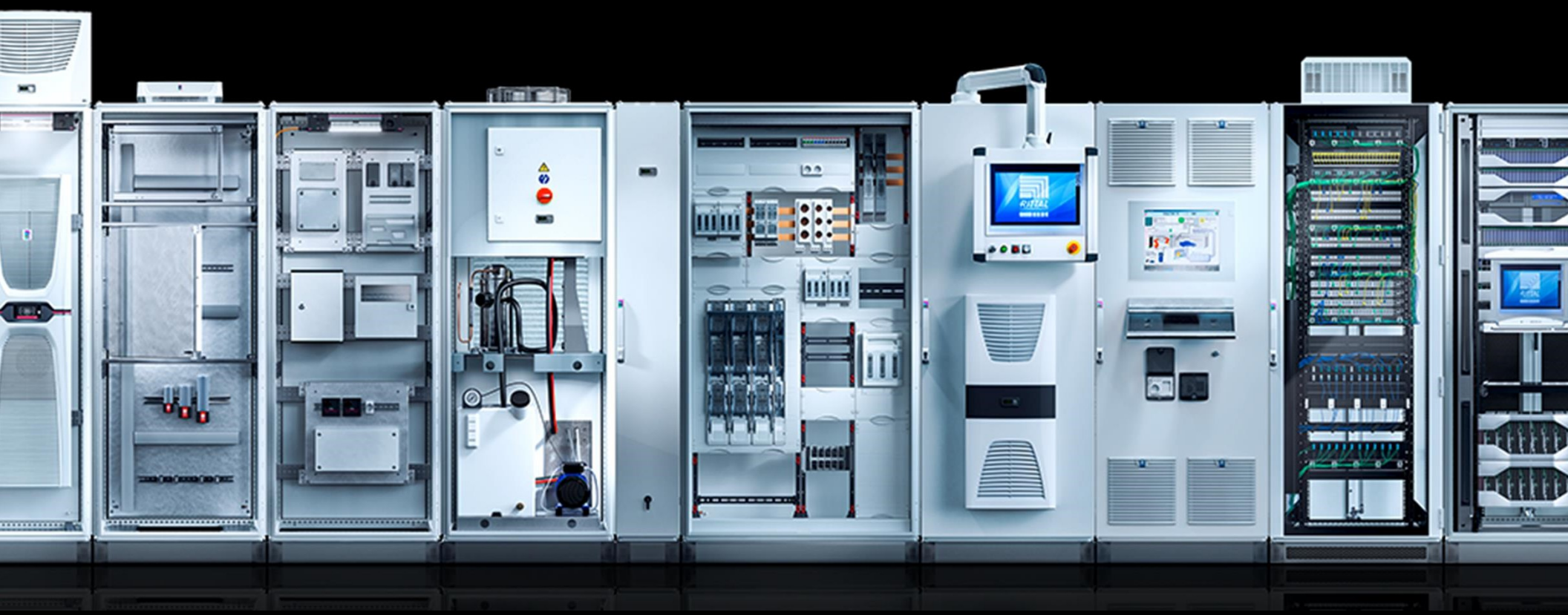
l – The System.

- better – everywhere.



Industry 4.0

ENCLOSURES | POWER DISTRIBUTION | CLIMATE CONTROL | IT INFRASTRUCTURE | SOFTWARE & SERVICES

M LOH GROUP

trong family

Friedhelm Loh Group – a successful business

1,300

ployees worldwide

500

ents

ased on 2016

80

international subsidia

2.2 bn

euros turnover

FAMILY BUSINESS | INNOVATION LEADER | GLOBAL PLAYER | TOP EMPLOYER

radition of innovation

orical milestones

1969

s the
e “very
nclosure

RS – The new bayable enclosure

1988

Rittal opens up the future IT market

1999

TS 8 – Finally, infinite possibilities

2002

TopTherm – The new generation of cooling units

2013

RiMatrix S – The standardised data center

2015

Blue e+
The ulti
Worldw

ENCLOSURES | POWER DISTRIBUTION | CLIMATE CONTROL | IT INFRASTRUCTURE | SOFTWARE & SERVICES

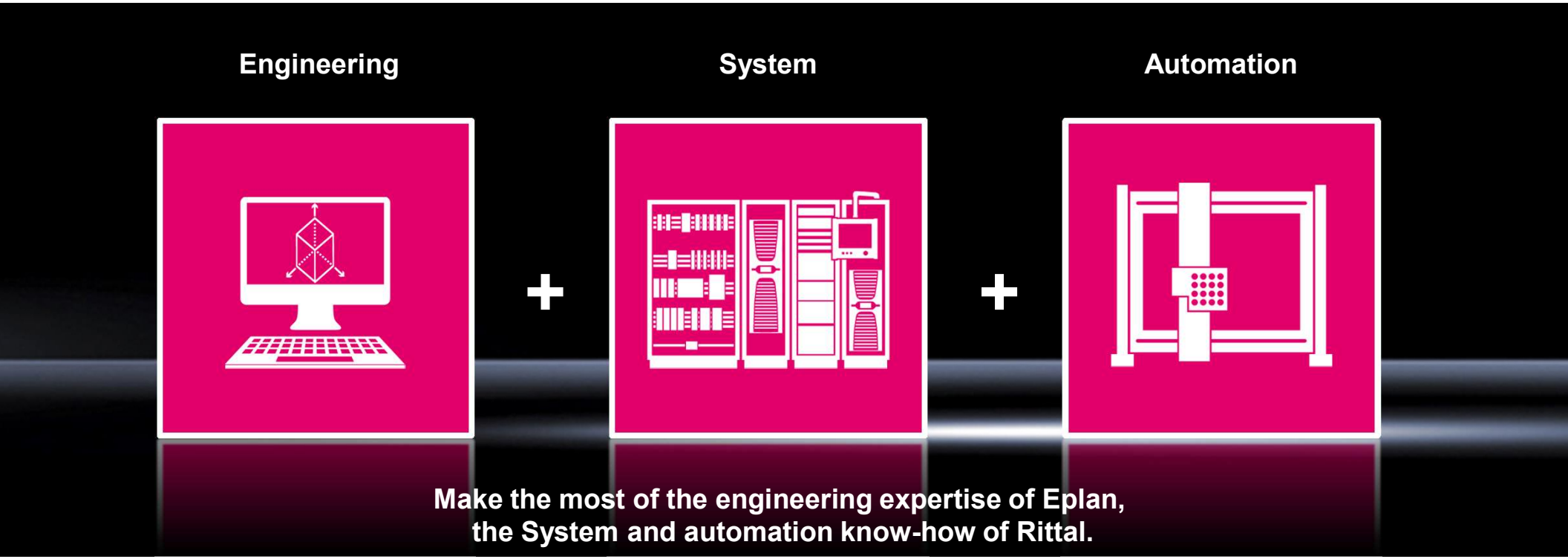
l – The System.

- better – everywhere.

ENCLOSURES | POWER DISTRIBUTION | CLIMATE CONTROL | IT INFRASTRUCTURE | SOFTWARE & SERVICES

Industry 4.0

power network of the future

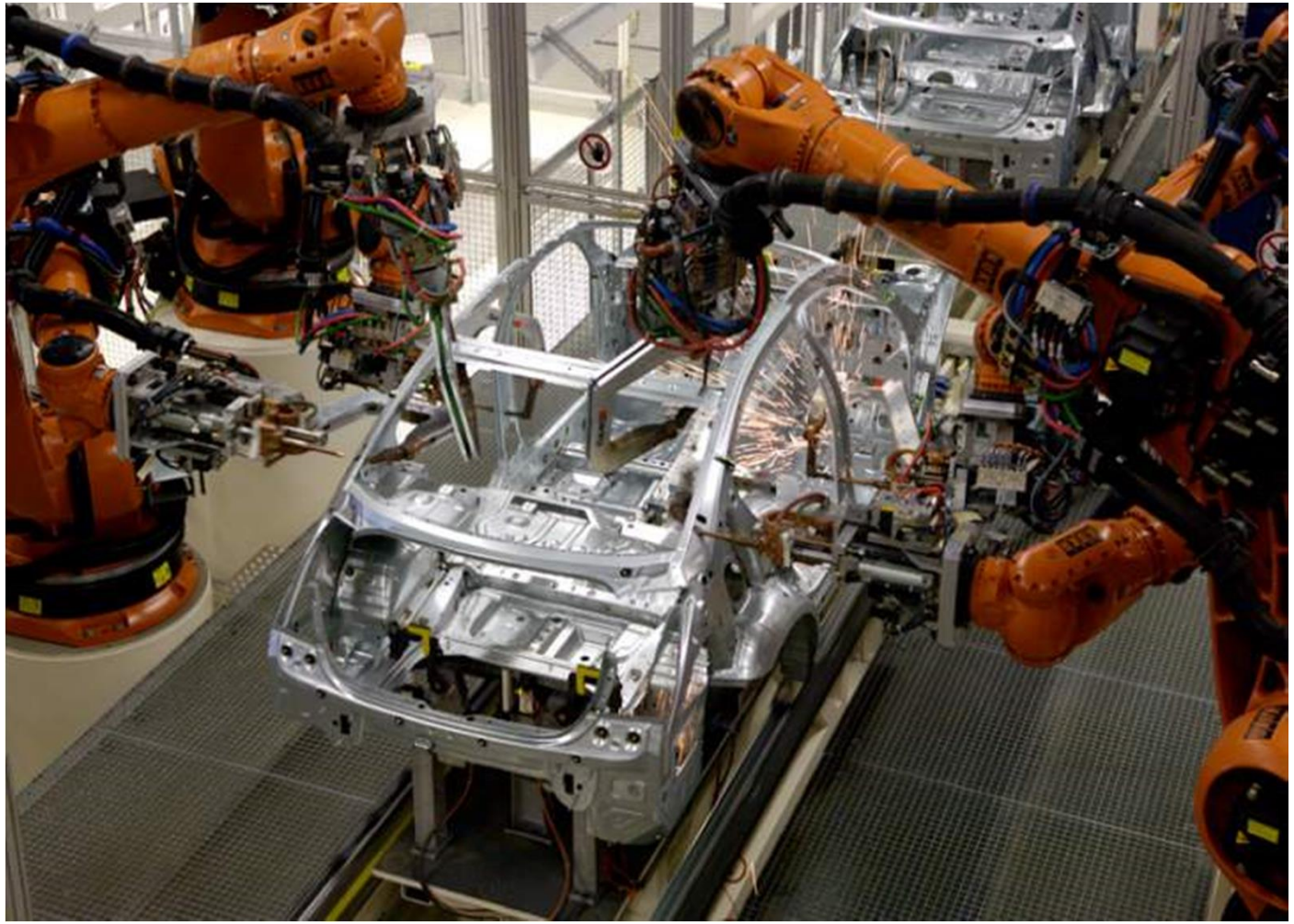


Digitalization in Control and Switchgear Manufacturing

Do you think about Industry 4.0 here?

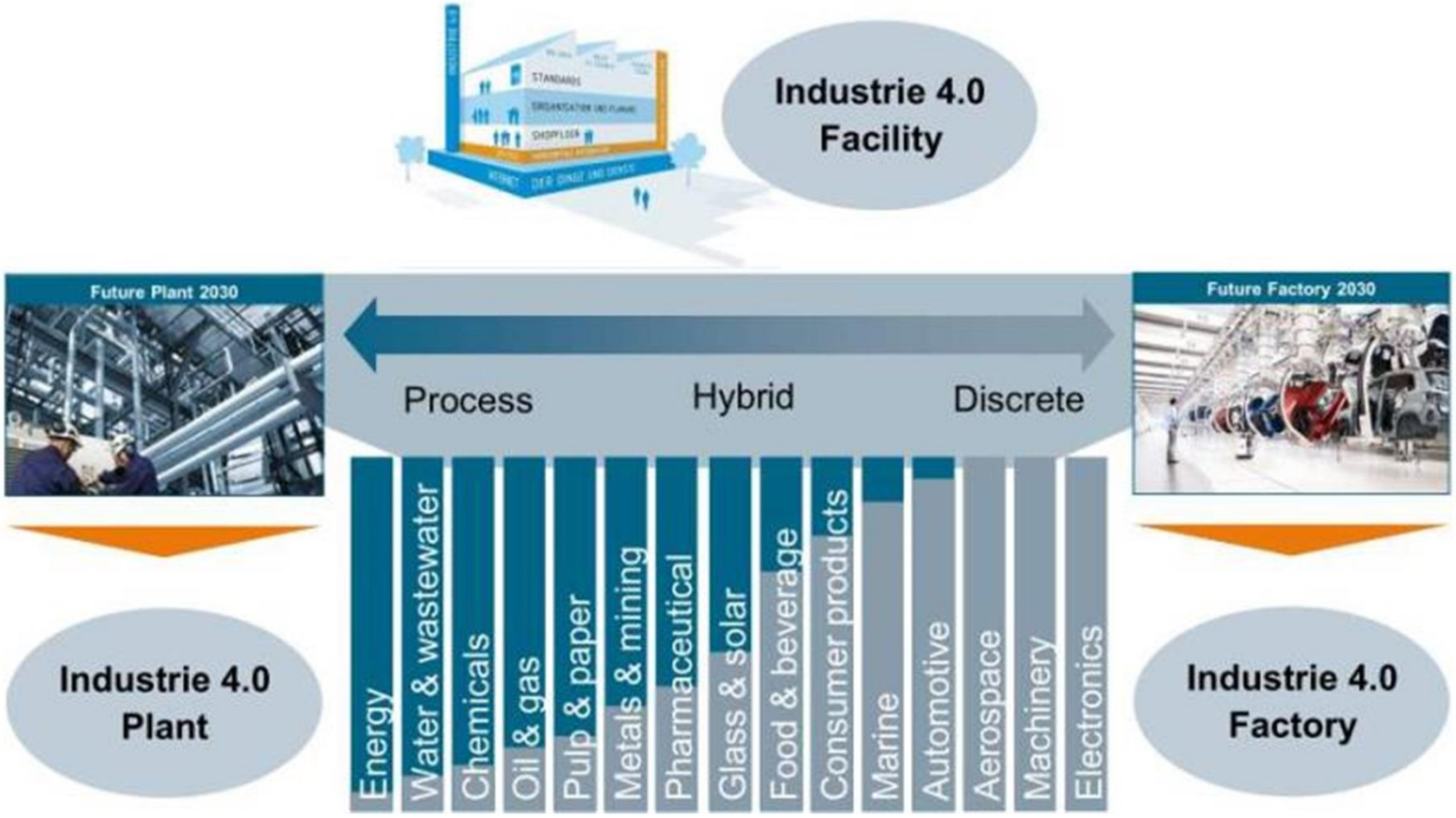
Digitalization in Control and Switchgear Manufacturing

Do you think about Industry 4.0 here?



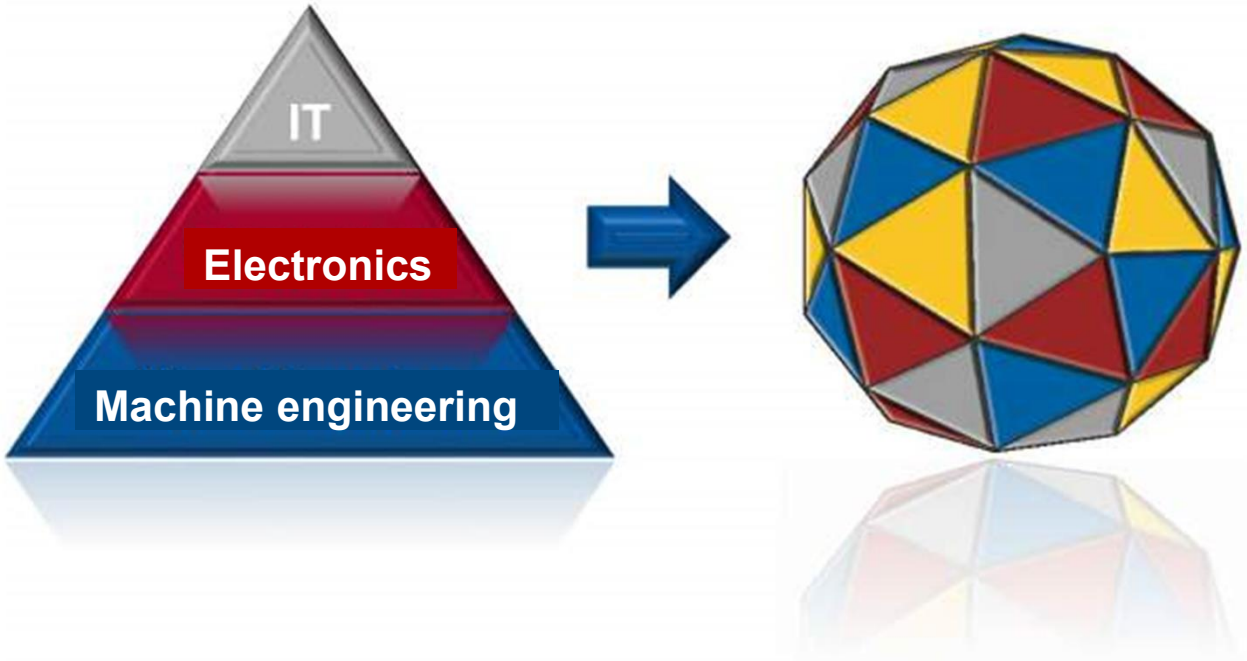
Digitalization in Control and Switchgear Manufacturing

Industry 4.0 affects all industry branches



Digitalization in Control and Switchgear Manufacturing

Paradigm shift in the value-added chain

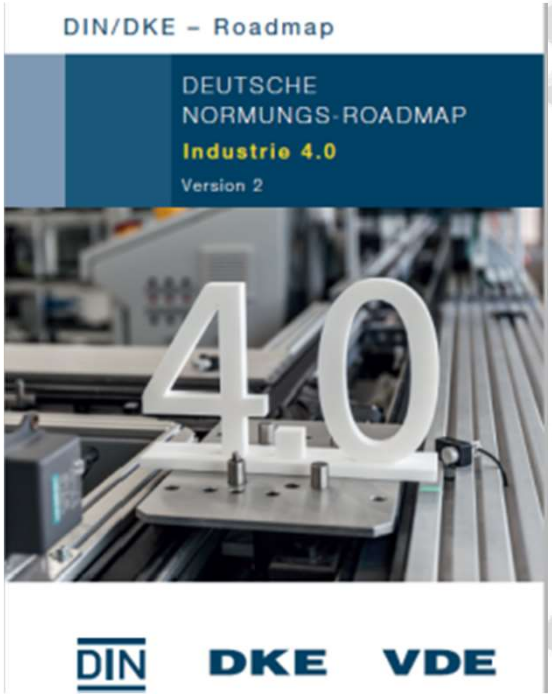


→ **Dissolution of industry boundaries**

Source: Update Industrie 4.0 – Aktueller Stand, ZVEI Führungskreis Industrie 4.0, Frankfurt am Main, 15.12.2015

Digitalization in Control and Switchgear Manufacturing

German standardization roadmap for Industry 4.0



For the digitalization in the industrial production, different systems of **different manufacturers need to interact reliably and efficiently.**

From the perspective of production engineering, it is not yet ensured if there will be another **revolution or an evolution** of existing concepts.

Also, with Industry 4.0, an increasing interconnection of stand-alone systems, e.g. in production, logistics, energy supply or facility management is expected. **A system of systems is being created.**

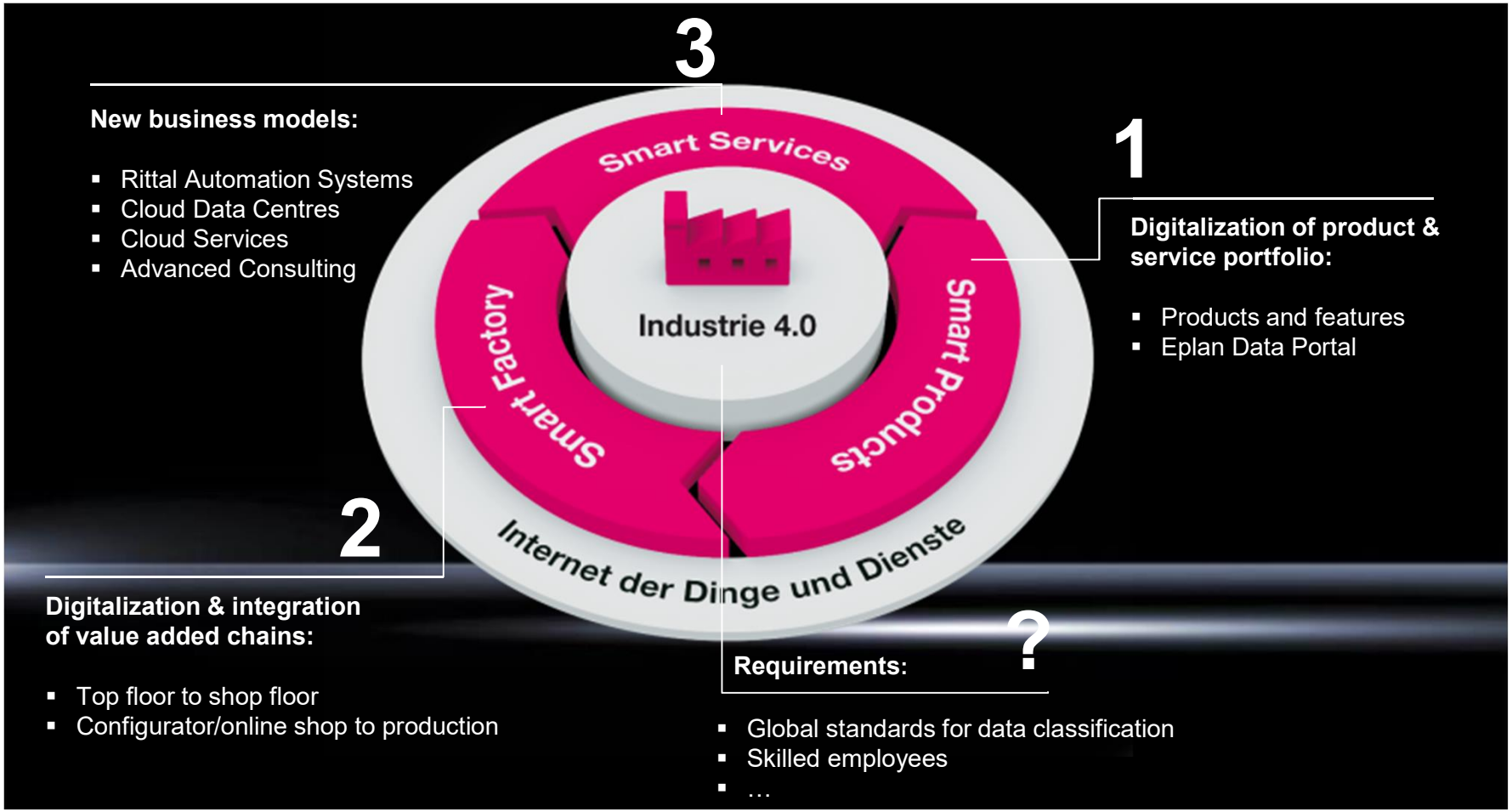
Three features need to be focused on:

- **horizontal integration:** real-time optimized, ad-hoc value added networks
- **vertical integration**: business processes and technical processes
- **Consistent engineering** during the complete lifecycle

Source: Deutsche Normungs-Roadmap Industrie 4.0 Version 2, DIN e.V., 10/2015

Digitalization in Control and Switchgear Manufacturing

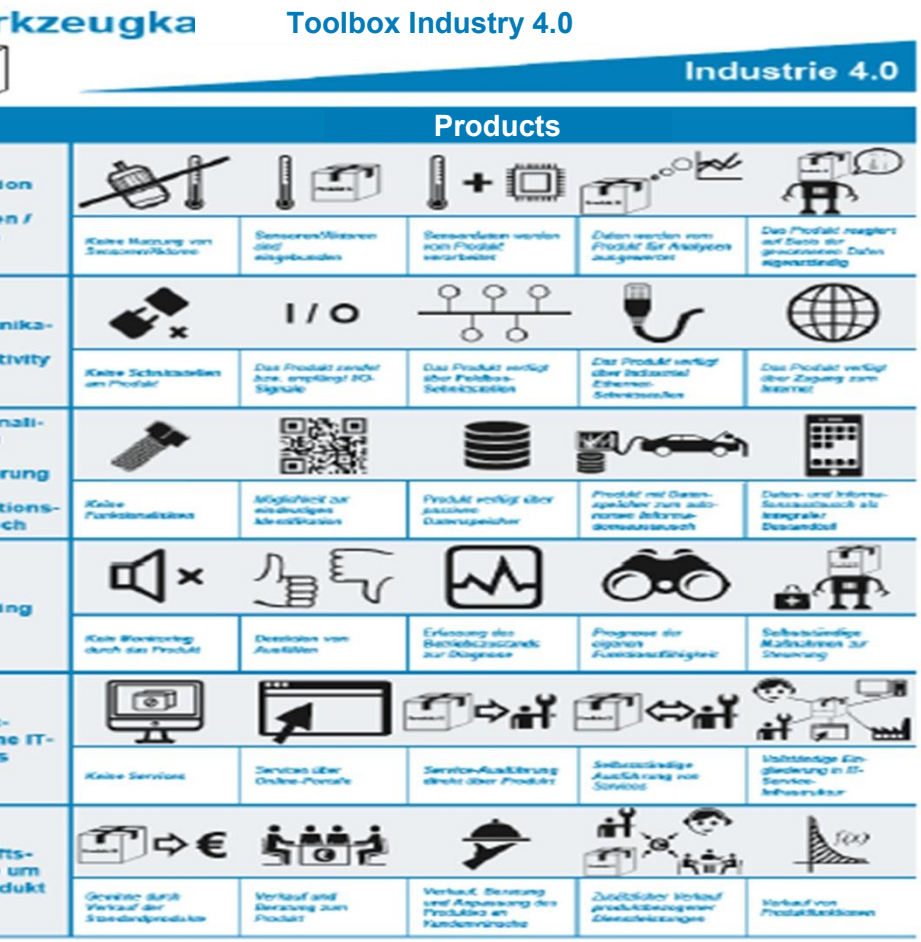
Effects of Industry 4.0 in 3 dimensions

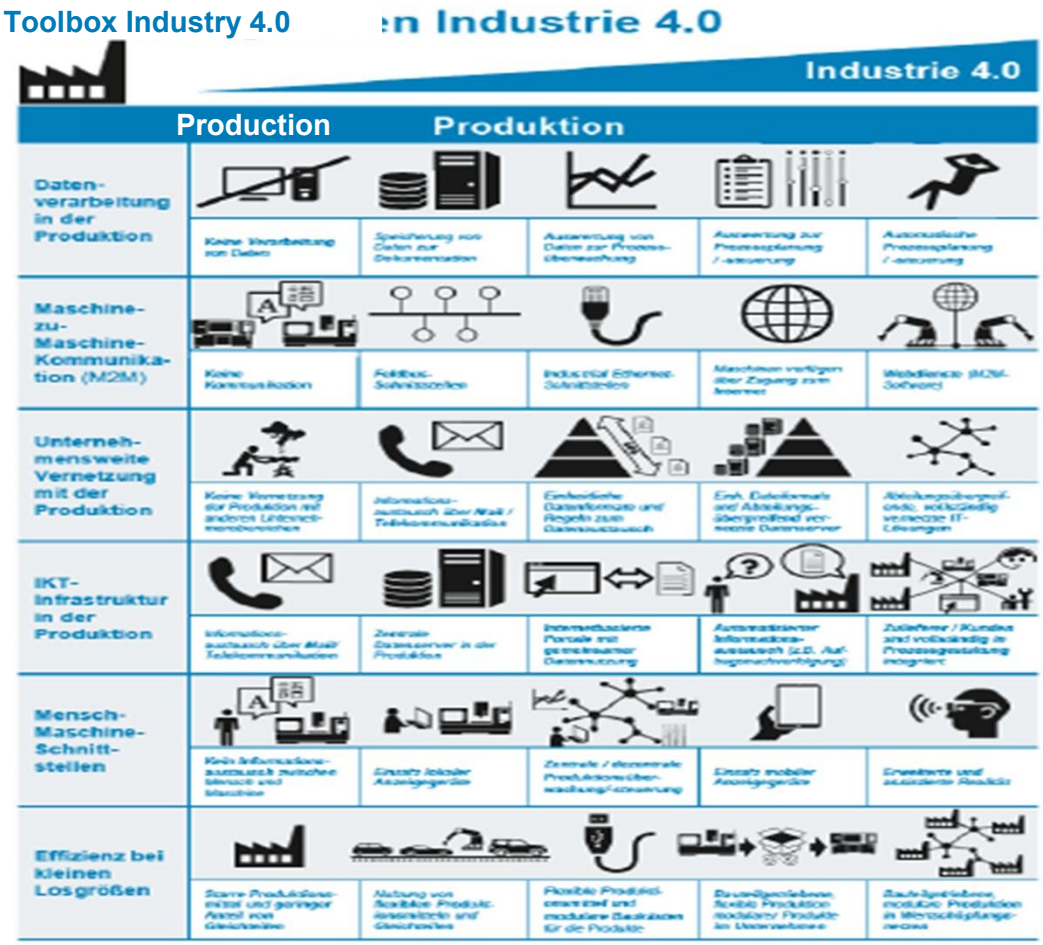


Source: ZVEI 12/2015

Digitalization in Control and Switchgear Manufacturing

Gradual analysis of products and production

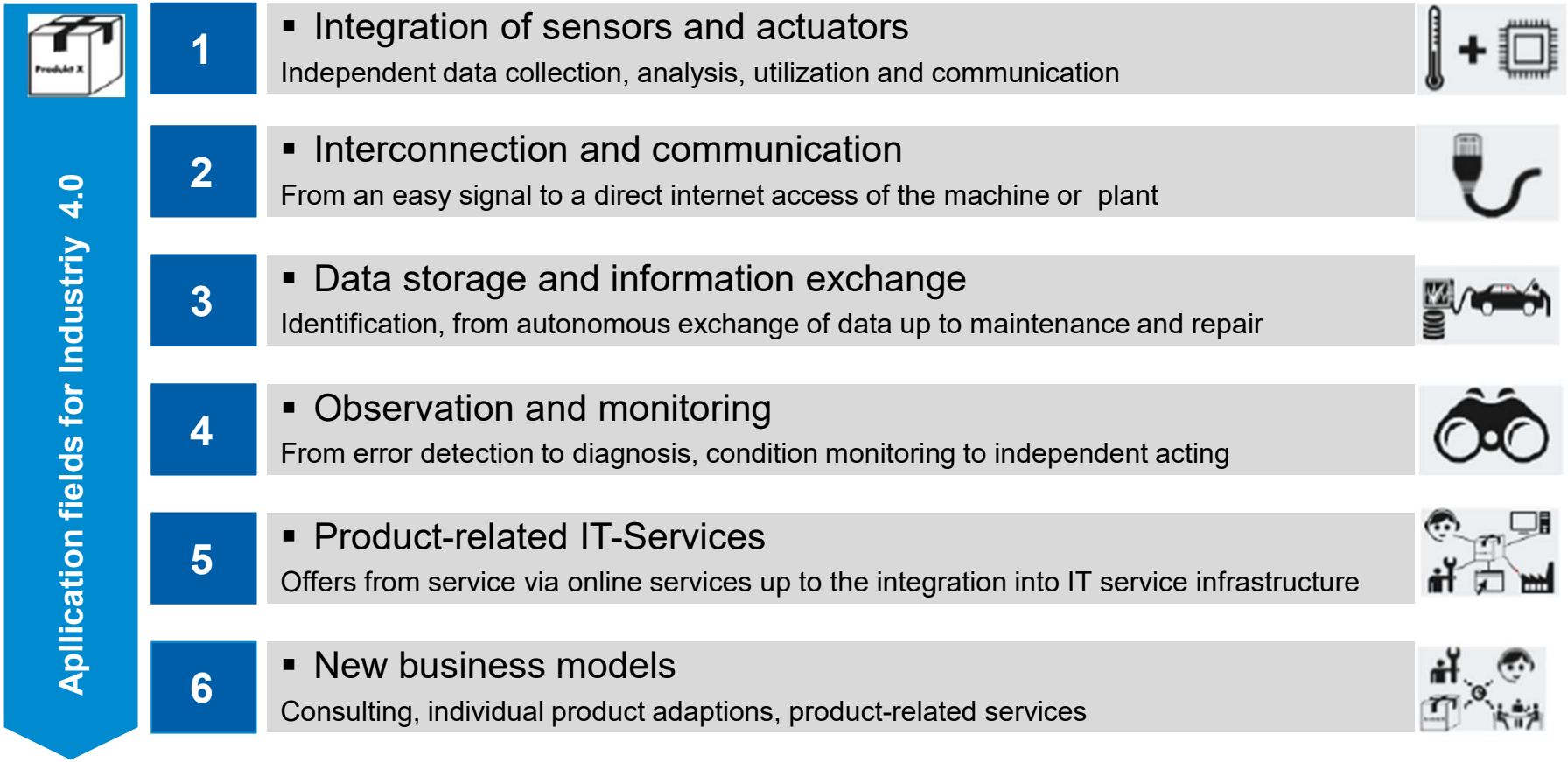




Source: VDMA-Leitfaden Industrie 4.0

Digitalization in Control and Switchgear Manufacturing

The way to an intelligent machine (product)



Digitalization in Control and Switchgear Manufacturing

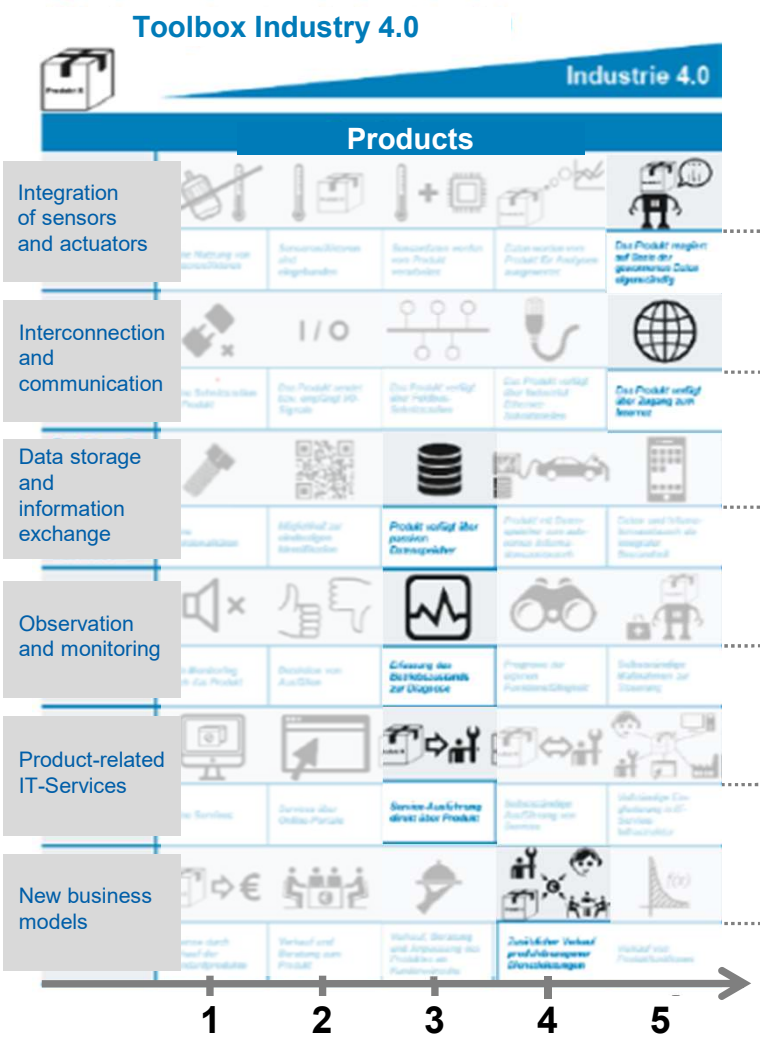
The way to an intelligent machine (production)

Application fields for Industriy 4.0 In production

1	▪ Establish data processing in the production From no data processing up to automatic process planning / control	
2	▪ Implement machine-to-machine communication From field bus to the use of Internet and Web services	
3	▪ Company-wide interconnection of the production From no connection up to inter-divisional and interconnected EDP solutions	
4	▪ Modernise the ICT infrastructure in the production Comprehensive information exchange and process integration of customers / suppliers	
5	▪ Build human-machine interfaces Use local displays up to the utilization of augmented reality	
6	▪ Increase efficiency for small batches Development of a component-driven and modular production	

Digitalization in Control and Switchgear Manufacturing

Example: Blue e+ cooling units



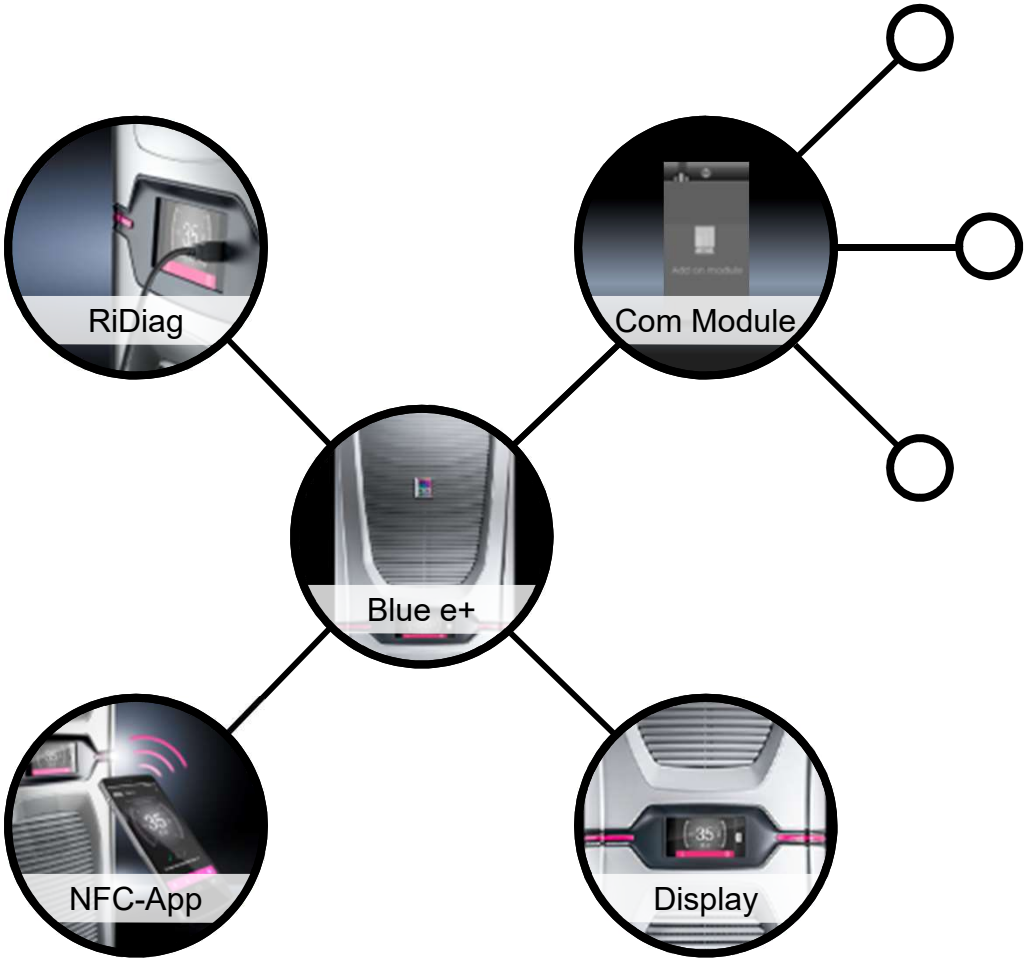
5	The product reacts independently, based on collected data.
5	The product has access to the Internet.
3	The product has a passive data storage.
3	Detection of the operating status for diagnosis.
3	Service directly via the product.
4	Additional sale of product-related services.

Digitalization in Control and Switchgear Manufacturing

Example: Blue e+ cooling units

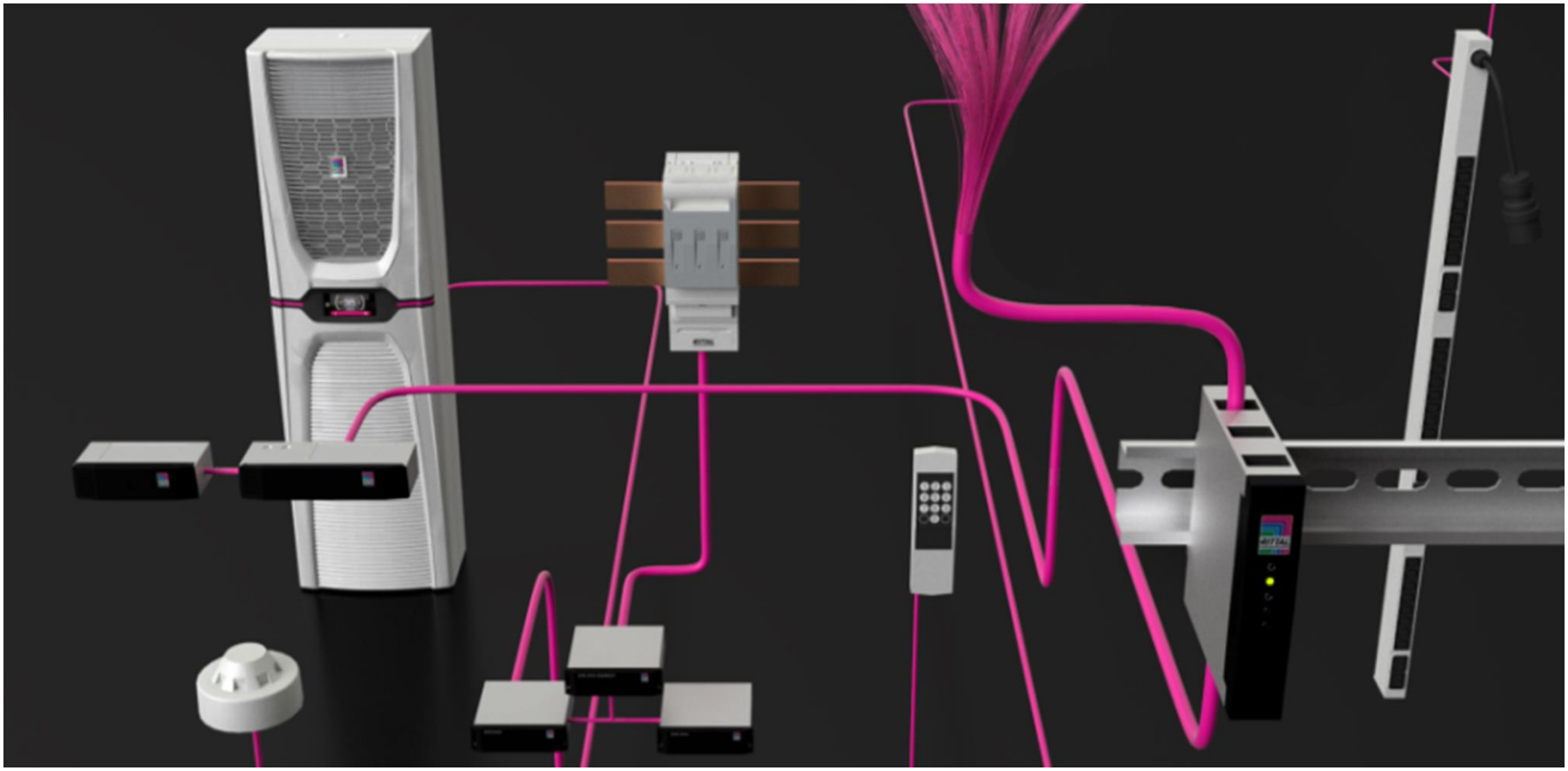
Interfaces:

- Fast diagnosis with App via Near Field Communication (NFC)
- Remote monitoring via Ethernet and diagnosis software via USB
- Detailed function analysis and parameterization via RiDiag



Digitalization in Control and Switchgear Manufacturing

Example for the interconnection of different Rittal products



Digitalization in Control and Switchgear Manufacturing

Digitalization of the product and service portfolio

Enclosures

- Enclosures
- Small enclosures
- Command Panel & support arm systems
- Console systems
- Stainless steel & industry solutions
- Outdoor enclosures

Power Distribution

- Modular system for low-voltage switch-gear up to 5500 A
- Busbar systems for switchgears and controlgears up to 1600 A
- Distribution enclosures

Climate Control

- Roof- and wall-mounted cooling units
- Recooling systems
- Air/air, air/water heat exchangers
- Fan systems
- Enclosure heaters

IT Infrastructure

- Integrated DC solutions
- Consultancy & planning
- Structural design
- Physical security
- Network & server racks
- IT wall-mounted enclosures
- IT climate control
- IT power distribution
- Monitoring systems

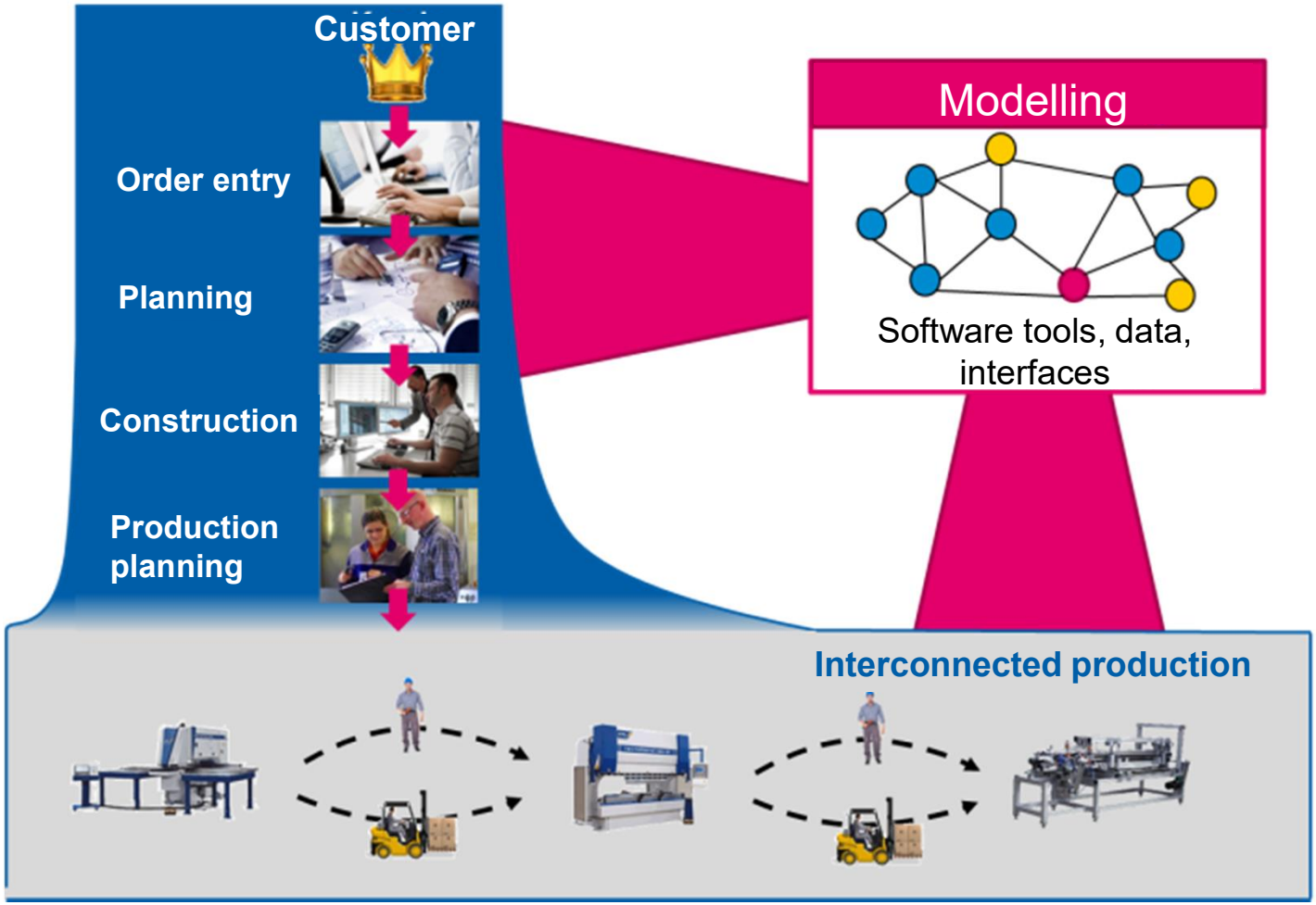
Fully compatible system accessories

Software & Services

→ 4.000 Standard articles

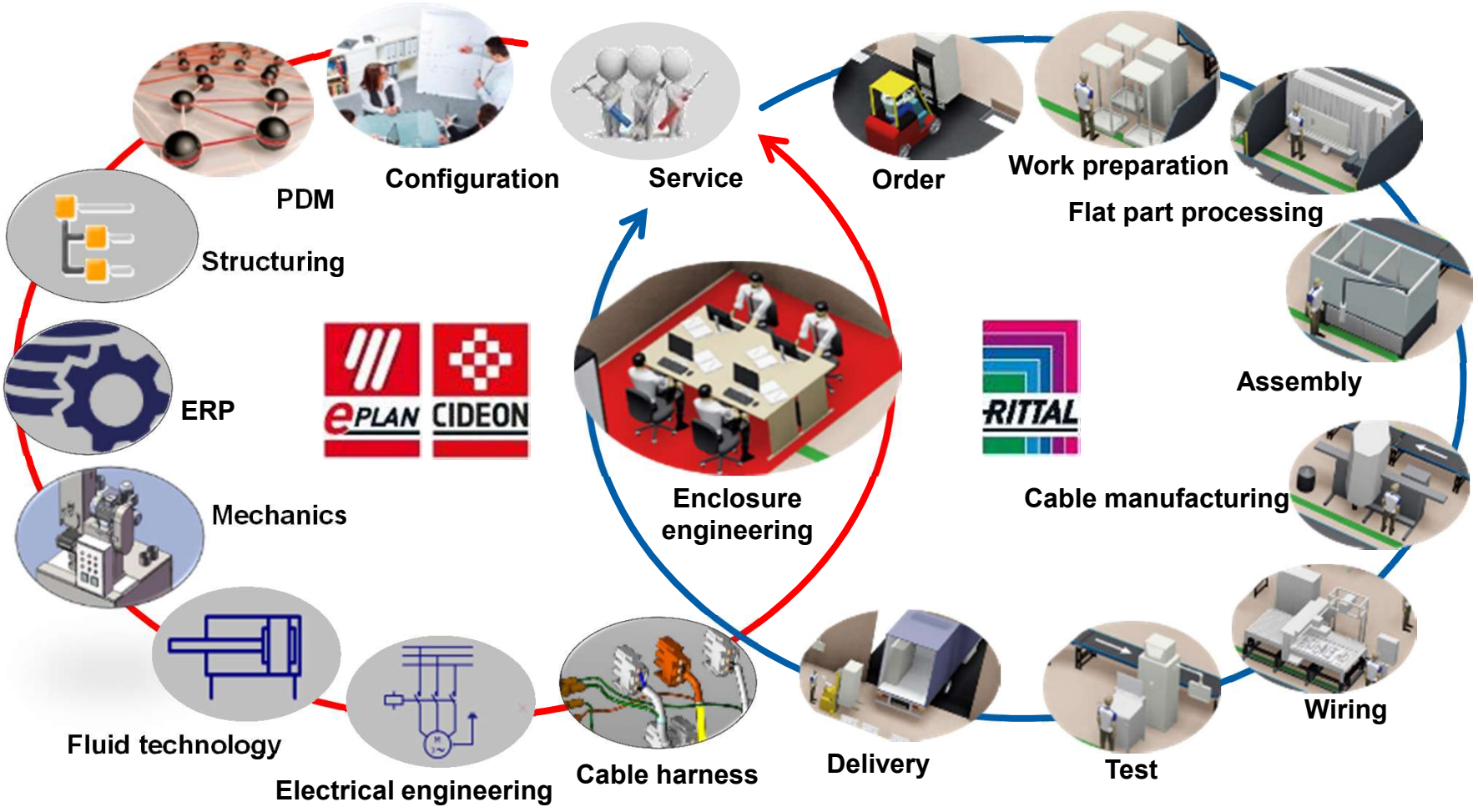
Digitalization in Control and Switchgear Manufacturing

Digitalization & integration of value-added chains



Digitalization in Control and Switchgear Manufacturing

Digitalization & integration of value-added chains



Digitalization in Control and Switchgear Manufacturing

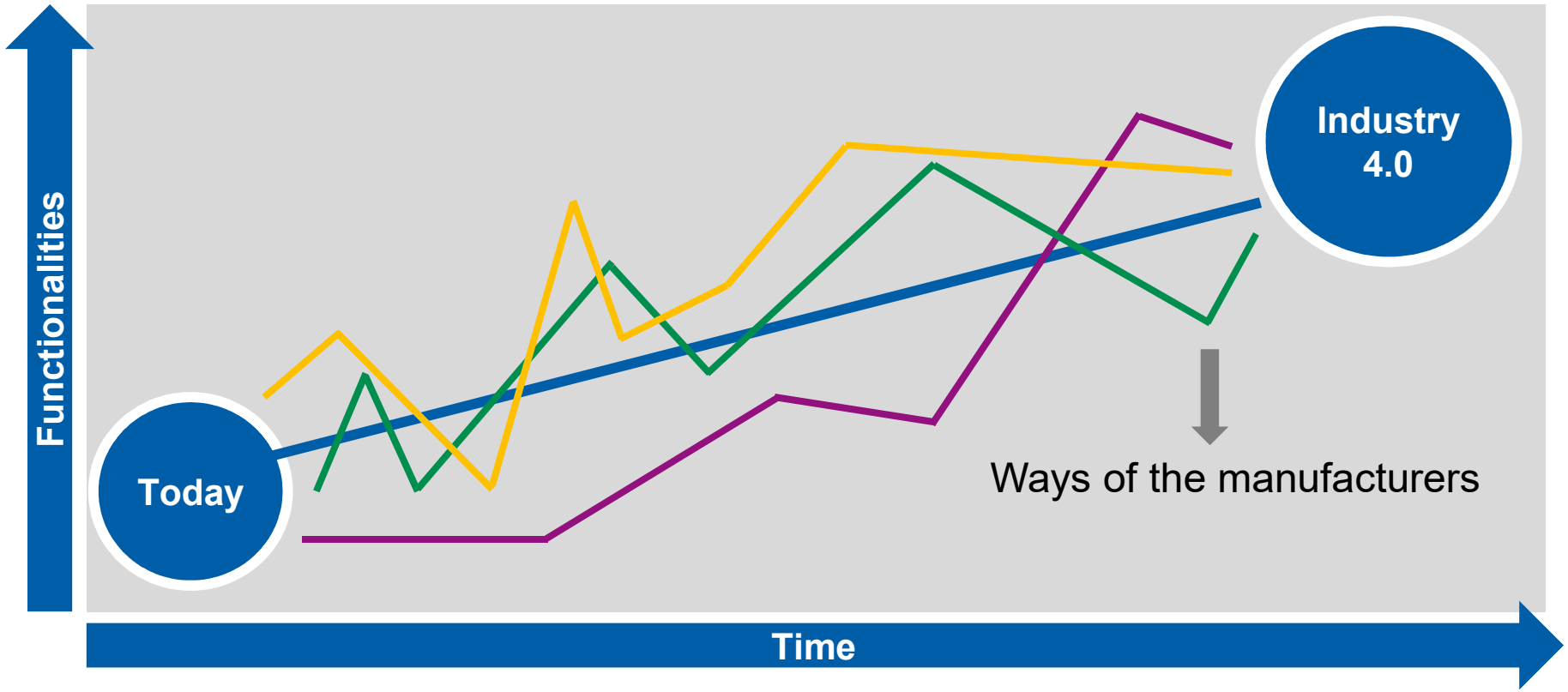
New Rittal production site in Haiger

Highly modern production of compact enclosures

- 24,0000 square meters production area
- Highly utomated production based on Industry 4.0 structures
- 9,000 enclosures per day
- 25,000 tons of steel per year
- 250 millionen Euros investment
- Start of production: 2018

Digitalization in Control and Switchgear Manufacturing

The way to Industry 4.0



The journey is the destination!

Thank You