ORBIS Solutions for Smart Manufacturing

ORBIS MPS as Enabler for Smart Manufacturing Processes

SAP Processes

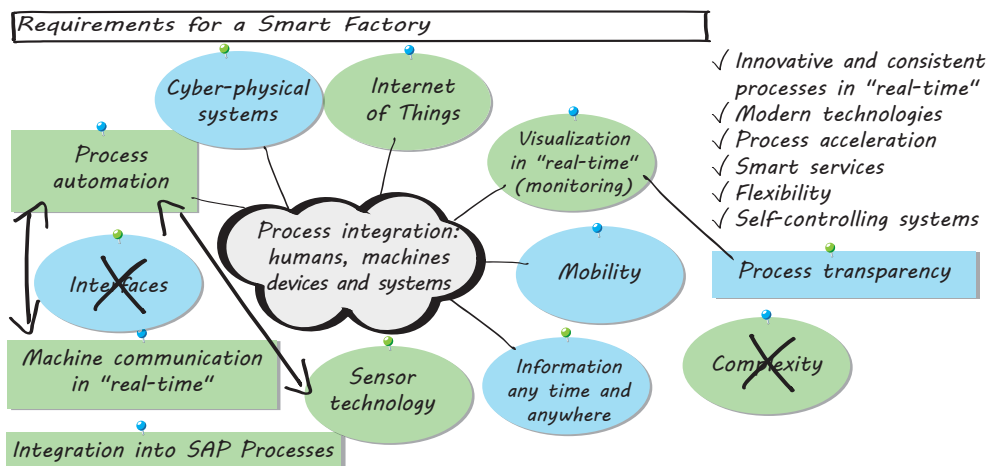| ORBIS MES	ORBIS Logistics	ORBIS Service
PP QM EAM HCM	LES SD	EAM CRM/CS

ORBIS Multi-Process Suite - Enabling Smart Manufacturing

- **Instant, connected and efficient processes**
- **Process integration of humans, devices, systems and sensors in "real-time"**
- **Visualization in "real-time" on any device**
- **No additional technology needed**

Requirements for a Smart Factory

- Cyber-physical systems
- Internet of Things
- Process automation
- Visualization in "real-time" (monitoring)
- Interfaces
- Process integration: humans, machines devices and systems
- Mobility
- Machine communication in "real-time"
- Sensor technology
- Information any time and anywhere
- Process transparency
- Complexity
- Integration into SAP Processes

√ Innovative and consistent processes in "real-time"
√ Modern technologies
√ Process acceleration
√ Smart services
√ Flexibility
√ Self-controlling systems

"Real-time" integration into the SAP process world - Into the factory of the future with ORBIS

ORBIS

Into the factory of the future with ORBIS

The vision of smart manufacturing is built on intelligent technical systems. Intelligent sensors with improved communication capabilities are gaining importance. The affordability of RFID and Internet technology has resulted in these gaining foothold in factory floors. Based on these industry components and the associated dialog capability of systems and machines, the digital factory is becoming a reality: Because, at the center of smart manufacturing, stands the connectivity of all people, machines, devices and systems involved in the value chain. This seamless integration increases efficiency, speed and quality of processes.

With the ORBIS Multi-Process Suite (ORBIS MPS), ORBIS has developed a modular solution which bi-directionally integrates and visualizes processes in logistics, production and service. On this basis,

faster and more efficient company processes in the sense of smart manufacturing are possible.

ORBIS' solutions for smart manufacturing

ORBIS solutions in the smart manufacturing environment are based on ORBIS MPS. It integrates machines, sensors and device data or to visualize processes user-specifically. They are implemented as an SAP Add-on, thus integrate into the ERP processes in "real-time". No interfaces are required. That means that no subsystems are needed. Existing SAP infrastructure, resources and SAP know-how can be utilized in order to operate, customize and further develop the solution.

Smart manufacturing – connected and consistent processes with ORBIS MPS in "real-time"
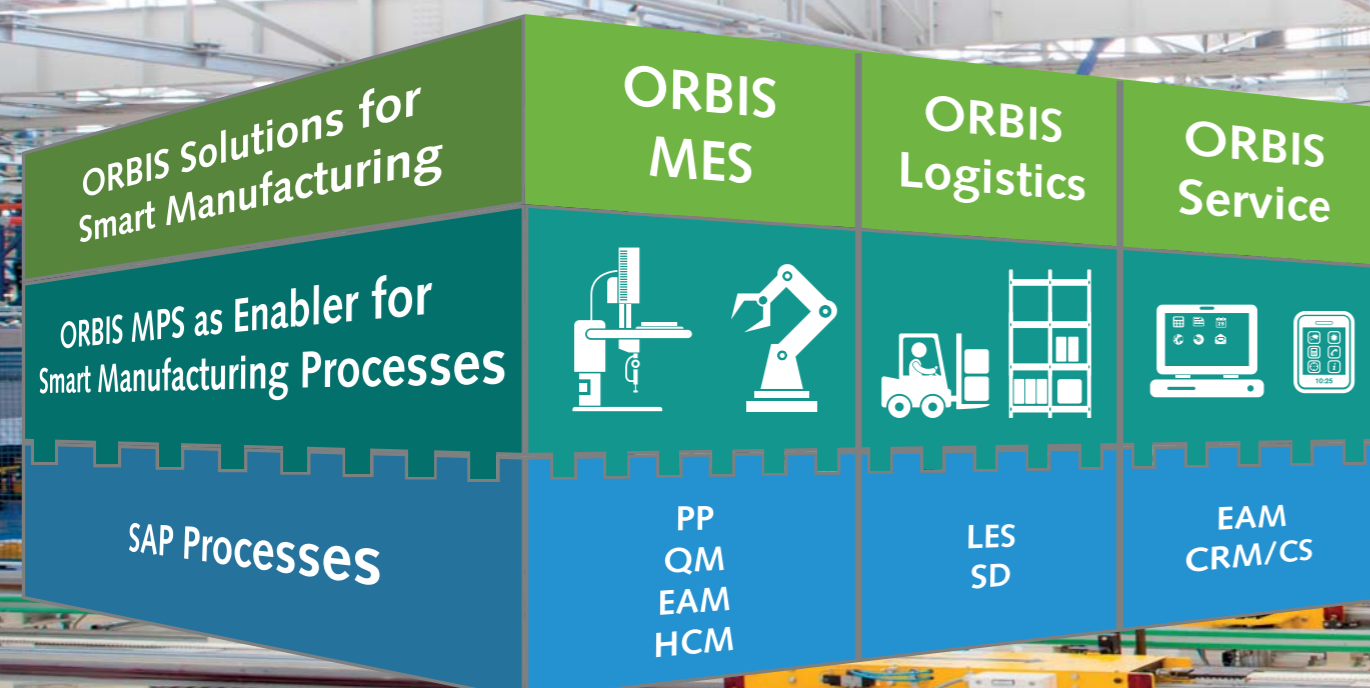
In the cyber-physical worlds of Smart Manufacturing, objects are connected and communicate with each other. In human-machine and machine-machine communications, dialogs, sensors and actuators are essential for ensuring communication in "real-time".

The classic automation pyramid (see below) is not networked seamlessly. Therefore, a "real-time" communication is still not possible, with the exception of field level communication. The integrative ORBIS Multi
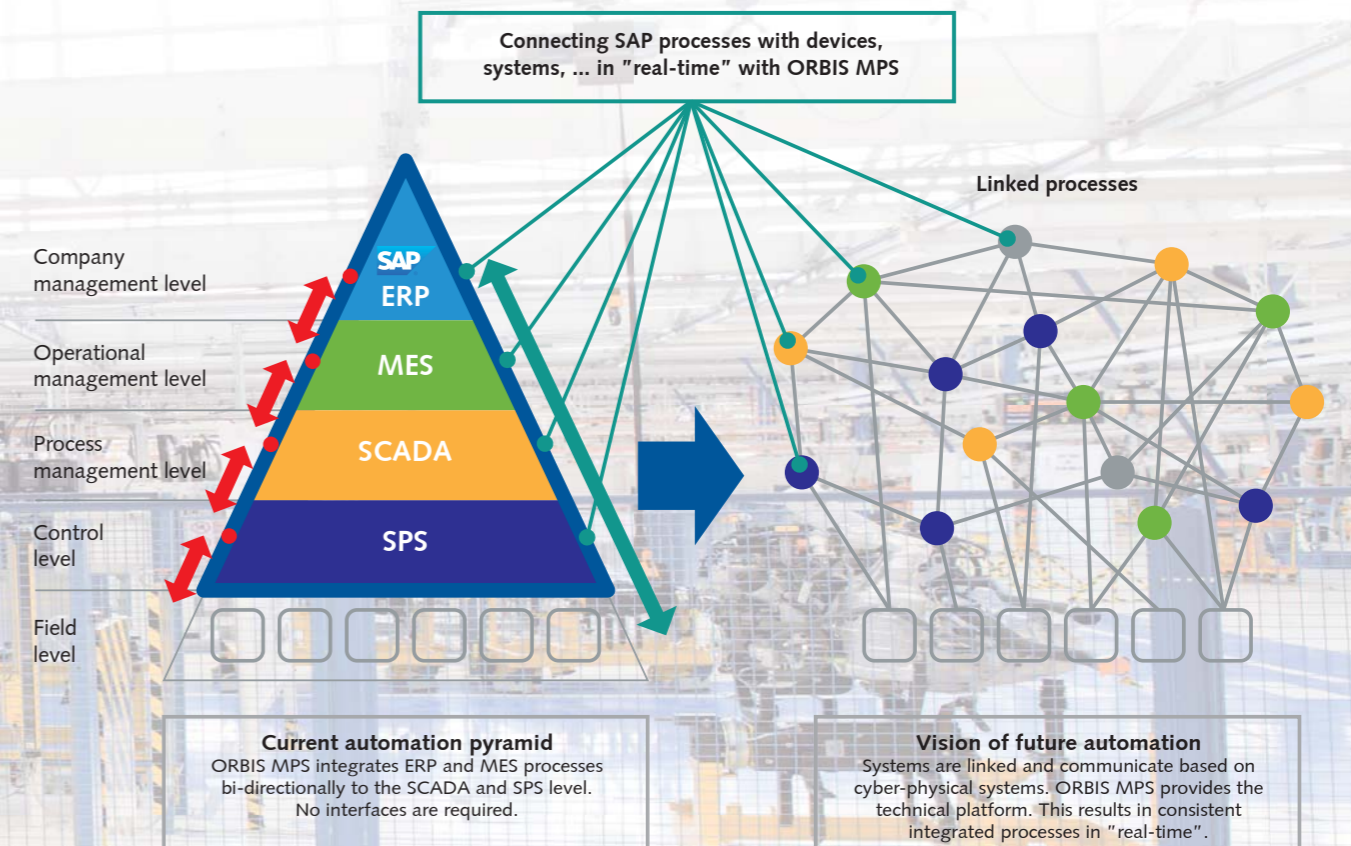
Process Suite is a seamless network across all levels of reality: from the ERP system to the field level. The speed of the processes is increased and the error rate is decreased, compared to conventional systems using interfaces.

Whether the automation is structured strictly hierarchical or already cyber-physically – the ORBIS Multi-Process Suite is suitable for integration scenarios in both worlds.

SMART MANUFACTURING WITH ORBIS: "REAL-TIME" INTEGRATION INTO THE SAP PROCESS WORLD

ORBIS Solutions for Smart Manufacturing

ORBIS MPS as Enabler for Smart Manufacturing Processes

SAP Processes

ORBIS MES — PP QM EAM HCM

ORBIS Logistics — LES SD

ORBIS Service — EAM CRM/CS

SMART MANUFACTURING CONNECTED AND CONSISTENT PROCESSES WITH ORBIS MPS IN "REAL-TIME"

Connecting SAP processes with devices, systems, ... in "real-time" with ORBIS MPS

Linked processes

Company management level — SAP ERP
Operational management level — MES
Process management level — SCADA
Control level — SPS
Field level

Current automation pyramid
ORBIS MPS integrates ERP and MES processes bi-directionally to the SCADA and SPS level. No interfaces are required.

Vision of future automation
Systems are linked and communicate based on cyber-physical systems. ORBIS MPS provides the technical platform. This results in consistent integrated processes in "real-time".

Accelerated processes with ORBIS MPS

Consistent process integration will be of central importance for the competiveness of companies in the future. For this, a holistic and seamless view of all processes is necessary. ORBIS MPS not only makes the processes in production, logistics and service transparent, but also accelerates them. All data created along the value creation chain can also be visualized on the (mobile) terminals.

With ORBIS MPS, processes can be monitored in "real-time", similar to manufacturing execution systems in production.

Smart Manufacturing with ORBIS

- ◆ Instant, connected and efficient processes
- ◆ Process integration of humans, machines, plants, devices, systems and sensors in "real-time"
- ◆ Visualization on any output device in "real-time"

PREVIOUSLY: TRANSACTIONAL, MANUAL, SEQUENTIAL PROCESSING
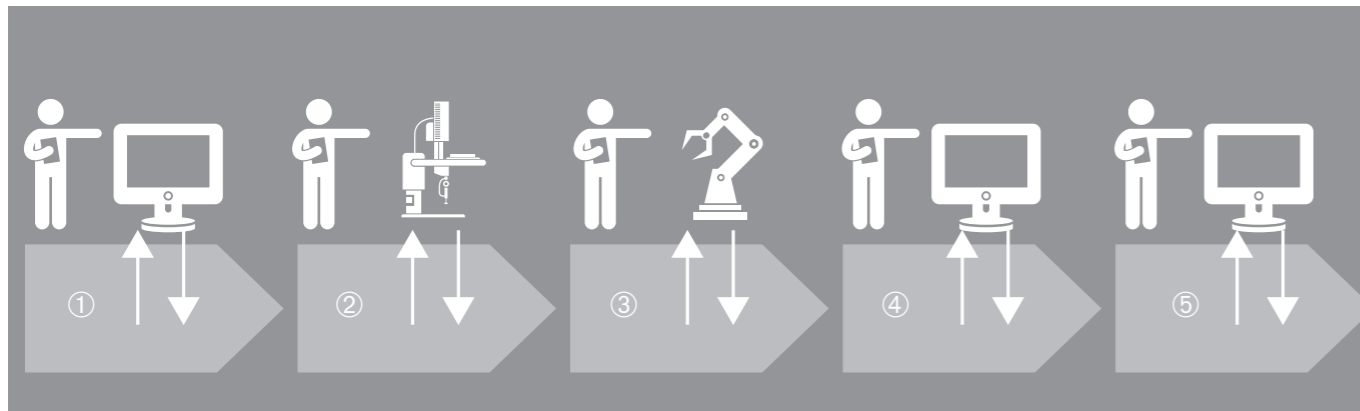
NEW: CONSISTENTLY INTEGRATED SMART MANUFACTURING PROCESS USING THE ORBIS MULTI-PROCESS SUITE
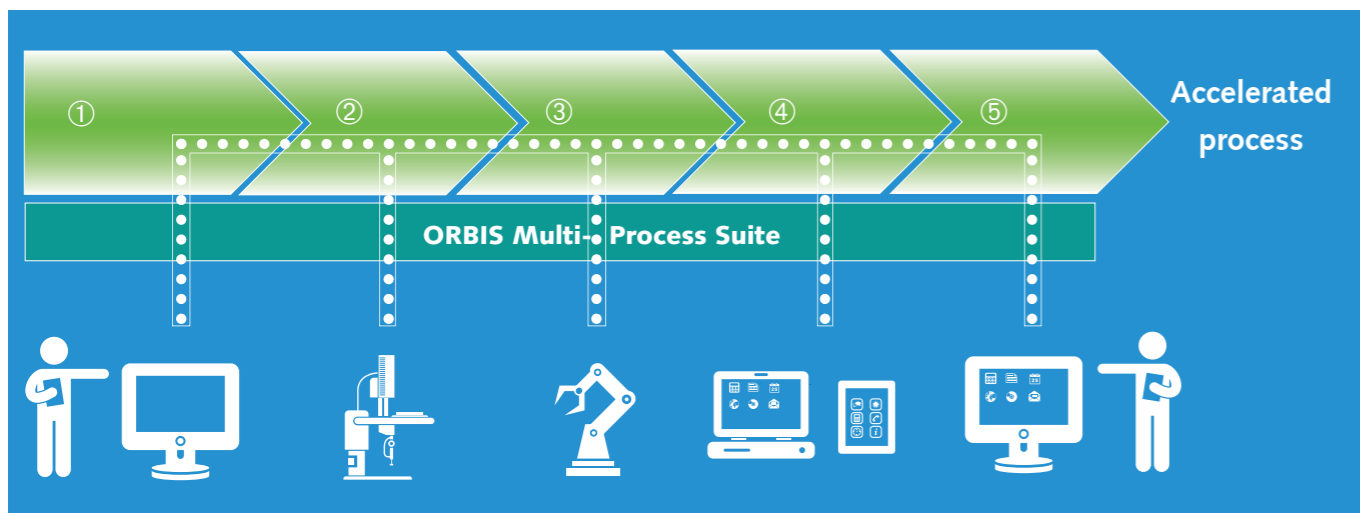
ORBIS MPS Highlights

With the ORBIS MPS solution, different types of data from production, logistics and service can be transferred to SAP and visualized user-specifically on any screen. Step by step, companies can implement their smart manufacturing strategy of connecting and automation with the ORBIS Multi-Process Suite, which offers the advantage of being completely integrated into SAP ERP. Internal existing SAP know-how can therefore be used to operate the solution, customize it and develop it further to specific requirements. IT costs are reduced as the time-consuming and costly creation and maintenance of interfaces are not necessary. Nor does it require additional hardware.

Modular structure

The ORBIS Multi-Process Suite is modularly structured and therefore extremely flexible. The **ORBIS Multi-Process Interface (ORBIS MPI)** integrates sub-systems, devices and controls in SAP ERP and allows for cross-system exchange of information. **ORBIS MPI** is based on the **ORBIS Multi-Process Protocol (ORBIS MPP).** This protocol transfers commands and data bi-directionally. Only this allows for a full process integration. This way, technical devices or sub-systems can actively or passively communicate with the central SAP system in processes. The configuration is performed centrally in SAP.

The second important component of **ORBIS MPS** is the user-specific visualization. The user can layout his screens according to his requirements – and this without any programming knowledge and with little effort (similar to Microsoft Power Point). The graphically flexible layout design of the application as well as the individual adaptation to business processes directly in SAP ERP is performed with the **ORBIS Multi-Process Designer (ORBIS MPD)**. In the last step, the business processes are visualized with the **ORBIS Multi-Process Visualizer (ORBIS MPV)** via user-friendly interfaces on all standard terminals.

This visualization allows companies to gain a clear overview of current business processes at all times and anywhere. All the information relevant for decision-making is available to the user, such as information about events, alarm functions and parameters.

ORBIS MULTI-PROCESS SUITE AS ENABLER FOR SMART MANUFACTURING PROCESSES
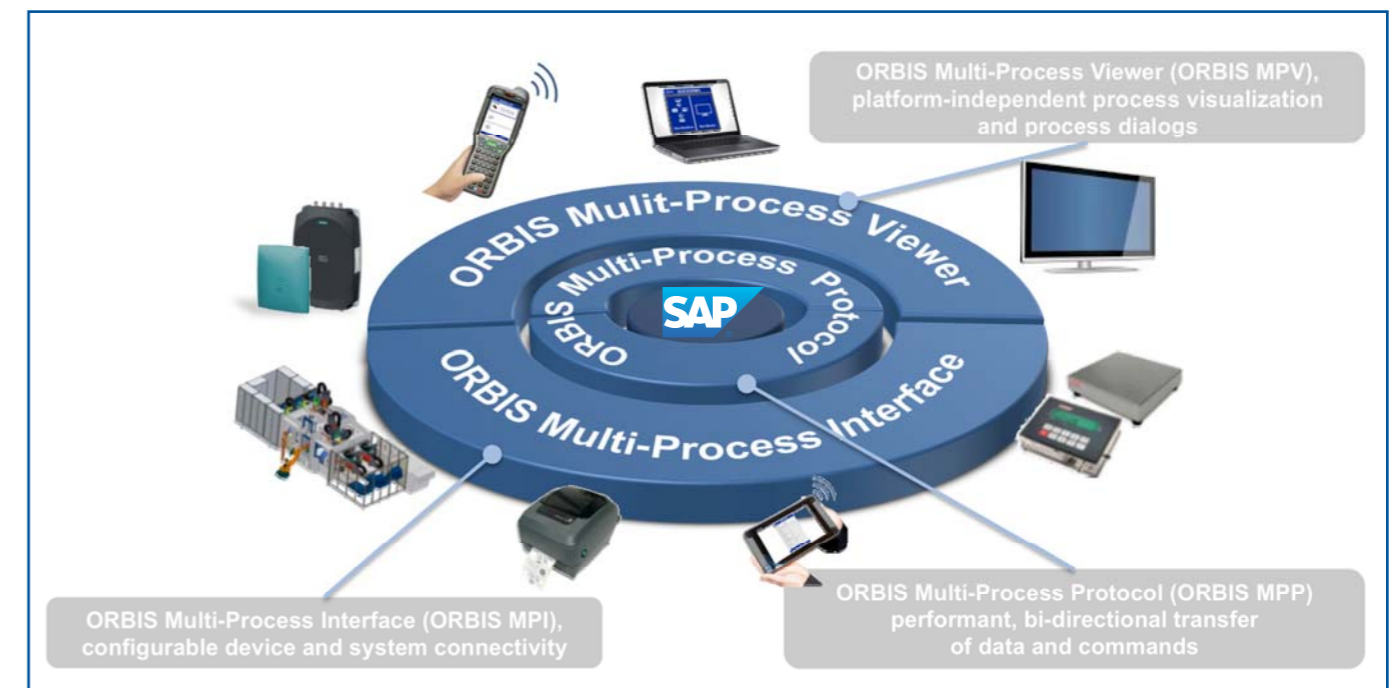
ORBIS Multi-Process Interface (ORBIS MPI) highly efficient, instant and bi-directional
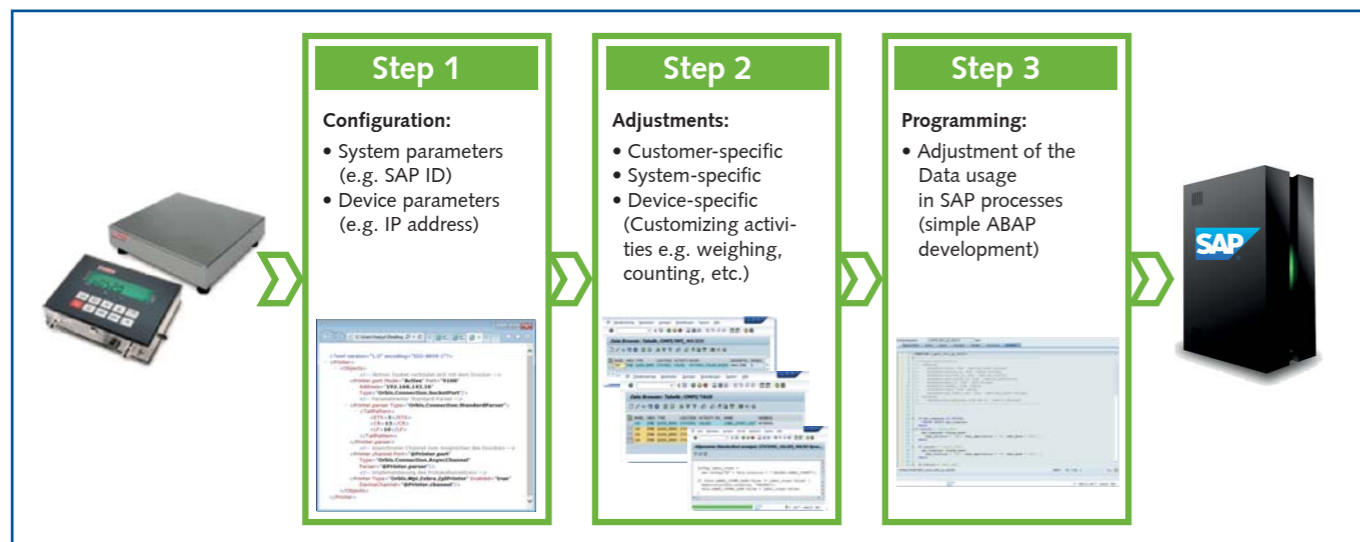
PROCESSES IN "REAL-TIME" IN THE SMART FACTORY: ORBIS MPI
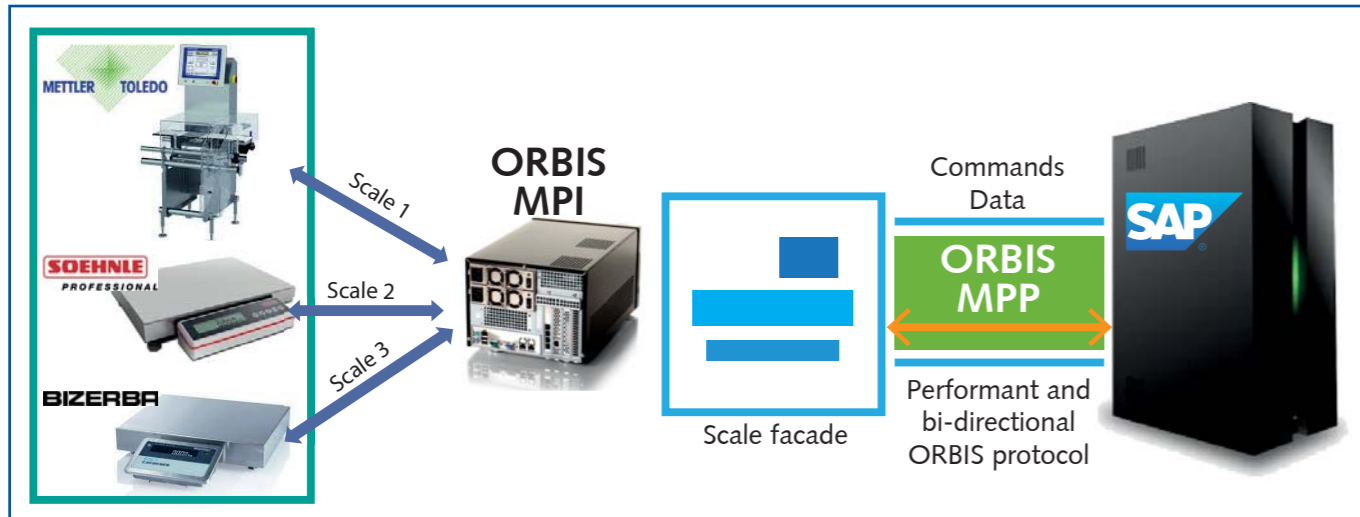
ORBIS MPI encapsulates manufacturer-specific device interfaces for the connection of technical devices, sensors and sub-systems of different manufacturers into the SAP system. The ORBIS MPI communication uses the ORBIS Multi-Process Protocol (ORBIS MPP), which actively or passively communicates with the SAP system and transfers commands and data bi-directionally. The configuration is performed via the central SAP system.

DATA INTEGRATION WITH ORBIS MPI IN THREE STEPS

Step 1	Step 2	Step 3
Configuration: • System parameters (e.g. SAP ID) • Device parameters (e.g. IP address)	**Adjustments:** • Customer-specific • System-specific • Device-specific (Customizing activities e.g. weighing, counting, etc.)	**Programming:** • Adjustment of the Data usage in SAP processes (simple ABAP development)

Data from different objects, machines and devices can be integrated with ORBIS MPI, and transferred directly into the SAP system. The software processing of the information in the SAP process is performed in the programming language ABAP. Therefore, internal existing SAP know-how can be is used to operate the solution, customize and to develop it according to requirements. Thanks to ORBIS MPI, there is no need for the time-consuming and costly creation and maintenance of interfaces or the acquisition of additional hardware.

ORBIS Multi-Process Viewer (ORBIS MPV) visualization in "real-time"

In the digital business world of ORBIS Multi-Process Suite, the Enabler for smart manufacturing, all areas involved in the process such as production, intra-logistics and service are able to quickly respond to changes, for example production disturbances or fluctuations in demand.

A comprehensive and seamless view of all processes is possible: from the warehouse, the individual machine, to the commercial processes. This information can be accessed in "real-time" on all terminals anytime and anywhere.

The user-specific visualization can be used for different applications. The focus lies on monitoring and improving processes. Bottlenecks or vulnerabilities in production, in the warehouse or service can be quickly and accurately identified with the graphical display function of ORBIS MPS. Relevant key performance indicators (KPIs) can be defined and displayed. In the service area, the visualization contributes to notifying technicians immediately about outages or errors and to directly triggering the necessary maintenance processes.

PROCESSES AT A GLANCE - QUICK, INTUITIVE, ANYTIME, ANYWHERE

Easy layout design for SAP dialogs

Flexible and instant fully integrated in SAP

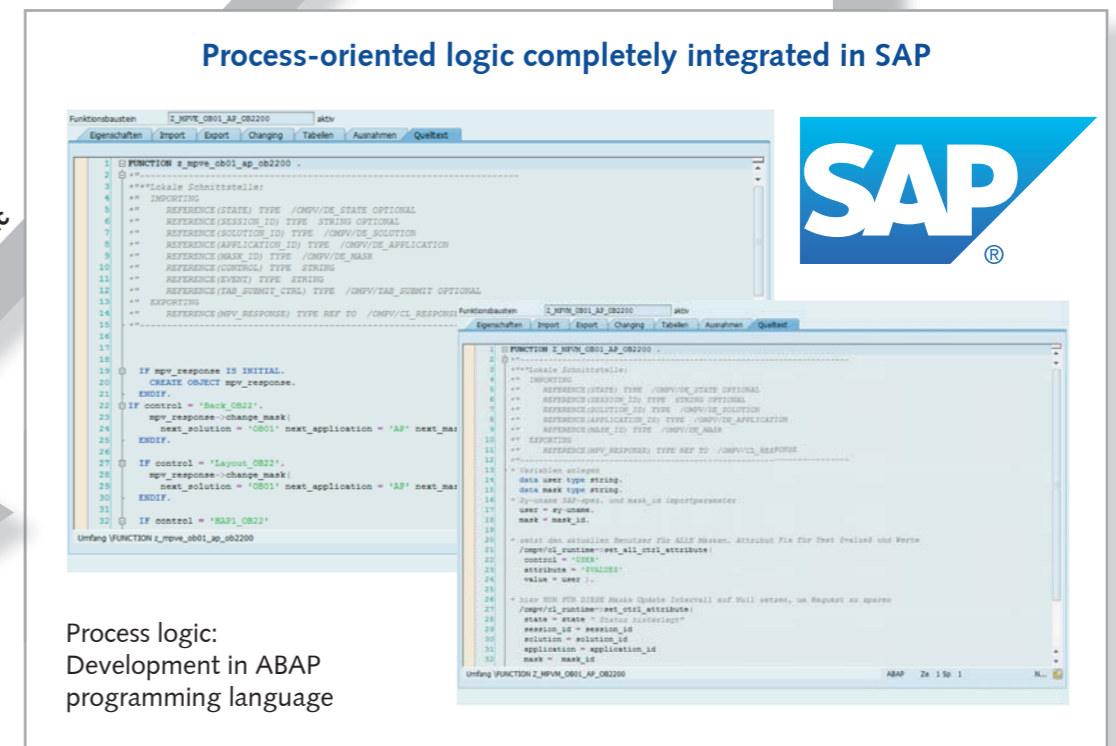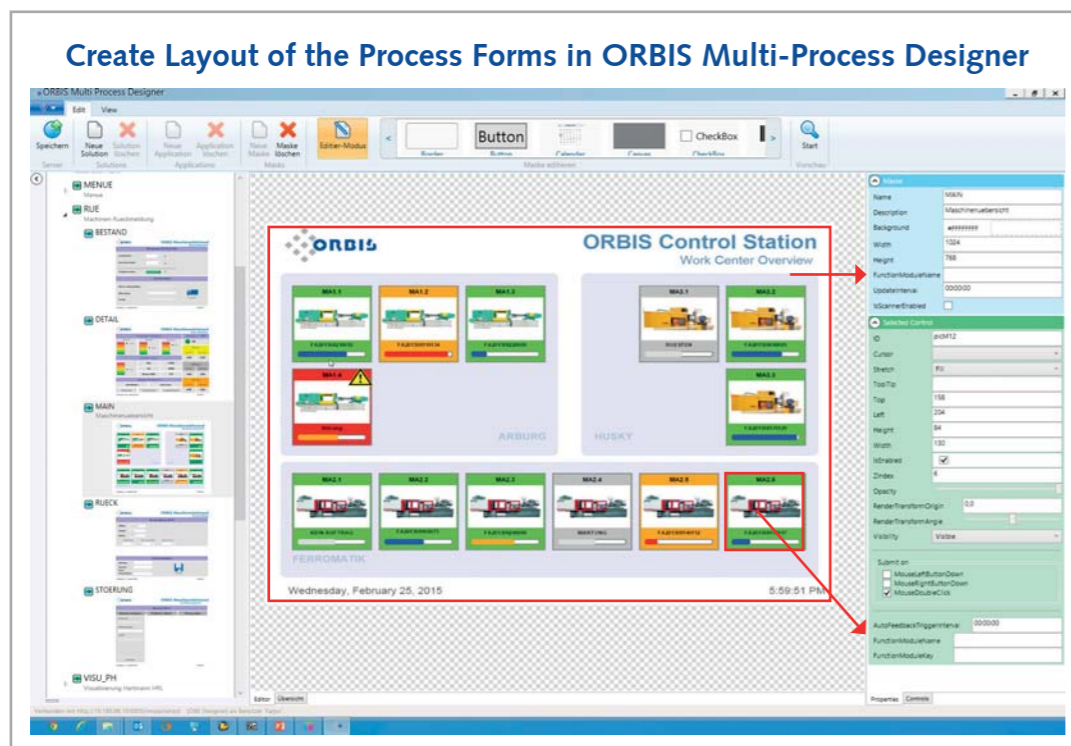### Developing is so easy with the ORBIS Multi-Process Designer

The advantage: The application development in the graphic designer (ORBIS Multi-Process Designer) is performed independent of the terminal. The development is intuitive (similar to Microsoft Power Point) and completely flexible – without any administrative effort in SAP. All information of the forms layout are automatically stored in SAP. Thanks to the high SAP integration, after a short training time, the user can design all layouts of all SAP processes in-house.

Highlights at a glance

- Quickly develop intuitive and user-friendly interfaces
- Intuitive, process-oriented screen layout on all terminals
- Encapsulated use of own and existing SAP functions, therefore, runs on all types of devices
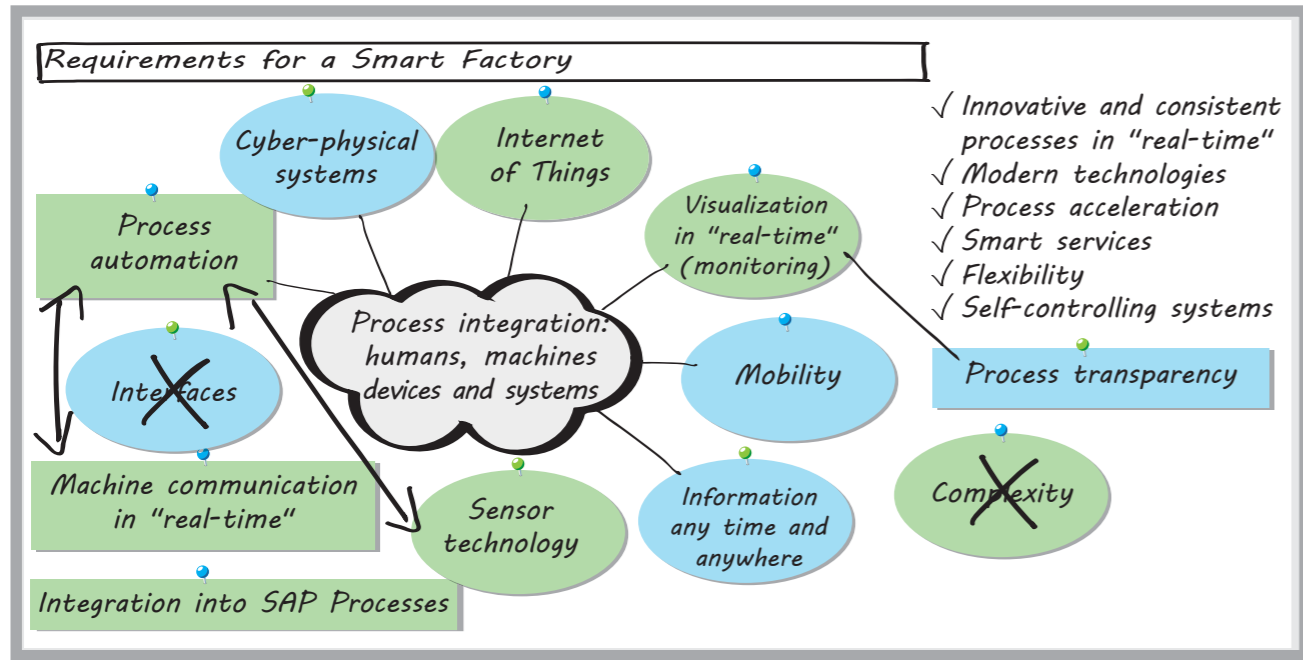- Robust, industrial grade and in "real-time"

Visualization on all standard terminals

Create Layout of the Process Forms in ORBIS Multi-Process Designer

Use of existing process logic

Use of existing process logic / Creation of new process logic

Process-oriented logic completely integrated in SAP

Process logic:
Development in ABAP programming language

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ORBIS Multi-Process Suite ...

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SAP Processes

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**Smart manufacturing with ORBIS MPS:
"Real-time" integration into
the world of SAP processes**

... as enabler for smart manufacturing processes

ORBIS process consulting for the smart manufacturing world, means streamlining production, logistics and services by implementing smarter and standardized processes with our Smart Manufacturing solutions. The ORBIS MPS solution is modular in structure and can be applied in all company units, as required.

**The Smart Manufacturing Tool Kit "ORBIS MPS" allows for the integration of the entire value creation chain in SAP ERP processes in "real-time".
The digital factory becomes reality.**

Goods Receipt — 14:17:22
Conveyer GR — 14:20:51
Working Station I — 14:24:54
Maintenance — 14:29:28

Conveyer GR — 14:18:30
Supermarket — 14:22:20
Robot Station 5024 — 14:28:28

About us

ORBIS is an international business consultancy company. ORBIS advises and supports international groups of companies and medium-size companies in questions ranging from their IT strategy and system selection to the optimization of business processes, system implementation and system integration. To do so, ORBIS makes use of the solutions provided by the market leaders SAP and Microsoft with whom we have a close partnership.

Our core competencies cover classic Enterprise Resource Planning (ERP), Supply Chain Management (SCM), Logistics Execution (EWM/LES), Manufacturing Execution Systems (MES), Variant Management, Customer Relationship Management (CRM), Business Analytics (BI, EPM and data warehousing) and Product Lifecycle Management (PLM). ORBIS is a reliable partner for global rollouts or ERP solutions and processes. Own solutions for Smart Manufacturing, BI, MES, product costing and variant management as well as add-ons based on SAP complete our service portfolio. On the Microsoft Dynamics CRM platform, ORBIS offers numerous own industry solutions and Best Practices such as e.g. SAP integration.

Over 1,500 successfully completed client projects bear witness to our business consultancy expertise and many years of experience in the industries of automotive supply, construction supply, electrics and electronics, machine and plant engineering, logistics, metal, consumer products, the trade as well as financial service providers and pharmaceuticals.

ORBIS' long-standing customer base includes among others, Bosch, Eberspächer, Edscha, Hager Group, Heineken Switzerland, Hörmann, hülsta, HYDAC INTERNATIONAL, Jungheinrich, KSB, KUKA Roboter, Magna, Melitta Haushaltsprodukte, Modine, Paul Hartmann, Pilz, Rittal, Schott, SCHUNK, Villeroy & Boch, WAGO Kontakttechnik and the ZF Group.