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# Smart Manufacturing in F&B

Gaining competitive advantages through manufacturing operations management

software, Thomas Pung, IAPI HI

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Note: Content is more important then the Format



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## **Presenter introduction: Andreas Ganz**

>18 years serving industrial automation customers



**Title:**

**Global Product Line Manager Smart Manufacturing**

**Background:**

**Master Degree in Electrical Engineering and Economic Sciences  
> 18 years experience in International Industrial Consulting  
Glass, Chemical, O&G, F&B, Pharma, Electrification  
Languages: DE, EN, RU**

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## Presenter introduction: Thomas Pung

20 years serving industrial customers



**Title:**

**Head of MES Sales Europe**  
Baden-Dättwil, Switzerland

**Background:**

**Master Degree Computer Science – Economics**  
**> 15 years experience in MES Consulting and Sales**  
**Domain Competencies in Chemical, FnB, Pharma,**  
**Robotics, Electrification, Semiconductors a.m.**  
**Languages: DE, EN, FR, SP, Thai**

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# Gaining competitive advantages through MOM software

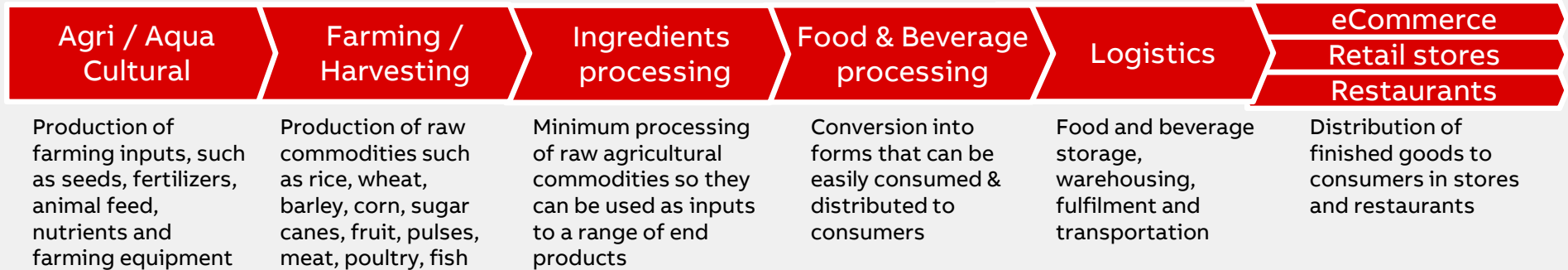
## Agenda

- **Smart Manufacturing addressing the current F&B needs (15 min)**
- Manufacturing Operations Management Software (20 min)
- Experiences out of customer's interactions (5 min)
- Q&A (10 min)

# ABB in Food & Beverage – From Farm to Table

## End-to-End-Approach

### F&B Value Chain



# Market trends in Food & Beverage

## Digital becomes Reality

### Market trends

Changing demographics

Regulatory requirements

Food safety focus

Product diversification

Increased sustainability focus

Way of buying

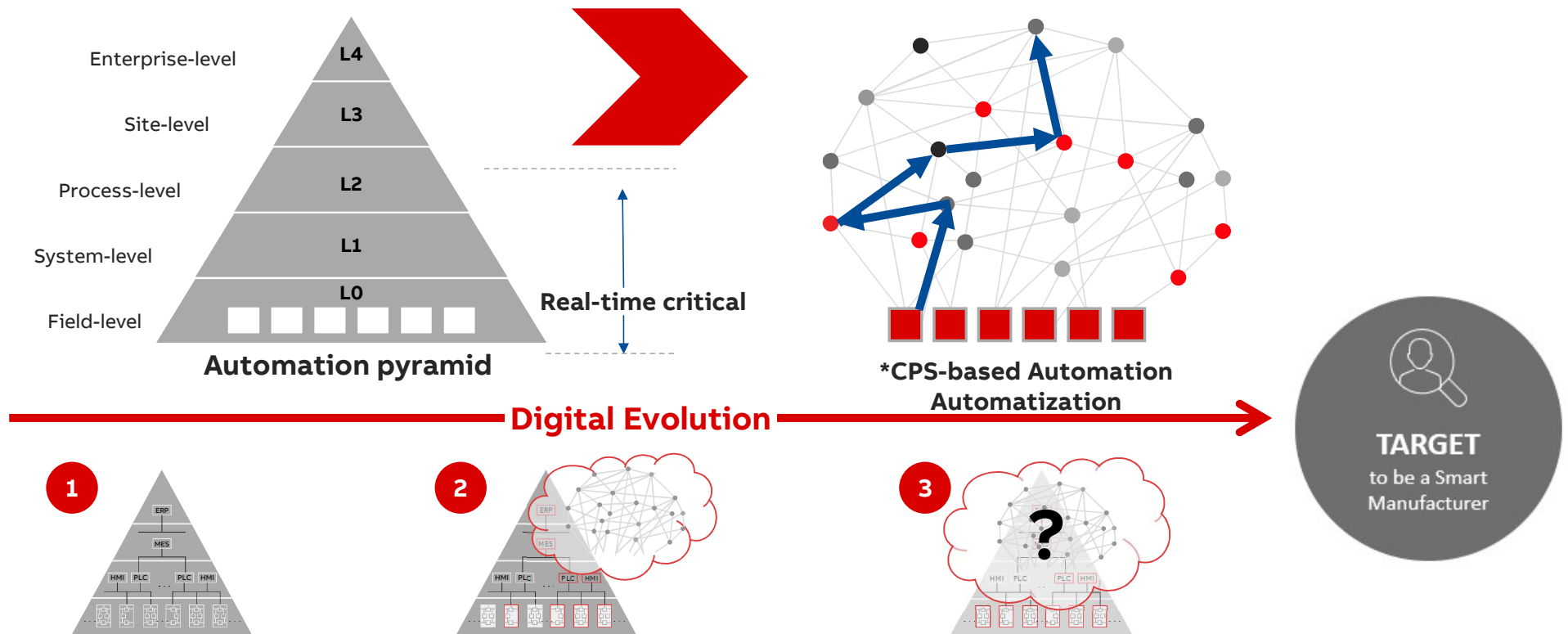
### Production challenges

- **Product quality and consistency**
- **Food safety**, contamination free, hygiene
- **Traceability**
- **Production reliability**
- Production speed and efficiency
- **Product variation**
- **Production flexibility**
- Resource efficiency
- Recyclable package
- Sustainable manufacturing

### Manufacturing drivers

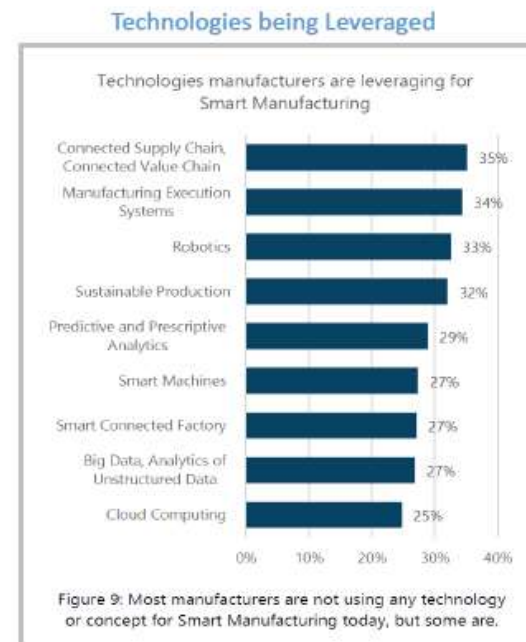
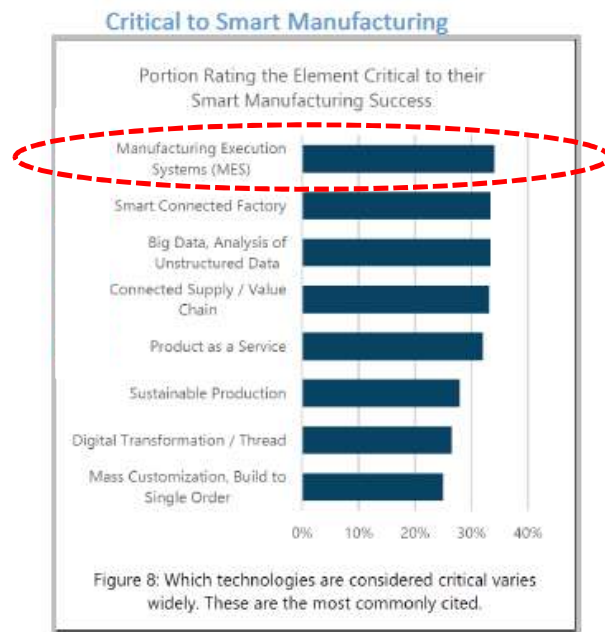
- Focusing on plant monitoring and diagnostics
- Optimizing line speed and minimizing breakdowns for increased operational efficiency
- Process complexity management
- Convenient sourcing, preference for less number of suppliers
- Requiring flexible manufacturing and packaging solutions
- Energy and water efficiency improvements
- Social responsibility when using the resources

# Digital market trends



# Digital Transformation in Smart Manufacturing

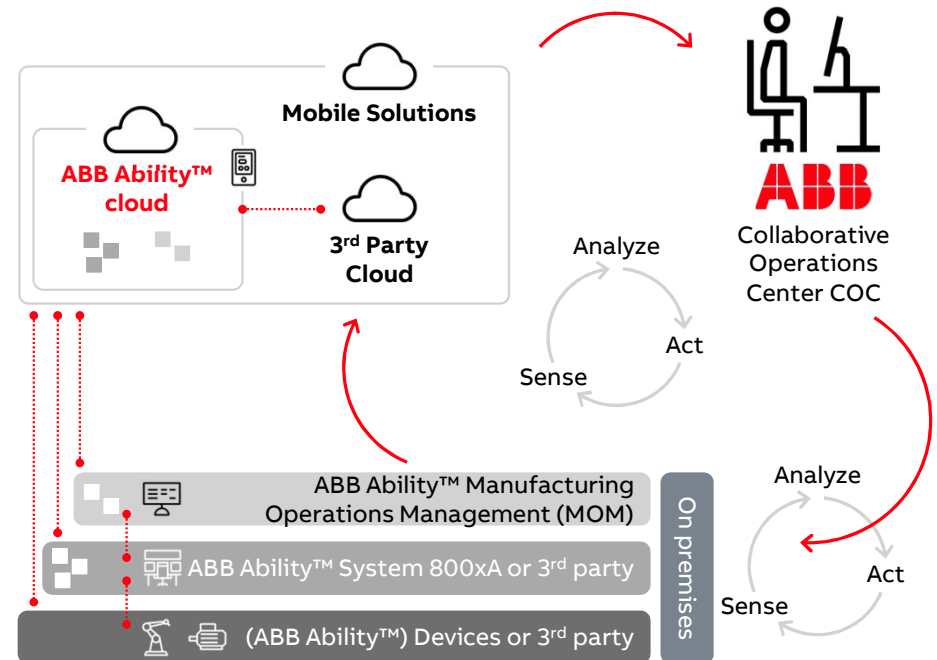
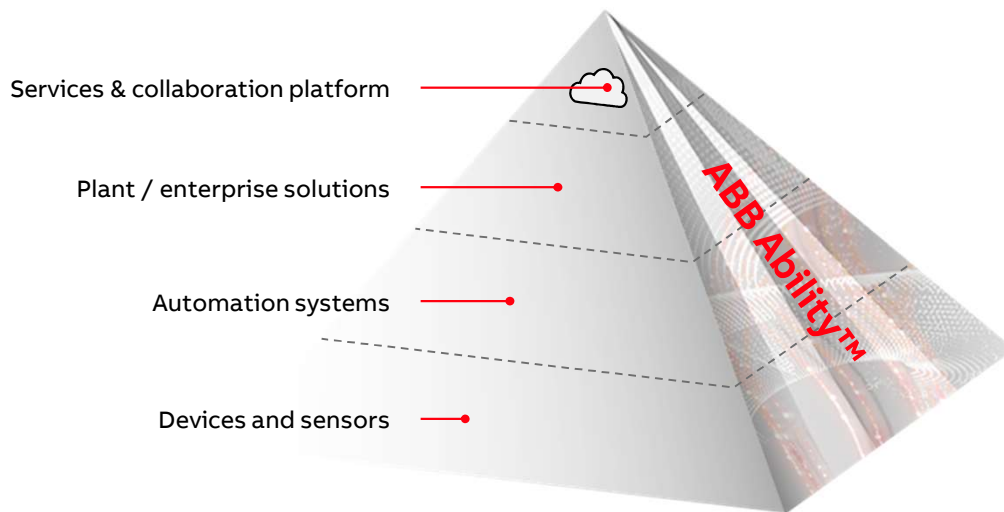
Main technological drivers - MES is the most critical part





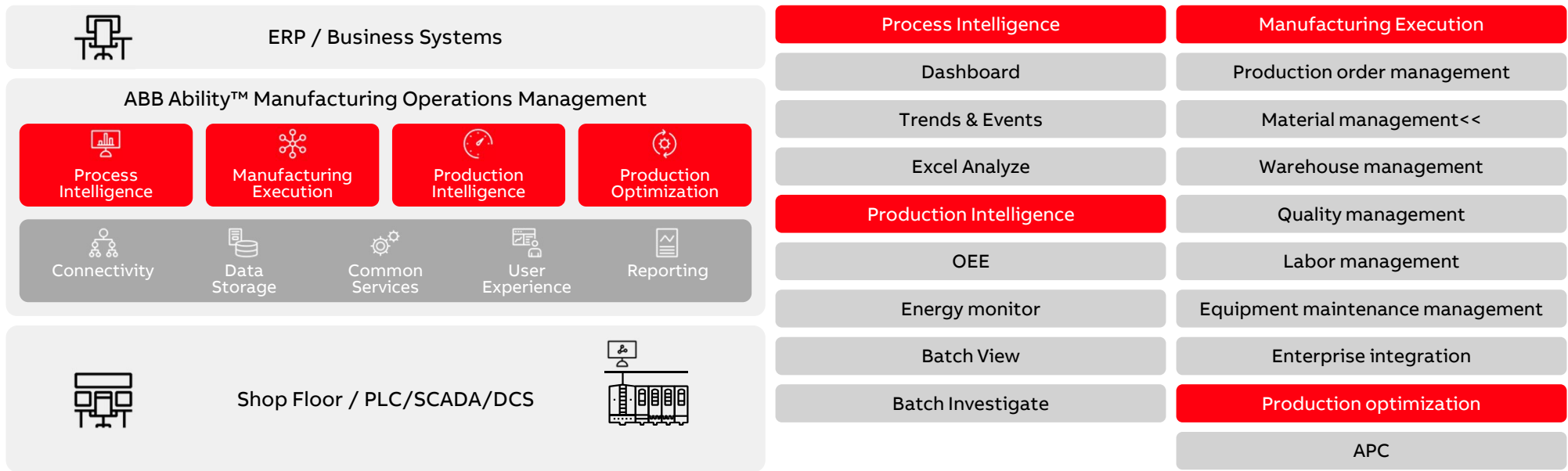
# ABB Ability™ overview

ABB holistic portfolio



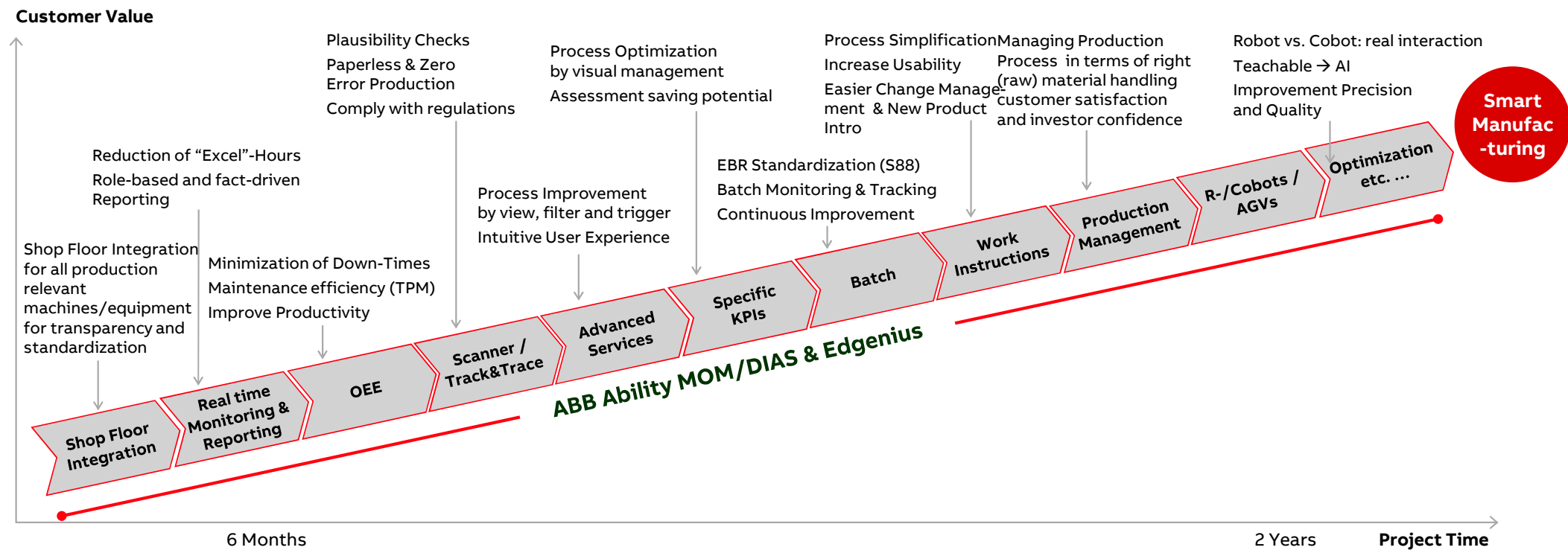
# ABB Ability™ Manufacturing Operations Management

Comprehensive, scalable and modular suite



# Holistic Digital Approach driven by ABB

Example: Customer individual way forward



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# Gaining competitive advantages through MOM software

## Agenda

- Smart Manufacturing addressing the current F&B needs
- **Manufacturing Operations Management Software**
- Experiences out of customer's interactions
- Q&A

## ABB in Digital

Uniquely qualified

### Information

- \$400 bn installed base
- 125 year history
- Context



### Technology

- Electrical
- Material
- Mechanical
- Digital



### Know-how

- Industry
- Geography
- Automation
- Process

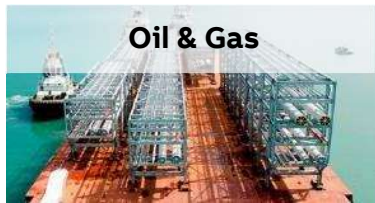


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# ABB's main customer segments

Sharing cross-industries best practices and added-values

## Process industries



**Oil & Gas**



**Refining & chemicals**



**Mining & metals**



**Power generation & water**



**Pulp & Paper**



**Speciality chemicals**



**Food & Beverage**



**Pharma\***



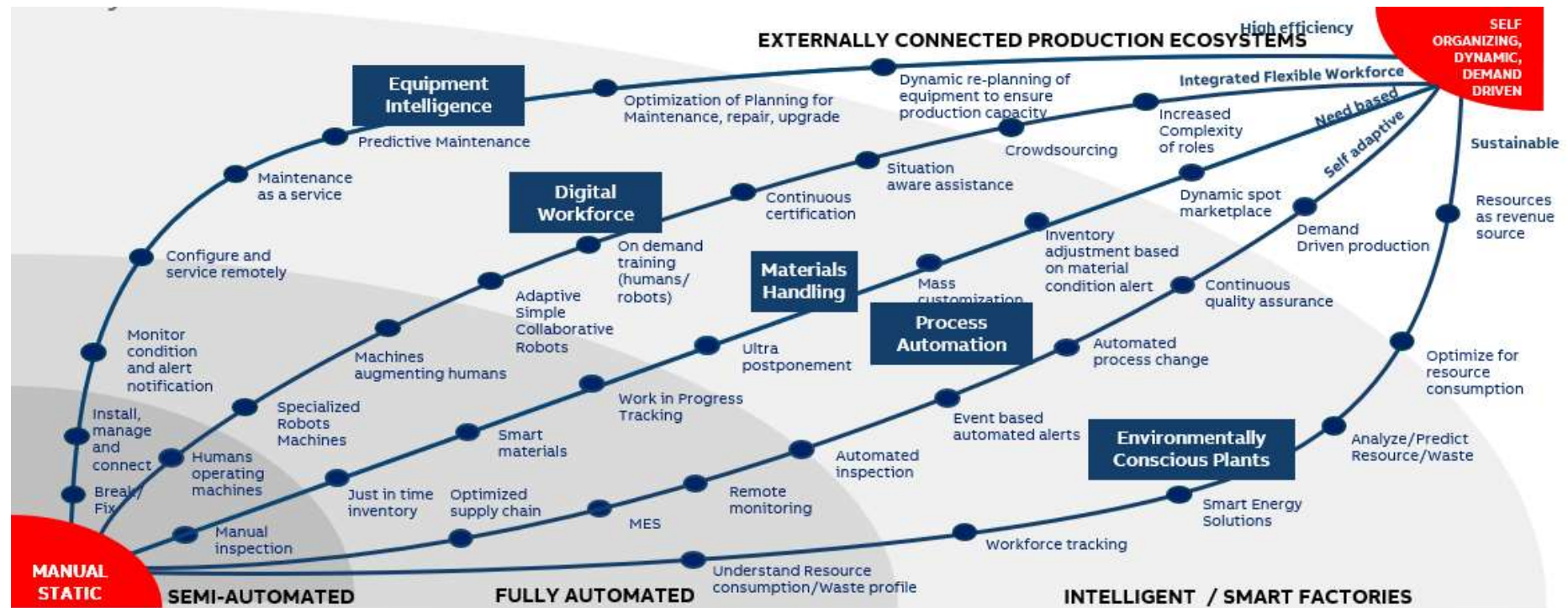
**Discrete Manufacturing**



**Printing**

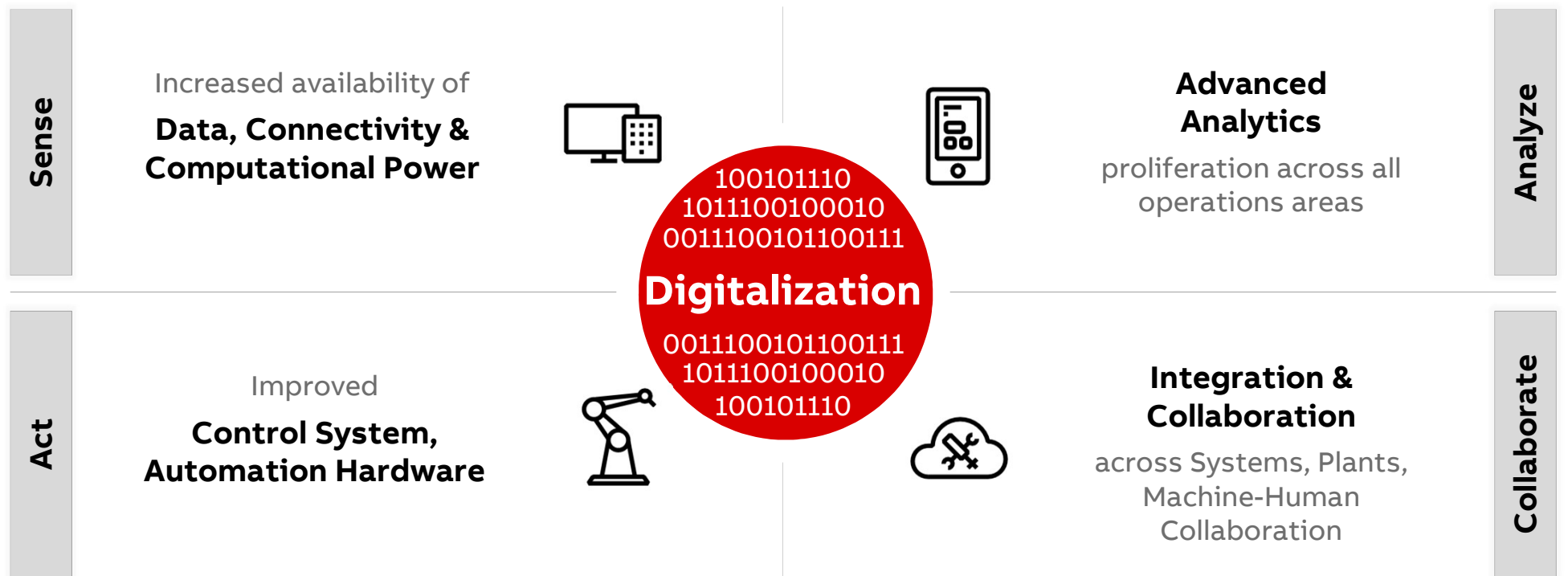
# MES Sales Approach – The BIG Picture

Current and Future Demands – Important Digitalization Topics



# ABB has a comprehensive portfolio in all 4 key digital building blocks

Sense – Analyze – Act- Collaborate





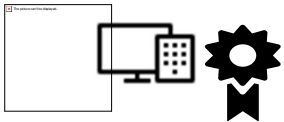
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# What our partners are asking for

Enabling smart operations

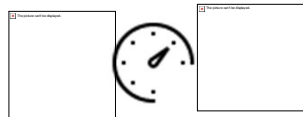
## Smart, Simple and Intuitive Software

Flexible, easy to use and configurable solutions.  
Apps and “app-like” functionality



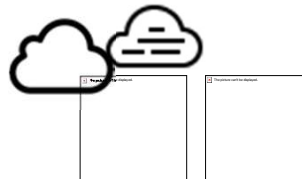
## Rapid Implementation

Simplify solution deployments through ease of configuration  
Enable savings and capturing benefits faster



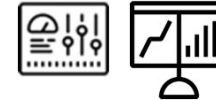
## Mobility Devices & Cloud Computing

Access information from anywhere from any device.  
Support for mobile devices



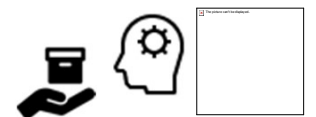
## Visualization & Intelligence

“three clicks to success.”  
Dashboard and reporting capabilities



## Predictive Analytics, & Machine Learning

Analyze data from different sources and provide insight which respond quickly to



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## ABB Ability MOM – An unique approach

### Brain

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Preliminary:  
Data Consolidation  
Connectors and Interfaces  
(Legacy Systems)

MES controls the legacy  
MES directs processes,  
Business systems and devices

MES will drive, direct and  
control all changes – by  
dynamic workflow

### Culture

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User Acceptance  
Daily Improvement : A & A  
Comparison by all levels

Traceability

Fact based and driven

Real Alliance/Partnership

### Lean

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Reduce Waste – paperless,  
manual data entries, intuitive,  
fast adaption & integration  
(new assets, new people, new  
devices)

Standardization

Permanent improvement

### Magic Button

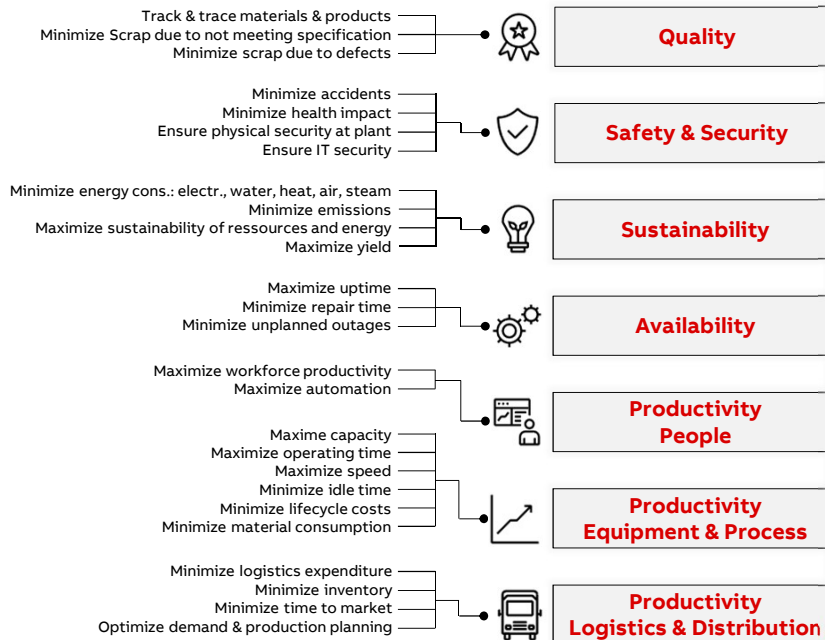
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Small to All:  
Push the Button - > the right  
information at the right place  
for the right role –  
IN REAL TIME

# Digital Solutions for the F&B Industry

Addressing all of your pain points

## CUSTOMER VALUE DRIVERS



Collaboration | E2E Data Integration | New Business Models

## ABB SOLUTION CLUSTERS

General	Automation			Electrification	
	Digital Engineering , Analytics	Robotics Drives Motors & Generators Control Technologies Measurement & Analytics Industry Automation	Protection & Connection Distribution Solutions Transformers	LV/MV	HV
1 Collaborative operations	■	■	■	■	■
2 Data collection & analytics	■	■	■	■	■
3 Product traceability	■	■	■	■	■
4 Quality management	■	■	■	■	■
5 Cyber security	■	■	■	■	■
6 Energy optimization	■	■	■	■	■
7 Emission monitoring (tba)	■	■	■	■	■
8 Digital maintenance planning	■	■	■	■	■
9 Inspection	■	■	■	■	■
10 Condition monitoring	■	■	■	■	■
11 Asset health	■	■	■	■	■
12 Predictive maintenance	■	■	■	■	■
13 Lifecycle assessment	■	■	■	■	■
14 Simulation / virtual commissioning	■	■	■	■	■
15 Virtual training (tba)	■	■	■	■	■
16 VR / AR (tba)	■	■	■	■	■
17 Paperless operations / HMI	■	■	■	■	■
18 Alarm management	■	■	■	■	■
19 Remote assistance	■	■	■	■	■
20 DCS / MES	■	■	■	■	■
21 Performance optimization	■	■	■	■	■
22 Back-up management	■	■	■	■	■
23 Advanced robotics applications	■	■	■	■	■
24 Warehouse & material management	■	■	■	■	■

## TOTAL VALUE



## Evaluation Starting Point: System Impacts

### COSTS MES

- Dedicated MES and Intelligence Modules
- Dedicated Engineering Services
- Dedicated and reliable Life Cycle Management

⇒ **Leading to new generation of production**

⇒ By implementation of dedicated phases

⇒ Lowering project risks

⇒ Increasing project success

### BENEFITS

- Breaking down Strategic Initiatives into visions and gains:
  - Lean Manufacturing
  - Quality and Regulatory Compliance
  - Product Life Cycle Management
  - Real Time Enterprise
  - Asset Performance Management
- To Business Objectives
  - Customer Focused Service Management
  - Financial and Performance Focus
  - Product Focus
  - Compliance Focus
  - Supply Focus
  - Asset Reliability

## The MES Impact – Hitting end-users financial KPI's

### COSTS MES

- ABB MOM Licenses
  - ERP Connectivity
  - Production Order Management
  - Quality Management
  - Downtime Management
  - Electronic Work Instructions
  - Material Management
  - Equipment / Maintenance Management
- Plus Engineering Services
  - Assessment (URS, FDS, TS)
  - Implementation (V-Model, Agile)
  - Testing (IAT, FAT, SAT)
- Plus Life Cycle Management
  - SW Maintenance Fee (15% annually)
  - Service Level Agreement

### BENEFITS

- Reduction of the production cycle time (%);
- Reducing the number of errors when executing orders (%);
- Reduction of preparation time (%);
- Reduce production planning time (%);
- Reduction of lead time (%);
- Reduction in the number of outstanding orders (%);
- Reduction in the number of material movements (%);
- Reduction of paperwork between shifts (%);
- Reduction and elimination of manual data entry (%)
- Reduction of waste and marriage (%);
- Reduction of inconsistencies in process requirements (%);
- Increase in productivity (useful use of equipment) (%);
- Decrease in work in process (%);
- Reduction of stocks of raw materials and finished product (%);
- Reduced operational and other costs (%).

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# ABB Ability™ for Manufacturing

## Modular Platform

### Manufacturing execution management system (MES)

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Provides full visibility into manufacturing processes enabling you to reduce cost, better manage the capacity of your assets and realize tremendous improvements in the whole supply chain efficiency. It consists of the following modules:

Downtime Mgmt.

Real-time downtime information: real-time tracking of equipment downtime, interruptions information & causes, non-productive activities tracking.

Maintenance Mgmt.

Plan, create & execute equipment maintenance tasks based on observations or planned preventive maintenance. Offers instructions, checklists.

Quality Mgmt. Module

Integrated quality management, including quality parameters management, manual or automatic data collection, product test certificates.

Tracking & Tracing

Tracking and tracing of parts, batches. Real-time reporting of material consumed & produced. Material compatibility and availability. Weigh and dispense support. Genealogy.

Paperless Manufacturing

ABB Electronic Batch Record (EBR) solution collects & visualizes data from manual entries, DCS / PLC / ERP, bar code scans, integrates label printing.

Production & Material Mgmt.

Dispatching, management, execution, and monitoring of production orders. Configuration of workflows with optional paths and dynamic flow. Production buffers handling.

Warehouse Mgmt.

Insights to drive inventory turns improvements and inventory reduction: mgmt. of material storage locations and levels, material movement within warehouses, etc.

Labor Mgmt.

Insight into manpower cost during production, real time or manual offline labor data collecting, time spent on specific tasks or products, ERP integration.

Energy & Emission Mgmt.

Planning & scheduling tools to help optimize energy use & supply, energy balance mgmt. tools to help get the best energy price, energy related reporting tools.



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## Conclusion

### Summing: **Embracing Technology will ensure Survival**

For most food and beverage organizations, there's an existing mentality that integrating technology into business is complicated and invasive, but avoiding technology will only make it harder to compete in the future

Adding technology to the shop floor is only as complicated as the company makes it. Start by rolling out simple things, phase-wise, so employees can become familiar with the system. Once that becomes a natural part of your operation, more can be added and customized to increase your efficiency.

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# Gaining competitive advantages through MOM software

## Agenda

- Smart Manufacturing addressing the current F&B needs
- Manufacturing Operations Management Software
- **Experiences out of customer's interactions**
- Q&A



# Food and beverage plant continuously improves performance

Flexible and efficient production with MES solution since 2010



**WANDER**

Wander AG,  
Neuenegg, Switzerland:

- Producing drinks, snacks and special food for athletes
- 175 intermediate & end products from 500 raw materials.
- Brand portfolio; Ovomaltine, Twinings, Caotina and Isostar

## Customer needs

High degree of automation, modernize and streamline production process and improve efficiency, flexibility and capacity to meet increased demand.

## Solution

Seamless integration with ERP (MFG-PRO), control system (ABB 800xA), automatic guided vehicles, barcode scanners, printers, and scales along the production flow.

Comprehensive MES with production order management, warehouse management and material consumption, goods receipt, bulk handling (filling, discharge, wet and dry cleaning etc.), weigh & dispense, quality control and reporting.

## Customer value

Fully automated, paperless production with reduced amount of manual work and on-the-job support for operators by providing process values and instructions. Full traceability on batch and lot level throughout the whole production process.

# ABB smart factory in Lenzburg (Switzerland)

Fully connected and automatized production lines

## Semiconductor factory

- Full vertical and horizontal integration with ABB MES
- Automation of all production processes with robots and automation equipment
- Automation of all logistic processes with AGVs and Robots
- Operator independent production through automated tooling of equipment (increased equipment utilization)
- Centralized production

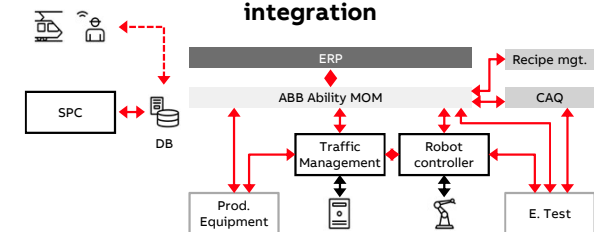
ABB Semiconductors factory,  
Lenzburg (Switzerland)



## Automated logistics with AGVs & robots



## ABB Ability MoM – horizontal & vertical integration



Full end-to-end smart manufacturing program, from wafer to finished semiconductor module incl. electrical testing

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## ABB smart factory in Lenzburg (Switzerland)

Increased competitiveness and location safeguarding through full automation

### Achieved benefits

- Significant increase of productivity as well as throughput
- Instant reaction to changing customer demands
- Increased reproducibility and quality
- Full product, process and material data traceability (vertical integration)
- Significant lead time & WIP reduction
- Significant inventory reduction
- Significant yield gain



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# Gaining competitive advantages through MOM software

## Agenda

- Smart Manufacturing addressing the current F&B needs
- Manufacturing Operations Management Software
- Experiences out of customer's interactions
- **Q&A**

# QUESTIONS ANSWERS



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