Manufacturing Strategy with SAP Solutions

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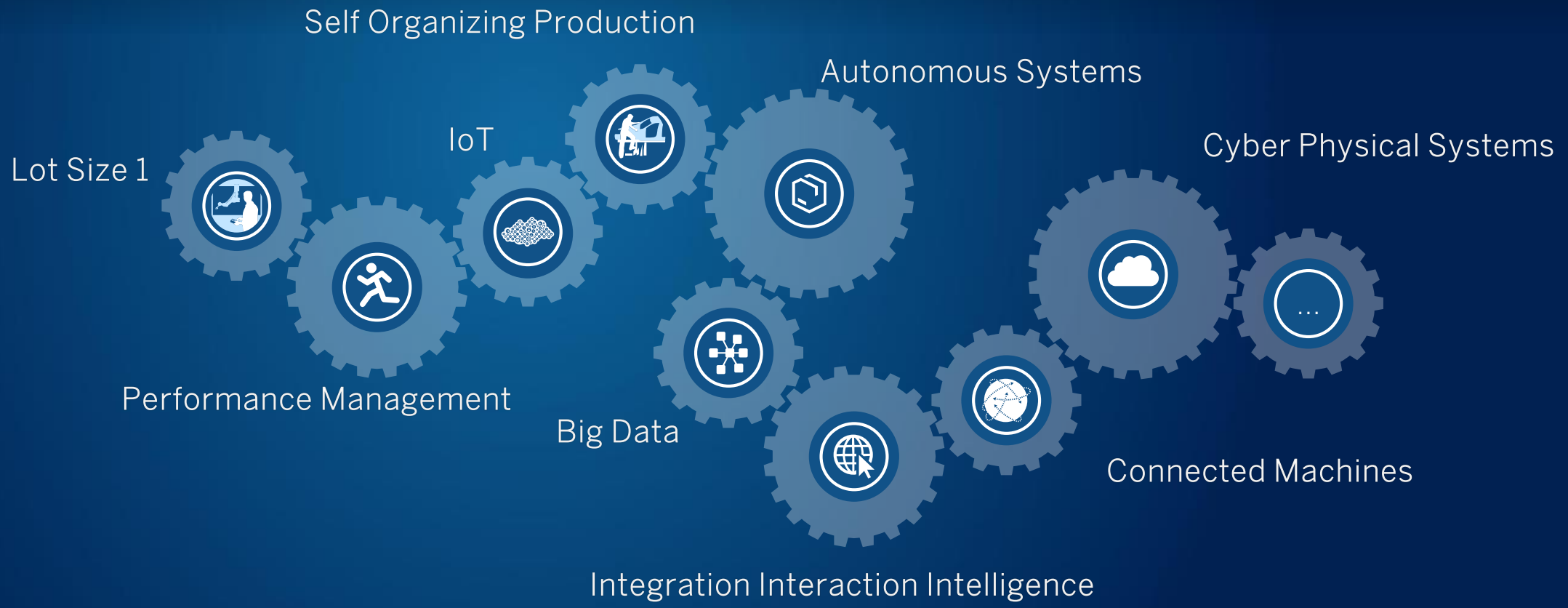
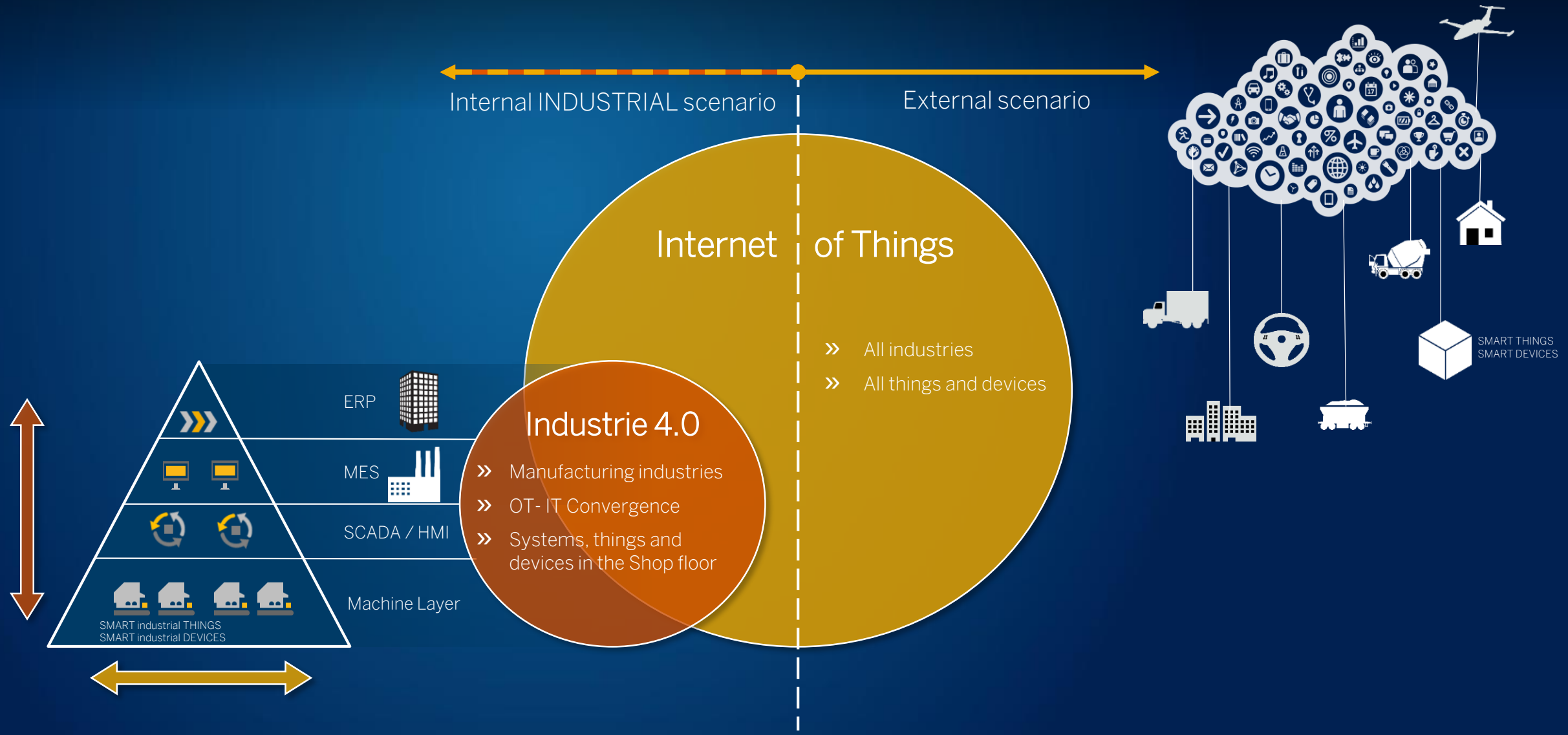
Industrie 4.0 – Driving Innovation

Building blocks for Industrial Internet of Things



Internet of Things and Industrie 4.0

SAP Connected Manufacturing runs Industrial IoT with Industrie 4.0 scenarios



Enabling the Internet of Things with SAP solutions

Industrial IoT and External IoT

SAP Predictive Maintenance & Service

SAP Connected Manufacturing

SAP Connected Logistics

SAP Augmented Reality

IoT Innovation Bundle

Industrial Automation → "Industrial Internet" / Industrie 4.0

"Internet of Things" ← Smart Devices, Personal Area Networks

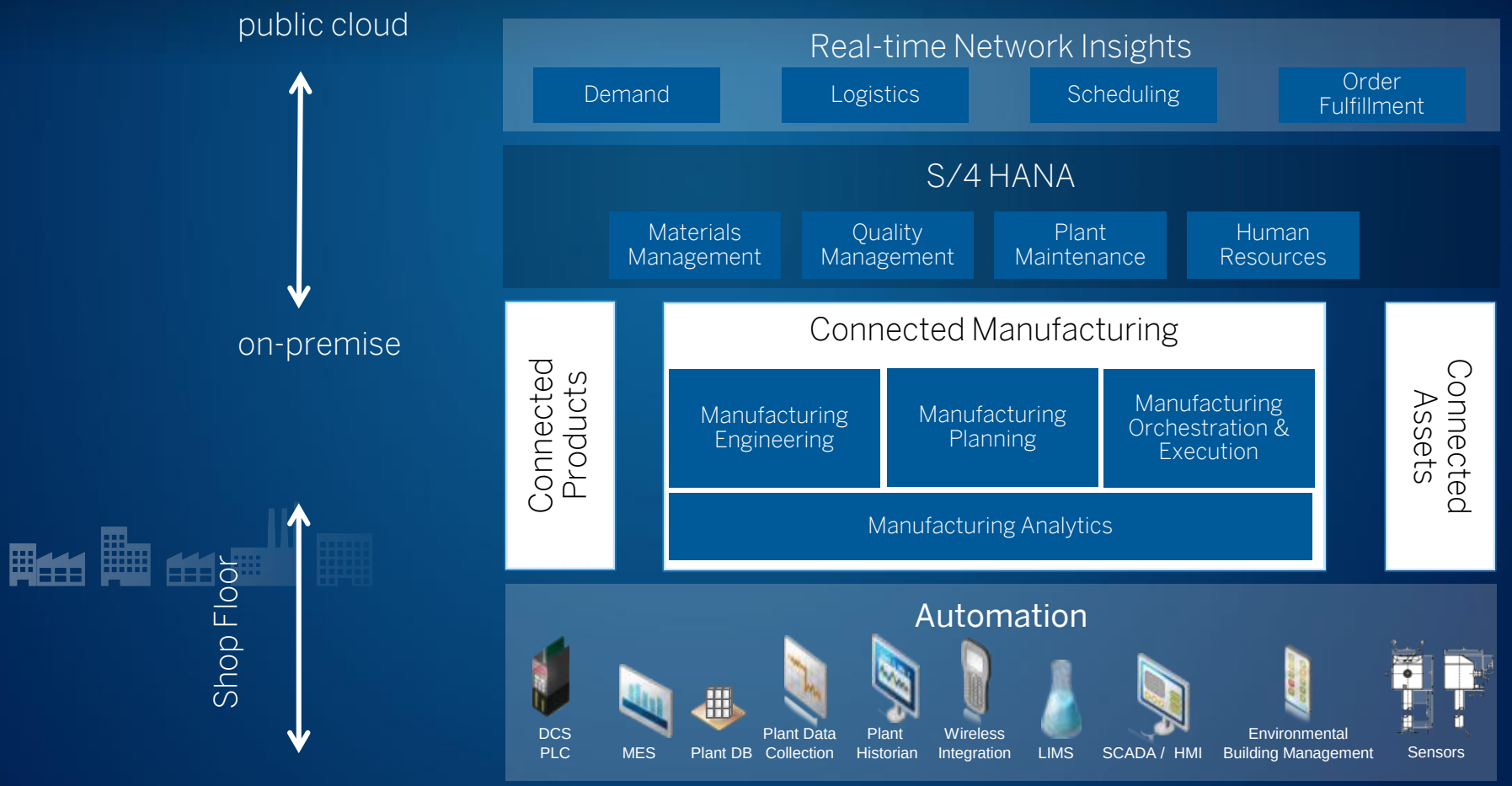
SAP Open Integrated Factory

From individual electronic customer order through production execution to delivery

1	e-commerce	Omni-channel creation of electronic sales order. Configuration of individual parameterized product with quotation.
2	Demand	SAP ERP sales order created and MRP run. Planned order creation.
3	Design	Realize changes in design. Adjust individual requirements in drawing and create CNC program that is attached to the order.
4	Produce	Execute production orchestration, coordination and documentation with SAP MES for standard products and configurable products. Real-time analytics from top floor to shop floor.
5	Deliver	Confirmation of production and integration to SAP Connected Logistics.
6	Service	Predictive analytics for big data. Discover patterns and define maintenance and service to enable high performing assets.

SAP Connected Manufacturing

Applications



Manufacturing Analytics

- Overall Equipment Efficency
- Manufacturing Performance Management

based on MII

LoB Manufacturing road map for SAP S/4HANA

Manufacturing and QM

In Development

- Fiori-Apps with built-in real-time decision support for MRP planners
- High-volume goods movements
- Enablement of all core product planning (PP) and material requirements planning (MRP) processes executable on the optimized data model for inventory
- Industry software for discrete industries and mill products (DIMP) in core deployment (including core innovations such as extended material number)

Planned

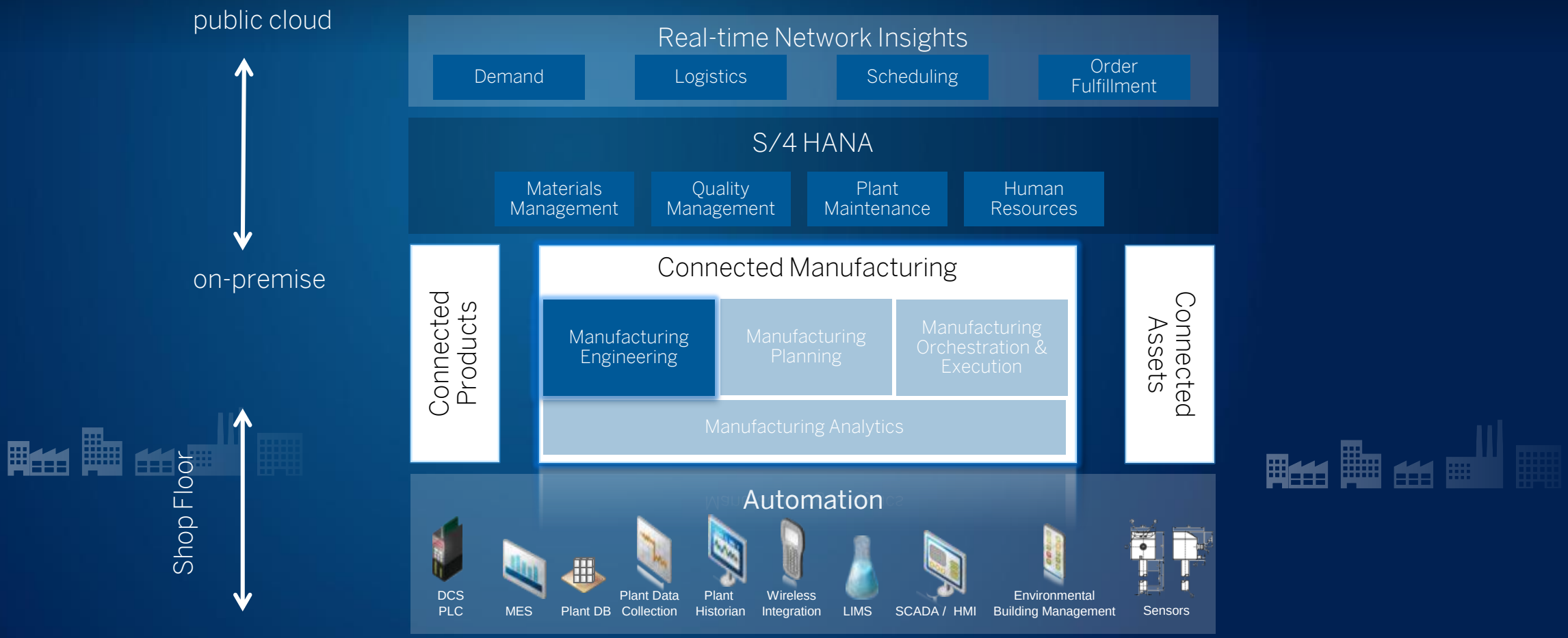
- Production planning/detailed scheduling (SAP PP/DS) for SAP S/4HANA as co-deployed solution
- Demand Pull Philosophy
  - Production Pull list
- Manufacturing Orchestration:
  - Shop Floor Cockpit
- Visual manufacturing planner for configurable work instructions
- SAP HANA-based analytics covering main LIS (Logistics Information System) functions for Manufacturing
- Expanded SAP Fiori UX coverage
- Support further industries like Retail and Fashion
- Migration path to SAP S/4HANA

Future

- Demand Pull Philosophy:
  - Bottleneck sequencing
  - Operation prioritization
  - Simple capacity requirements planning
- Manufacturing orchestration:
  - Shop Floor Cockpit (continued)
- New Gantt Chart for Production planning/detailed scheduling (SAP PP/DS)
- Expand SAP Fiori UX coverage to engineer production, plan production & prepare production
- Extended visual manufacturing planner scenarios for handover engineering to production
- Tool and people orchestration
- Support further industries like Oil & Gas

SAP Connected Manufacturing

Manufacturing Engineering



Solution Today

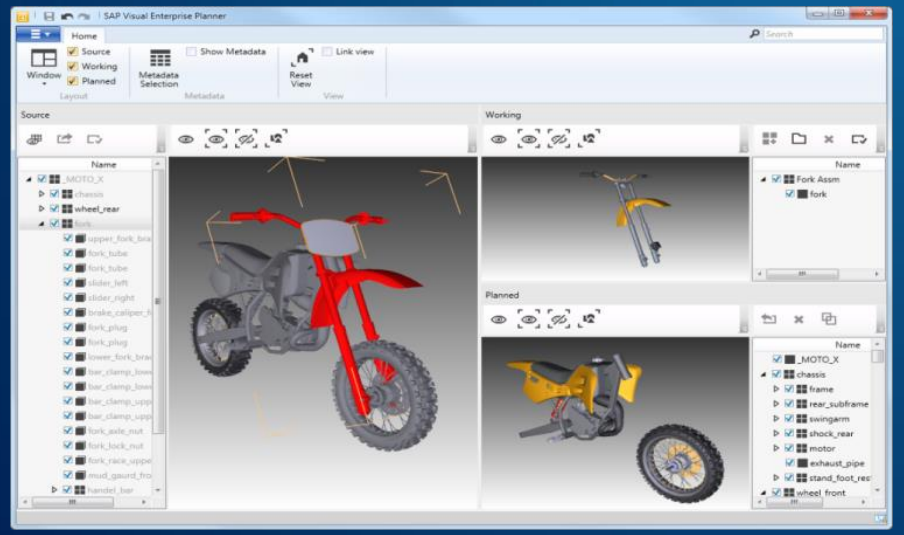
Visual Manufacturing Planner for Handover Engineering to Production

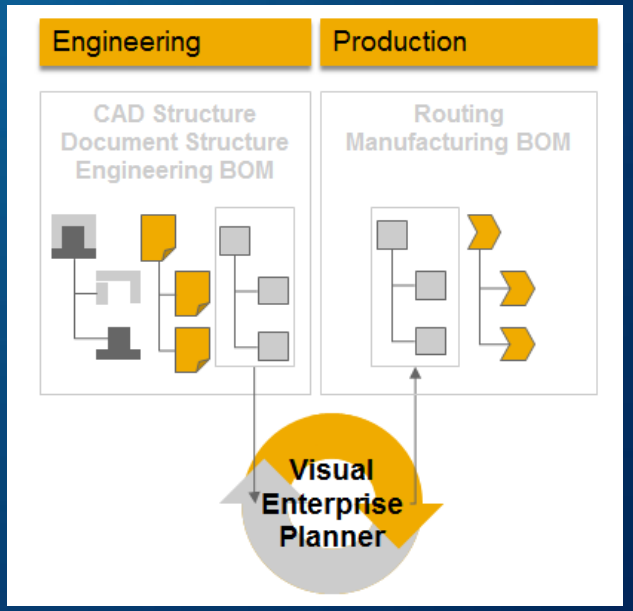
Description

- 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

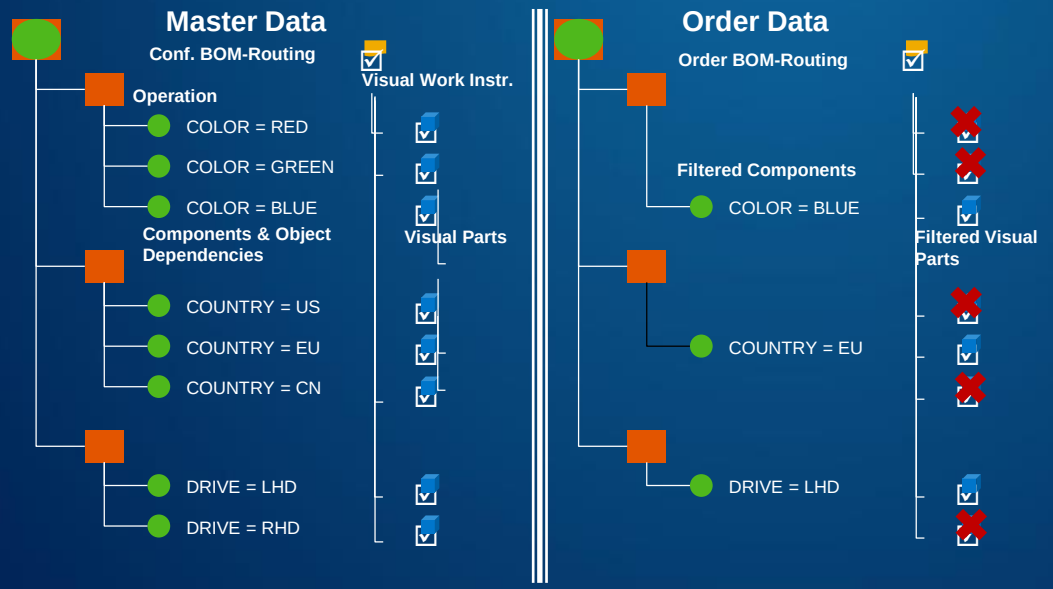
ERP6.0 EHP7 SP06 / EHP6 SP14

Planned Innovation

Visual Manufacturing Assembly Planning (Visual Enterprise Manufacturing Planner)

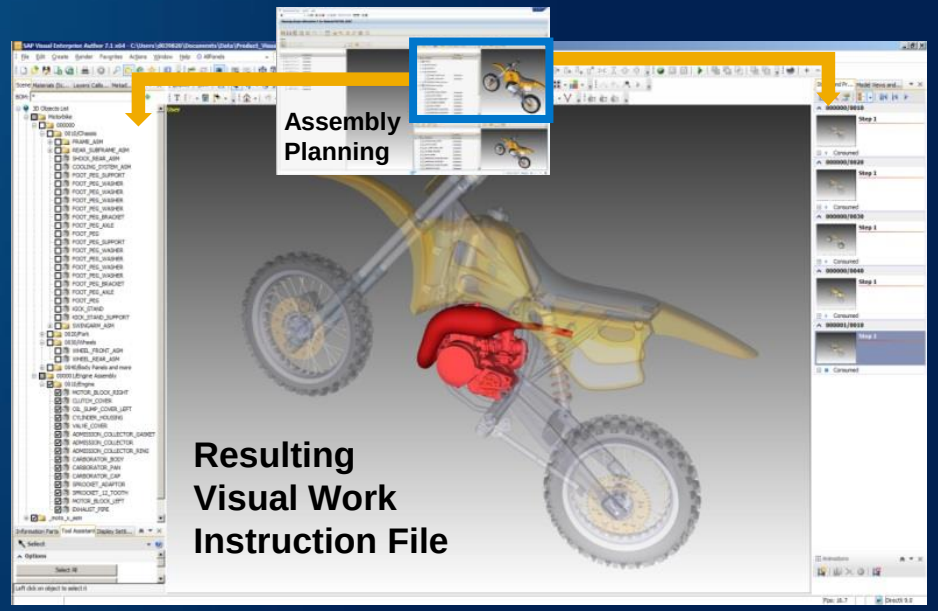
Description

- 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

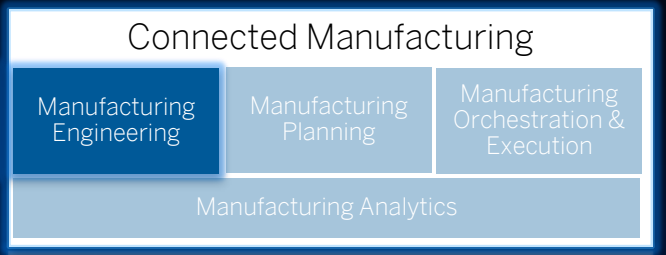
- Automatically create Visual Work Instructions according to the BOM and routing structure
- A variant Manufacturing BOM will result in a configurable Visual Work Instruction



PLANNED INNOVATION

Manufacturing Innovation Roadmap

Manufacturing Engineering



2015 *

Visual Manufacturing Planner

- Support Engineer To Order (ETO) Process
- Support of document BOM, Product Structure Manager, and material BOM as source
- Visual Production Resource/Tool (PRTs)
- Integration into QM

Visual Quality Management

- Visual Quality Planning

Planned

Visual Manufacturing Planner

- Configurable Work instructions

New BOM Management in S/4

Future

Footprint free UI

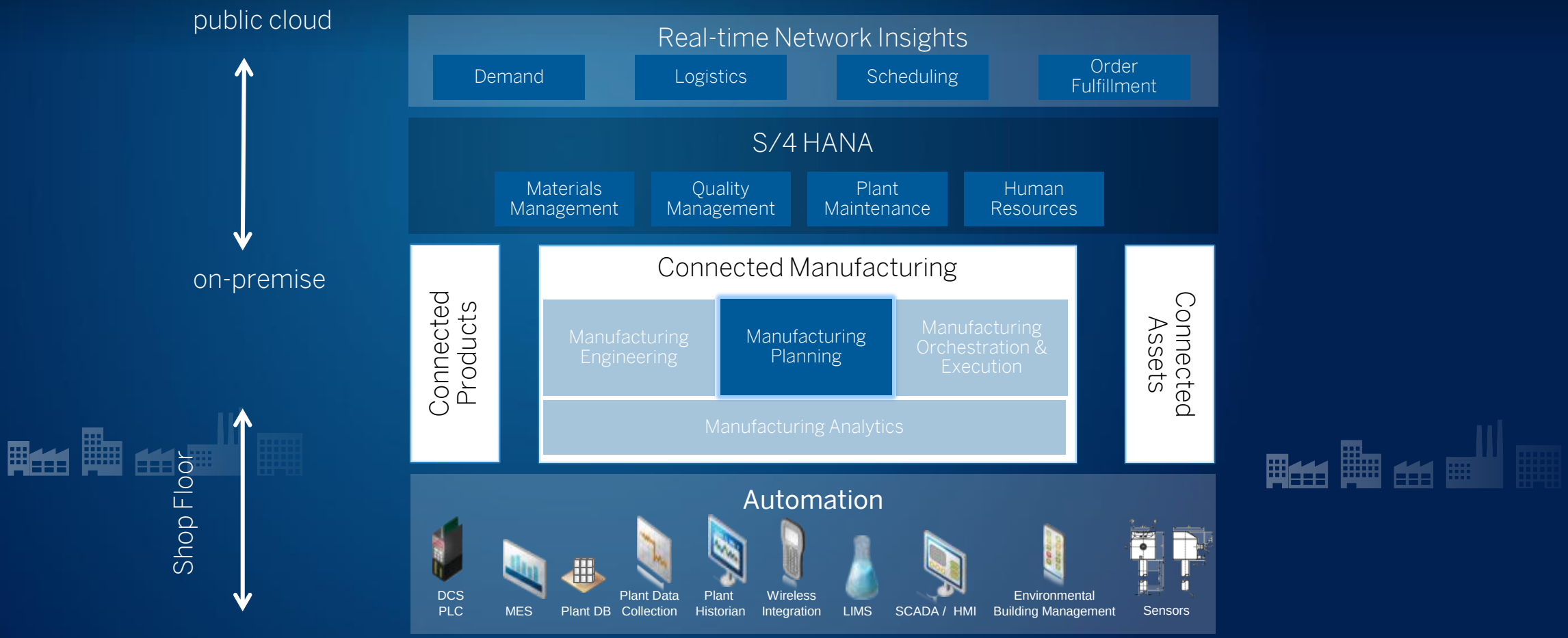
- Web Graphics Language Visual Enterprise Technology; e.g. for confirmation

New Master Data Management in S/4

* Q3/2015 – EhP 7, SP09

SAP Connected Manufacturing

Manufacturing Planning



Solution Today

MRP Apps

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

Solution Today and Planned Innovation

MRP Apps

Capabilities and Benefits

- With the MRP Apps the planner can analyze the material flow situation of his materials and orders based on real-time data
- The identification and evaluation of critical situations has highest priority
- Besides that the apps provide decision support with system-generated solution proposals
- Remark: ERP on HANA is prerequisite for the MRP apps

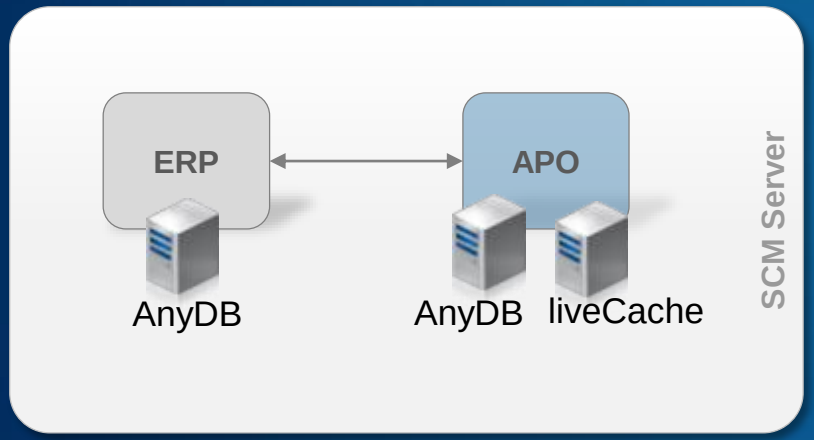
Current Status and Roadmap

- Shipment Q1-2014 (EhP7-Sp3):
  MRP FIORI Apps for external procurement
  - Monitor and Manage Material Shortages
  - Monitor and Manage External Requirements (sales orders, transport purchase order demands)
- Shipment Q3-2014 (EhP7-SP5):
  MRP FIORI Apps for monitoring in-house production
  - Monitor und Manage Production- und Process Orders
  - Monitor und Manage Internal Requirements (from production or plant maintenance)
- Shipment Q1-2015 (EhP7-SP7):
  - Improved communication of planners with their suppliers
- Planned for EhP8:
  - Handling of delivery schedule lines for purchased materials
  - Enhancements for MTO/MTP

Manufacturing Planning & Scheduling

PP/DS : Options Today and in the Future

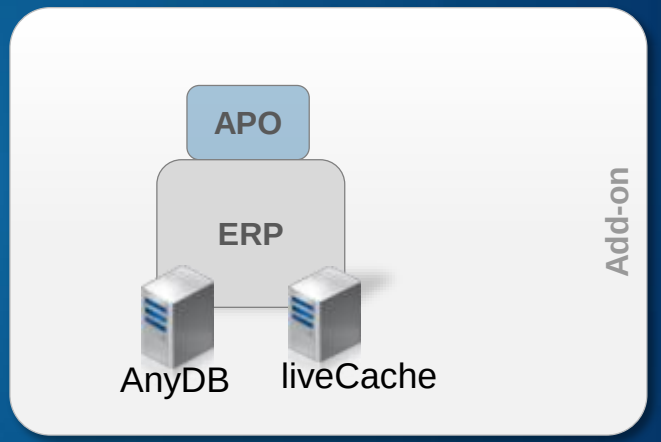
APO Standard Deployment Model



Large & X-Large Installations

- High Data Volume: two NetWeaver Servers
- APO with D/Q/P Landscape

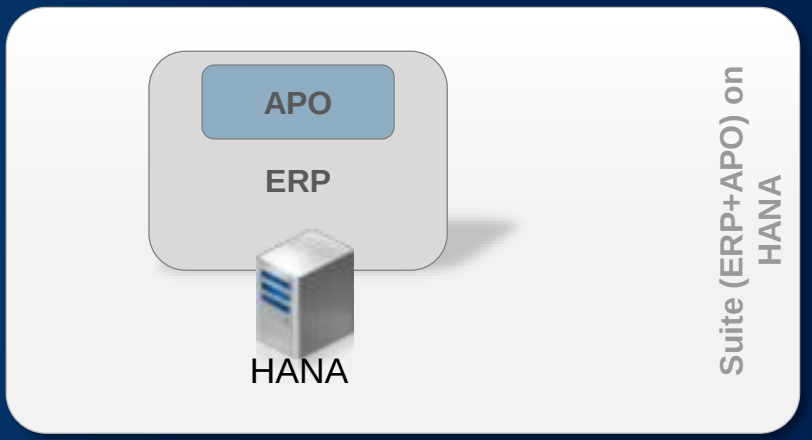
SCM 7.0 EhP3



Medium-Sized Installations

- Simplified Landscape, reduced TCO
- Less DB/OS/Backup/Basis Operations

ERP EhP8

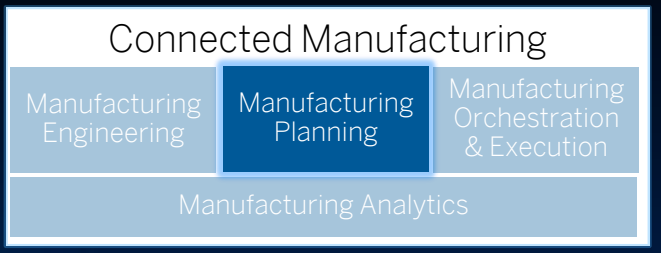


HANA based Installations

- Simplified Landscape, reduced TCO
- Simplified Application: Integration, Data Model, UI, Analytics
- No restrictions of PPDS use cases

Manufacturing Innovation Roadmap

Manufacturing Planning



In Development *

Basic E2E Process with Fiori + PP/DS Integration:

- MRP Live
- Material Planning Apps with enhancements

Simplifications (only S/4),
e.g. Sourcing and MRP areas

Planned **

Demand Pull Philosophy + PP/DS Improvements

- Demand Pull Control
- Order Pull Lists
- Simplified PP/DS Integration
- New PP/DS Graphical Planning Board

Future **

Capacity Requirements Planning

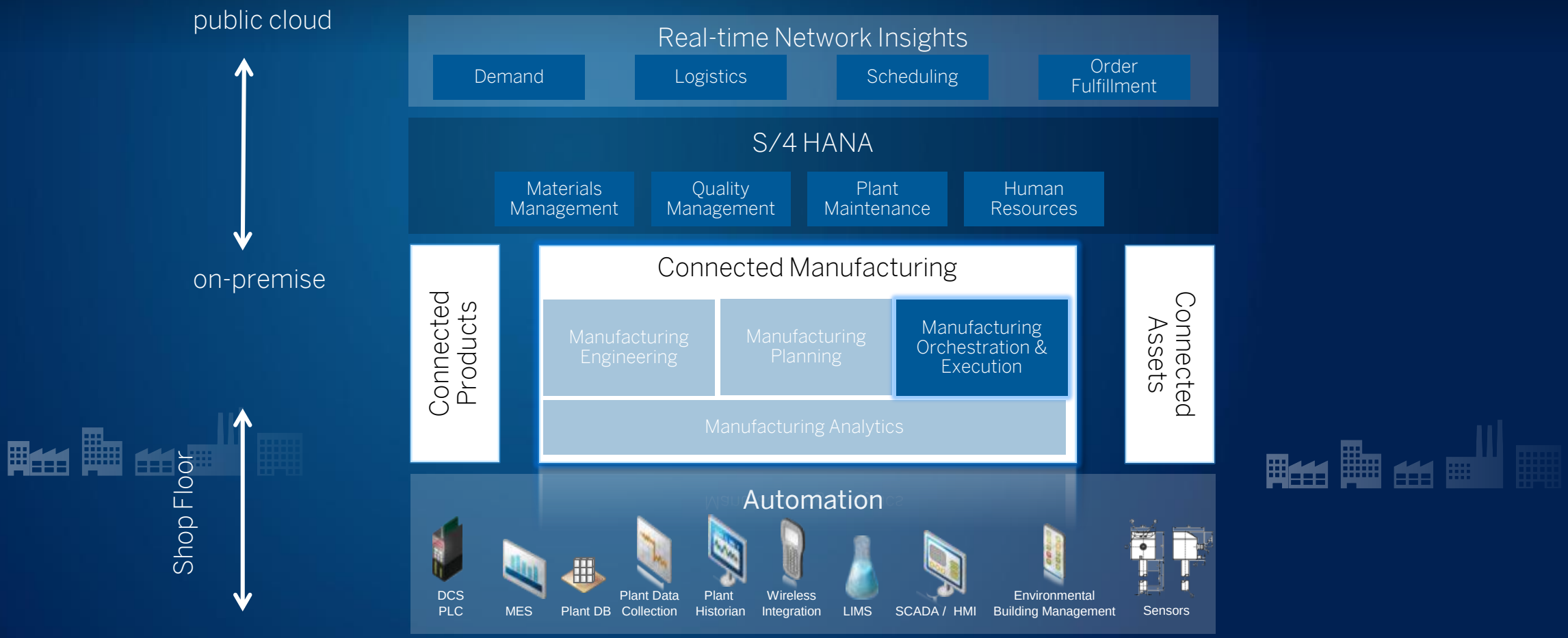
- Simplified Capacity Requirements Planning in MRP Live
- Capacity utilization analysis + decision support
- Bottleneck sequencing
- Capacity Supply Management

* EhP 8 & S/4 HANA

** S/4 HANA

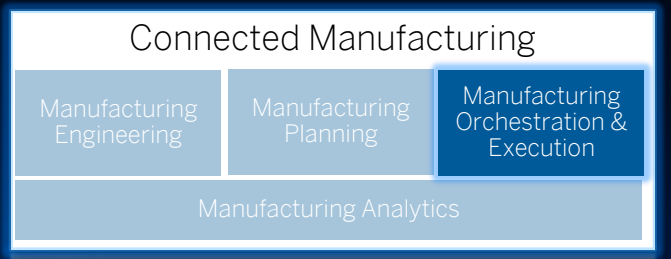
SAP Connected Manufacturing

Manufacturing Orchestration & Execution



Manufacturing Innovation Roadmap

Manufacturing Orchestration



Today *

Shop Floor Dispatcher

In Development **

Shop Floor Orchestration Apps

- Shop Floor Cockpit: Fiori Apps for the Production Supervisor, e.g. Monitor, Quick Create, Simple Change and Finalize of orders and operations

Planned **

New Shop Floor Dispatcher

- Additional order types
- Overwrite planned dates/times
- Interactive prioritization of operations with decision support

Future

Shop Floor Orchestration Apps

- Fiori Apps for complex tasks

* ERP

** S/4 HANA

There are multiple options for SAP in the Shop Floor

SAP Manufacturing Integration & Intelligence

Range of use
- Integration & Intelligence
- Reporting & Analytics
- Individual Scenarios and Use Cases
- 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

Target Industries
- All Manufacturing Industries

Highlights
- Highly Extensible

SAP Manufacturing Execution System

Range of use
- Manufacturing Execution System

Target Industries
- Discrete Industries

Highlights
- Tracking & Tracing on SFC / Serial Number
- Non Conformance Handling
- Interlocking
- Production Data Acquisition
- KPIs, Reporting & SPC
- Highly Extensible

SAP Manufacturing Integration and Intelligence

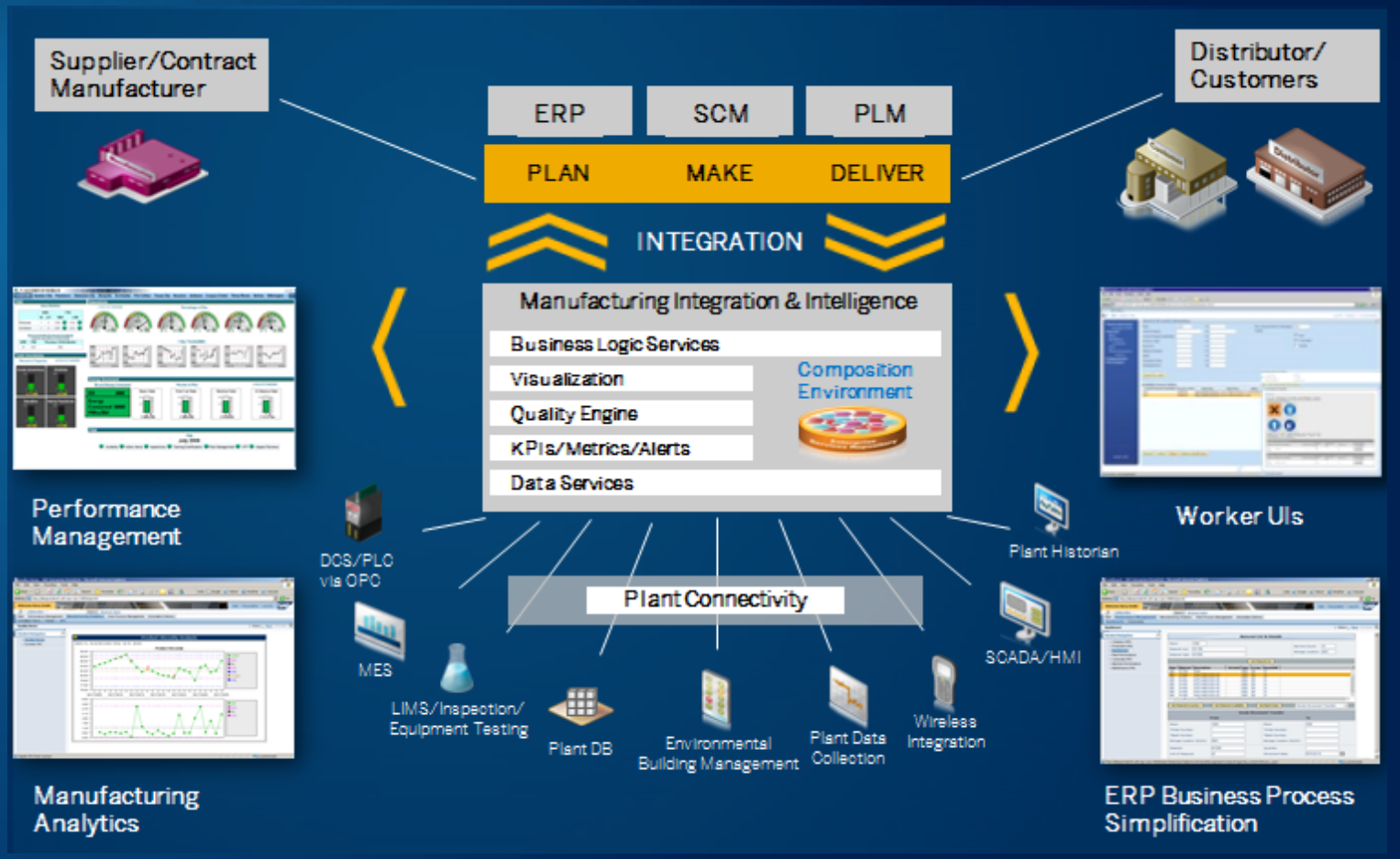
Overview of the Strategic Platform for the Connected Plant

SAP MII – What is it?

- **Extensible** manufacturing platform allowing **rapid adaption** to any manufacturing process
- 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
- Delivered with **standard performance management content** (OEE Management)

SAP MII– Main Differentiators

- Allows **Fast prototyping** to achieve fast ROI
- Unique platform and entry point to clean up **and unravel complicated software landscapes**
- Broad and extensive Partner Network and Customer Community
- Applicable to all Manufacturing Industries and Utilities



SAP Manufacturing Execution (SAP ME)

Main Differentiators

SAP ME – What is it?

- Manufacturing Execution System for the discrete industries

SAP ME – Main Differentiators

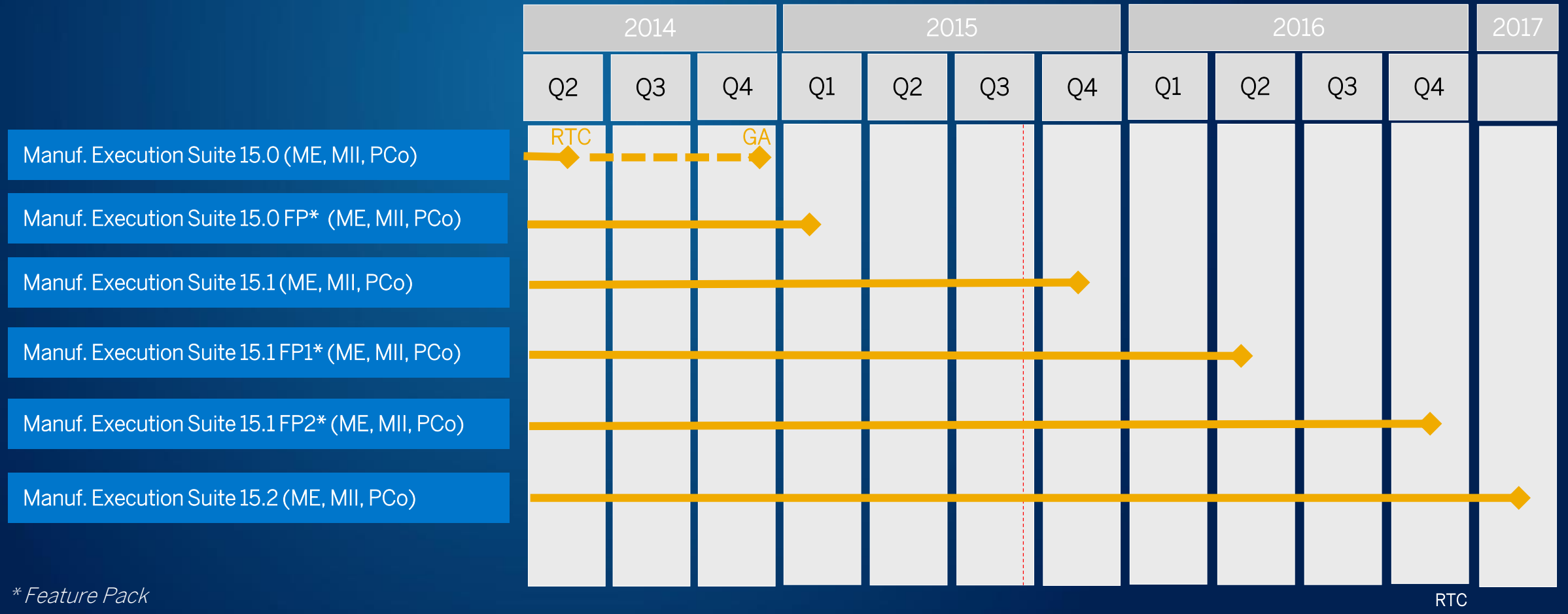
- ERP Integration "out of the box"
- Controls Production of every single unit (Lot Size 1)
- Easy interaction with shop-floor automation layer
- Unit Level Tracking & Tracing / Genealogy
  What operation, tool or machine was used, where parts came from, etc.
- Comprehensive nonconformance management 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

Manufacturing Execution Roadmap

Product Release Timeline

Subject to Change

New and planned developments;
Roadmap shows the importance of production in the SAP portfolio



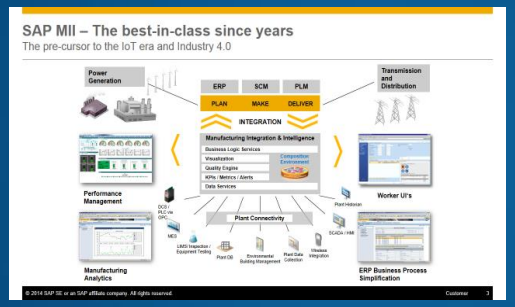
** Feature Pack*

SAP MII – In the age of Industrie 4.0

Supporting smart Manufacturing Operations

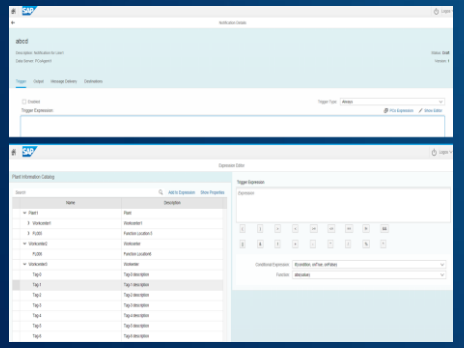
Connector Service
Visualization Service
Business Logic Service
Flexible Tool-set

MII Runs on HANA

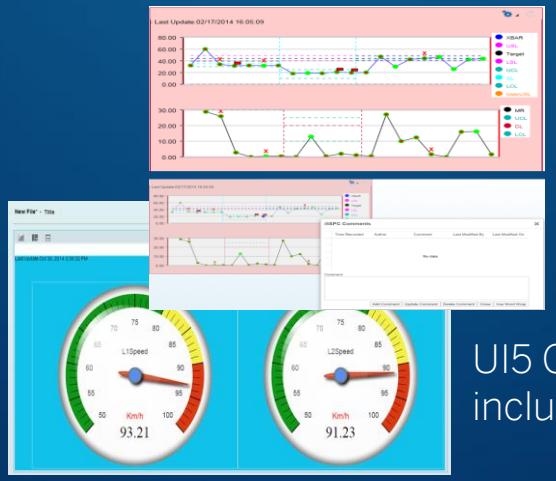


Self Service Composition Environment – No Development Dashboard creation

Standard Delivered Performance Management content (SAP OEE Management)
Manual / Semi-automatic and Automatic Production Lines



Remote PCo notification – Single window notification configuration



UI5 Charts and Gauges including SPC charting

Worker UI:
Responsive design
Device Enabled
State-of-the-art UI Technologies

Solution Today

Integration of 3D Models and HTML- Pages in the POD

Description

3D Models

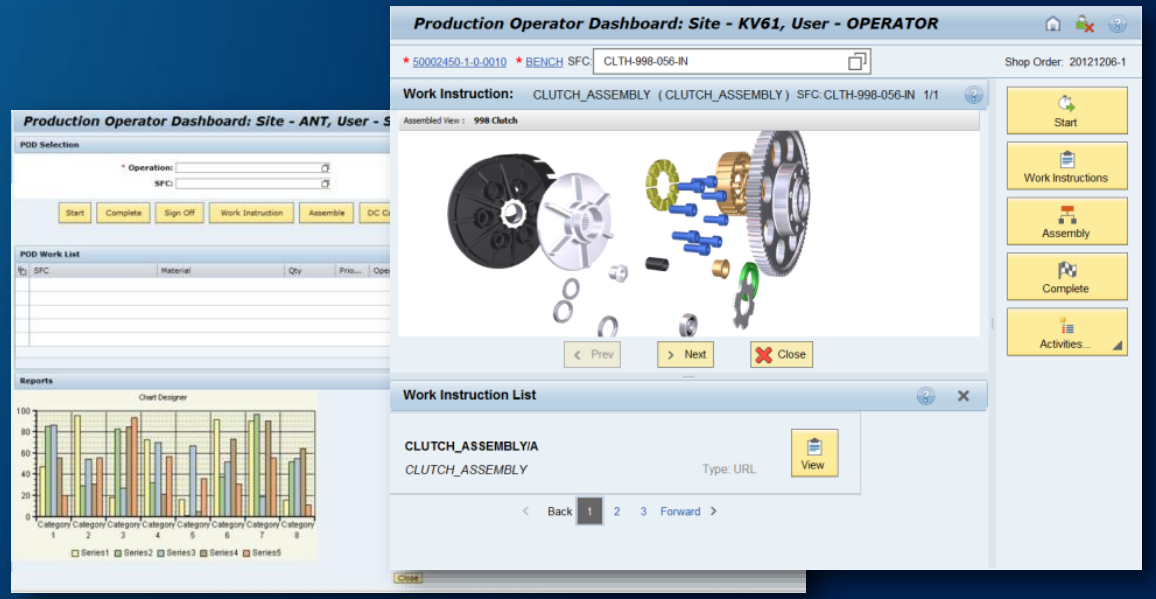
- Visual Enterprise Viewer (the former Right Hemisphere technology) is now embedded into the POD as a Work Instruction plug-in
- View 2D/3D models that can be created in the Visual Enterprise suite as a .RH file format
- Scenarios:
  - Assembly
  - Visual Test and Repair

HTML Pages

- Viewing of an image or HTML page in a POD plug-in
- Can be used e.g. to view MII reports and dashboards within the context of the ME POD

Key Benefits

- Allows the shop floor operator to have an interactive experience with 2D/3D models w/out having to leave the POD
- Flexibility to provide various kind of content to the operator



SOLUTION TODAY ME6.1

Solution Today

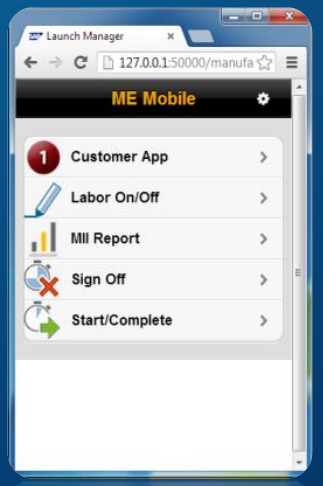
Mobility

Description

- Deliver browser-based mobile apps for wireless bar code scanners used on the shop floor for executing production activities
- Enable production activities in the application to be executed from mobile data terminals
- Deliver an exposed data layer, source code, and templates to support custom mobile app development

Key Benefits

- Easier access to functionality in SAP Manufacturing Execution on the shop floor using mobile devices
- Add an enterprise mobility front end to SAP Manufacturing Execution through a newly created data layer
- Empower partners and customers to easily develop custom mobile apps



SOLUTION TODAY ME15.0

Solution Today

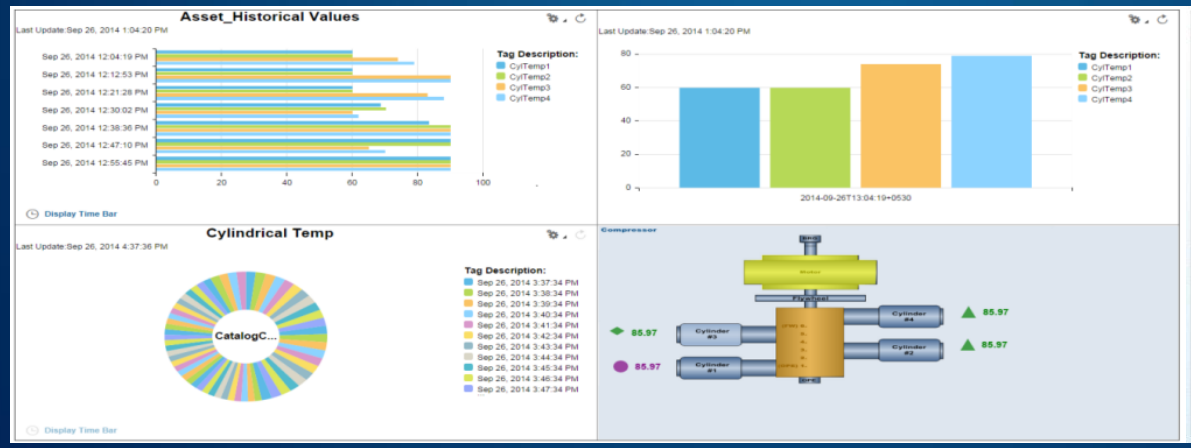
Self-service Composition Environment

Description

- Browser(HTML5) based design tool for dashboard creation by consuming different MII objects
- WYSIWYG based design
- Form based reporting dashboard using UI elements
- Integrating tag value changes directly to browser using web socket interface or through catalogue query template
- Source code generation for high sophisticated UIs

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



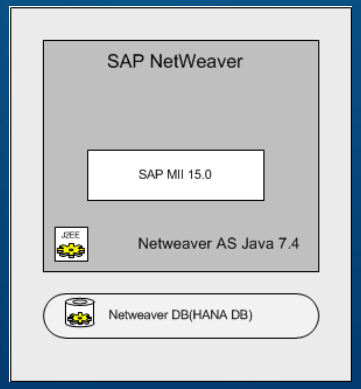
SOLUTION TODAY MII15.0

Solution Today

MII on HANA

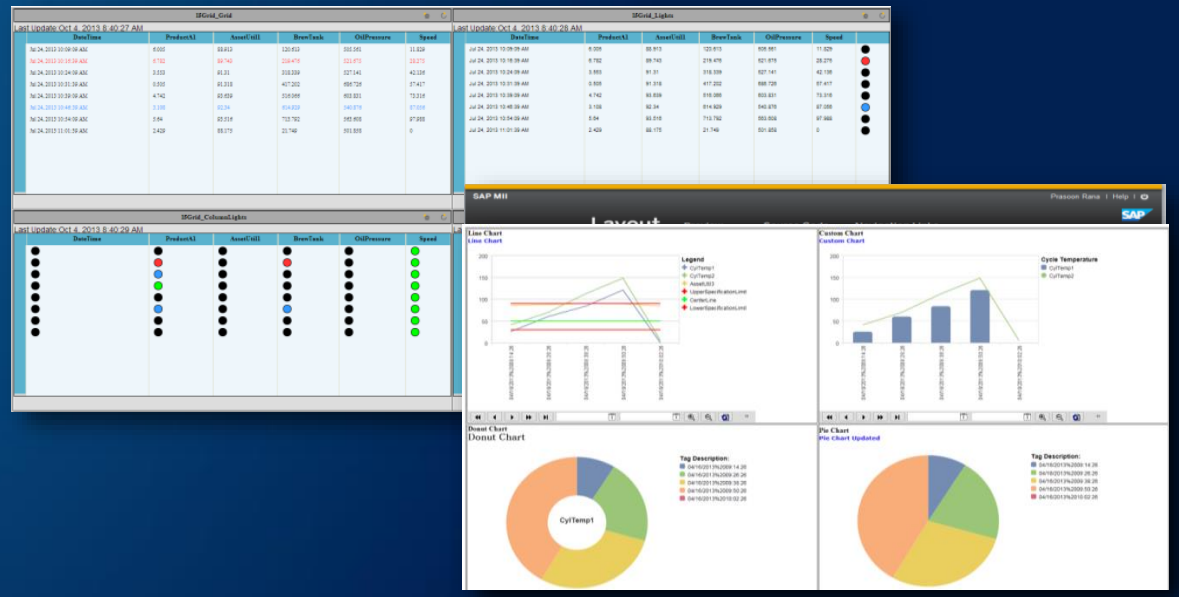
Description

- 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



SOLUTION TODAY MII15.0

Solution Today

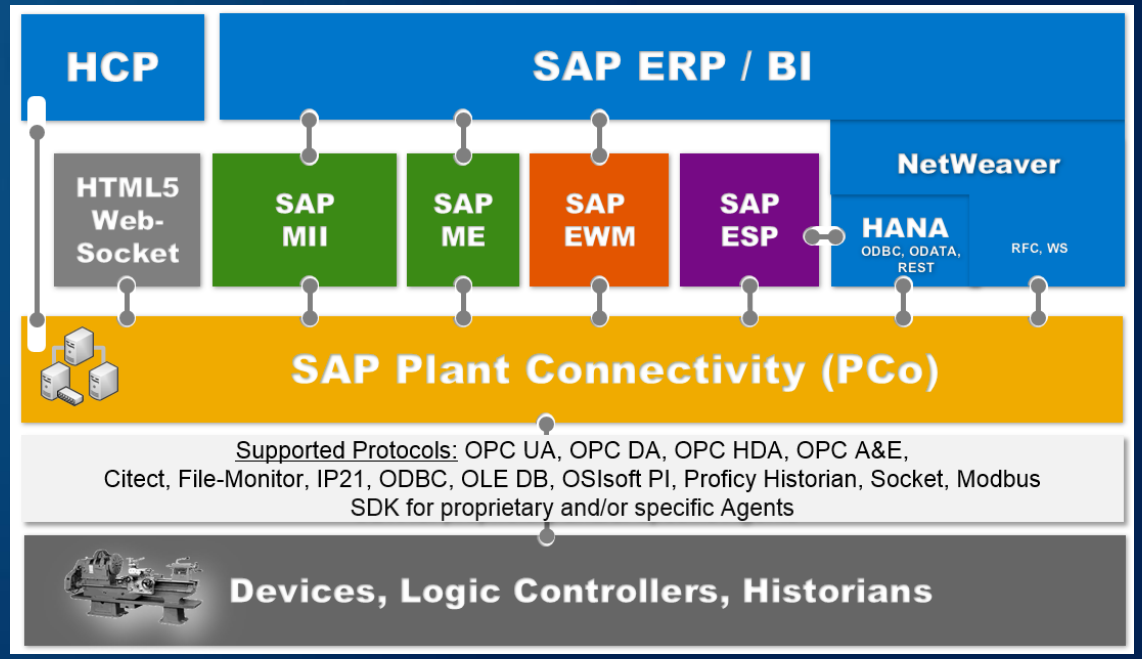
Enhanced Connectivity

Description

- Basis for the three core IoT/Industrie 4.0 communication patterns:
  - Notifications
  - Queries
  - Synchronous Service Calls with response handling
- Near Real Time UI Support with PCo as WebSocket-Server
- Data supply into HANA (ODBC or REST-Service)
- Integration with SAP ESP
- RESTful, ODATA, SOAP Webservices
- High throughput performance on .Net/C# architecture
- Bundling and buffering of data – notification delivery retry
- Remote Configuration of PCo from MII – Versioned Notifications and MII Destination
- Synchronous Request/Response pattern enablement ("Notification Processing with Response Handling")

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



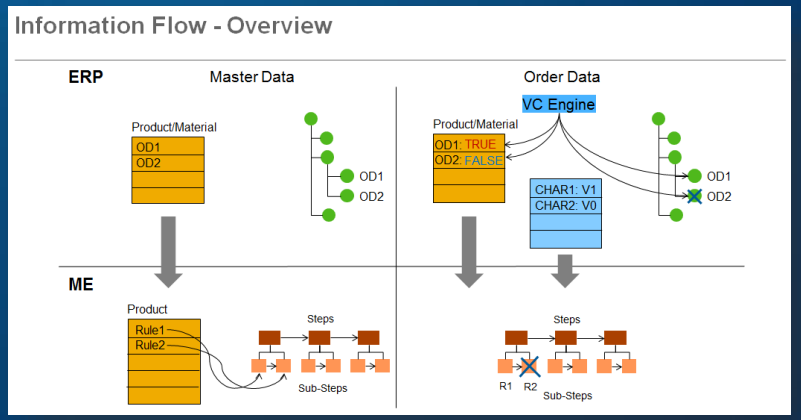
SOLUTION TODAY PCo15.0

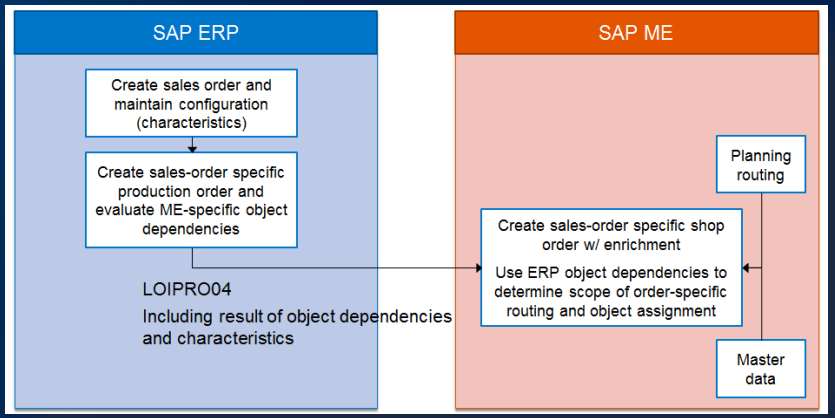
Planned Innovation

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 where the primary manufacturing **planning is maintained w/in ME**
- 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

PLANNED INNOVATION (SAP ME)

Solution Today

Industrie 4.0: 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

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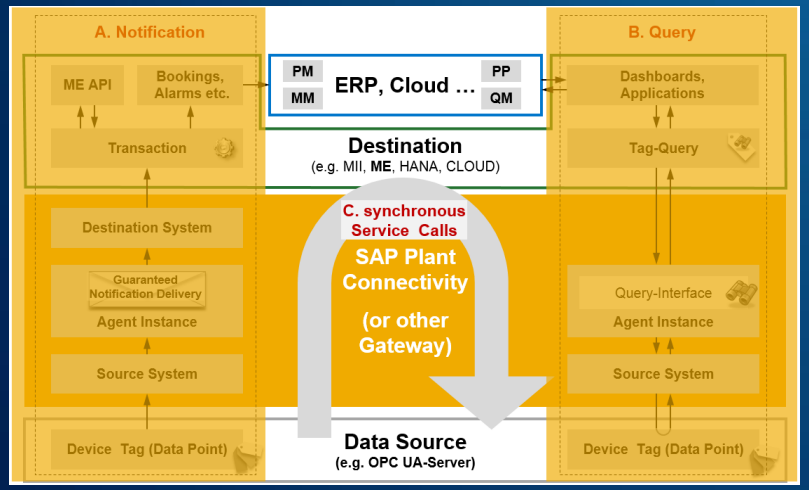
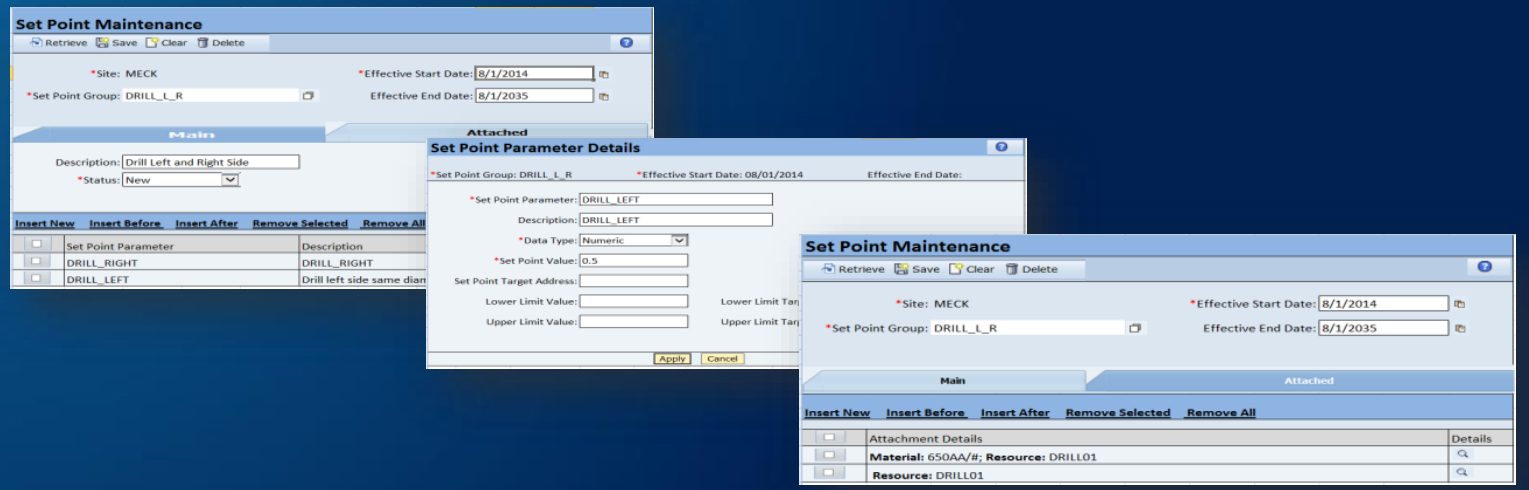




SOLUTION TODAY ME15.0.3

Planned Innovation

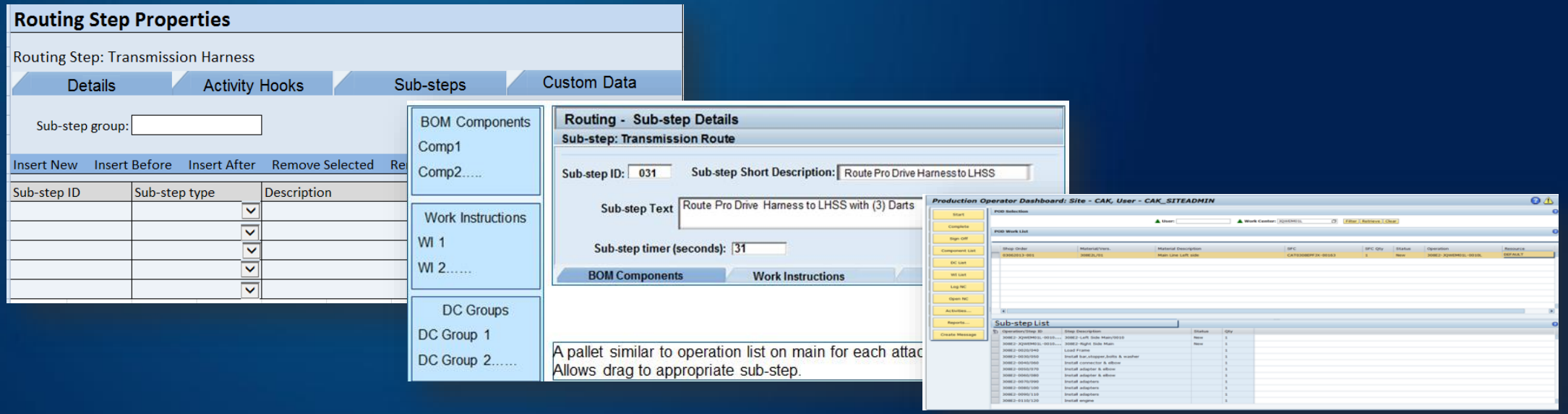
Industrie 4.0: Sub-steps

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



PLANNED INNOVATION - *Down ported to SAP ME 15.0.3*

Planned Innovation

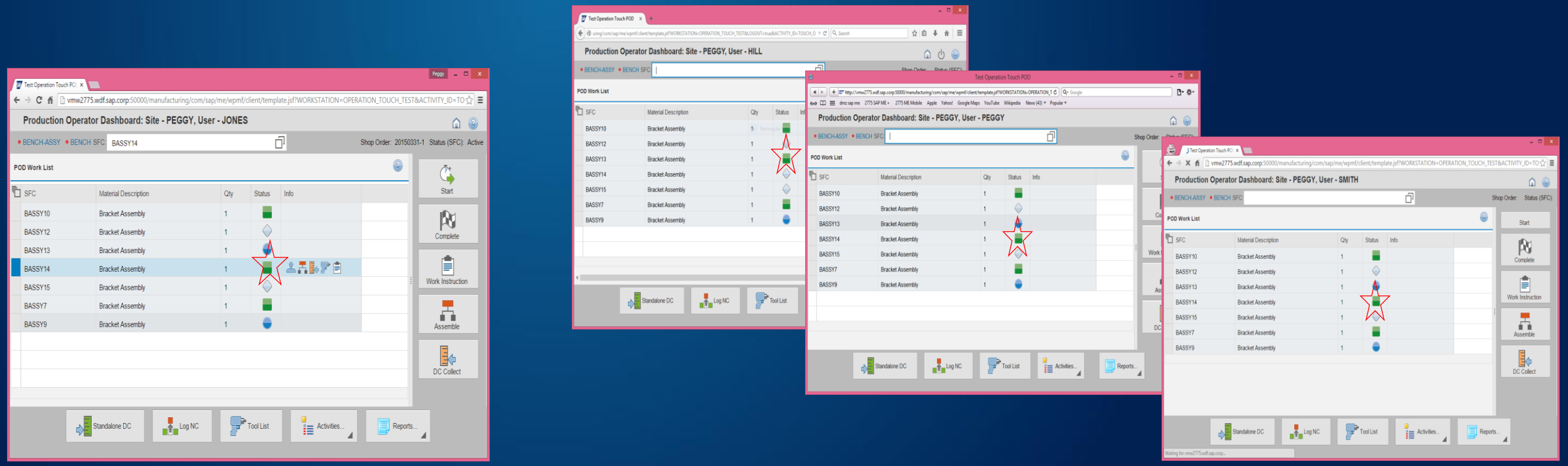
Industrie 4.0: Automation Support

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



PLANNED INNOVATION (SAP ME)

Planned Innovation

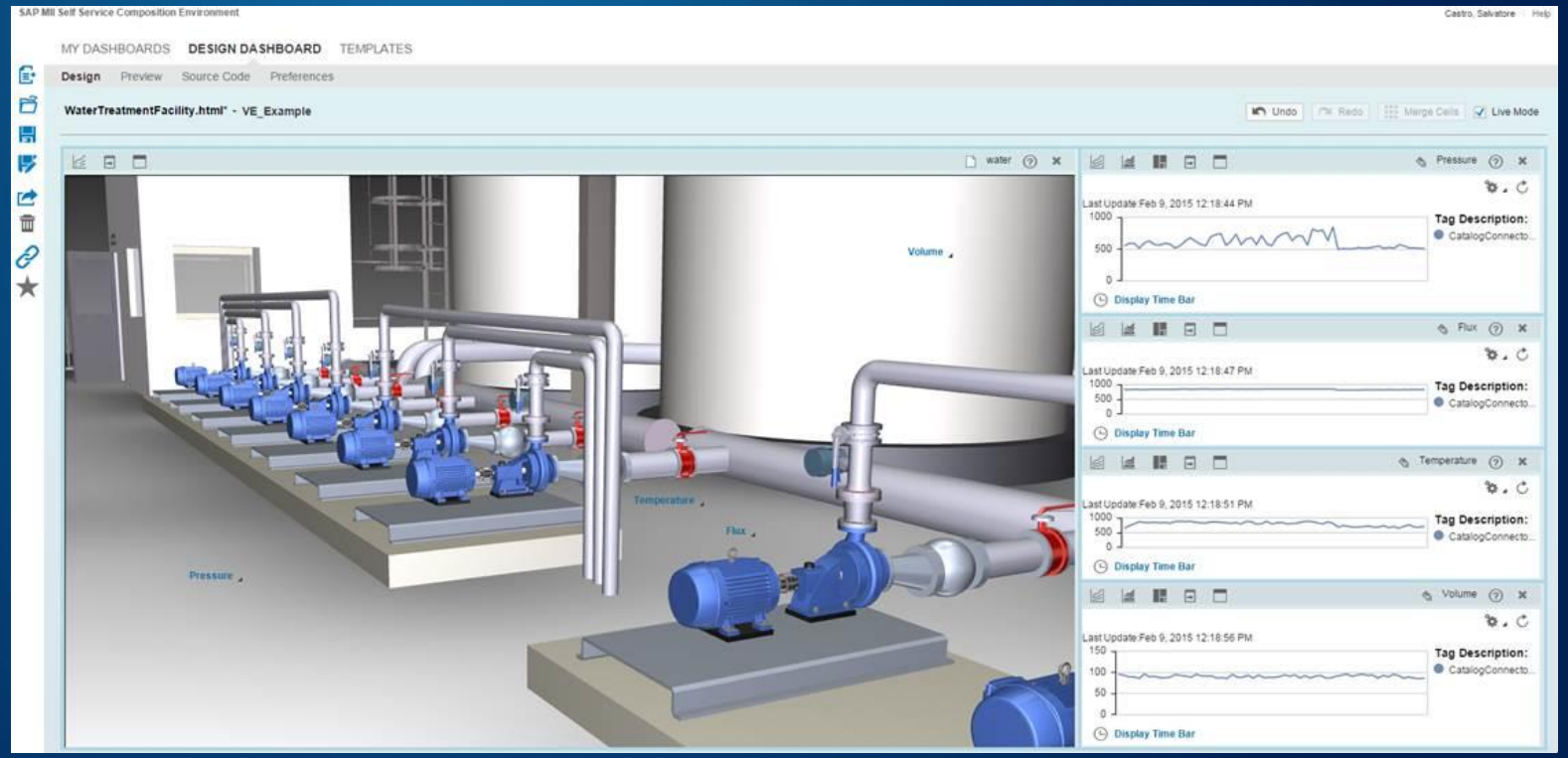
Self Service Composition Environment: UI Enhancements

Description

- Additional HTML5 based charts e.g. i5Command
- Enhance the SSCE with 3D file integration and simplified reporting for manufacturing application

Key Benefits

- Remove the dependency on JRE required on each of the machine
- Build reporting application without any coding



PLANNED INNOVATION

Planned Innovation

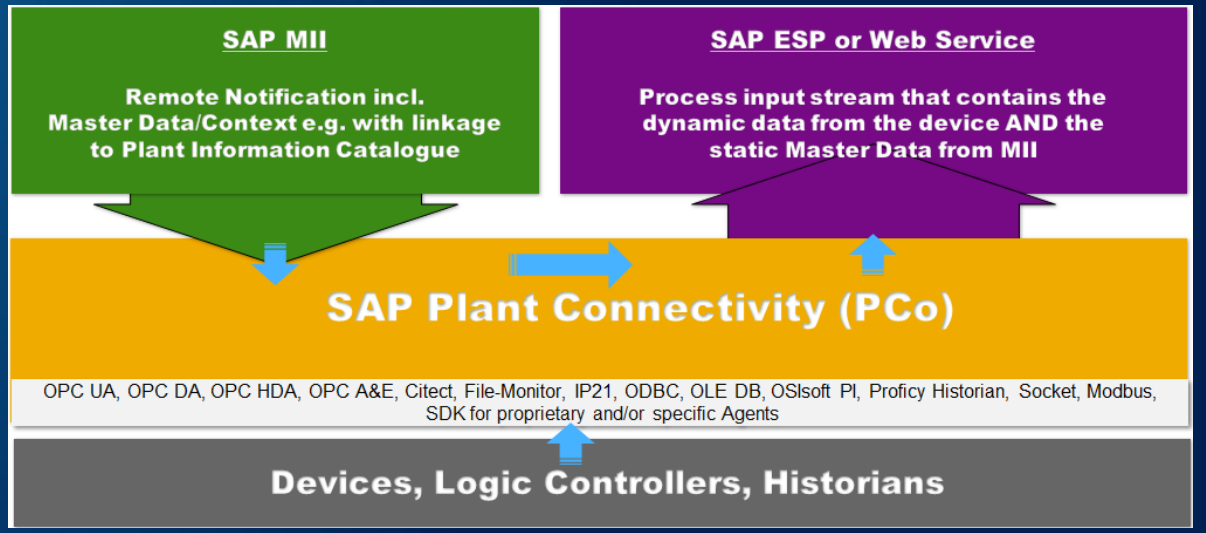
"Remote Configuration of PCo from MII" – enablement of SAP ESP and Web Service Destination

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

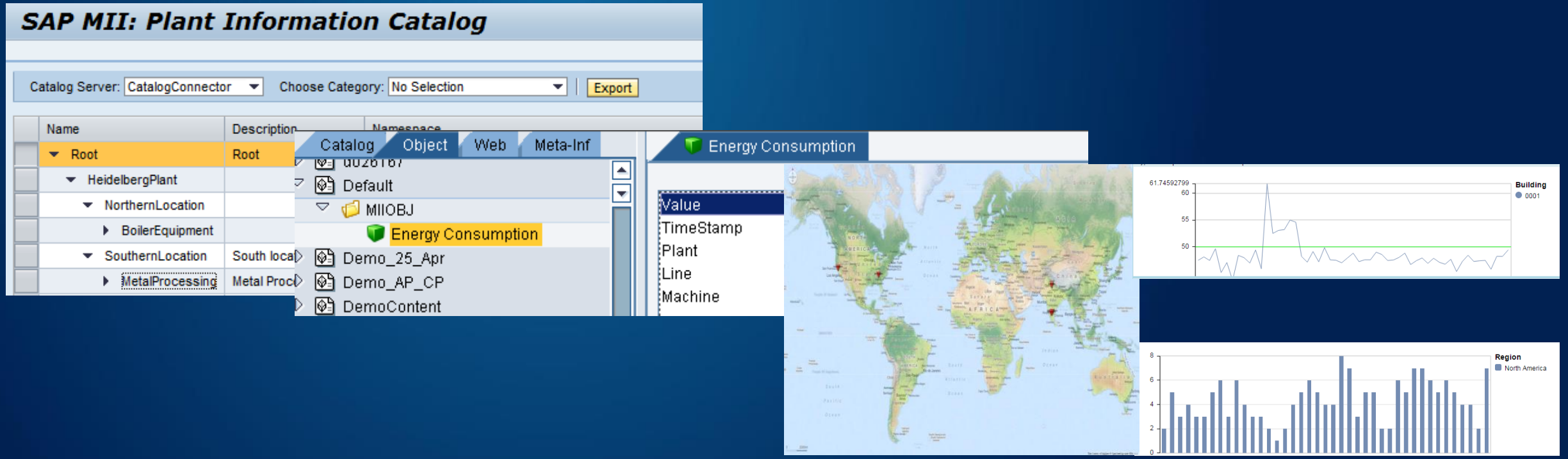
Energy monitoring & Analysis

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



Planned Innovation

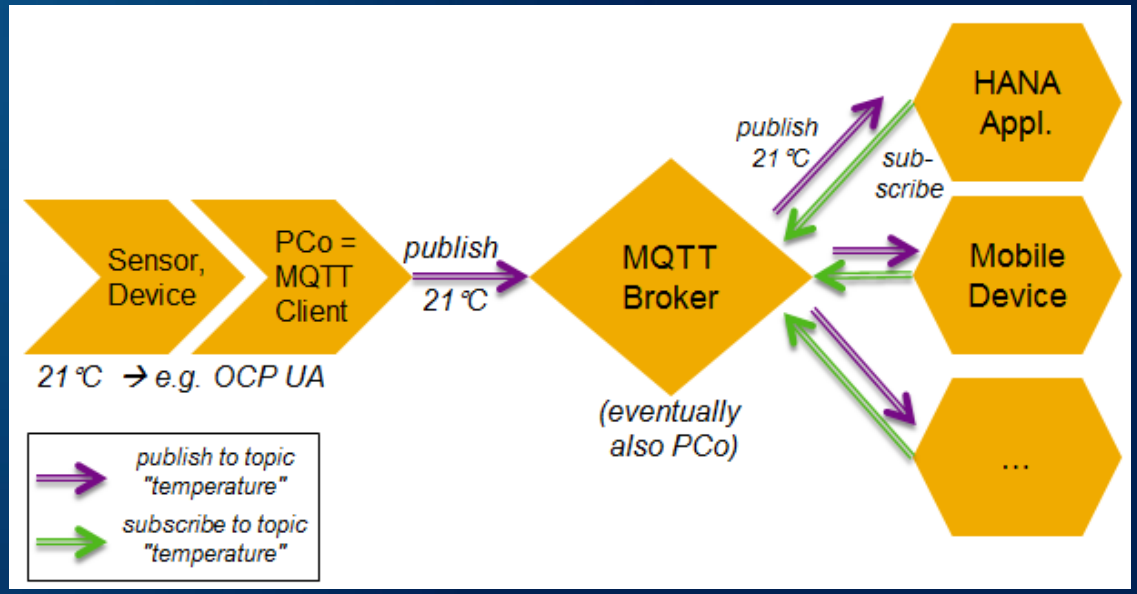
Enable PCo for "Message Queue Telemetry Transport" (MQTT)

Description

- MQTT (Message Queue Telemetry Transport) is a lightweight messaging protocol focusing on machine to machine communication. It follows a publish-subscribe pattern where a message broker receives messages from devices, systems or actually any client and dispatches these messages based on explicit subscriptions.
- In first instance, PCo would be enabled as an MQTT-Client which can publish messages to an MQTT broker (e.g. in HCP), in second instance and if feasible, PCo should be enhanced to act itself as MQTT broker

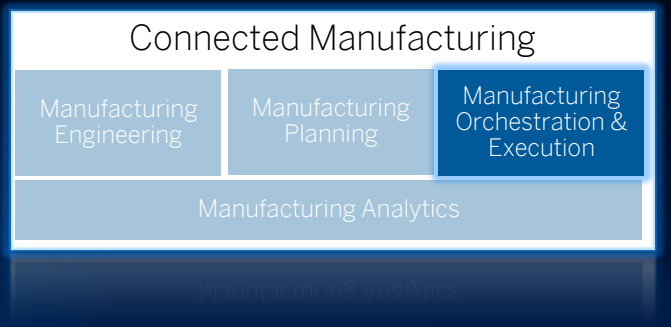
Key Benefits

- MQTT is very bandwidth efficient
- The protocol uses a publish/subscribe architecture in contrast to HTTP with its request/response paradigm
- The approach matches with the HANA Cloud Platform strategy



Manufacturing Innovation Roadmap

Manufacturing Execution Discrete Industries – SAP ME



In Development

Lot Size 1

- Configuration Information in SAP ME
- Substeps

ME on HANA

Energy Monitoring & Analytics (with MII)

Planned

Lot Size 1 Extended

- Highspeed roundtrips with automation layer

Continuous Improvements & Simplifications ; e.g.

- OEE on ME
- Integration Excellence

MII Entry Page

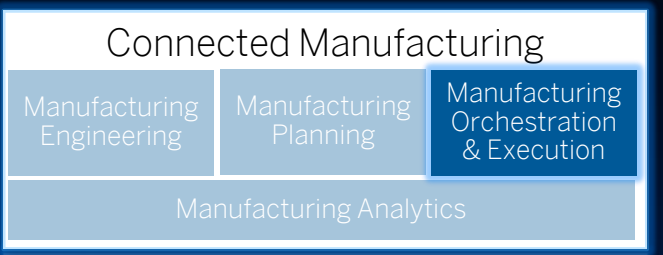
Future

Manufacturing Network Integration

Hybrid MFG
(Process-> Discrete)

Manufacturing Innovation Roadmap

Manufacturing Execution for Process Industries



In Development

- Energy Monitoring & Analytics with MII
- Self Service Composition Environment Enhancements; e.g. 3D Support
- MII Worker UI Enhancements

Planned

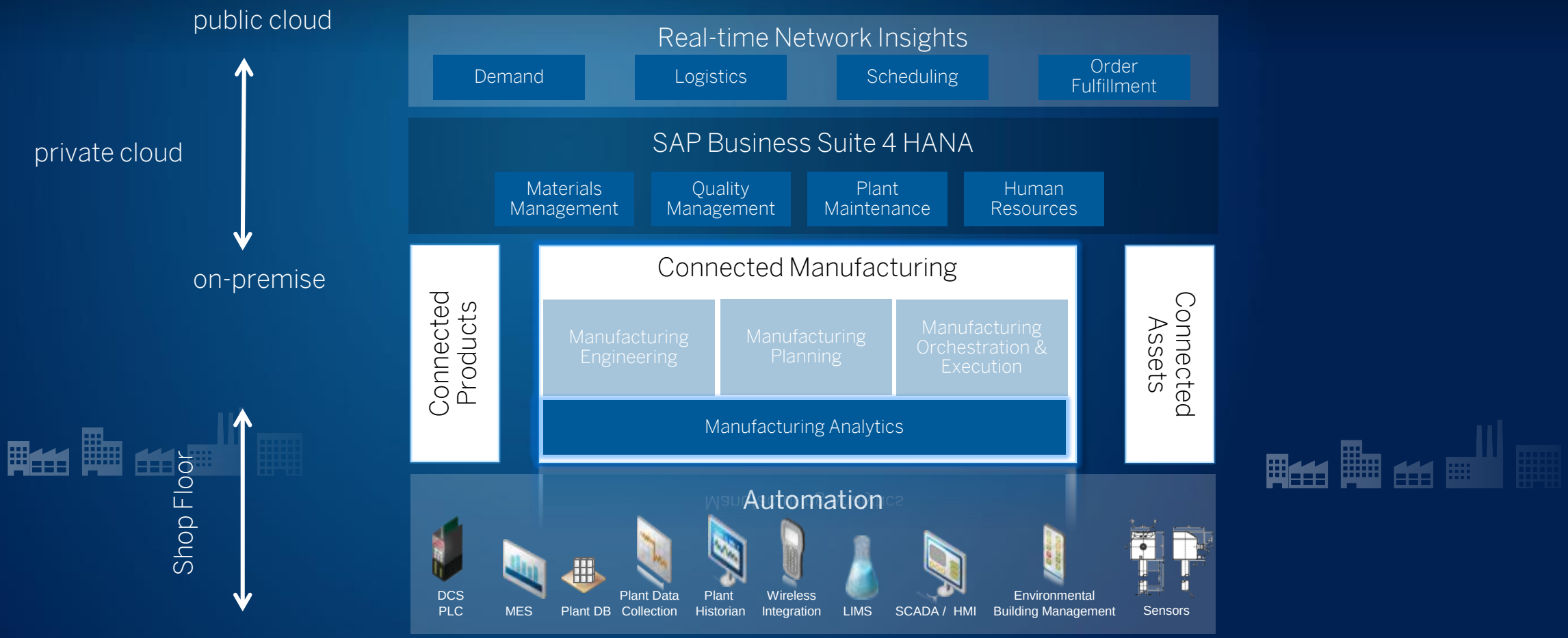
- Enhanced Energy Monitoring & Analytics
- Self Service Composition Environment Enhancements
- MII Entry Page
- Predefined Analytics Content
- Integration Scenarios with IoT / HCP; e.g. for PDMS

Future

- Predefined Analytics Content - extended
- Integration Scenarios with IoT / HCP - extended

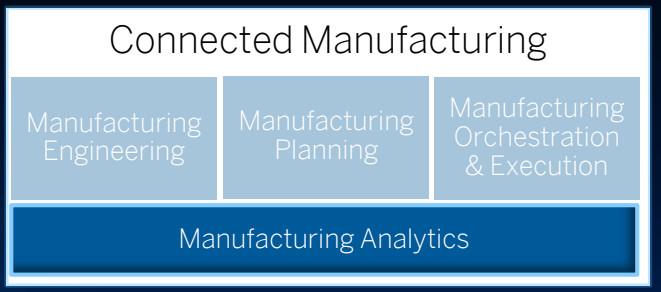
SAP Connected Manufacturing

Manufacturing Analytics



Manufacturing Innovation Roadmap

Manufacturing Analytics



In Development

LIS Replacement by CDS views

Planned

Predefined Analytics Content

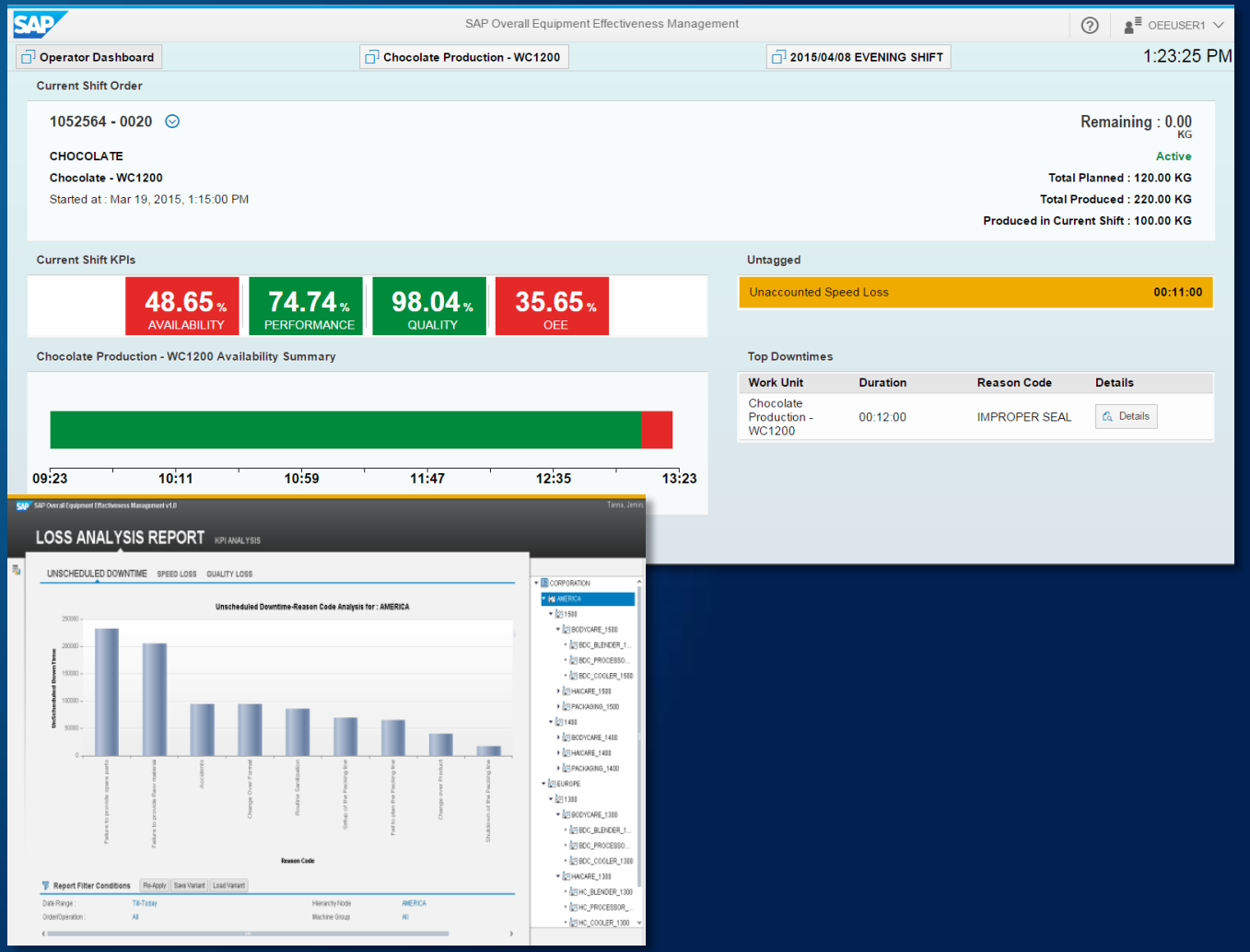
Future

Predefined Analytics Content - extended

SAP MII OEE Management

SAP MII delivered standard content

- **Rich Standard Content on top of MII** for simple order execution along with calculating of key OEE KPIs
- **Bi-Direction** top-floor to shop floor integration. Ability to download production/process order, collect production, rework, waste, standard value key, raw material etc. and post it back to ERP system
- **Capture the root causes** for downtime, efficiency loss and poor quality. Facilitates analysis and corrective action at the plant level and across plants
- **Analysis real time information** on OEE, Availability, Performance and Quality on various hierarchy levels along with business context
- **Operator friendly UI design**
  Responsive and device friendly UI, State-of-the-art technologies
- **Automation Support of Green field and Brown field factories**
- Support of Manual, Semi-automatic and Automatic Production environment

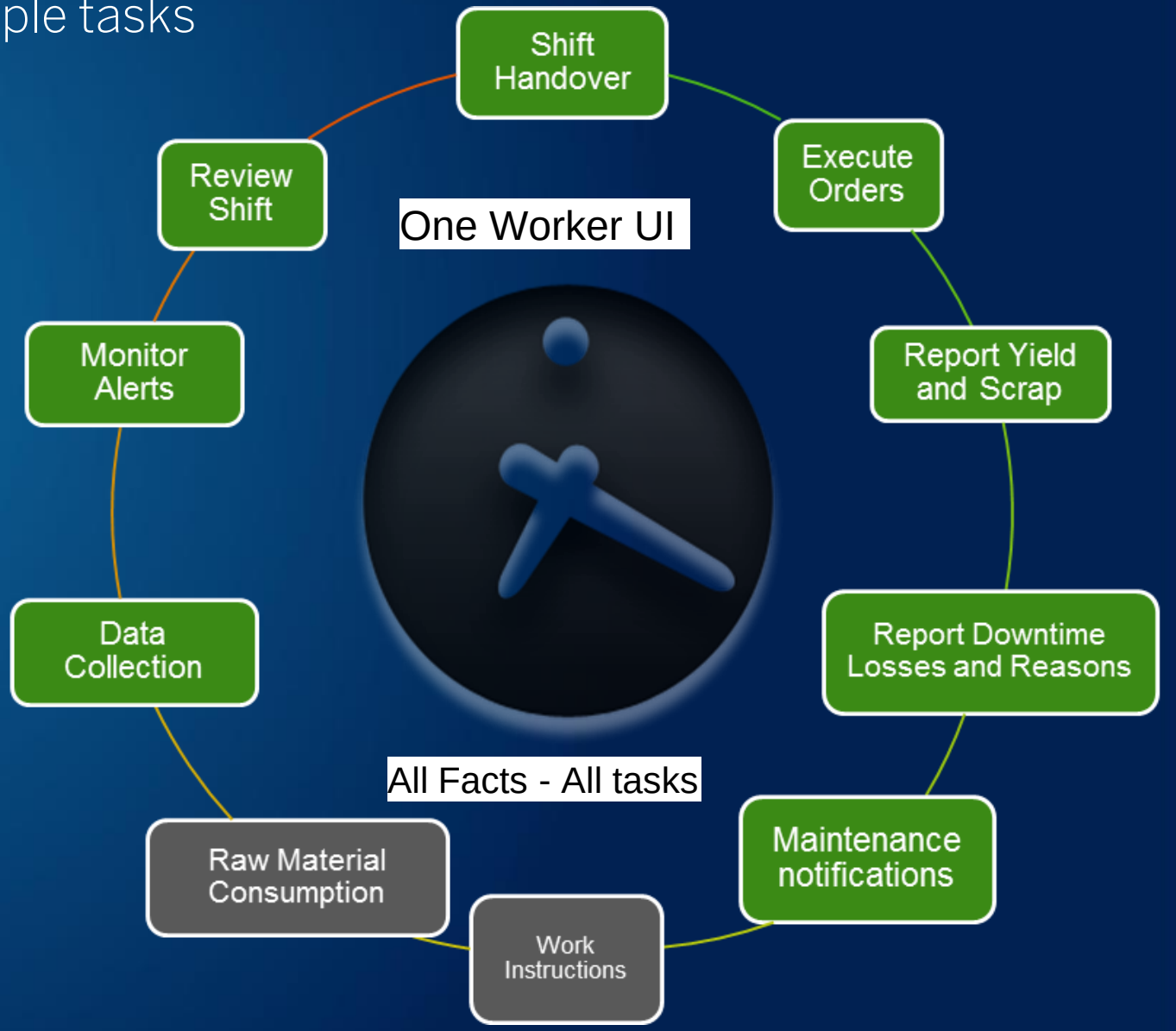


SAP MII OEE Management – Worker UI

Single application window to complete multiple tasks

- Shift Handover
- Execute New Orders (Manage Orders)
- Manage Downtimes and Monitor Production
- Data Collection (e.g. Waste and Overfill)
- Monitor Alerts
- Review Shift

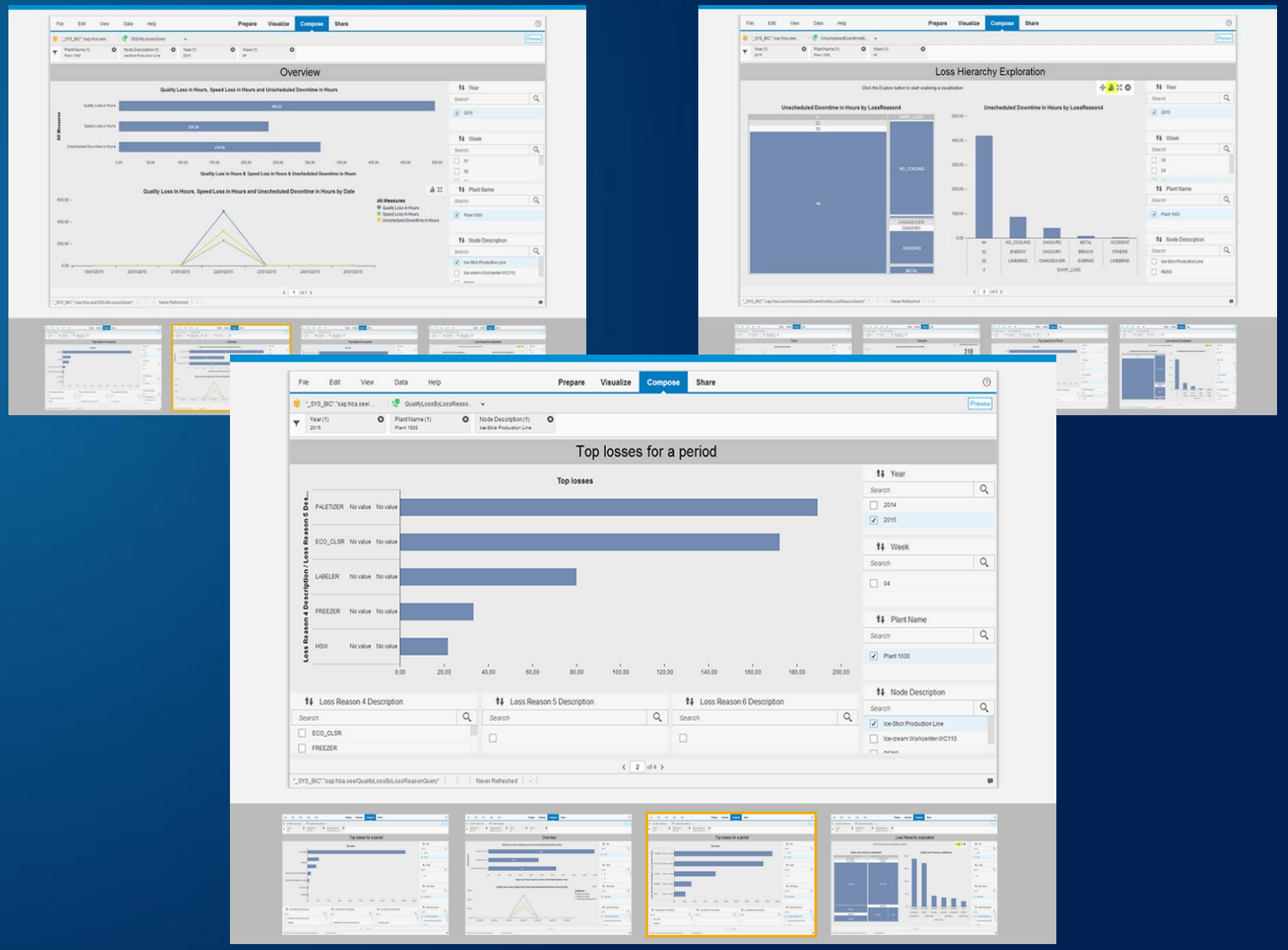
- Example Customized scenario
  - Raw Material Consumptions
  - Look for Work Instructions (e.g. Changeover Instructions)



SAP OEE on HANA Analytics

SAP MII delivered standard content

- SAP OEE HANA component delivers the HANA calculation views and some pre-delivered reports
- But for better flexibility, customer can use the HANA Calculation views and use SAP Lumira to built their own reports
- SAP HANA consolidates the data from multiple plants residing in several MII boxes – In the HANA box data from all plants can be visualized and analyzed – comparison of plants or production lines are also an advantage of using the HANA Analytics
- The HANA box gets the data replicated from several MII systems installed at several plants. The HANA component is optional. If customer does not want to have HANA in their landscape, they can still use the plant level MII system and use the data for creating their own reports



SAP MII OEE Management

Why SAP MII OEE?

- SAP OEE helps customers drive reliable performance and improve manufacturing and asset productivity

Customer Challenges

- Aligning manufacturing performance with enterprise performance measures / manufacturing excellence standards
- Lack of connectivity and visibility to plant systems and performance
- Inability to identify sources of plant performance loss

- **Important for the COO**
  SAP OEE provides the ability to compare performance across plants and combine OEE metrics with broader business performance measures for improved supply chain, sustainability and enterprise financial performance
- **Important for the Plant Manager:**
  SAP OEE provides visibility to the major sources and reasons for manufacturing performance loss including capacity utilization, unplanned downtime, performance loss and quality loss
- **Important for the Production Operator:**
  SAP OEE provides real-time visibility to operational events and performance and generates real time alerts when critical events arise and need to be addressed immediately – One Worker UI covers multiple tasks

Top Reasons for Selecting SAP OEE

- Enables manufacturers to utilize a single enterprise solution for measuring and controlling consistent performance across all plants and the enterprise, which directly improves the bottom line
- Provides a solution which facilitates the full lifecycle of continuous improvement for manufacturing performance both within the plant as well as at the enterprise level
- Enables operational improvement from the bottom up by minimizing and reducing adverse events contributing to plant performance issues
- Works well for manual, automatic and semi-automatic – all kinds of plants

Planned Innovation

SAP MII OEE Management

Description

Enhanced Productivity

- PM notification creation from OEE dashboard
- Line specific alerts on Operator's dashboard (Worker UI)
- Enabling Data Collection at Line and Machine Level – Automatic and Manual
- Manual Correction of Order execution data if required
- Visual icons for the Worker UI buttons for easy identification
- Customer Logo on Worker UI

Simplified Extensibility

- Standard activity download option from Activity Configuration screen

Key Benefits

- More coverage on Operator's Day-In-a-Life
  - One Dashboard Multiple Tasks coverage
  - Direct real-time notification from dashboard to ERP
  - Critical messages on Operators Dashboard through alert pop-up
- Flexible Data collection Options at any level
- Visual appeal/identifications with icons on buttons
- Pride and Branding with Company Logo on Dashboard

- Easier custom extensions replicating the standard code
- Enabling new UI extension to remain responsive design / same look and feel like standard - as developed on the same framework

Planned Innovation

SAP MII OEE Management

Description

Simplified Configuration

- Simplified Master list of Reason code upload in ERP through MS excel
- Simplified reason code assignment to machine (from the master list) for downtime reporting
- Simplified mass excel upload of unscheduled/schedule downtime reporting
- Plant hierarchy transfer in ERP from Dev system to Q and Productive system
- Pre-delivered Demo Plant Set-up

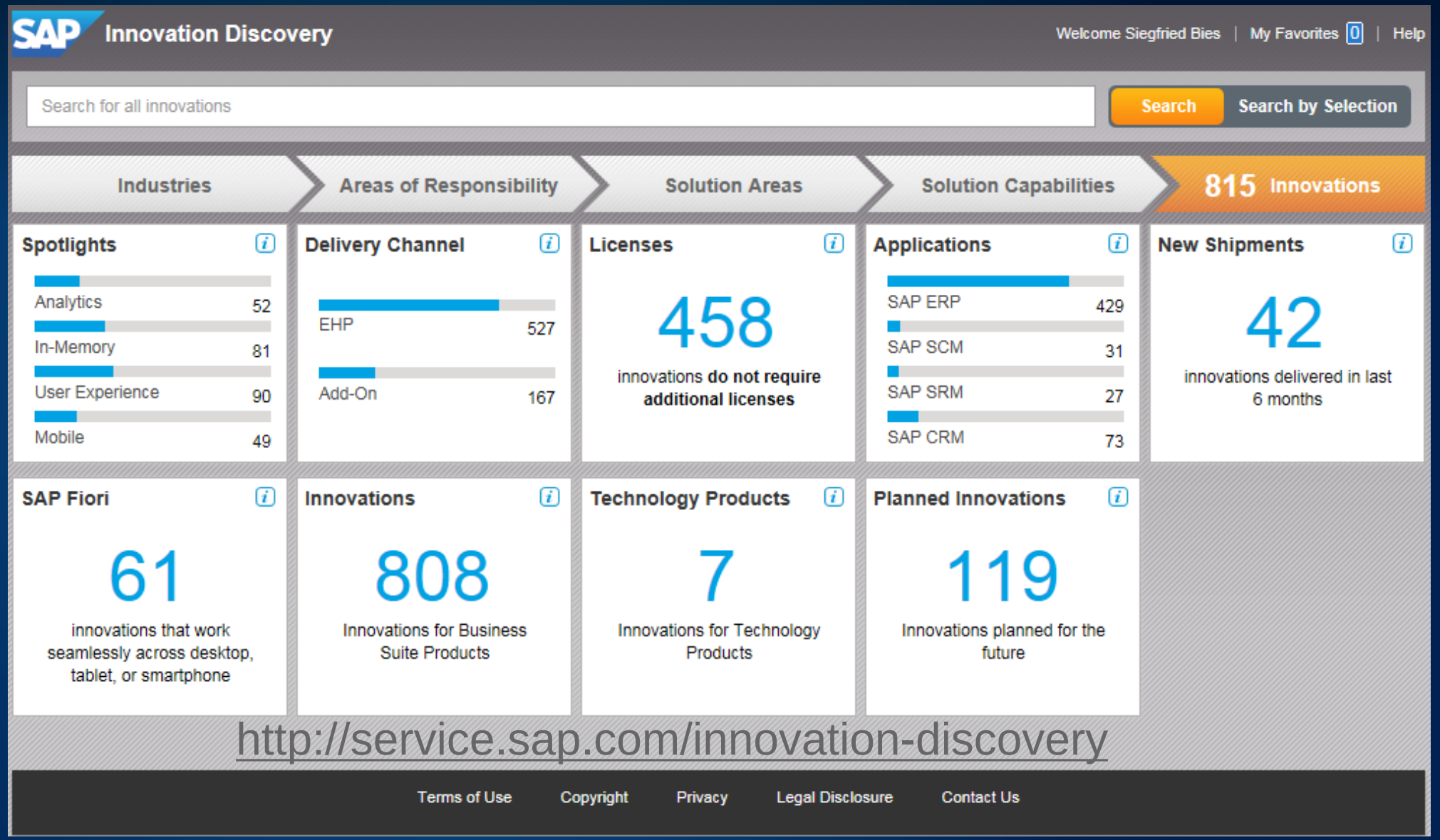
Local Plant Reporting and Analytics

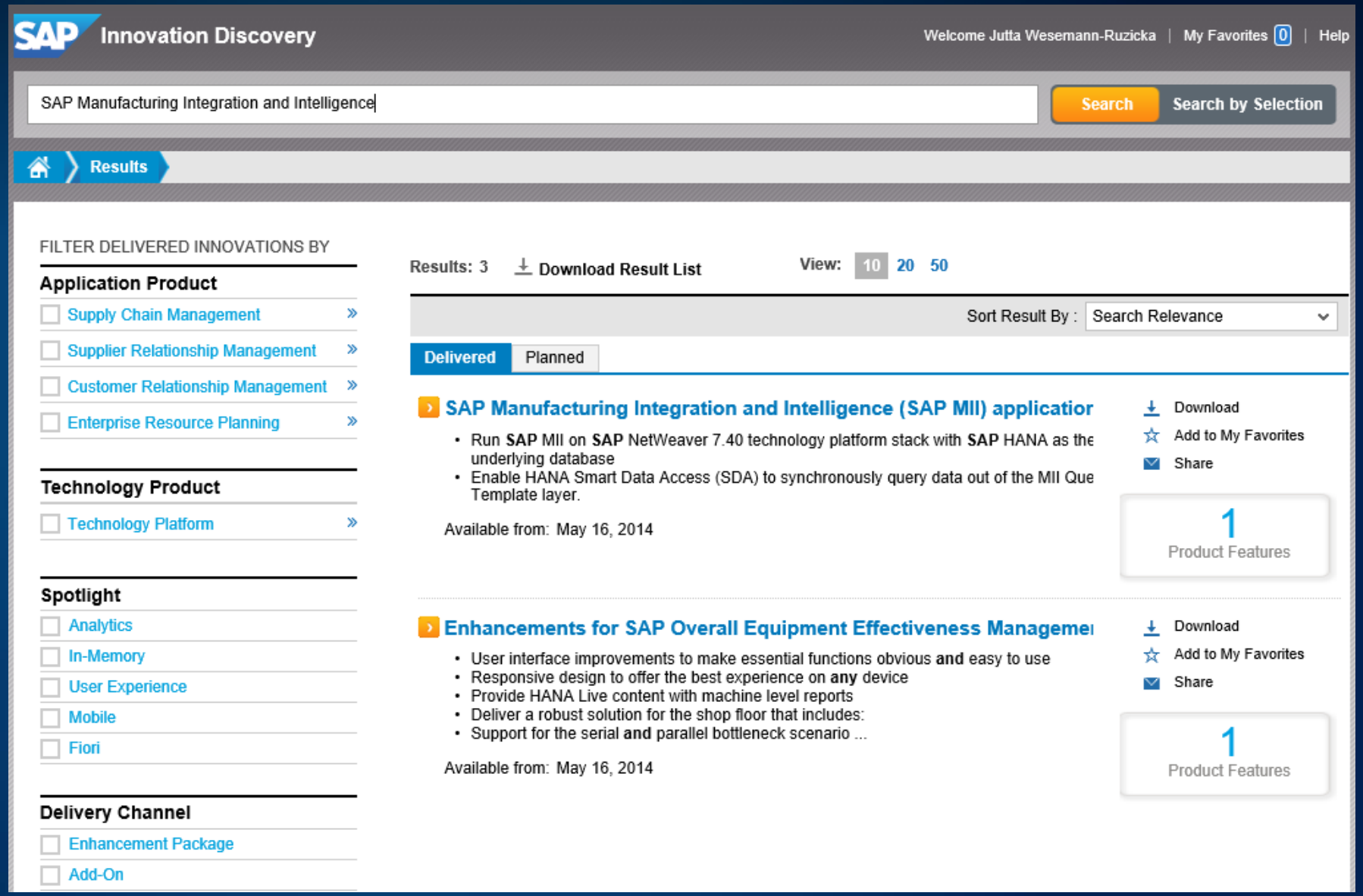
- Plant based OEE reporting : State-of -the-art SAP Lumira for reporting and analytics consuming local MII Data
- SAP pre-delivered plug-in for Lumira to enable MII based reporting
- SAP pre-delivered data extraction from MII for Lumira consumption

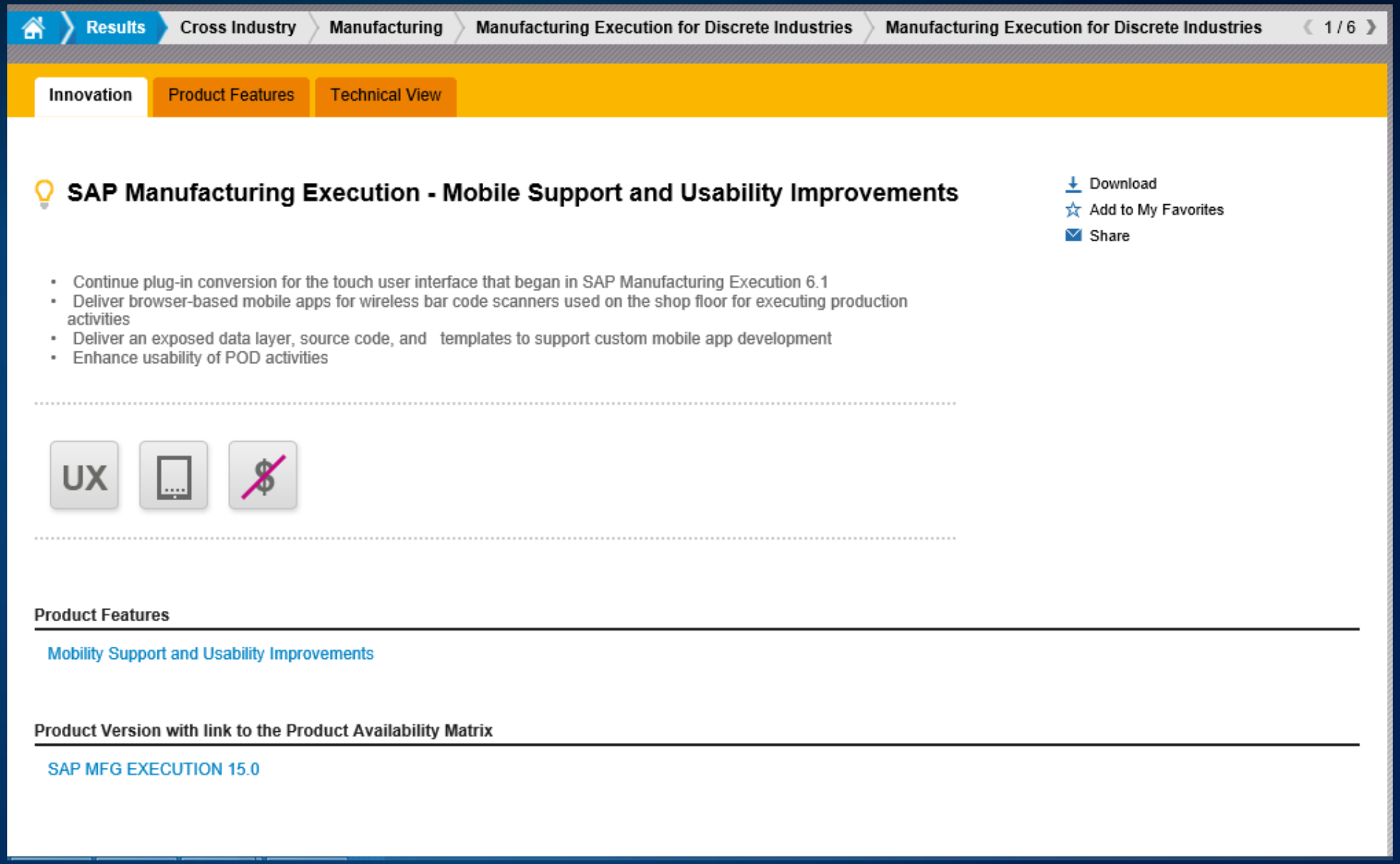
Key Benefits

- Quick Set-up an improved scalability
- Mass upload of downtime data and offline maintenance
- ERP hierarchy transfer reduces implementation time
- Demo plant without any ERP master data set-up available for quick reference

- Reduced the dependency of only HANA based consolidated and central reporting
- Local reporting on desktop – flexible tool like Lumira to make own analysis







Summary

SAP delivers the E2E solution for manufacturing for today and tomorrow

> Connected and embedded

The HANA Platform is THE key enabler

> High performing real-time

A huge Eco-System and Partners provide a tremendous workforce and innovation power

> State of the art solution for various industries

Where to find more information

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
- IOT and Industrie 4.0 — http://www.sap.com/pc/tech/internet-of-things/software/manufacturing-industry/index.html
- Connected Manufacturing — http://go.sap.com/assetdetail/2015/01/4c02dfc2-107c-0010-82c7-eda71af511fa.html

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Thank You ...

Jutta Wesemann-Ruzicka
SAP LoB Manufacturing

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