANA, requiring just one database to manage
  - Advanced analytics
  - One materials requirements planning
  - Simplified data integration
  - Intuitive maintenance of master data and integration models

### Business Benefits
- Fulfill an order on time and in the desired quantity using different kind of checks for different business scenarios
- Perform automatic back-order processing
- Reduce inventory carrying cost
Business process view
Embedded Production Planning and Detailed Scheduling

Traditional system:
- SAP Advanced Planning and Optimization – planning and detailed scheduling
- Live cache
- ERP
- SAP HANA platform

With traditional system:
- Different master data in scheduling and ERP systems
- Different MRP processes and user tools in scheduling and ERP systems
- Data integration latency and errors

With SAP S/4HANA:
- Planning and detailed scheduling embedded on ERP system enables:
  - UI harmonization
  - Data integration (CIF) simplification
  - Master data harmonization
  - Analytics

Planning process adoption
2016 Future Direction of Innovations in Manufacturing

S/4 HANA for Manufacturing

- Manufacturing Engineering
- Production Planning for Discrete (PP)
- Production Planning for Process (PP/PI)
- Material Requirements Planning (MRP)
- Quality Management

SAP Manufacturing Execution Suite

- SAP ME
  - Industry 4.0, HANA Analytics, Integration, Configuration
- SAP MII
  - Industry 4.0, Energy Monitoring, Analytics Content
- SAP PCo
  - Industry 4.0, Configuration, Performance
### SAP Manufacturing Integration & Intelligence

<table>
<thead>
<tr>
<th>Range of use</th>
<th>Target Industries</th>
<th>Highlights</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integration &amp; Intelligence</td>
<td>All Manufacturing Industries</td>
<td>Highly Extensible</td>
</tr>
<tr>
<td>Reporting &amp; Analytics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual Scenarios and Use Cases</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Worker UI - Pre-delivered E2E integrated content delivered with MII to drive Plant Performance Management on the Production Shop floor – covers manual, automatic and semi-automatic scenarios</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### SAP Manufacturing Execution System

<table>
<thead>
<tr>
<th>Range of use</th>
<th>Target Industries</th>
<th>Highlights</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing Execution System</td>
<td>Discrete Industries</td>
<td>Tracking &amp; Tracing on SFC / Serial Number</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non Conformance Handling</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Interlocking</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Production Data Acquisition</td>
</tr>
<tr>
<td></td>
<td></td>
<td>KPIs, Reporting &amp; SPC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Highly Extensible</td>
</tr>
</tbody>
</table>
SAP Manufacturing Execution - SAP ME
Main Differentiators

SAP ME – What is it?
- Manufacturing Execution System for the discrete industries

SAP ME – Main Differentiators
- ERP Integration “out of the box”
- Controls Production of every single unit (Lot Size 1)
- Easy interaction with shop-floor automation layer
- Unit Level Tracking & Tracing / Genealogy
  What operation, tool or machine was used, where parts came from, etc.
- Comprehensive nonconformance management including in-line sampling and ability for visual test and repair
- Process Interlocking
- High Flexibility and Extensibility; pure SOA based architecture
- Role specific access and personalized dashboards for operators
- Provides flexible production process modeling without additional programming
- Active Community of partners and customers
- High Usability with pure Browser Based UIs
SAP Manufacturing Integration and Intelligence (SAP MII)
Main Differentiators

SAP MII – What is it?
- Extensible manufacturing platform allowing rapid adaption to any manufacturing process

SAP MII – Main Differentiators
- Integration: Provide interoperability (in)between Shop Floor solutions and enterprise ERP (PP, PM, MM, QM)
- Intelligence: Visualize data from any of above sources to provide KPIs. Provide simple and efficient local User Interface and Dashboards
- Innovation: Powerful SOA-enabled business logic to cover for customer specific processes around Planning, Execution, Maintenance and Quality now including versioning of any Content
- Allows Fast prototyping to achieve fast ROI
- Broad and extensive Partner Network
- Applicable to all Manufacturing Industries and Utilities
Solution Today – SAP ME
Usability & Mobility

Description

• 3D Models can be embedded in the Production Operator Dashboard (POD) as Work Instructions
  Scenarios: Assembly, Visual Test and Repair

• Visualization of any HTML Pages in a POD plug-in
  E.g. for Display of MII Reports und Dashboards

• Browser-based mobile Apps for shop floor activities; easy extensible

Key Benefits

• Delivers a new user experience for high productivity

• Low training effort
Solution Today – SAP ME
Set Point Object

Description

• A Set Point Parameter is an entity used in Manufacturing and Automation that identifies a value to which a control system will strive to achieve on a particular resource, for a particular material

• A Set Point Group will contain one or more set point parameters, either numeric or string, that are delivered to the shop floor to a specific resource for specific products

• The new functionality will provide PAPIs/Web Services for the master data and run time execution

Key Benefits

• Delivers a solution to define the set point parameters outside the controller and into the execution system for easier maintenance and update

• Provides a concise definition, along with features, without the overhead of Data Collection within SAP ME

• Provides a framework to support configurable product in the future
Sub-steps

Description

- Sub-step is a new master data object that is defined under a routing step.

- These sub-steps typically represent a list of tasks or activities that must be performed before a routing step is complete.

- Sub-steps will allow parameter data collection, work instructions, components to be assembled, tools to be logged, and certifications to be enforced.

Key Benefits

- Allows the definition of sub-steps executed in manufacturing but does not require the shop floor to start and complete at every sub-step.

- The goal is to minimize the amount of operator interaction with SAP ME in an operation, yet provide the associated sub-steps that must be acknowledged and tracked.

![Image of SAP ME interface with sub-step properties and description.]
Solution Today – SAP ME
SAP ME on HANA

Description

- Adding support for in memory technology powered by SAP HANA
- Migration support for WIP and Archived data (*1)
- Selected areas for HANA specific performance optimization (*2)
- Consolidation of ODS and WIP on HANA
- Enable use of MII SSCE for real time analytics
- Archiving using the HANA Dynamic Tiering (warm storage/Sybase IQ)

Key Benefits

- High speed real time analytics enablement for SAP ME reporting (*3)
- Data compression with HANA eliminates the need of frequent archiving
- Simplifies the overall stack for customers by reducing the maintenance cost of non-HANA database
- Lower TCO solution:
  - No separate ODS database required
  - ME/MII co-located on NetWeaver & HANA
- Align with customers HANA strategy
- New insights into the shop floor based on trends and predictive analytics with HANA capabilities
- Enables near real time analysis of shop floor data to identify preventive actions

1 Using Warm storage and Dynamic Tiering
2 Where performance does not meet requirements
3 MII SSCE and other reporting tools
**Solution Today – SAP ME**  
**Industrie 4.0: Automation Support**

**Description**

- Add out-of-the box POD plug-in auto-refresh capabilities using the message notification framework that refreshes the UI
- Auto start SFC feature

**Key Benefits**

- Minimizes operator interaction w/the system to focus on task at hand
- Critical for more highly automated environments combined w/manual labor

The operation is automatically started

Machine/Carrier system/other system  
SFC #  
Via webservice or OData

**SOLUTION TODAY**
Solution Today – SAP MII
Self-service Composition Environment

Description
• Browser(HTML5) based design tool for dashboard creation by consuming different MII objects
• WYSIWYG based design
• Integrating tag value changes directly to browser using web socket interface or through catalogue query template
• Source code generation for high sophisticated UIs
• Form based reporting dashboard using UI elements
• 3D file integration and simplified reporting for manufacturing application
• Additional HTML5 based charts e.g. i5Command

Key Benefits
• Simplified interface for dashboard creation.
• A tool which can be used by business users also along with IT developers.
• Reduce the time required for dashboard creation
• Dashboard accessibility from mobile devices
• Remove the dependency on JRE required on each of the machine
• Build reporting application without any coding

SOLUTION TODAY
Solution Today – SAP MII
Energy monitoring & Analysis

Description

- Enhance the core MII product to meet Energy management requirements e.g. maintaining hierarchies, storing time series data, and reporting capabilities against those hierarchies, Order, shift and time series data

Key Benefits

- Out of box content with core MII to manage energy consumption
- Reduce TCO to monitor energy consumptions
- Simplified software stack to collect and analyze energy consumption
Overall Equipment Effectiveness
Global, Multi Site Analysis with SAP HANA and SAP MII

- Analysis and Real Time information on OEE, Availability, Performance and Quality on various hierarchy levels
- Local Data Collection and Analysis in MII
- Global, multi site Analysis via SAP HANA
- Combination of shop floor data with enterprise information

- Real time monitoring
- Cross plant analysis / Best Practice
- Analysis of Shop Floor with Top Floor Context
Solution Today – SAP MII
MII on HANA

Description

• Run SAP MII on NW 7.40 stack with **HANA as underlying database**
• High performing In-Memory Analytics for large amount of Data (“Big Data”)
• HANA provides the ability to store a significant and broader selection of manufacturing data for more thorough analysis and more complex comparison of data.
• HANA provides various statistical algorithms for deep analysis, clustering and prediction
• The ability to manage large volumes and multiple types of data provides ability to develop, train and utilize predictive techniques (e.g., regression and heuristic) for forward looking analysis.

Key Benefits

• **Simplifies the overall stack** for customers by reducing the maintenance cost of non-HANA DB
• New insights into the shop floor based on trends / prediction with HANA capabilities
• Enables near real time analysis of shop floor data to identify preventive actions

![SAP NetWeaver](image_url)
Solution Today – SAP PCo
Enhanced Connectivity

Description
- Basis for the three core IoT/Industrie 4.0 communication patterns:
  - Notifications
  - Queries
  - Bidirectional machine communication
- Near Real Time UI Support with PCo as WebSocket-Server
- Mass Data supply into HANA
- Integration with SAP ESP / HANA Smart Data Streaming
- Flexible WebService Orchestration (RESTful, ODATA, SOAP)
- High throughput performance on .Net/C# architecture
- Bundling and buffering of data – notification delivery retry
- Remote Configuration of PCo from MII
- Enablement of machine automation scenarios

Key Benefits
- Support of Big Data Scenarios in the Shop Floor
- Foundation for interaction with automation layer and “Things”
- Support of the key machine protocol architecture: OPC UA
**Description**

- Support for additional destination for remote configuration of PCO from MII. Key feature of remote PCO are highlighted below.
- Fiori based HTML5 client for maintaining PCO Notification from MII.
- Enhance the PCO notification payload with business context e.g. boiler pressure value coming along with functional location, equipment number or work center ID.
- Maintain notification even when Agent is running.
- Ability to pause a notification for certain duration without having to stop the agent.
- Ability to export and import the notification object.
- Ability to start and stop PCO agent from SAP MII.

**Key Benefits**

- MII can act as the single source of truth for Master Data and especially for static context.
- the Destination System e.g. the SAP ESP can consider the context in rules and decisions avoiding time consuming data base access.
- PCO provides Services for the Rem.Conf. from MII – these services can be used in later releases also for Rem. Conf. from Cloud Apps.
Planned Innovation – SAP ME
Industrie 4.0: Configurable Product

Description

• Up to real-time lot-size one production in high volume production scenarios for addressing individual customer requirements
• Configurable product via Variant Configuration is supported today within the complete E2E process where the primary manufacturing planning is maintained w/in ERP
• New development will focus on supporting the same E2E process more seamlessly
• Following objects in ME will depend upon the configuration:
  • BOM (from ERP)
  • Production Steps
  • Sub-steps
  • Automation Parameters (Set Points)
  • Data Collection
  • Work Instruction

Key Benefits

• Reduces costs associated to building customized products by enabling the manufacturing of product variations in any given order and quantity, all on the same production line
• Producing highly configurable product at costs comparable to those of mass production can provide a key competitive advantage

Information Flow - Overview

SAP ERP
- Product Material
  - Create sales order and maintain configuration (characteristics)
  - Create sales-order specific production order and evaluate ME-specific object dependencies
  - Use ERP object dependencies to determine scope of order-specific routing and object assignment

SAP ME
- Product Material
  - Create sales-order specific shop order w/ enrichment
  - Use ERP object dependencies to determine scope of order-specific routing and object assignment
  - Master data

PLANNED INNOVATION
### Manufacturing Innovation Roadmap

**Manufacturing Execution Discrete Industries**

<table>
<thead>
<tr>
<th>Planned</th>
<th>Future</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Industrie 4.0</strong></td>
<td><strong>Complex Assembly Processes</strong></td>
</tr>
<tr>
<td>• Configurable Product</td>
<td></td>
</tr>
<tr>
<td>• Sub Steps Integration</td>
<td></td>
</tr>
<tr>
<td><strong>Continuous Improvements</strong></td>
<td><strong>Cloud Based Manufacturing Services</strong></td>
</tr>
<tr>
<td>&amp; Simplifications ; e.g.</td>
<td></td>
</tr>
<tr>
<td>• Integration Excellence</td>
<td></td>
</tr>
<tr>
<td>• Performance optimizations</td>
<td></td>
</tr>
<tr>
<td>• Monitoring &amp; Safeguard</td>
<td></td>
</tr>
<tr>
<td><strong>Manufacturing Analytics</strong></td>
<td></td>
</tr>
<tr>
<td>• SAP ME Global HANA</td>
<td></td>
</tr>
<tr>
<td>Planned</td>
<td>Future</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Enhanced Energy Monitoring &amp; Analytics</td>
<td>Predefined Analytics Content - extended</td>
</tr>
<tr>
<td>UX &amp; Self Service Composition Environment Enhancements</td>
<td>Integration Scenarios with IoT / HCP – extended</td>
</tr>
<tr>
<td>Fiori Launchpad like MII Entry Page</td>
<td></td>
</tr>
<tr>
<td>Predefined Analytics Content</td>
<td></td>
</tr>
<tr>
<td>Integration Scenarios with IoT / HCP; e.g. for PDMS</td>
<td></td>
</tr>
<tr>
<td>Worker UI / OEE Enhancements</td>
<td></td>
</tr>
</tbody>
</table>
## Manufacturing Innovation Roadmap
### SAP Plant Connectivity

<table>
<thead>
<tr>
<th>Planned</th>
<th>Future</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orchestration of independent machine units by means of OPC UA capabilities</td>
<td>Decentralized autonomous agents</td>
</tr>
<tr>
<td>Local buffering of automation related master data for high-speed response times</td>
<td>Edge processing enablement for all industries</td>
</tr>
<tr>
<td>Simplified footprint for embedded systems/microcontrollers</td>
<td></td>
</tr>
</tbody>
</table>
“Edge Processing” – 1. buffer data, enable shortcuts

1. Read ME data in advance:
   - Next Production Order(s) incl.
   - Routing steps
   - Set-Points
2. PCo buffers this data
3. Machine requests data
4. PCo responds from buffer
5. PCo manages posting to ME asynchronous

Response from buffer < 50 Milliseconds
"Edge Processing" – 2. orchestrate independent machine units

1. Event occurs on Machine Unit X
2. Machine Unit Y needs to be notified/triggered
3. PCo can be configured to execute communication between units
Key Takeaways

• SAP Connected Manufacturing is a key enabler for Industry 4.0.

• SAP Connected Manufacturing is a key component of our IoT Strategy.

• SAP Manufacturing supports HANA today with SAP MII and SAP ME.

• SAP Manufacturing extends the investments our customers have made in ECC through MRP, Production Planning, Scheduling, Inventory Management, Quality Management and Maintenance down to the value on the shop floor.
“We are convinced that manufacturing in the digital world requires a completely new approach how to run the shop floor. Therefore our solution is much more connected and intelligent in order to empower production workers, re-invent flexibly manufacturing processes and to increase responsiveness. We build Industry 4.0.”

Bernd Leukert
Member of the Executive Board SAP SE
Where to find more information
SAP CONNECTED MANUFACTURING Links

» SAP Manufacturing
  http://www54.sap.com/lob/manufacturing.html
» SAP Manufacturing YouTube
  http://www.youtube.com/sapvideomom
» SAP Manufacturing Community
  http://scn.sap.com/community/manufacturing
» SAP ME WIKI
  http://wiki.sdn.sap.com/wiki/display/ME/Home
» SAP MII WIKI
  http://wiki.scn.sap.com/wiki/display/xMII/Manufacturing+Integration+and+Intelligence
» Sales Play
  https://jam4.sapjam.com/groups/6Z7XS2hfTQOrb951FeC3x
» Products Solution Hub
  https://jam4.sapjam.com/groups/about_page/6p6pZ4XtQN7fJe5bxbwZAY
Thank You …

Jutta Wesemann-Ruzicka
SAP LoB Manufacturing