# Industrie 4.0 – A Chance for the Swiss Industry

Robert Rudolph
Member of the Board Swissmem / President Industrie 2025

SWISSMEM

# Agenda

- Initiative «Industrie 2025»
- Understanding of Industrie 4.0
- Examples / Use Cases

# Examples of Products

- **Machinery**
  - Machine tools, textile machinery
  - Pumps, compressors
  - Turbines
  - Packaging & filling machines
- **Precision Instruments**
  - Tools
  - Medical Instruments
- **Electronics**
  - Electrical switches and cables
  - Electrical drives
  - Control equipment & sensors
- **Metals**
- **Vehicles**

SWISSMEM

# National Initiative for Industrie 4.0

INDUSTRIE 2025
INDUSTRIA
INDUSTRY

- inform
- raise awareness
- network
- promote

| | |
|---|---|
| **Networking and knowledge transfer** (events, seminars) | **Support** (on-site workshops, seminars, basic training) |
| **Technical topics** (working groups, whitepapers, studies) | **Innovation support** (R&D Conference, coordination) |

www.industrie2025.ch
@Industrie2025

SWISSMEM
swissT.net swiss technology network
asut
electro suisse

# History of «Industrie 4.0»

**2012**

January: Working Committee «Industrie 4.0» (acatech)

April: First presentation on «Industrie 4.0» @ HMI

**2013**

April: Presentation of final report of WC to Chancellor Merkel @ HMI, Launch of «Zukunftsprojekt Industrie 4.0»

June: Start of Plattform Industrie 4.0, Start of working groups, lead by VDMA, BITKOM and ZVEI

**2014**

Industrie 4.0 is main topic @ CeBIT and HMI

**2015**

@ HMI BMWi (Gabriel) and BMBF (Wanka) take over leadership of Plattform Industrie 4.0

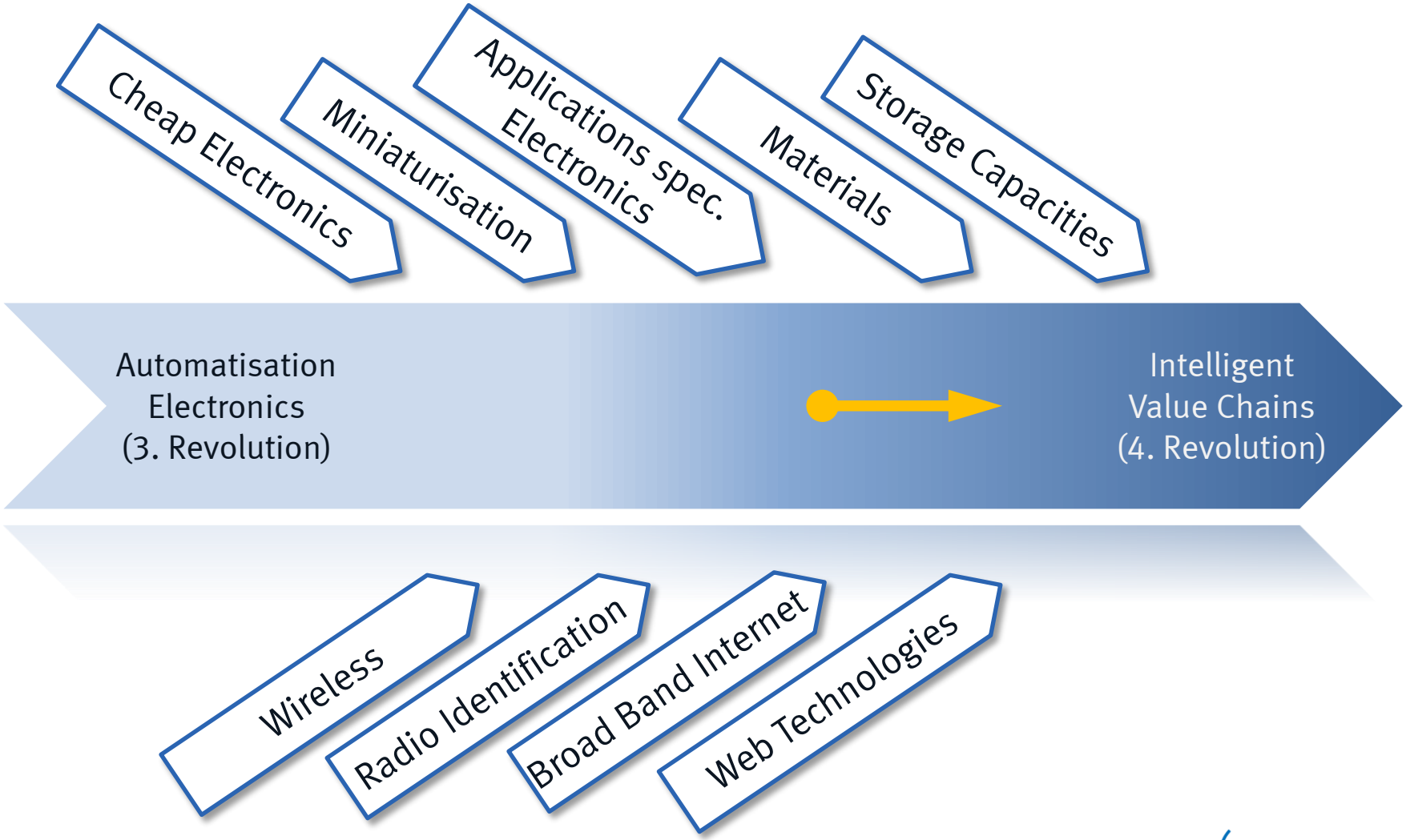
**2016**

VDMA-Forum Industrie 4.0: Pathway to networked production

# International Activities

- Germany: Plattform Industrie 4.0
- Netherlands: Smart Industry
- Schweden: Produktion 2030
- France: Usine du Futur
- USA: Industrial Internet Consortia (IIC)
- China: 物联网 (wù lián wǎng)
- Austria: Industrie 4.0 Österreich

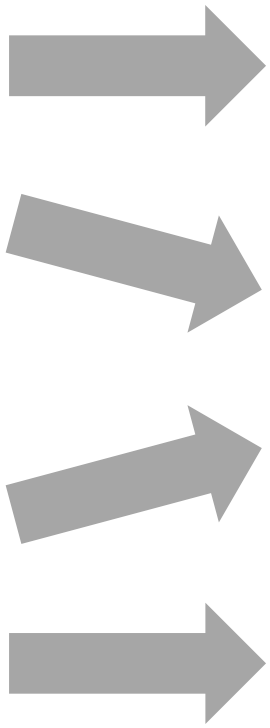
# Digital Transition in Industry

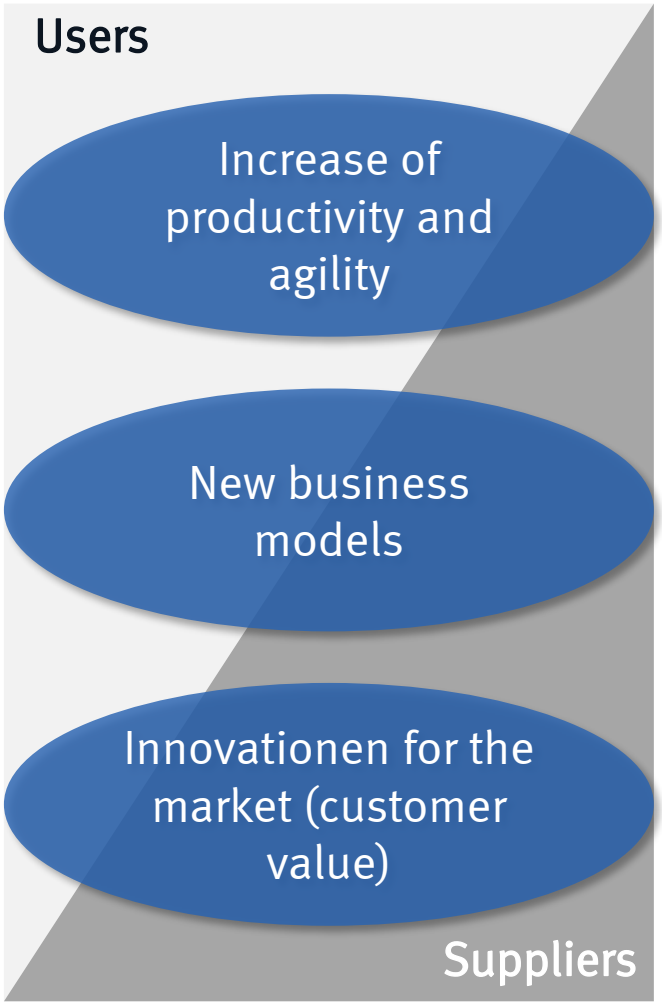


# Basic Understanding

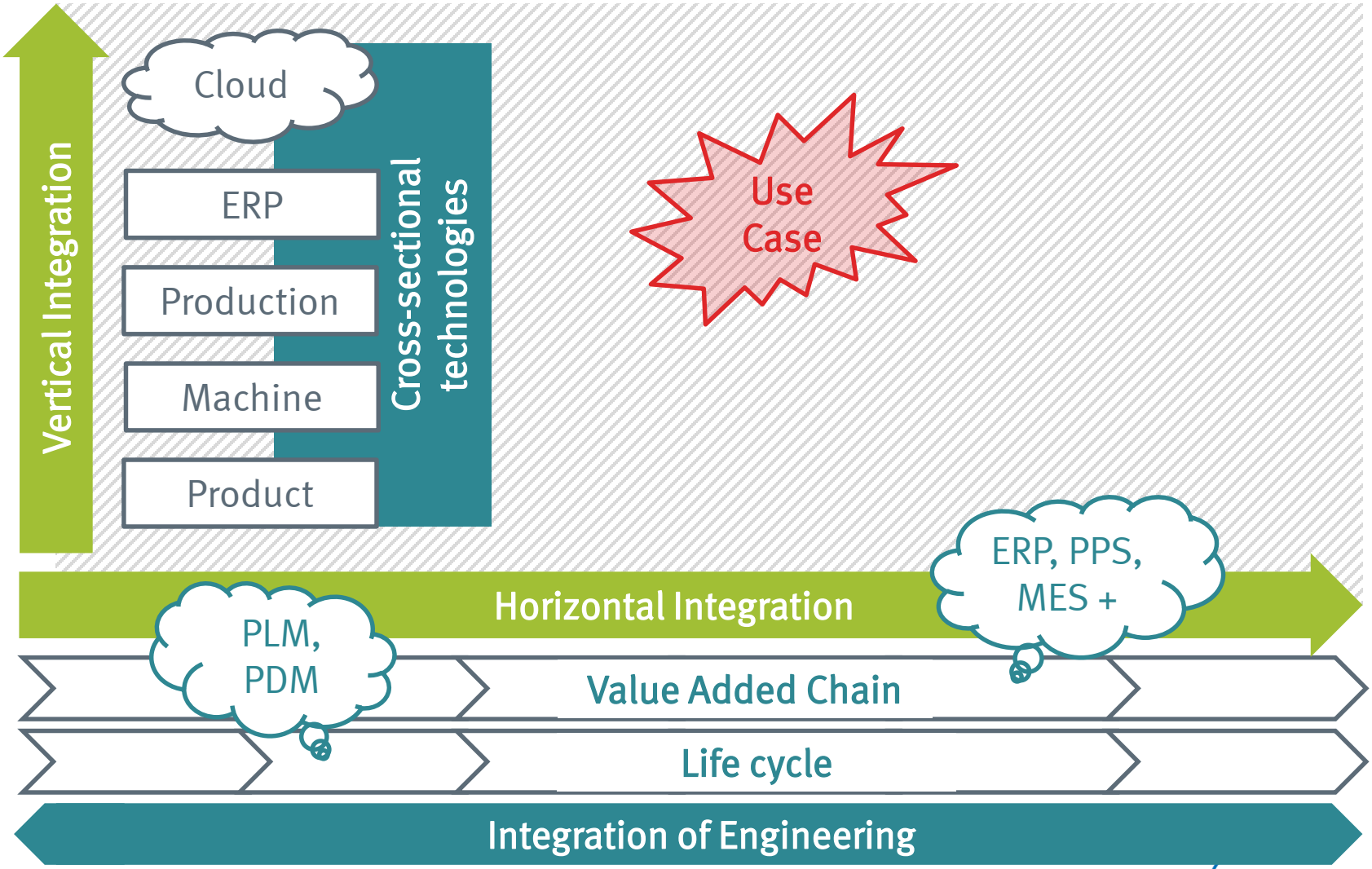
Optimization of **production equipment, processes** up to cross-company **value added chains**

Digitalization of **products, services** and their **Life cycles**





# Opportunities for «Use Cases»

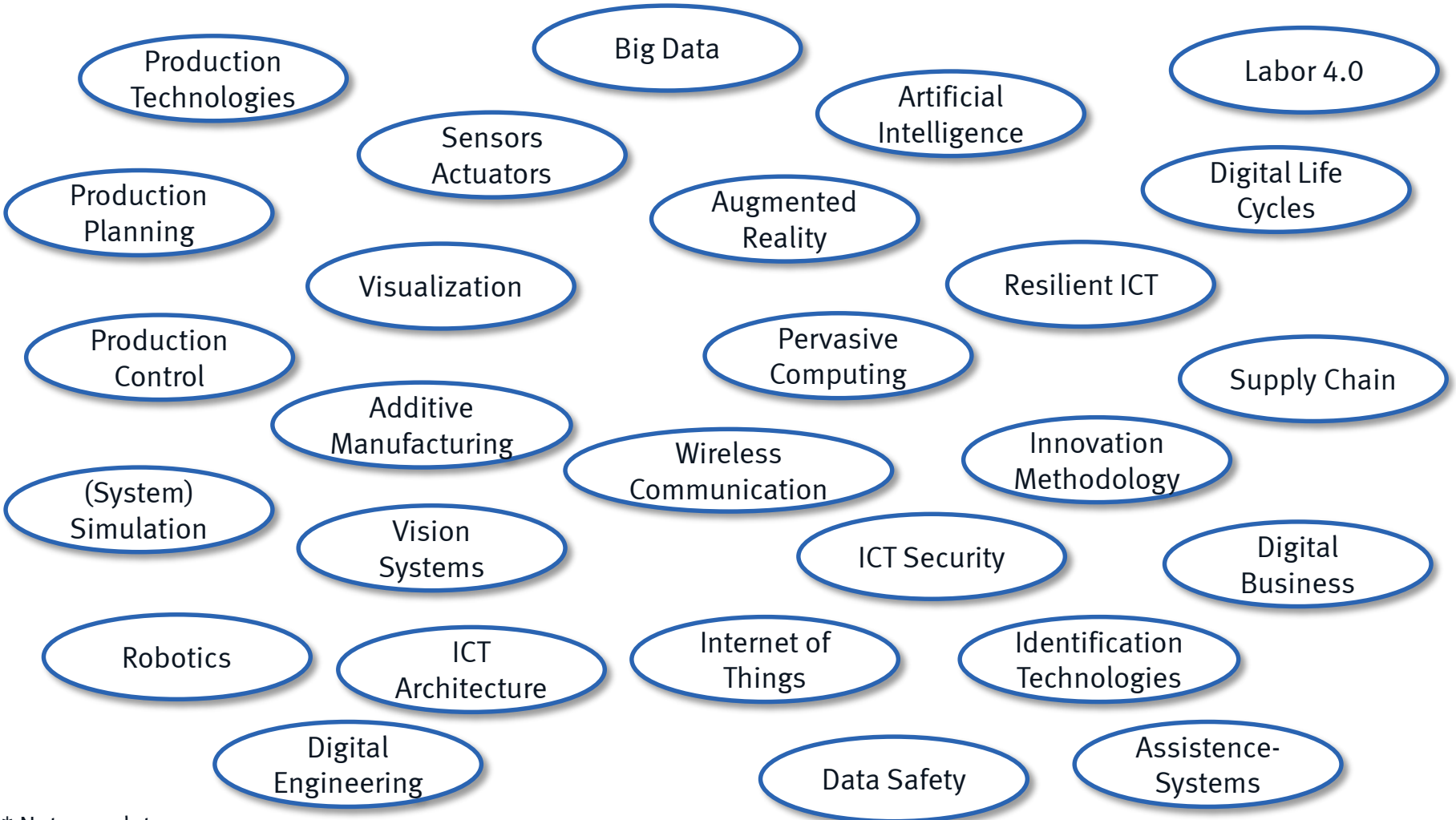


# «Use Case» have a range of aspects

«Use Cases» are a combination of:

- Technologies
- Data
- Processes
- Methods / Models
- Services
- Safety / Security
- Standards

# Large field of technologies




* Not complete

# **Use Case**: Connected Factory

**Prevention of deficencies** in assembly

- Unplanned situations are detected and handled by the system
- Product is guided through assembly
- Cooperation of smart automatisation with cognitive and creative skills of workers

Bild: Demag Cranes

# **Use Case**: Market Place Application Know-how

Access to internal and external application and technology know-how allows to optimize machine tool operation in terms of **quality, time and efficiency**

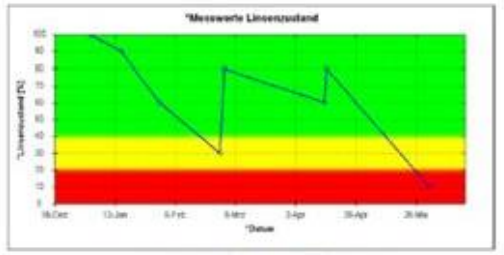
- Application data from archive
- Cross-machine logging and evaluation of operation and condition data
- Comparison with manufacturer data
- Business model on public market places

# **Use Case**: Condition Monitoring

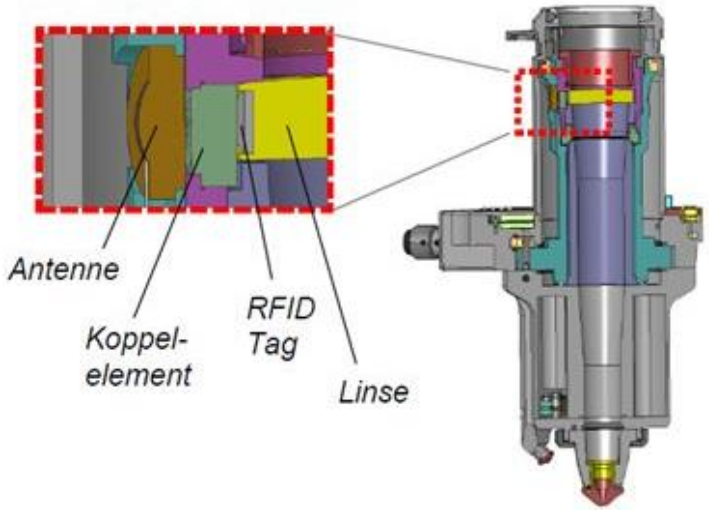
Lenses are consumables in laser machine tools

- Identification of lenses
- Diagnosis system evaluates specification of lens
- Measurement/Calculation of wear buffer
- Recording history

Linse mit RFID-Tag



LensLine - Historie

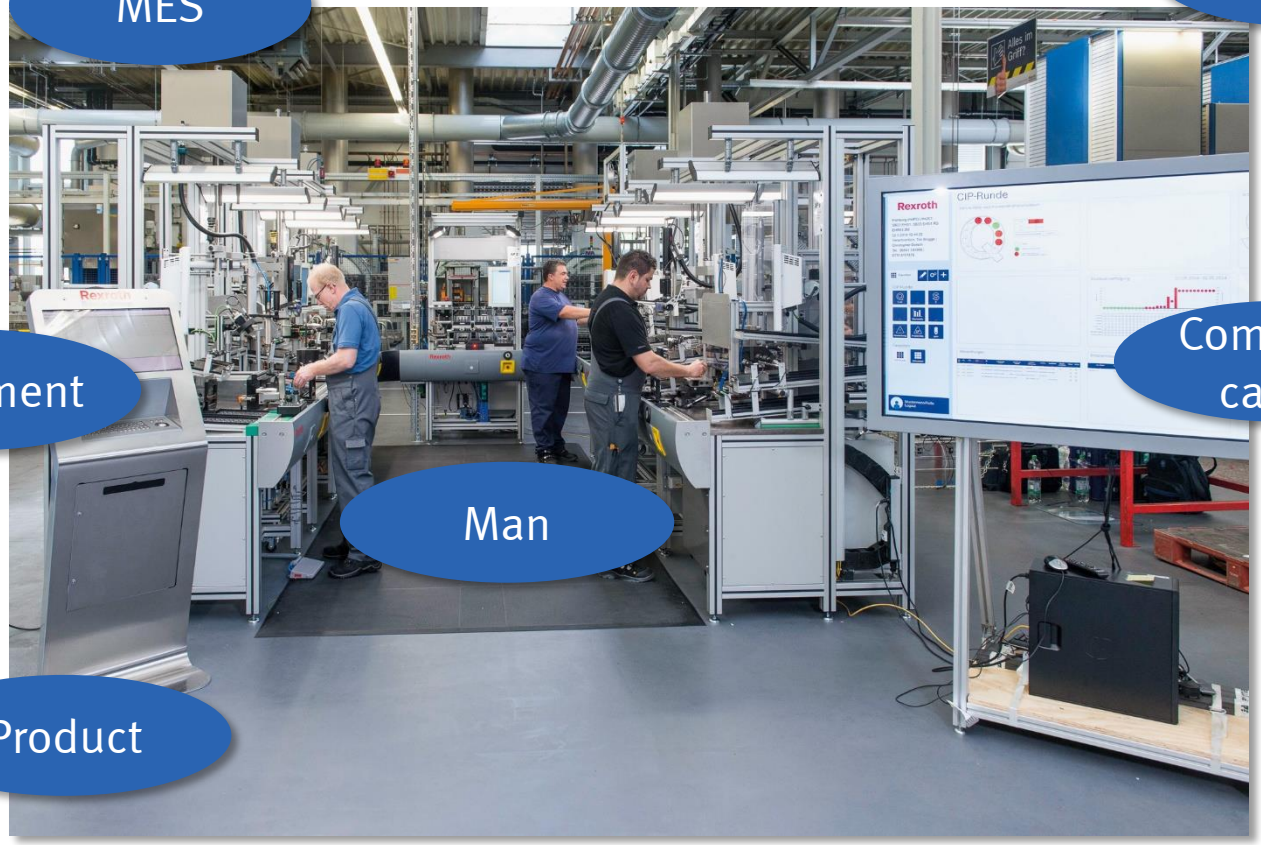




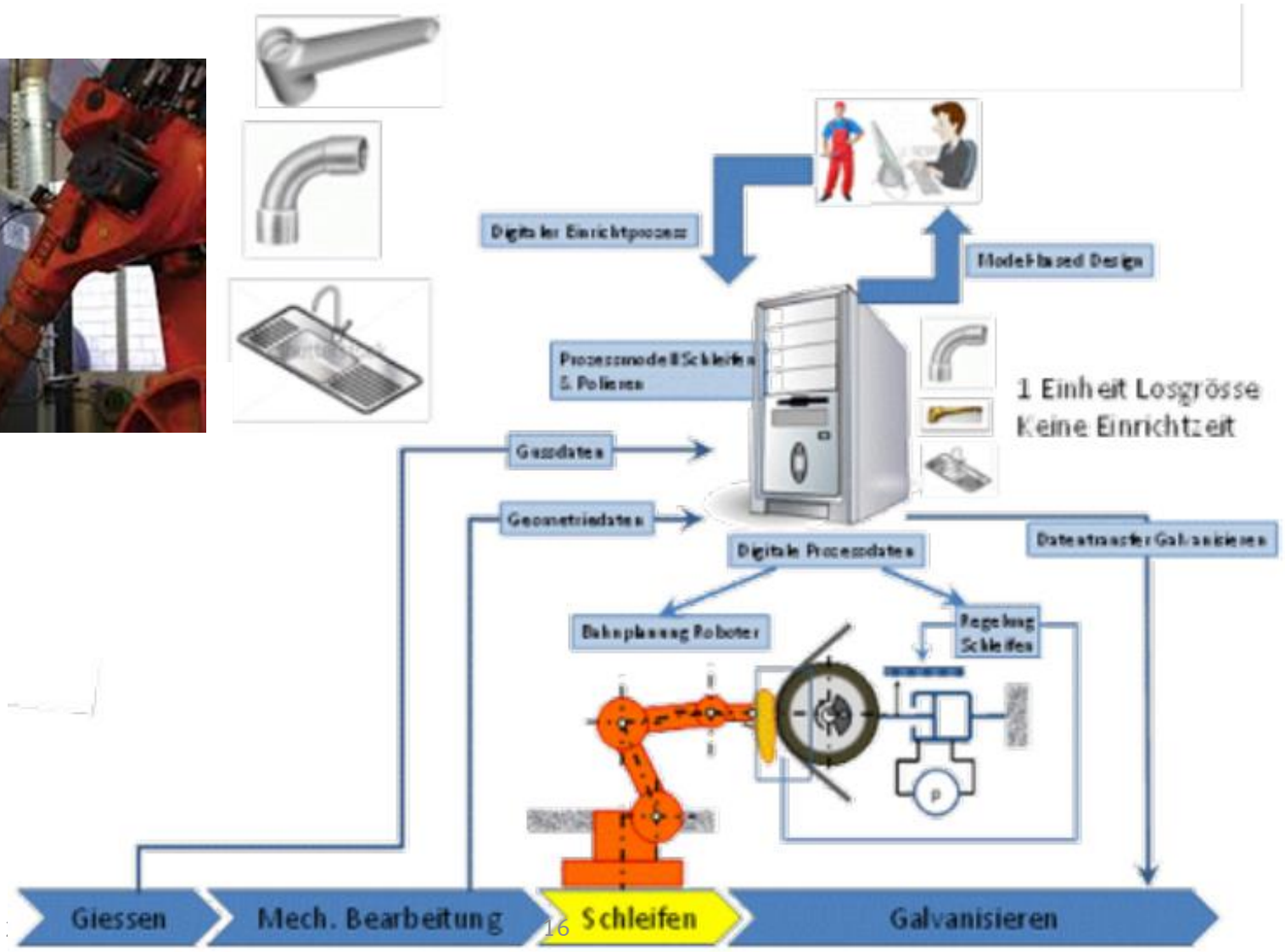

SWISSMEM

# Example: Pilot Line Bosch Rexroth

Six basic types of disc valves in 200 variants → Enhanced assistance systems

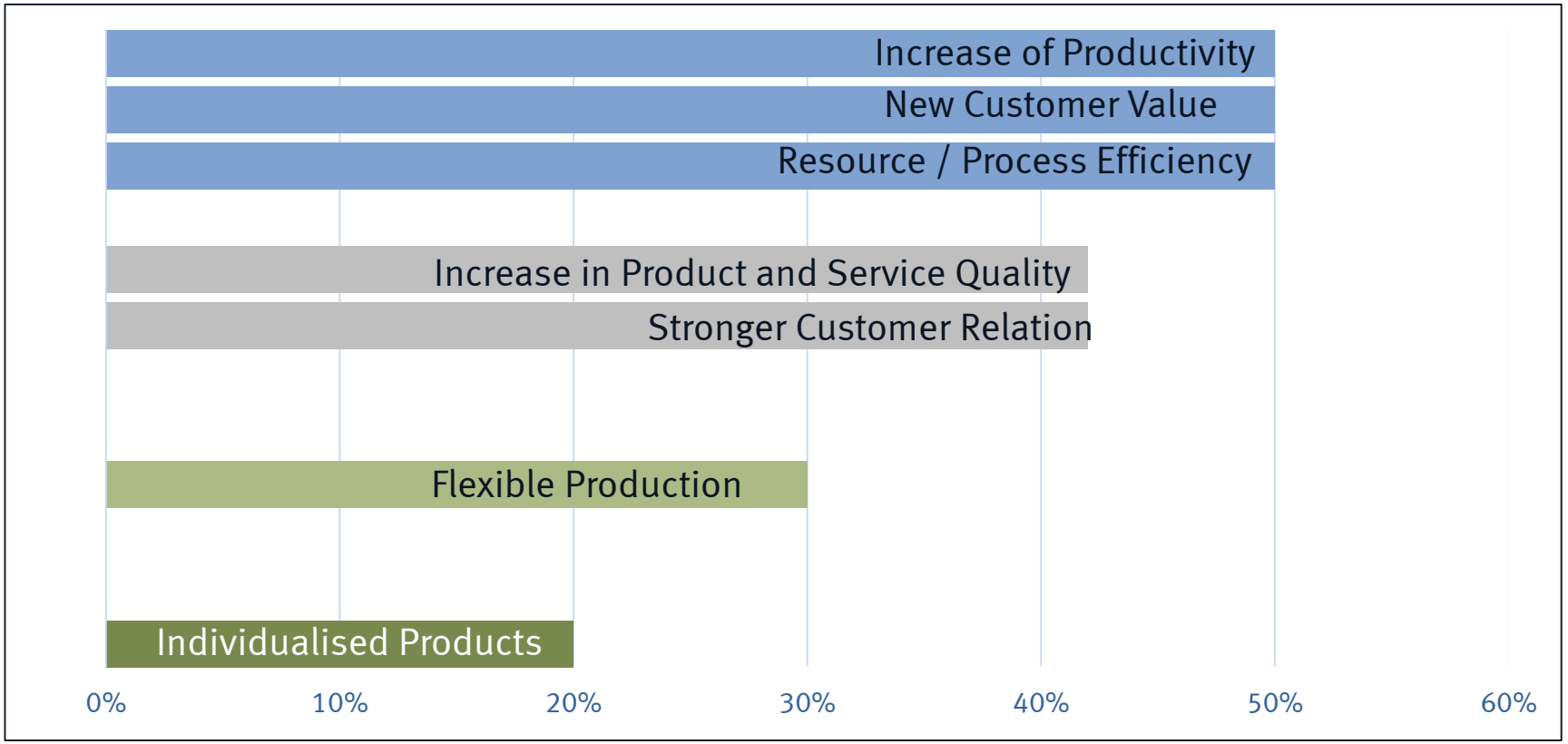


# Example: Digital Engineering for Faucets



# Where is the biggest benefit of Industrie 4.0?

Percentage of companies / multiple answers allowed



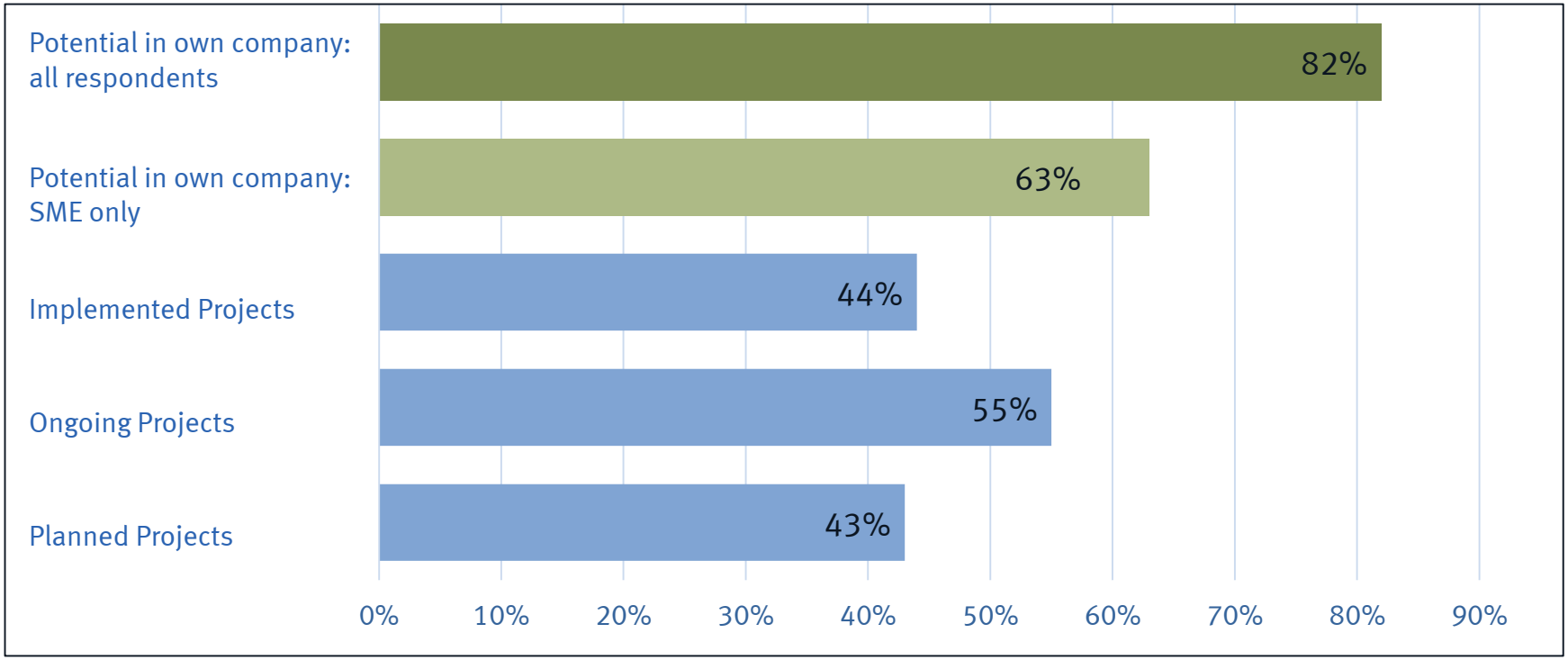

82% of the respondents see one or multiple benefits in the concept Industrie 4.0

Source: Swissmem Survey May/June 2016

SWISSMEM

# Status of Project Implementation

Percentage of companies/ multiple answers allowed



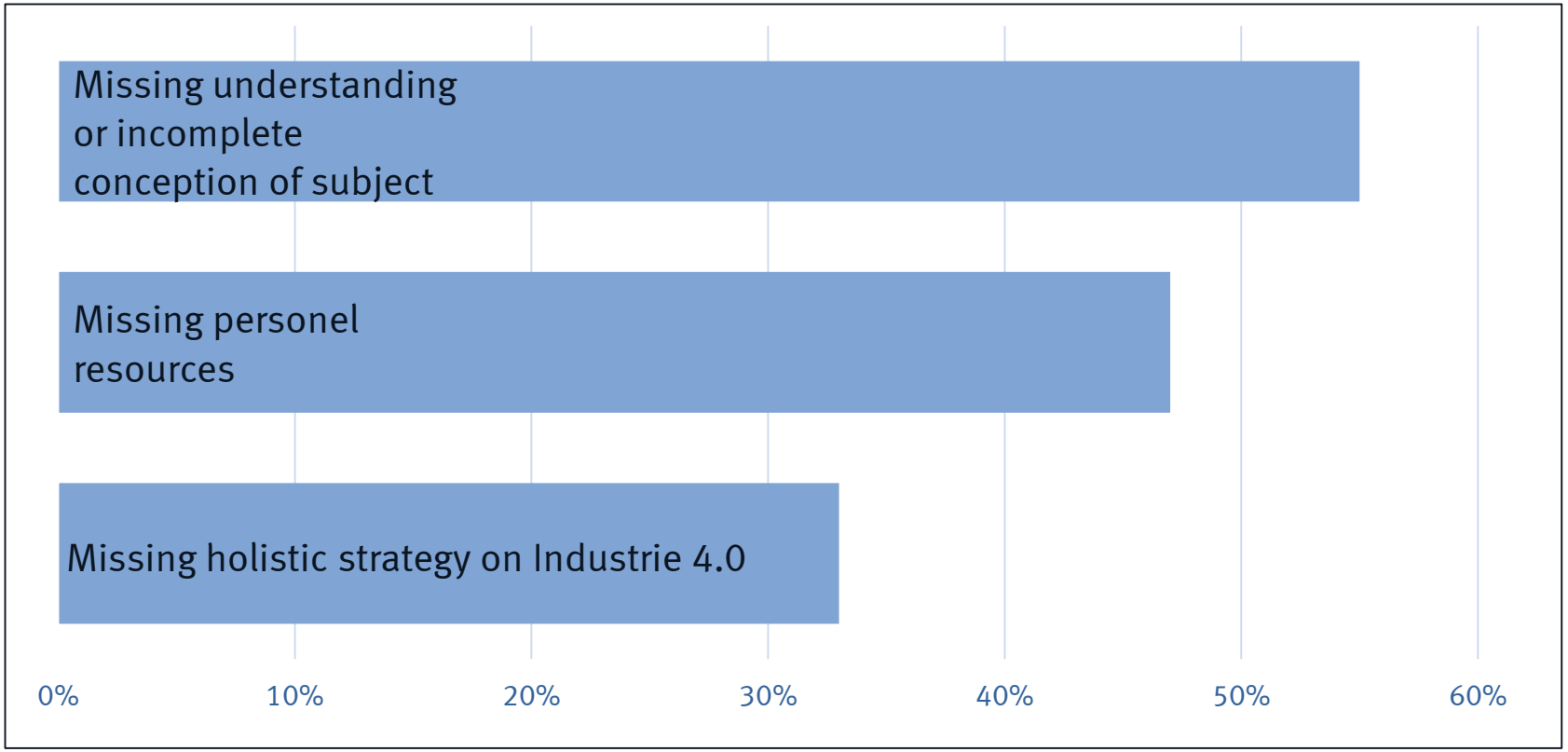

Amongst the respondents 1‘225 projects are implemented, running or planned. Of those 718 are with SME.

Source: Swissmem Survey May/June 2016

SWISSMEM

# What are the biggest obstacles?

Percentage of companies / multiple answers allowed




Source: Swissmem Survey May/June 2016

SWISSMEM

# Some Thoughts on Data

- «Data is the new oil» → Transparency → Control
- Fundamental for new (digital) business models
  - –Use of publicly available data
  - –Models from web world probably not applicable in industry
- Interpretation of data in manufacturing context
- Modelling / Semantics
- Data rights / trade secrets / trust / personal data protection

# Take the Challenge!