

Industrie 4.0 - Intelligent networked Automation requires digitization



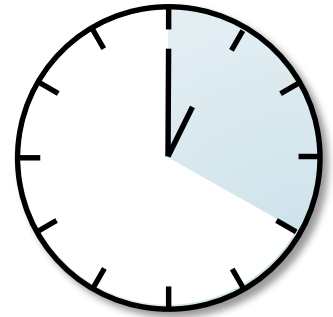
Frank Knafla
Master Specialist Industrie 4.0

Industrie 4.0

Intelligent networked automation

Agenda

- Phoenix Contact Perspective Industrie 4.0
- Phoenix Contact Expectation Industrie 4.0
- Pre-competitive German platform Industrie 4.0
- Automation platform PLCnext Technology



PHOENIX CONTACT

Overview

PHOENIX CONTACT Group 2017

- 15`000 Employees
- 1.94 bn. € Turnover



Industry Solutions



**Factory
Automation**



Infrastructure



**Process
Industry**



**Wind
Energy**

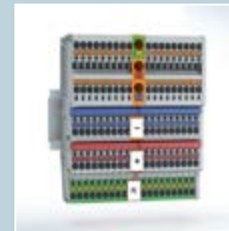


Energy



**Solar
Energy**

Components and Systems



Terminals



**PCB
Connector**



**Industrial
Connectors**



**Over voltage Protection
Power Supplies**



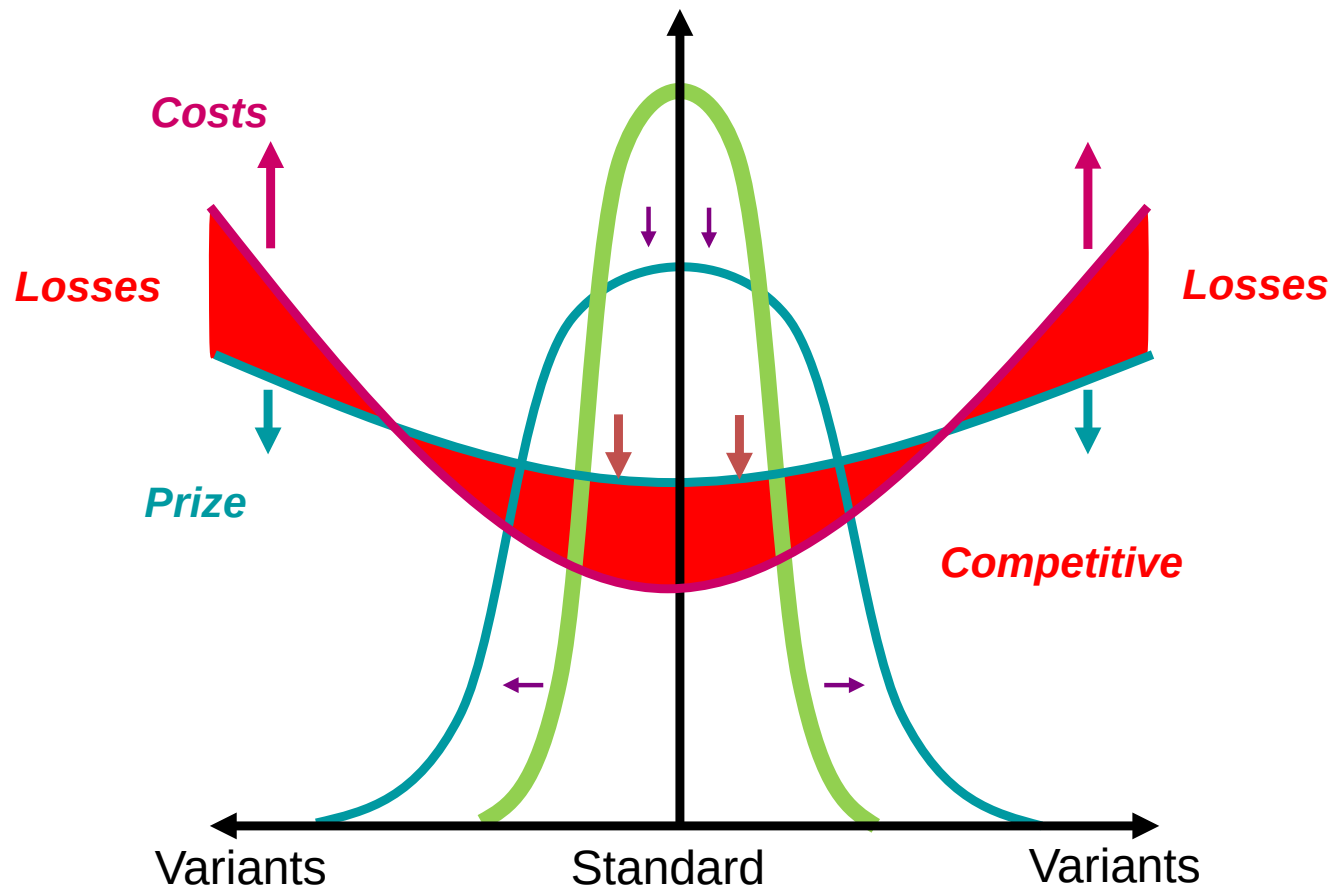
**Industrial
Electronics**



**Automation/PLC/IO
Industrial Ethernet**

Industrie 4.0 – Challenging Operation Requirements

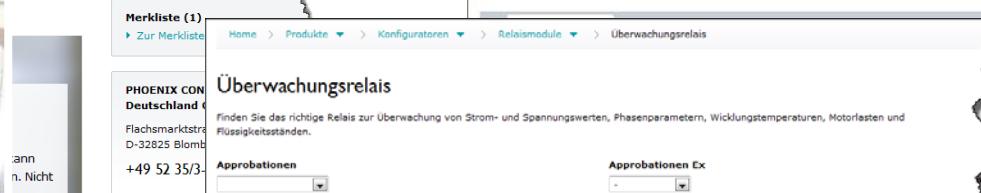
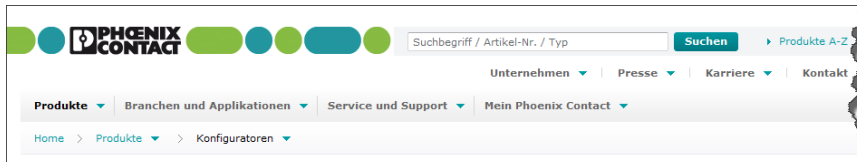
Lot size



Source: WZL, RWTH Aachen; Author Dr. Possel-Dölken, Phoenix Contact Manufacturing Solution

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Configurators and Selectors



VALUELINE IPC - 2913108

Industrie-Panel-PC (PPC) mit IP65 oder lüfterloser Box-PC (BPC) mit IP20 und Intel®-CPU. Bis zu 3 GB RAM. Option für Massenspeicher im HDD- und SSD-Format. Mit verschiedenen Betriebssystemen erhältlich. PCI- und CompactFlash®-Erweiterungssteckplätze verfügbar.

[PDF erstellen](#)

☐ Dieser Artikel muss konfiguriert werden.

[In den Warenkorb](#)

[Überblick](#) [Technische Daten](#) [Zubehör](#) [Approbationen](#) [>](#)

Montage
3] [Frontplattenmontage \[A20\]](#)

ed [124] [2 GB DDR SODIMM \[R10\]](#)

Betriebssystem

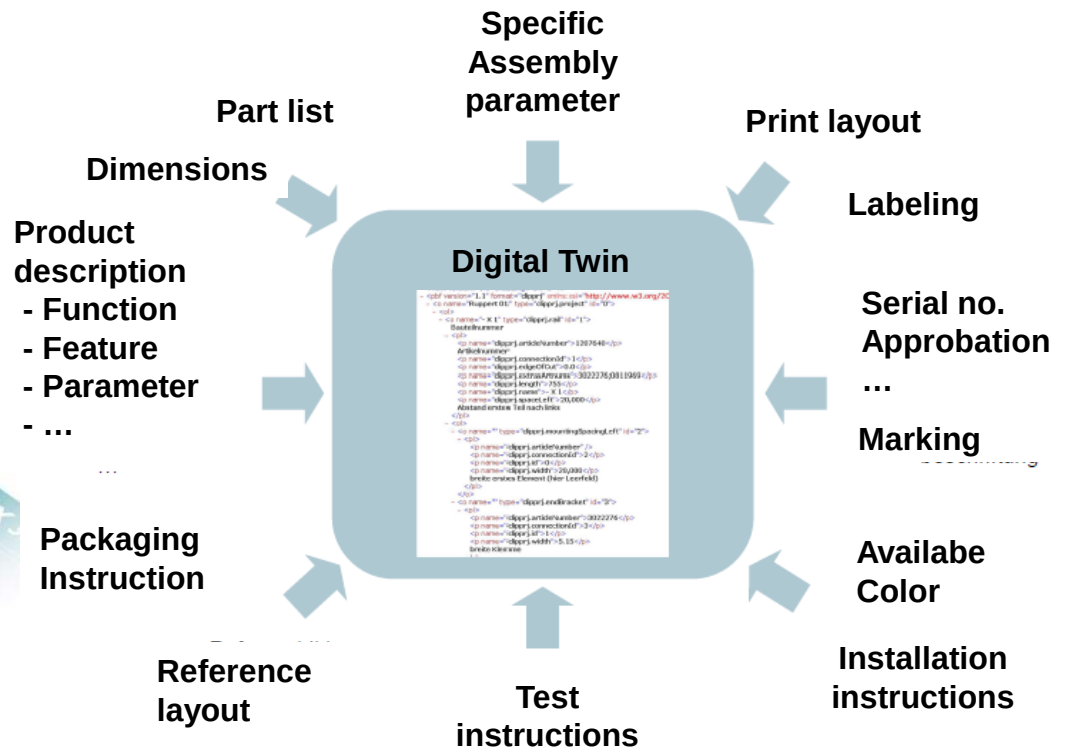
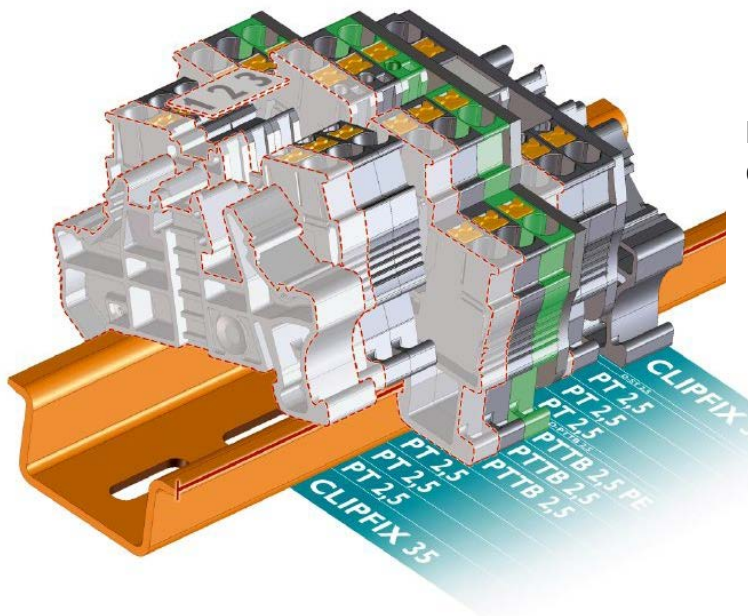
Deutsch

Configuration of product parameters in web shop

Transfer of digitized configuration data

Usage of configuration data in business and production

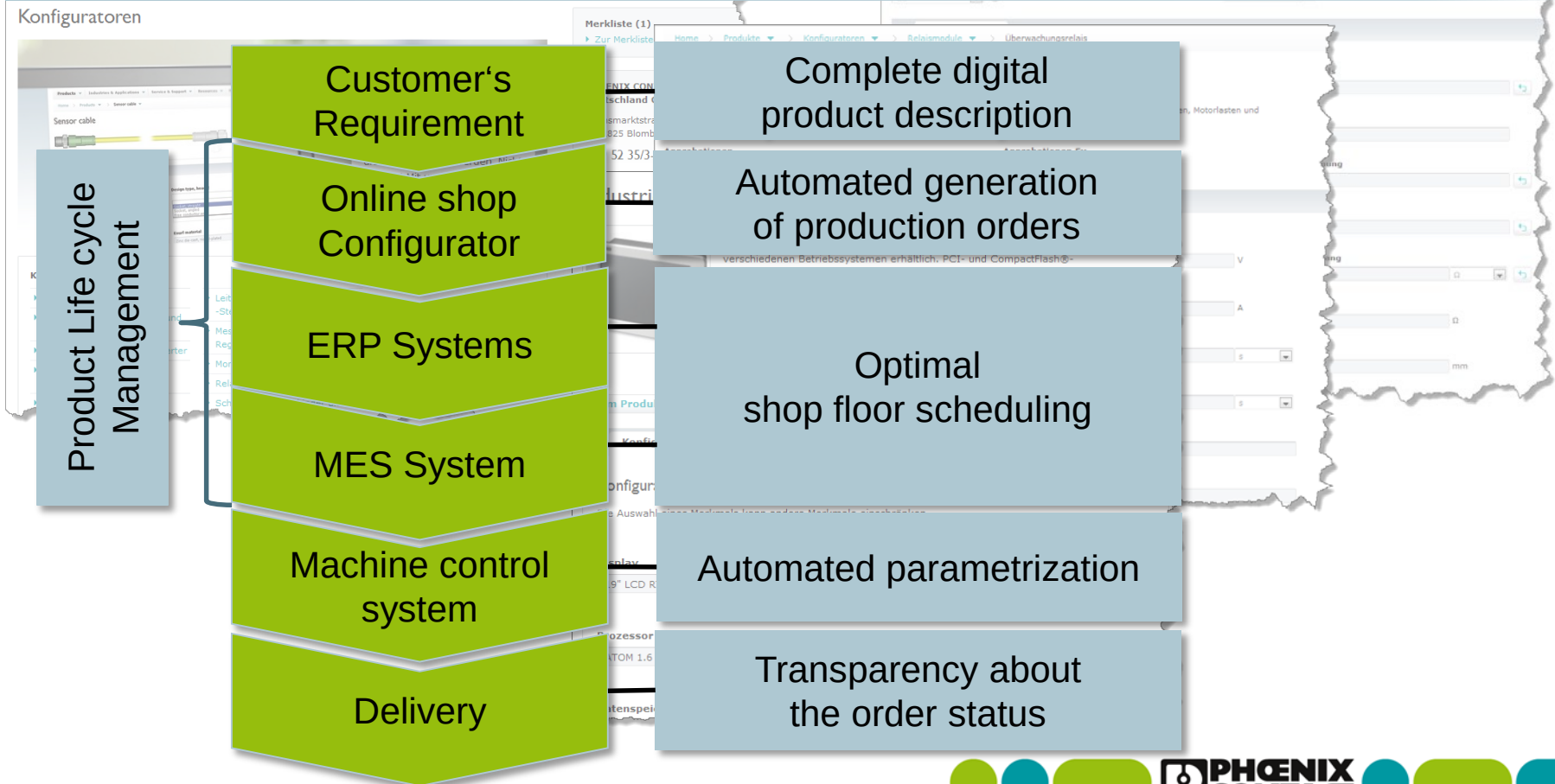
Industrie 4.0 – Digital Twin – Backbone



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What do we expect from Industrie 4.0?

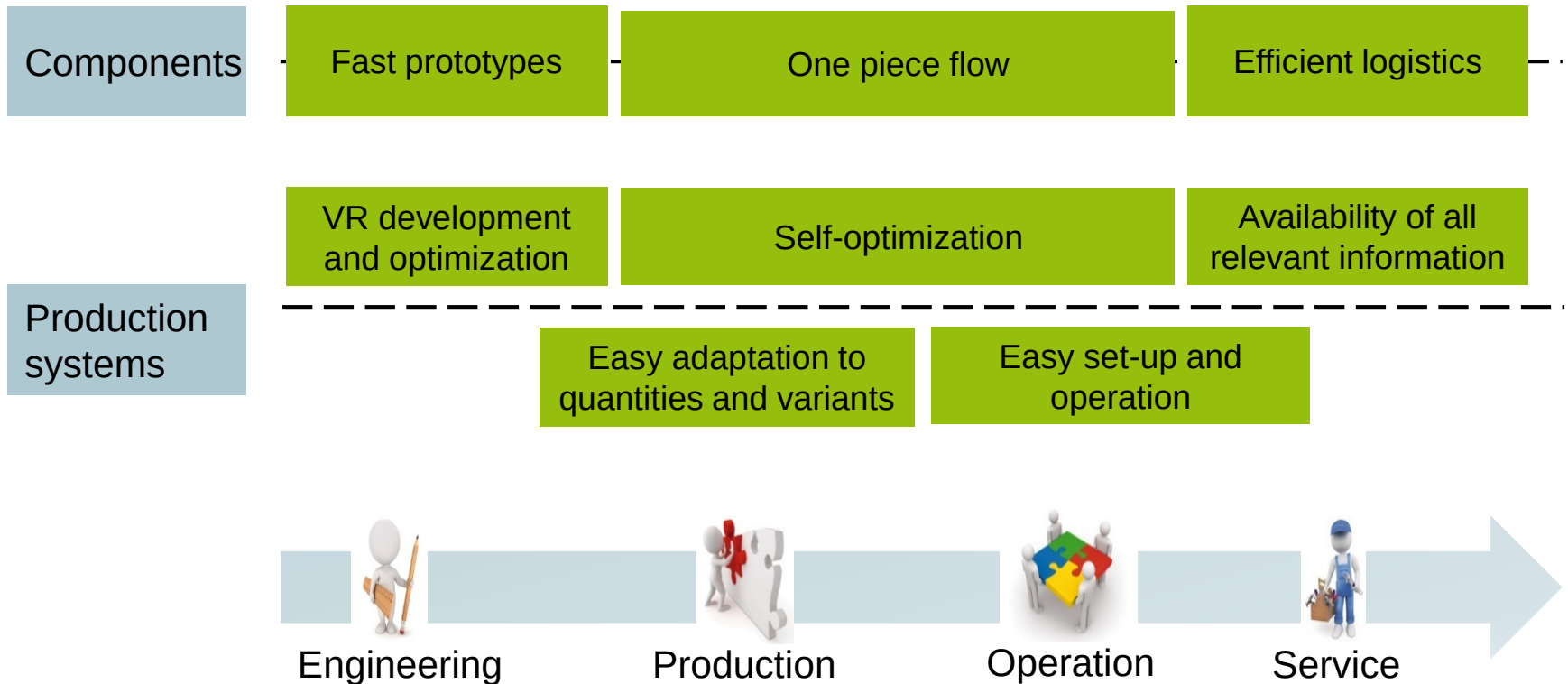
Vertical integration of Business processes for the Manufacturing of Customized products



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What do we expect from Industrie 4.0?

Flexibility, Efficiency and Transparency along the Value chain and the Product life cycle



Industrie 4.0 – Intelligent networked automation

Digitization is a basis for...

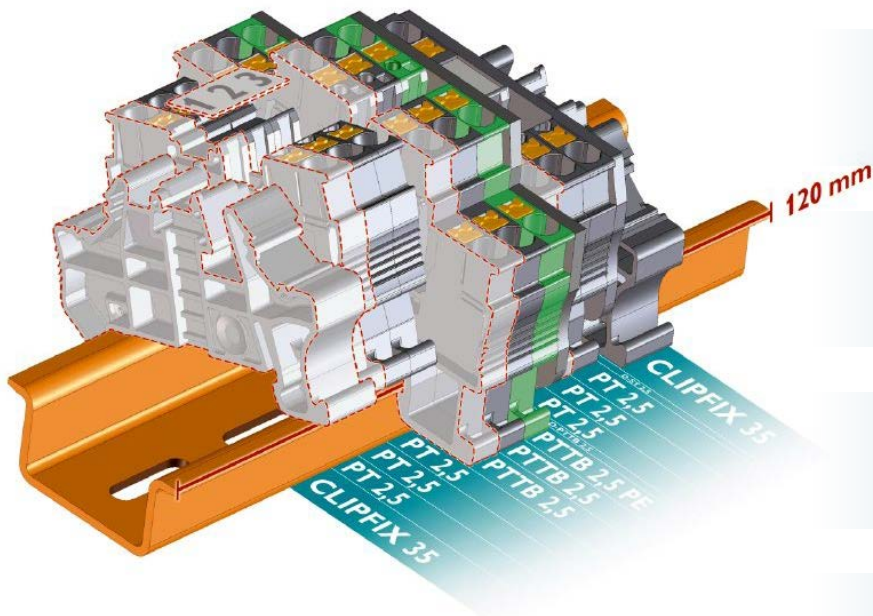
... ubiquitous availability of information:
The Digital Twin

... networking of machines, products and people:
The Internet of Things

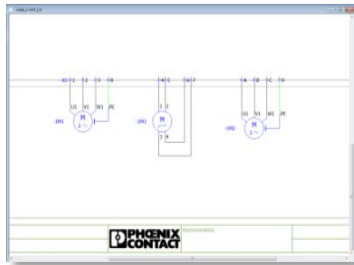
... new business models and processes:
The Internet of Services

... new collaboration models:
The Internet of Processes

... Smart Factories, Smart Products
and Smart Services



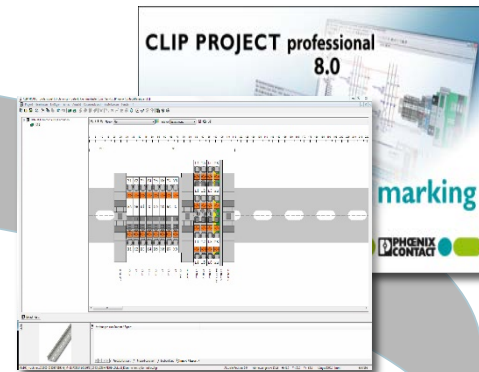
Industrie 4.0 – Digital Twin – UseCase Smart Engineering & Production



**E-CAD
Engineering**

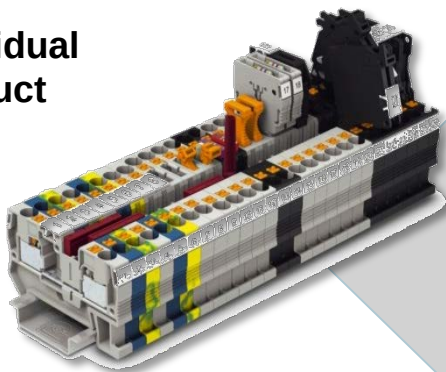


**Data Source
E-Shop**

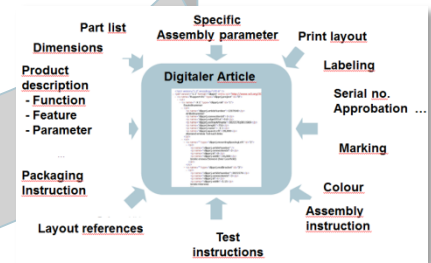


**Article
Engineering**

**Individual
Product**



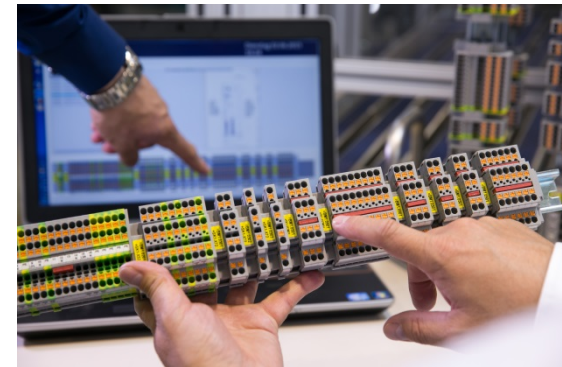
ERP/ Control



Digital Twin

Industrie 4.0 –

Customer application ClipX.AssemblyLine@KronesAG



Industrie 4.0 – Digital Twin – Requirement of Interoperability



Objective:

Provision of digital Data und Models for
Components

Critical Success Factor:

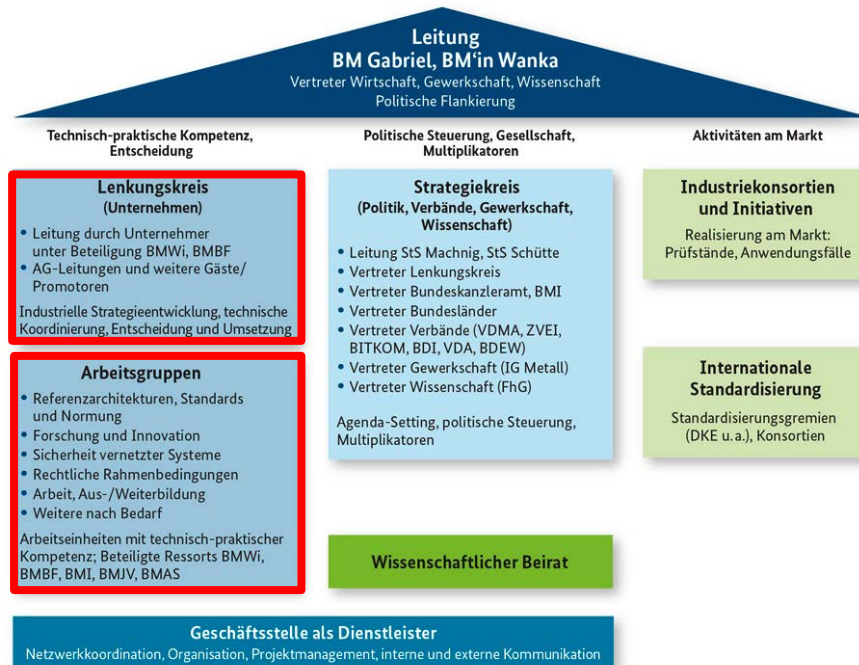
Standardized Formats and Language



<AutomationML/>

The German platform „Industrie 4.0“

Pre-competitive Definitions and Technological solutions



Objective Steering committee

- Strategy development

Member: Roland Bent, CTO Phoenix Contact

PHOENIX CONTACT participation

WG 1: Reference Architecture & Standards

WG 2: Research & Innovation

WG 3: Security of linked systems

WG 5: Labour, training, education

The German platform „Industrie 4.0“

Integrated part of German Industry association network



- Industrie 4.0 is coordinated pre-competitively by the Plattform Industrie 4.0
- ZVEI support the Platform and develop industry relevant Use Cases.
- Example:
White Paper Connectivity for Industrie 4.0
- LNI 4.0 provide the Infrastructure (Test beds) for testing
- SCI4.0 (Standardization Council) organize the generating and delivery of standards

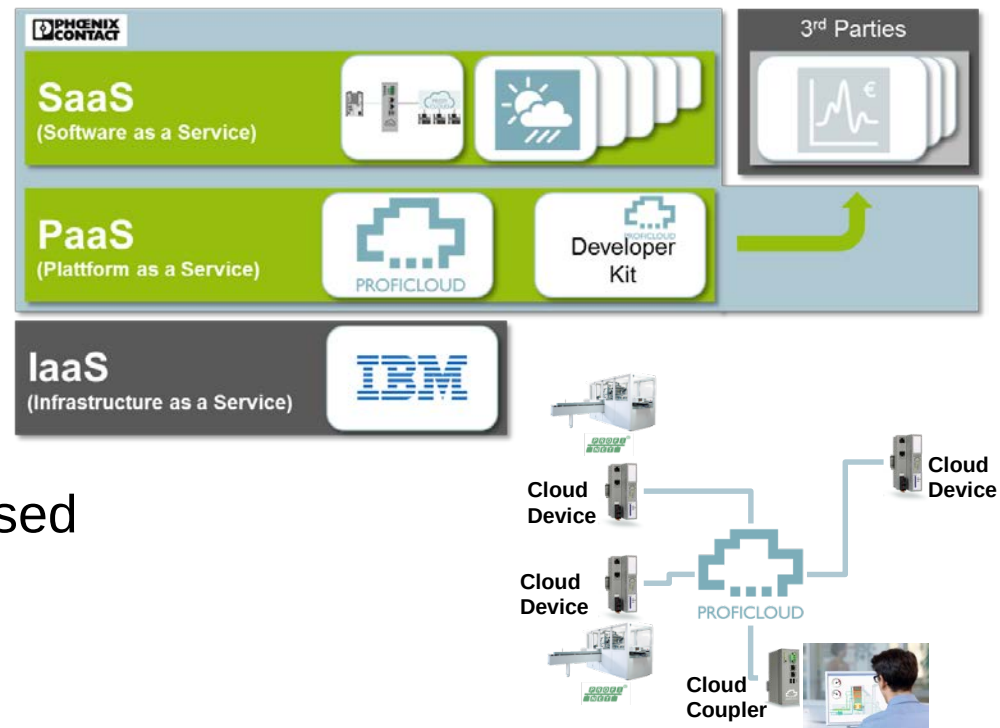


Industrie 4.0 –

Intelligent networked automation

Proficloud – the Internet of Things (IoT) platform

- Smart, reliable and secure data exchange between machines
- World wide networking of manufacturing systems
- Integration of 3rd parties in the whole solution
- Integration of 3rd party applications
- Design and running of web-based services and applications

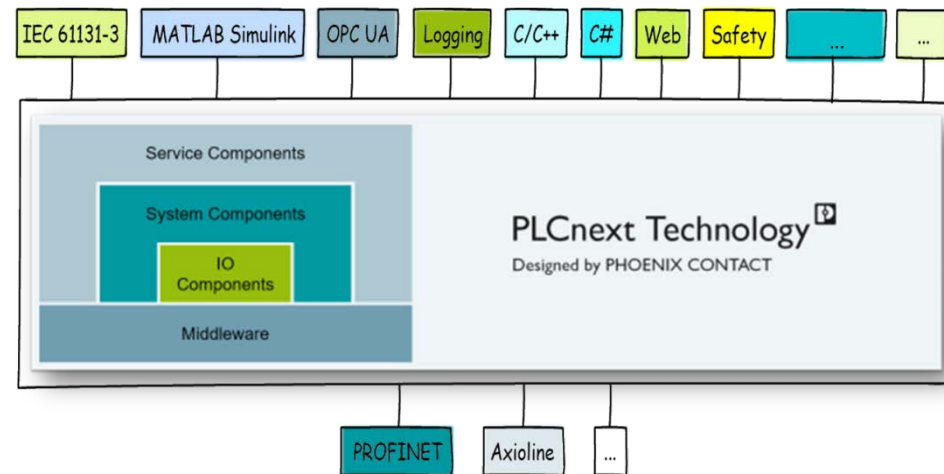


Industrie 4.0 – Intelligent networked automation

PLCnext Technology – future proof control platform

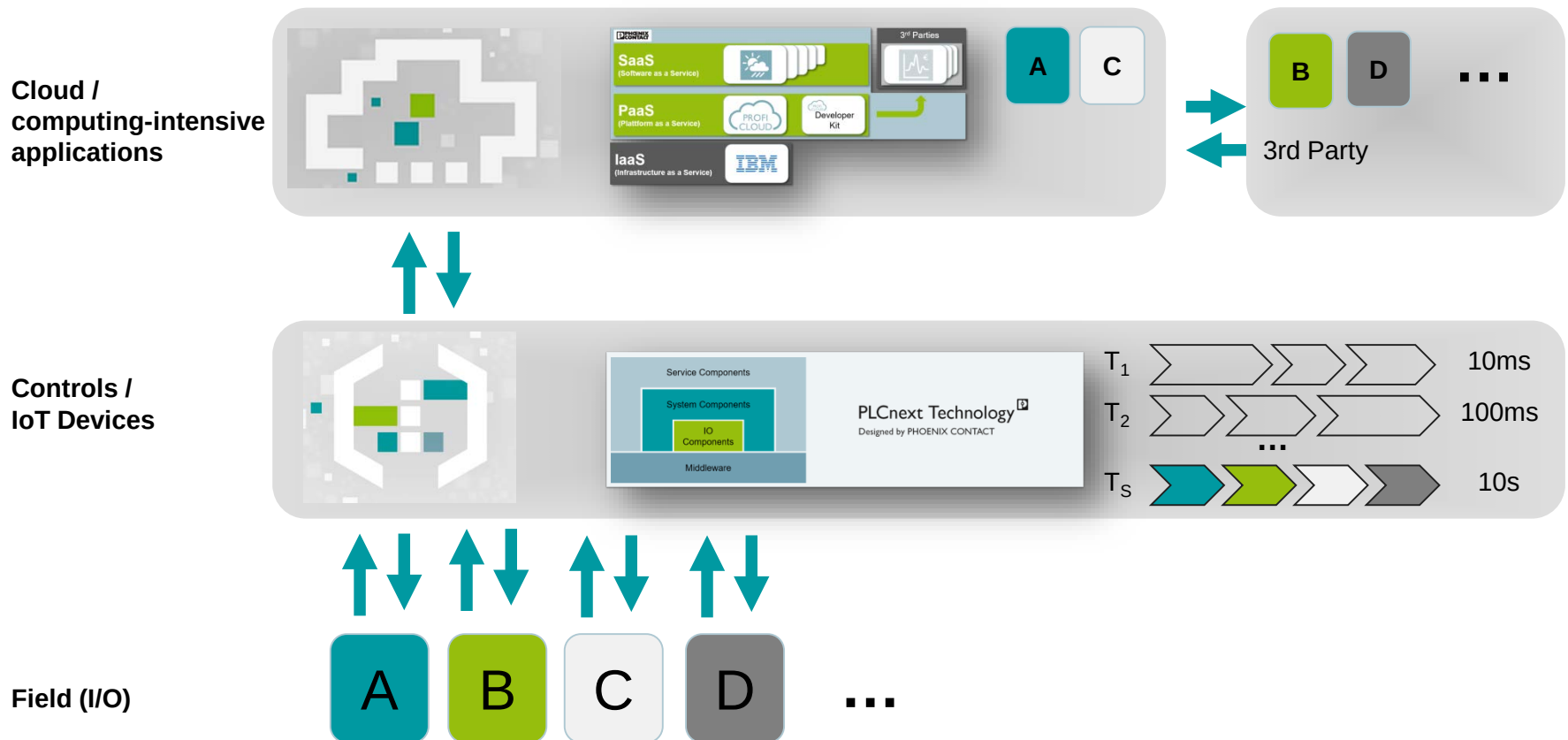
Designed by PHOENIX CONTACT

- Parallel coding with established software tools
- Visual Studio, Eclipse, Matlab Simulink and PC Worx Engineer
- Programming according IEC 61131-3, C/ C++ und C#
- Integration of 3rd party or Open Source Community applications
- Security-by-design according IEC 62443



Industrie 4.0 – Intelligent networked automation

PHOENIX CONTACT – the new area of automation



Summary

With Industry 4.0, value chains and product life cycles will be completely digitized.

The integration and further development of standards like eCl@ss and AutomationML enables a fully digital representation of products in all levels of added value.

Using digital product descriptions, it will be possible to optimally support and to automate important processes in engineering and production.