

Digital Factory

Basic

Phoenix Contact | Digital Factory Now



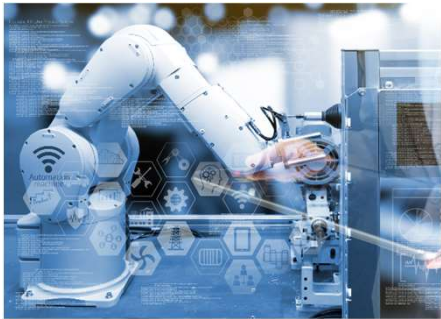
Agenda

- Background: digitalization introduction
 - Target applications: basic description of the targeted applications
 - Target customers: brief overview of customers and stakeholders
 - Architecture: basic presentation of all GDAs
 - Function: basic description of the GDA functions
-



Digital Factory | Basic

Digitalization changes our world



Energy efficiency

Reduced energy
consumption



Mass customization

Economic
production with batch
size one



Smart network

Secured networked
systems as a basis



Services / IoT

New, data centric
business models

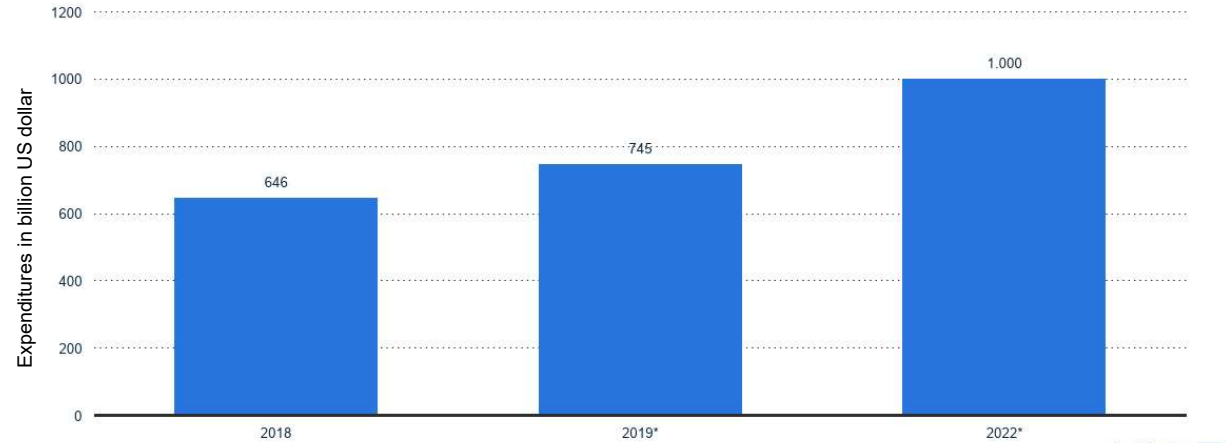
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Digitalization changes our world



Digital Factory | Basic Potential

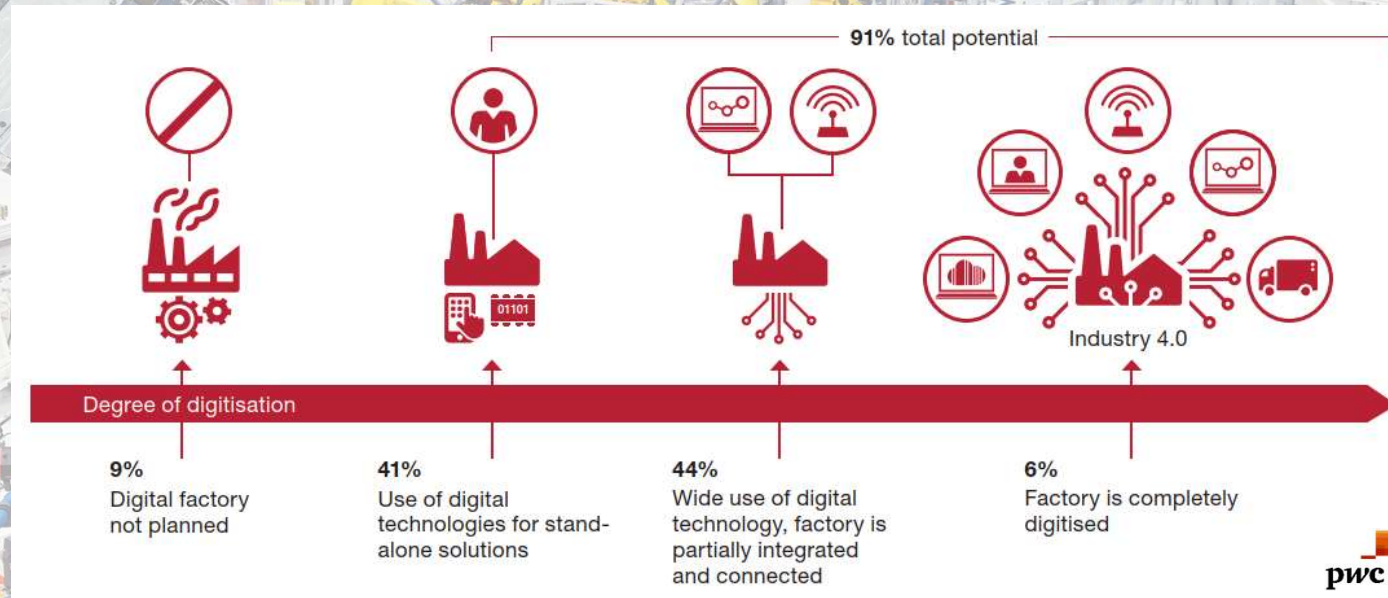
Forecast for expenditure on the Internet of Things (IoT) worldwide in the years 2018 to 2022
(in billion US dollar)



statista

Countries all over the world are investing into digitalization

Digital Factory | Basic Potential



9 out of 10 companies are investing in Digital Factories

Situation without a Digital Factory

- Many are **overburdened** with the introduction of digitalization
 - No transparent **company objectives**
 - Objectives are **unattainable**
 - No existing **concept** for orientation
 - **Handling of data** – collection, communication, connection, quality

Do I have to do a lot of reorganization?

Can I implement it step by step?

What are the use cases?

How do I get a digitalization concept

How many people do I need?

What data is important?

Should all data be collected (Big data)?
Or only selected data (Smart data)?

How do I get which data?

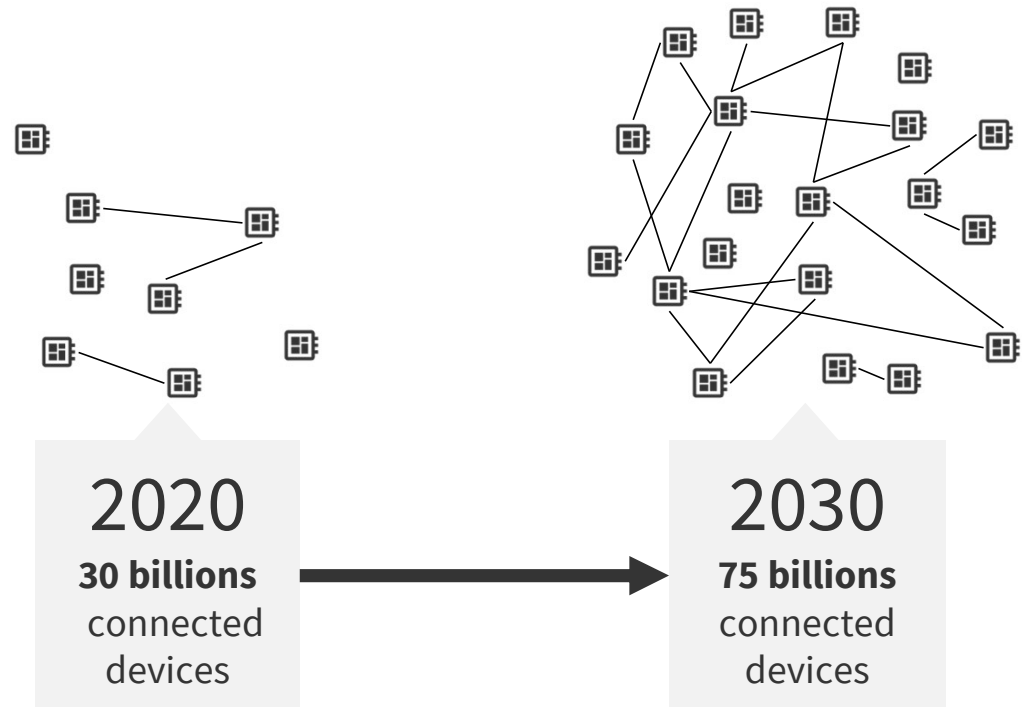
Are additional sensors needed?
If so, which?

Do I use a platform?

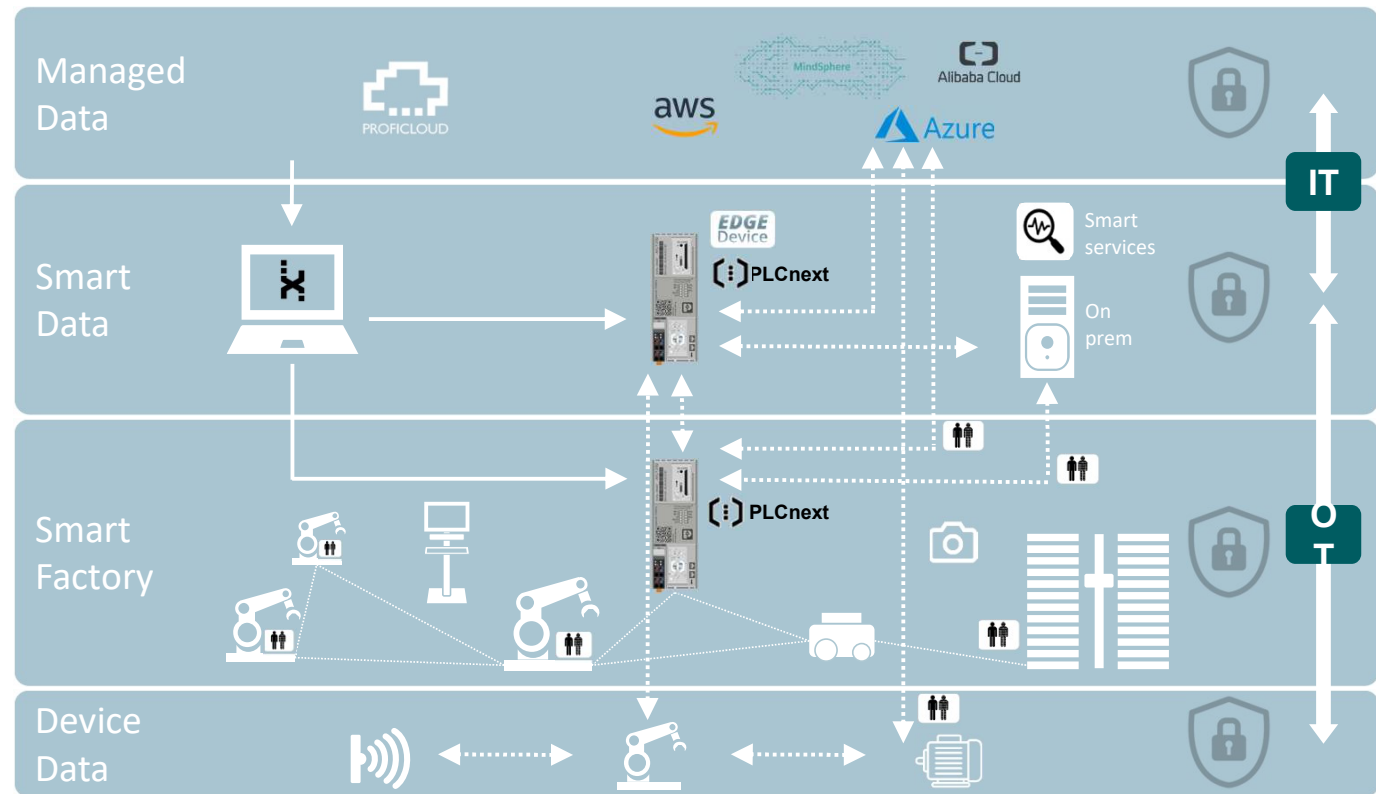
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Your Digital Factory toolbox

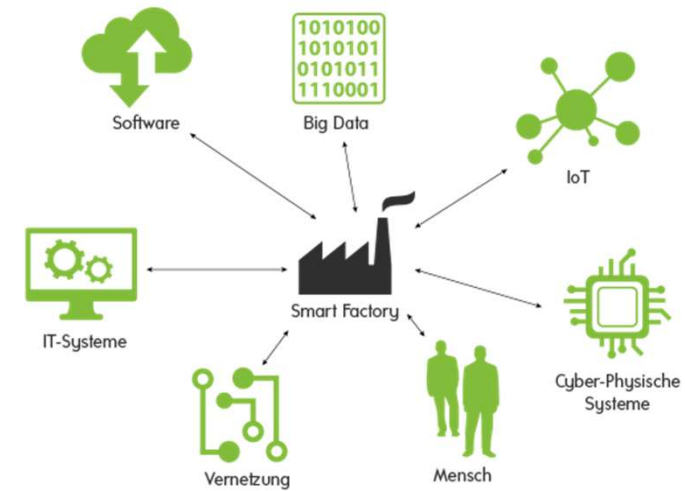
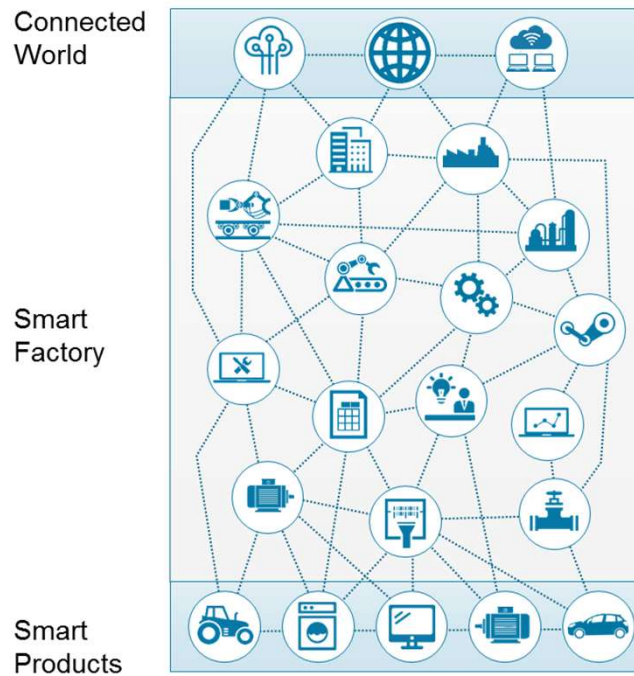
Data transportation



Data collection, storage and evaluation

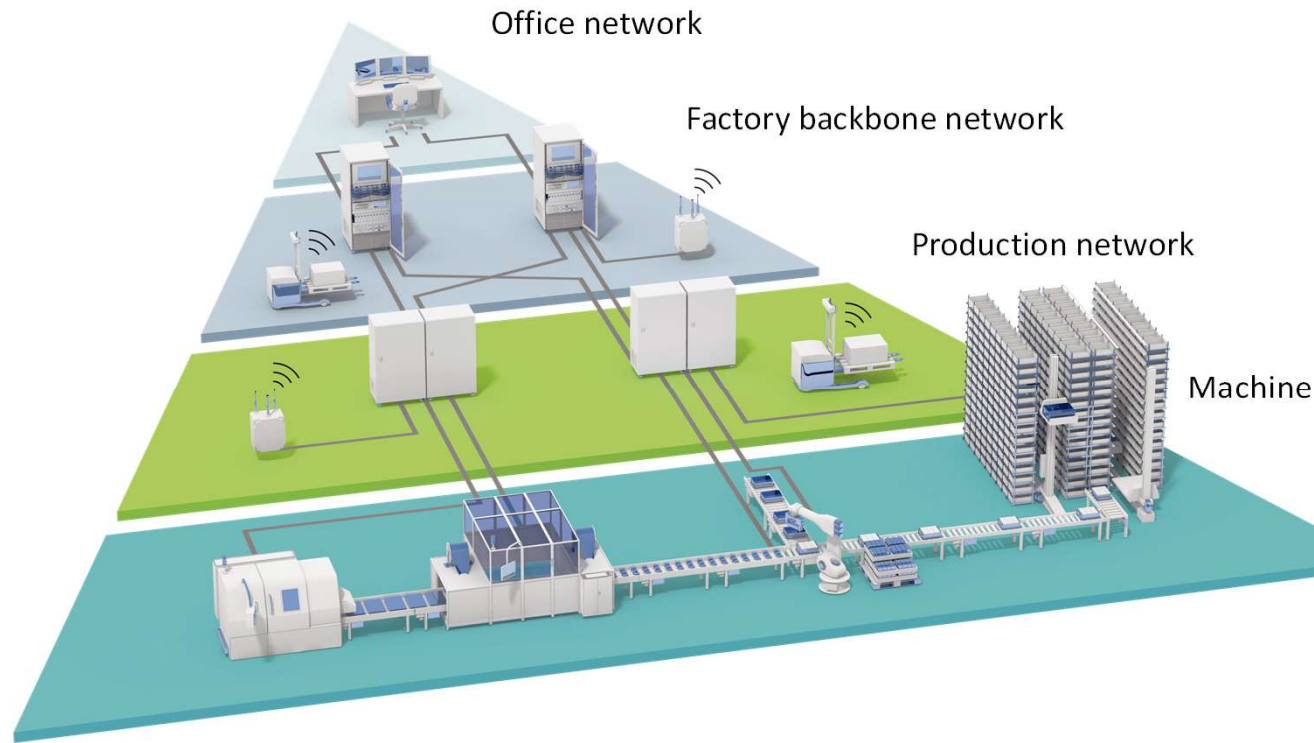


Data usage

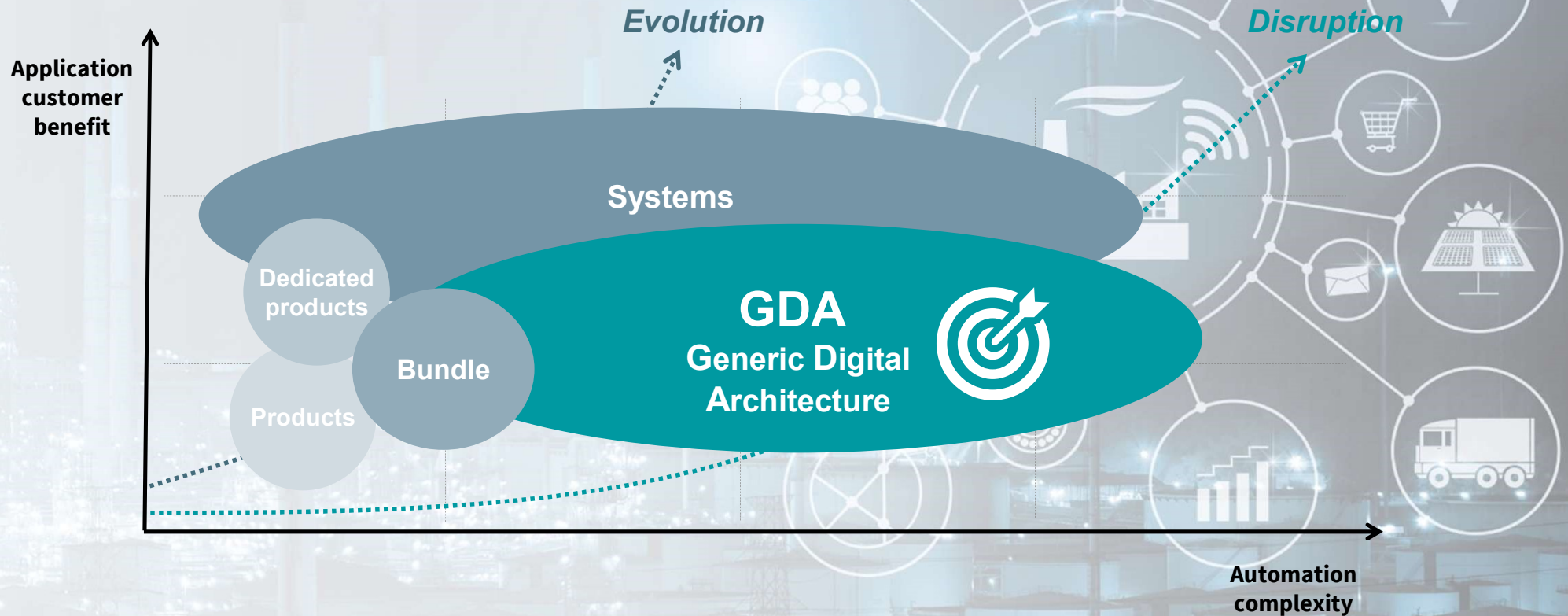


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Data security

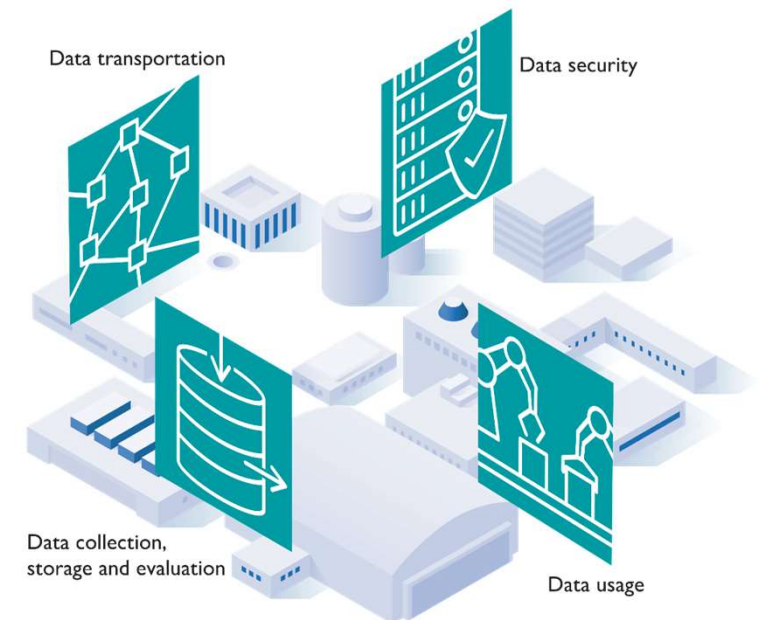


Definition of use cases (GDAs)



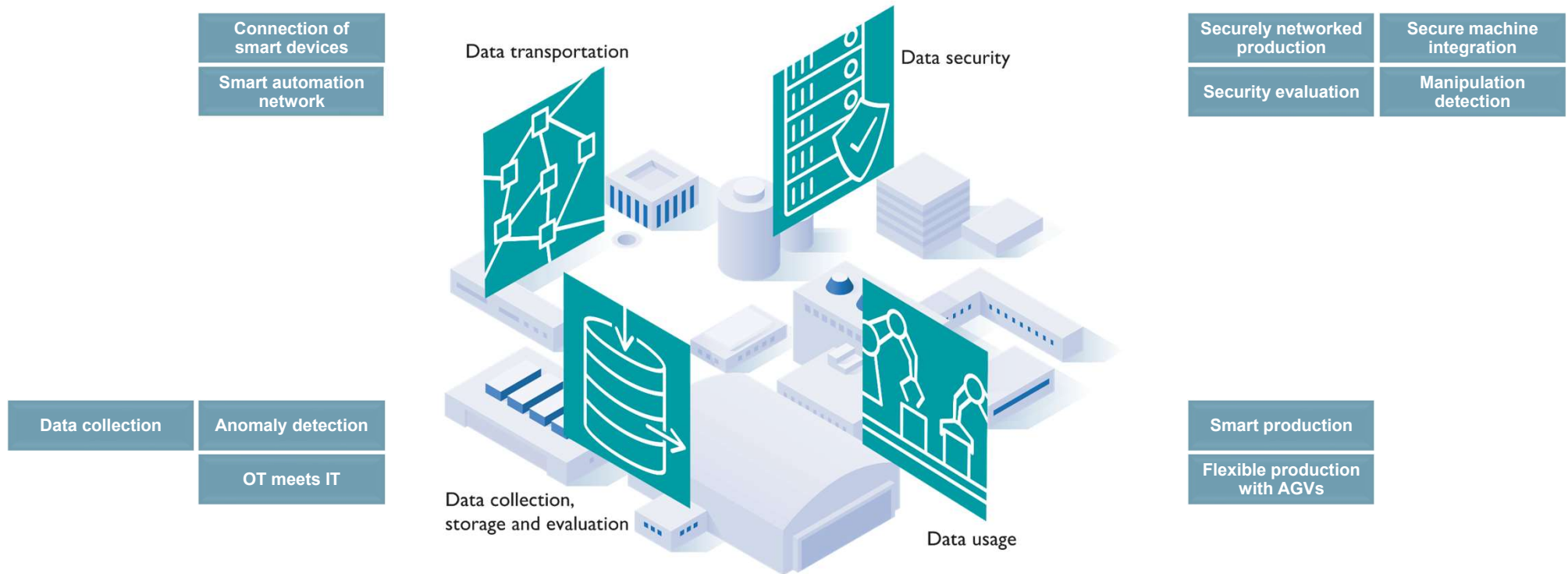
Digital Factory use cases

- ... are a combination of **products** and **software**
- ... are based on a **generic architecture**
- ... are **scalable** according to customer needs
- ... are **verified** by field tests
- ... are **documented** and **supported**
- ... are **worldwide** usable
- ... have a **clear customer benefit**



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The Digital Factory offer



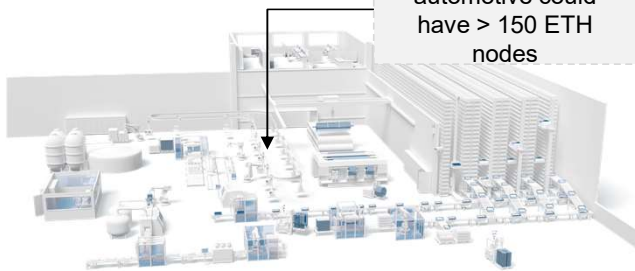
Use case: Smart automation network

1 Customer requirement

Keep the control over the industrial network

- More quality by cameras
- More process control
- More data by digitalization
- More IoT
- ...

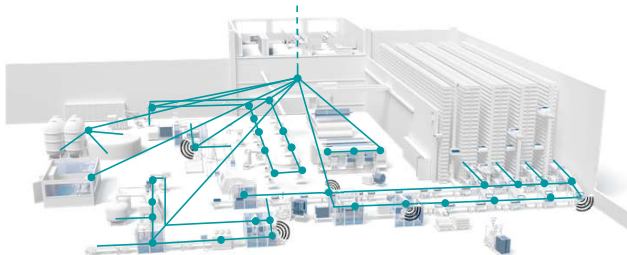
Conveyor line f.e. in automotive could have > 150 ETH nodes



2 Use case

„Smart automation network“

- More bandwidth
- More managed switches (diagnostic)
- More topology possibilities (rings)
- ...



3 Ready-to-order

„FL managed switch family“

- Consulting services
- Switch with Gbit for all ports
- Managed switches
- Managed wireless portfolio
- Security
- ...



Use case: Connection of smart devices

1 Customer requirement

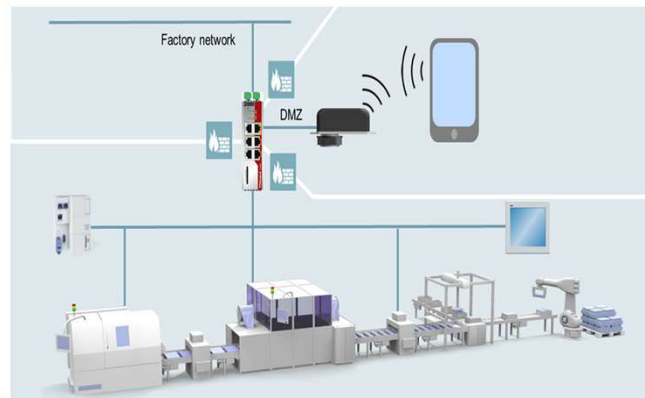
Transparency, mounting and maintenance support and efficient operation

- KPIs directly on site
- Managing of maintenance tickets
- Pick-to-light
- Maintenance remote support
- Fast reaction
- ...



2 Use case

„Connection of smart devices“



3 Ready-to-order

„FL MGUARD family “
“WLAN 1100”



- FL MGUARD 4000
- FL WLAN 1000

Use case: Data collection

1 Customer requirement

Collect data without modifying the machine CE confirmation

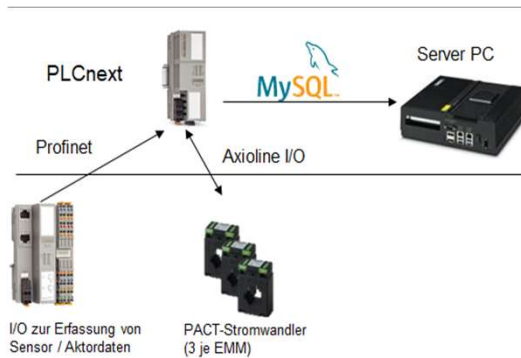


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2 Use case

„Data collection“

3-5% of the machine I/Os communicate via OPC UA to SQL server



3 Ready-to-order

„Data collection cabinet“



Use case: OT meets IT

1 Customer requirement

Maximum transparency of the process
for highest productivity

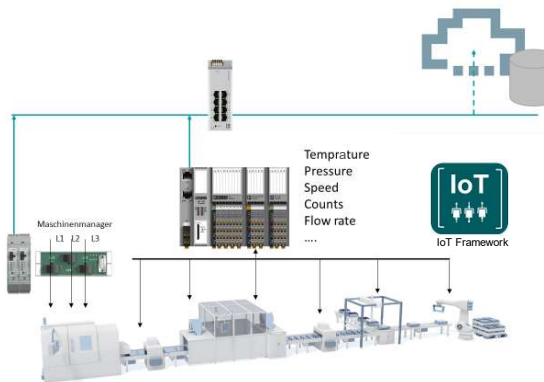


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2 Use case

„OT meets IT“

Collect data via IoT framework connector
and store via SQL



3 Ready-to-order

„IoT cabinet“

- PLCnext 1152/2152
- AXL F/ AXL SE
- Motor manager
- IoT framework connector
 - Siemens
 - MPRO connector
 - Axioline digital
 - Axioline analog
 - Motor manager
 - SQL

Use case: Anomaly detection

1 Customer requirement

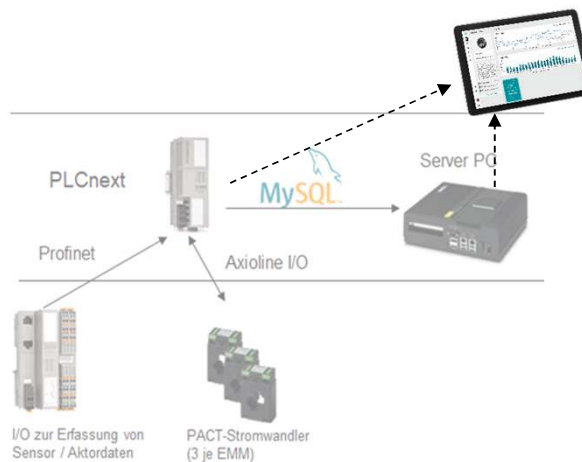
2 Use case

3 Ready-to-order

Hidden potentials should lead to higher productivity and new business

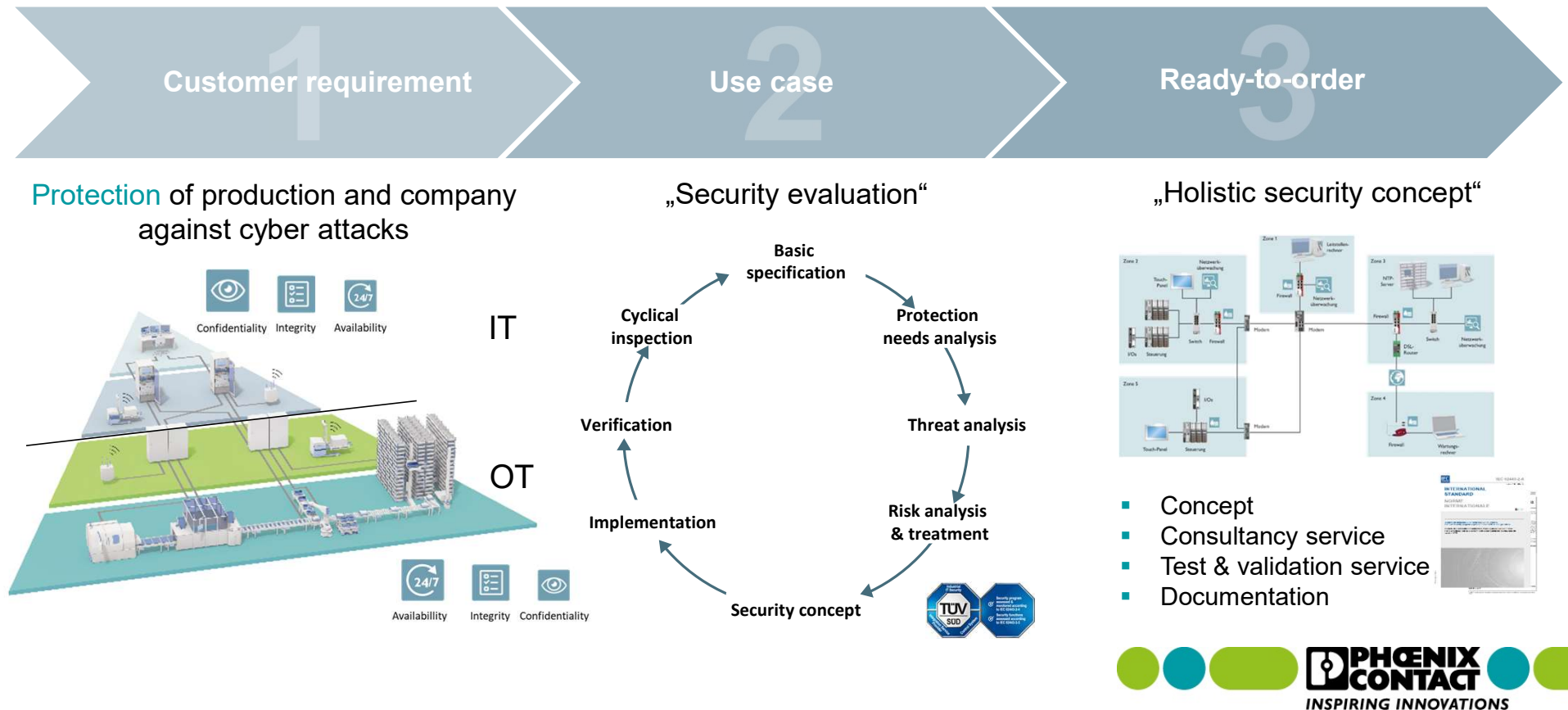
„Anomaly detection“
based on data analytics

„Data evaluation service“



- PLCnext & IoT framework
- Smart service
- Analysis platform (scalable from PLCnext to premise)
- Open database

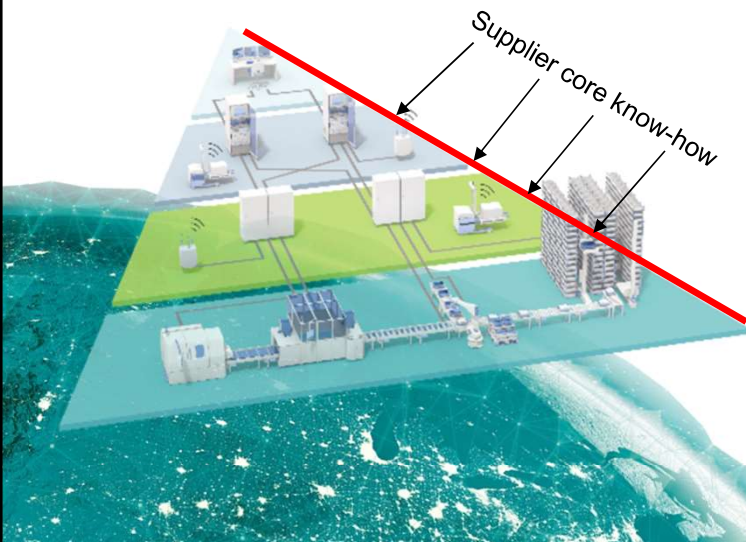
Use case: Security evaluation



Use case: Securely networked production

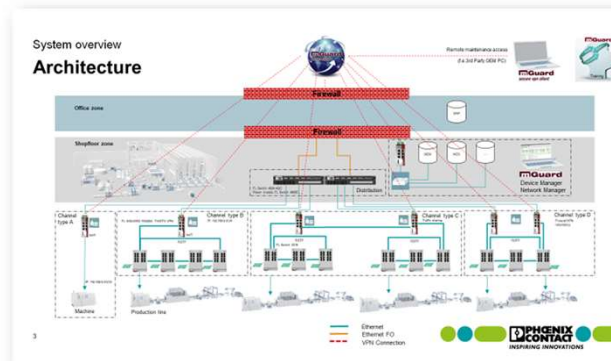
1 Customer requirement

Integration of supplier **core know-how** into global maintenance and optimization concept



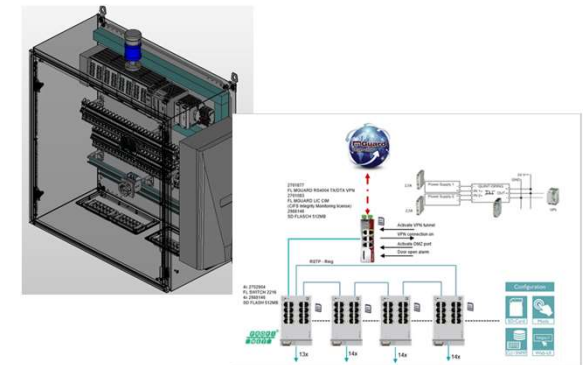
2 Use case

„Securely networked production“



3 Ready-to-order

„Ready-to-use cabinet“

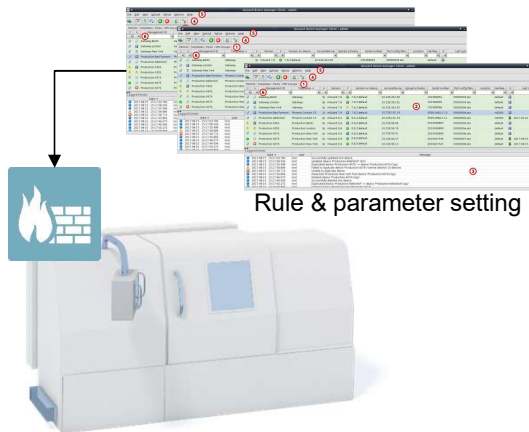


- Ready-to-go cabinets
- Product list as preparation for vendor list

Use case: Secure machine integration

1 Customer requirement

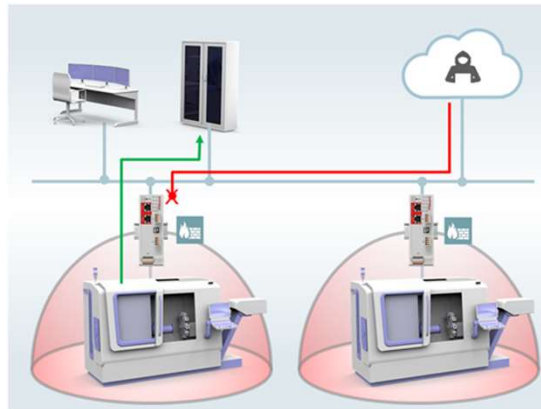
Easy, non complex machine integration



2 Use case

„Machine integration“

Rule & parameter setting by learning mode



3 Ready-to-order

„FL MGUARD 11xx family“



- FL MGUARD 1102
- FL MGUARD 1105

Use case: Manipulation detection

1 Customer requirement

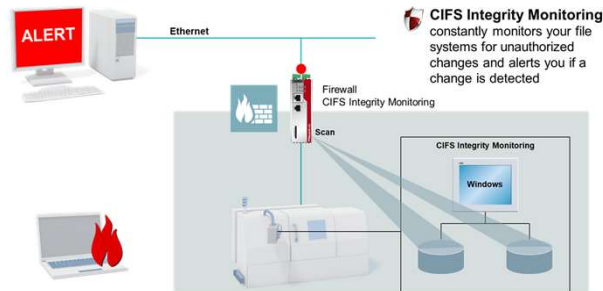
Secure use of “old” but **necessary**
process control



Production depends on core process
of the machine

2 Use case

„Manipulation detection“



3 Ready-to-order

„Product line MGUARD“



- MGUARD firewall
- FL MGUARD LIC CIM

Use case: Smart production

1 Customer requirement

Adaption and collaboration to react **economically** on customization and volatile markets



2 Use case

„Smart production with cobots“



3 Ready-to-order

„Smart production cabinet“



- PLCnext 2152
- SafetyBridge
- SQL connector
- Smart automation FB lib

Use case: Flexible production with AGVs

1 Customer requirement

2 Use case

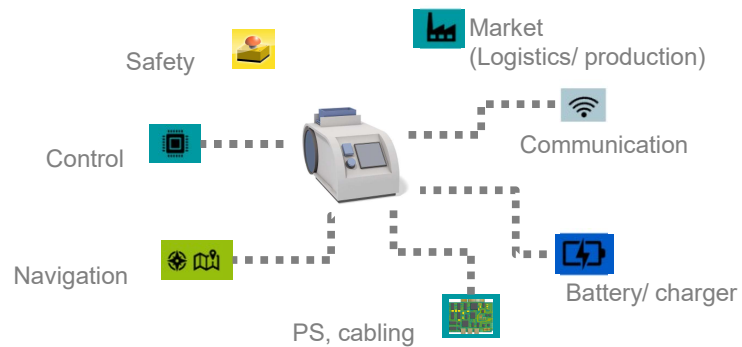
3 Ready-to-order

Reliable wireless connectivity to AGVs
for a **high available logistic**



„Flexible production with AGVs“

Robust wireless connection
to any wireless network supplier



„Wireless solutions“



- Managed backbone network
- SWITCH 2000
- WLAN 1100
- WLAN 5100
- ...

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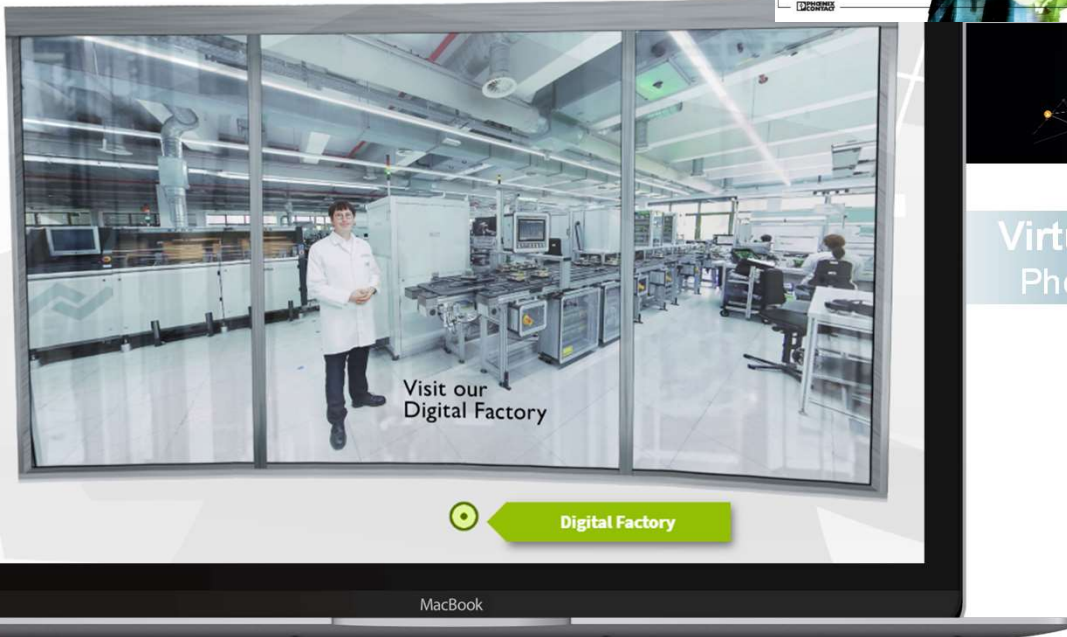
Sales and marketing material



Digital events and exhibitions
Dialog Days, SPSconnect



Virtual Digital Factory
Phoenix Contact website



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Proof-of-concept at the production site Bad Pymont

All use cases are **implemented** and **verified** – both **technical** and **beneficial**



Come and see for yourself – either personally or virtually!



Digital Factory Thank you

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