



INDUSTRIE 4.0 AND THE INDUSTRIAL INTERNET

DIGITIZATION OF PRODUCTION AND PRODUCTS

Celtic-Plus Proposers Day, Berlin, Feb 21th 2017

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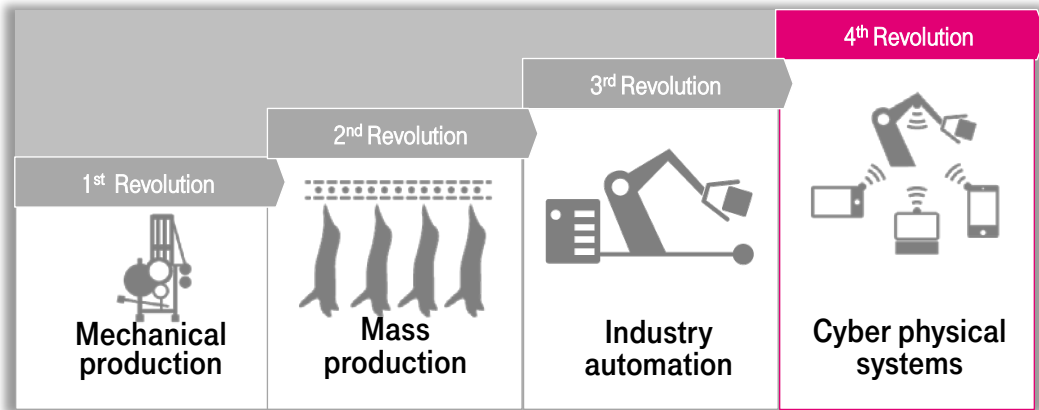


LIFE IS FOR SHARING.

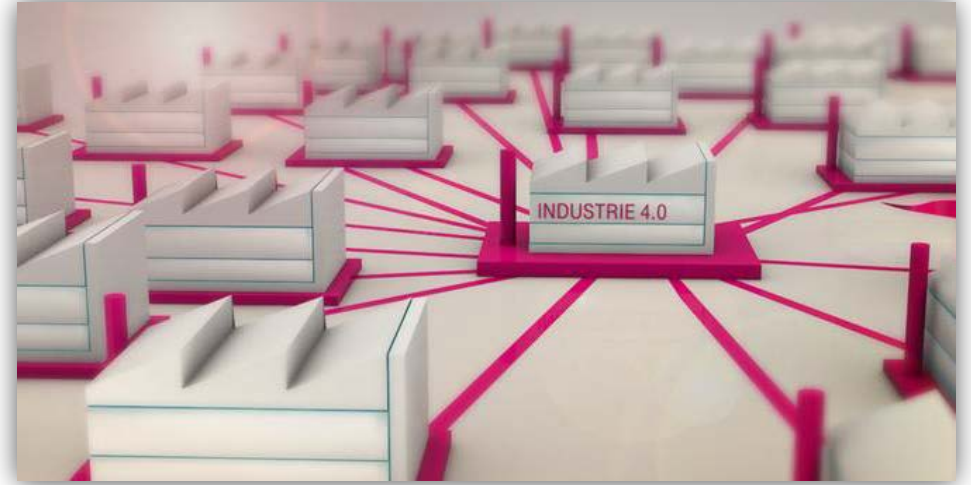
INDUSTRIE 4.0 @ DEUTSCHE TELEKOM

OPERATOR VIEW

„INDUSTRIE 4.0“ - 4TH INDUSTRIAL REVOLUTION



REAL TIME CONNECTED INDUSTRY



VISION

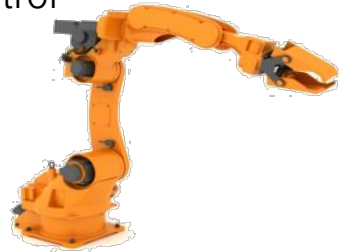
Deutsche Telekom sustainably optimizes production value creation and connects (classic) industry through integrated ICT >> to say it simply: “Telekom puts industry on the net”

INDUSTRY AUTOMATION AND ICT ARE STILL DIFFERENT WORLDS

THE COMPLEMENTARY AREAS WILL MERGE AND BLUR

Factory domain

- Highly isolated and resilient local networks
- Multiple Firewalls, very often no direct connection to internet
- A lot of protocols specific to industry automation
 - Optimized for real time control
 - Heterogeneous
 - Vendor specific



14.0

Carrier Domain

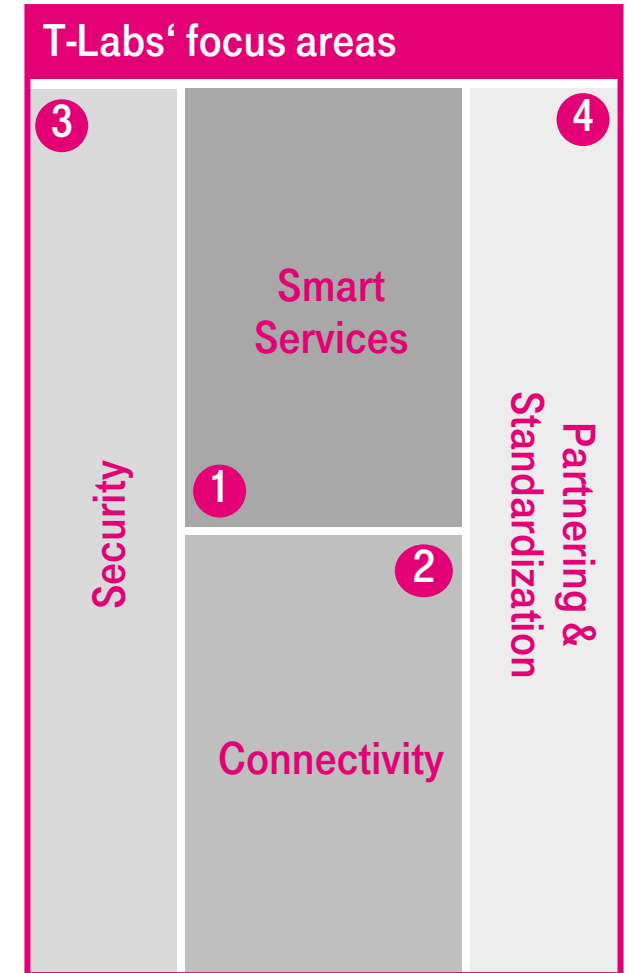
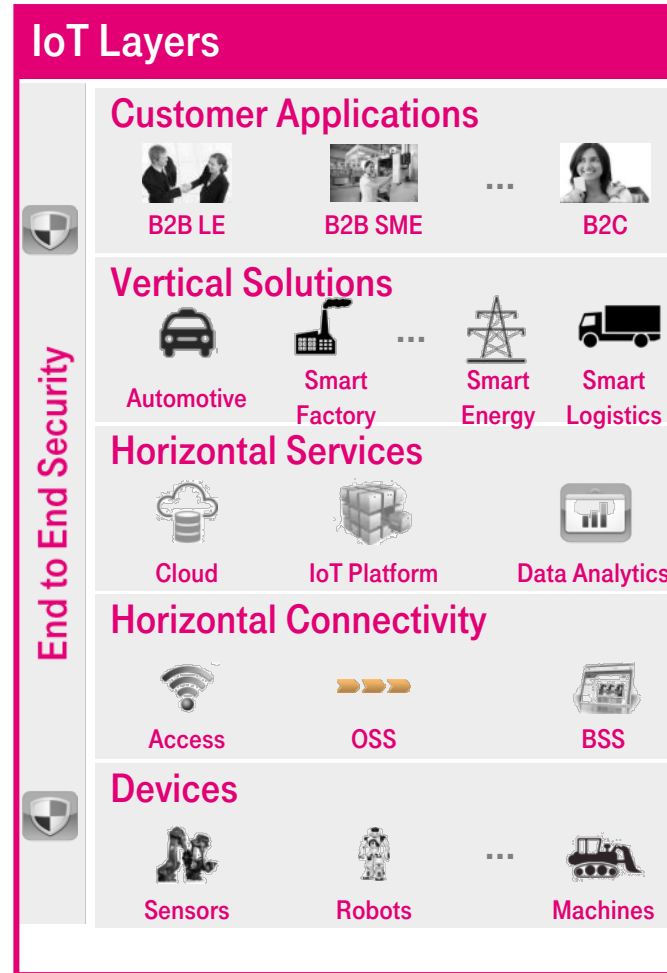
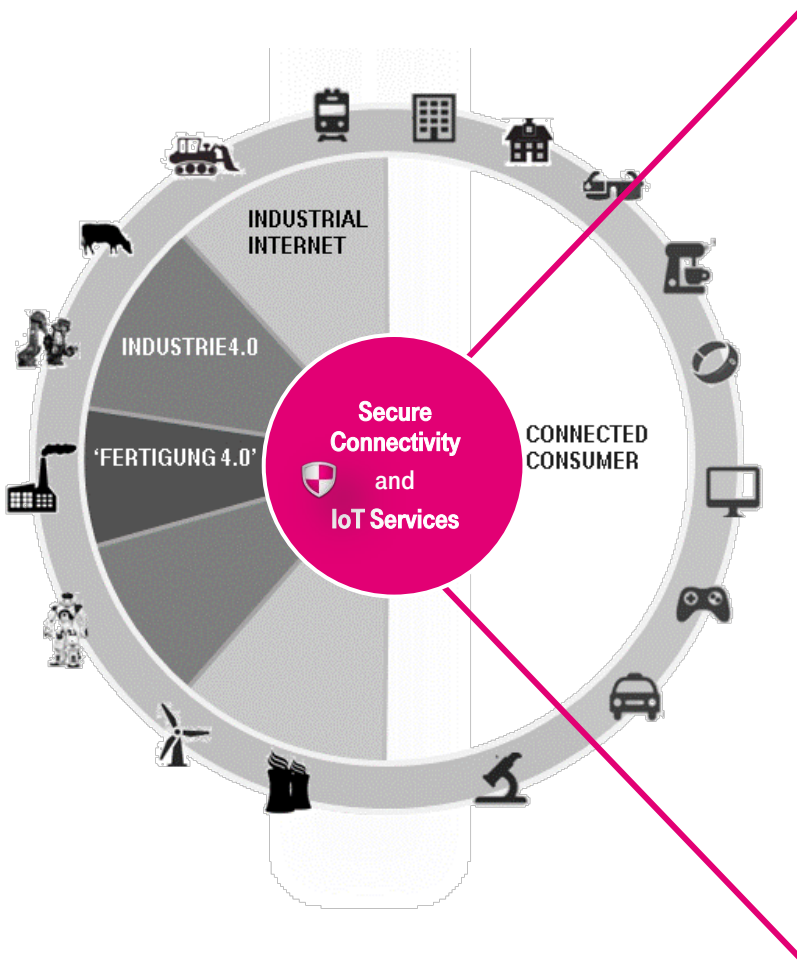
- Global standards
- IP-based communication
- Cloud-based production of network-related or service-related functions
- “Softwarization” of networks
 - Network Function Virtualization (NFV)
 - Software Defined Networks (SDN)



- Different families of standards are relevant; different communities need to harmonize their solutions
- Industrie 4.0. standards should be global; fragmented and regional standards need to be consolidated
- Main challenge: Domain specific innovation in the light of commonly understood requirements

CONNECTING THE INDUSTRY COVERS SEVERAL LAYERS

T-LABS' ACTIVITIES IN 4 FOCUS AREAS



SMART SERVICES

INDUSTRIE 4.0

CONNECTED FARMING



- A German farmer today produces food for 140 people
- Today, an acre of corn can be reaped within 1 hour
- Harvesting is time-critical and needs realtime control
- However, realtime ITC support for an optimized, self-organizing harvesting process is typically still poor and gives room for improvement

FASTER, BETTER HARVEST WITH INDUSTRIE 4.0!



SMART PORT LOGISTICS STREAMLINING ACTIVITIES AT THE PORT OF HAMBURG

- 40,000 trucks must be loaded and unloaded each day
- Twice as much transloading by 2025 (25 million containers)
- More effective management of growing quantities of goods, better use of limited space, fewer traffic jams
- Drivers receive jobs on their smart devices, and have an overview of port traffic at any given time
- Benefits for port authority, terminal operators, forwarding agents and other stakeholders

THE FAST AND DIRECT WAY TO ACCESS INFORMATION:
ZERO DISTANCE



Bundesministerium
für Wirtschaft
und Energie

SERVICEFACTORY

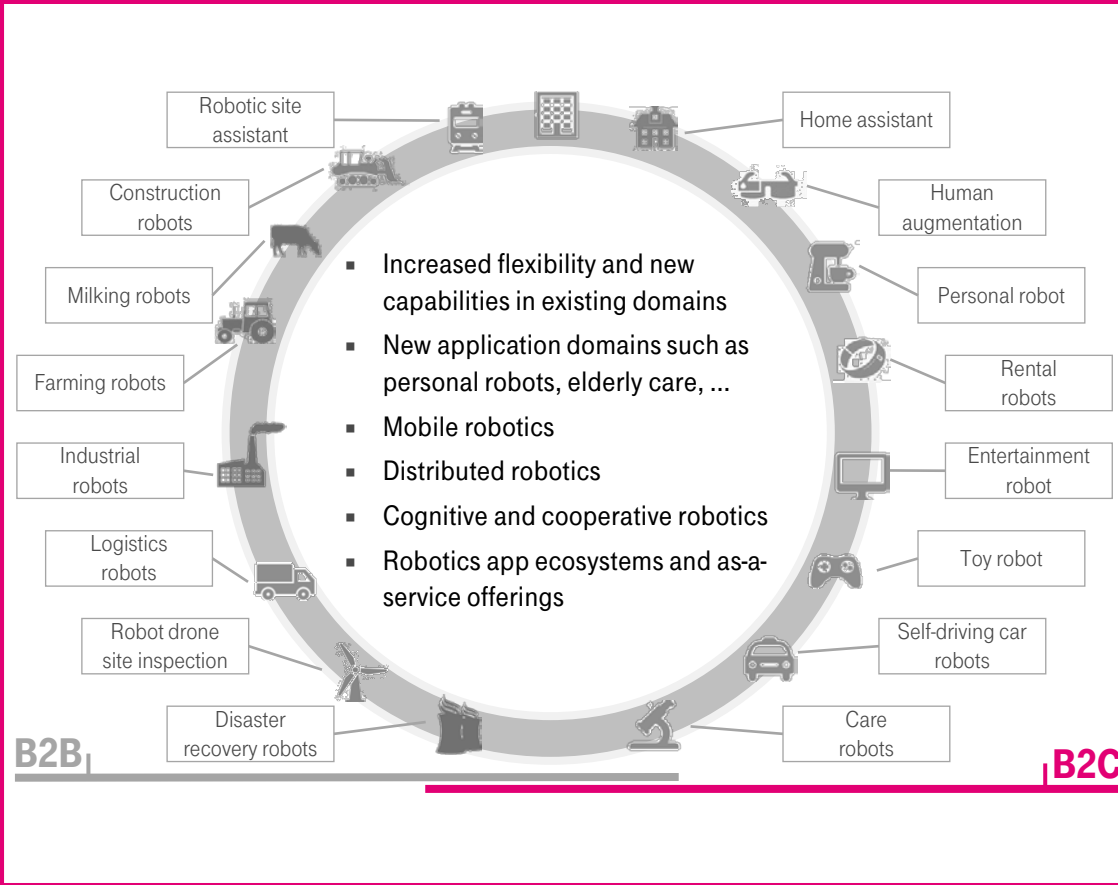


dresden elektronik

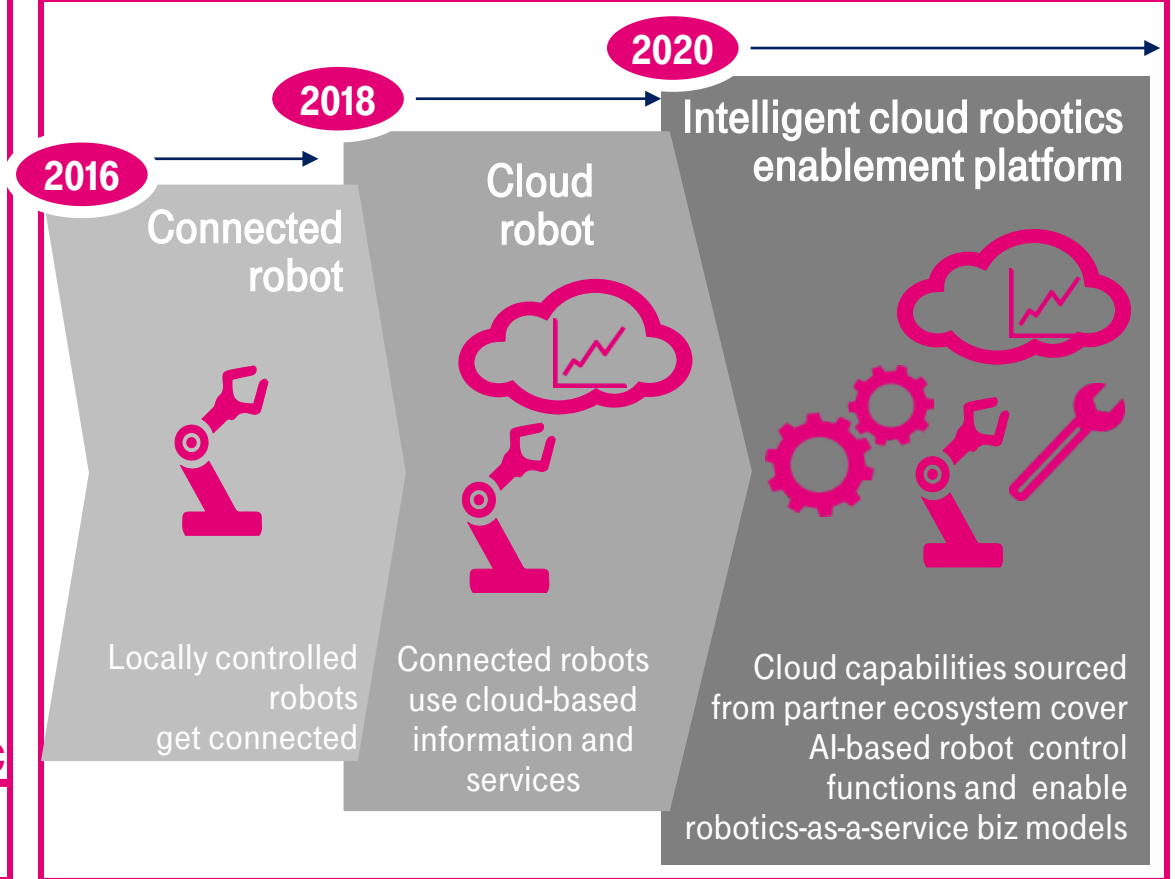


INTELLIGENT CLOUD ROBOTICS

Robotics trends



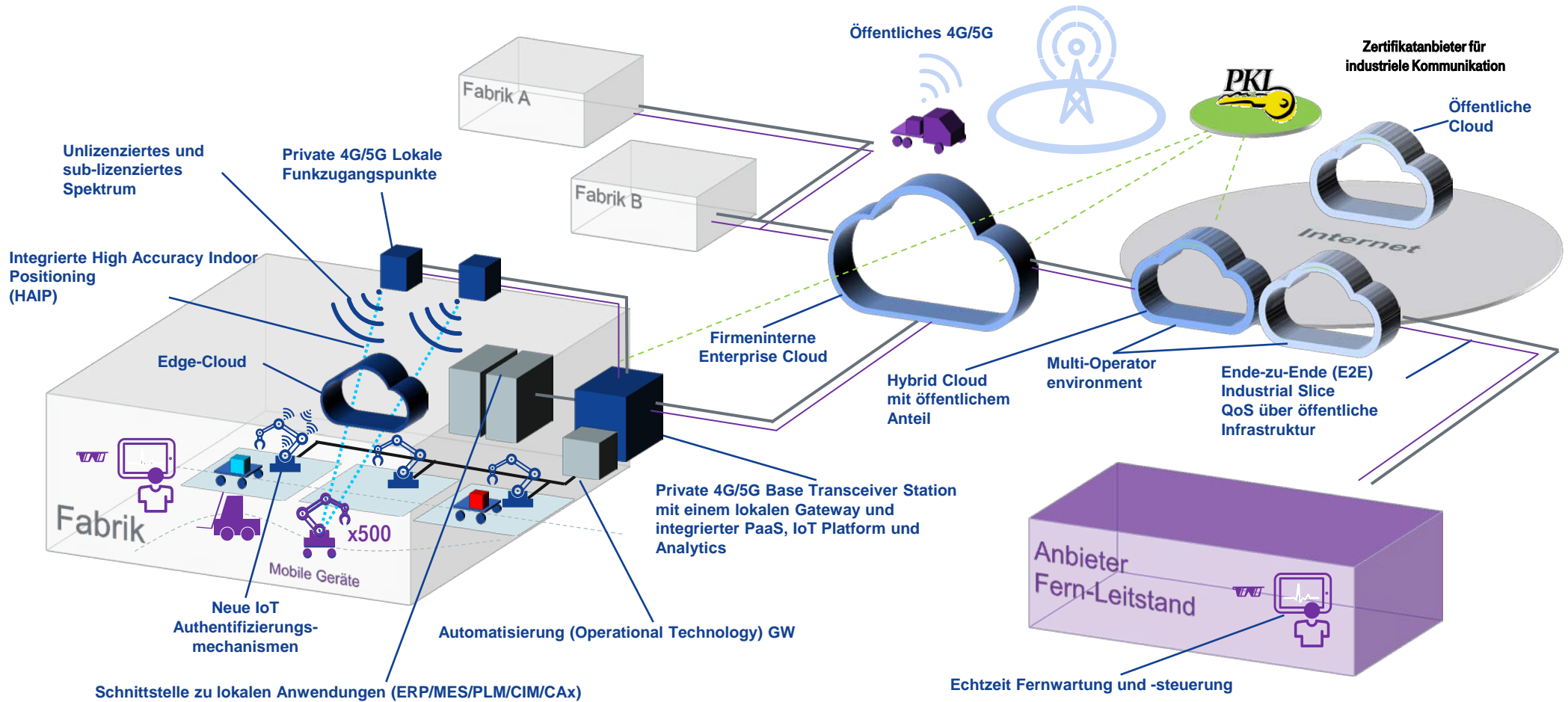
DT on eye level with market progress



CONNECTIVITY AND SECURITY

INDUSTRIAL COMMUNICATION FOR FACTORIES

TRUSTWORTHY COMMUNICATION AND COMPUTING INFRASTRUCTURE

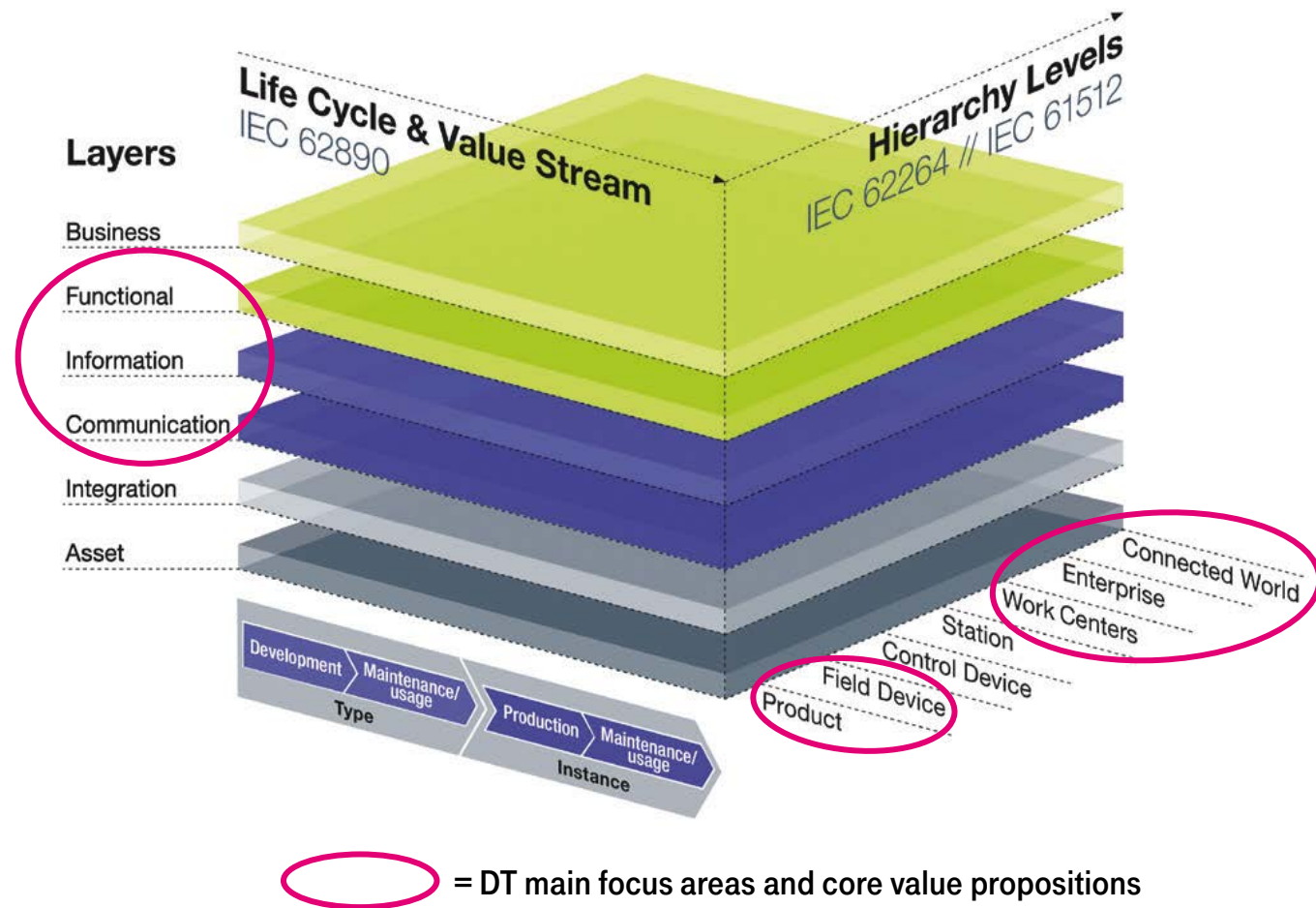


STANDARDIZATION AND GREMIA

STANDARDISATION & NETWORKING

RAMI 4.0 (REFERENCE ARCHITECTURE MODEL FOR INDUSTRIE 4.0)

- DTAG engaged in all instances of German **Platform Industrie 4.0**, the national coordination office bundling 80 organizations to shape and stimulate the implementation of Industrie 4.0
- **Reference Architecture Model for Industrie 4.0** (RAMI4.0) developed and registered as DIN-SPEC 91345. Goal: Link automation tech and ICT industry standardization on global level
- **Internationalization** fostered: Europe, China, Japan, USA (IIC)
- Association **Labs Network Industrie 4.0** founded to link Labs and SMEs (www.LNI40.de)



DIGITAL CO-INNOVATION LABS

WELCOME TO THE DIGITAL CO-INNOVATION LABS

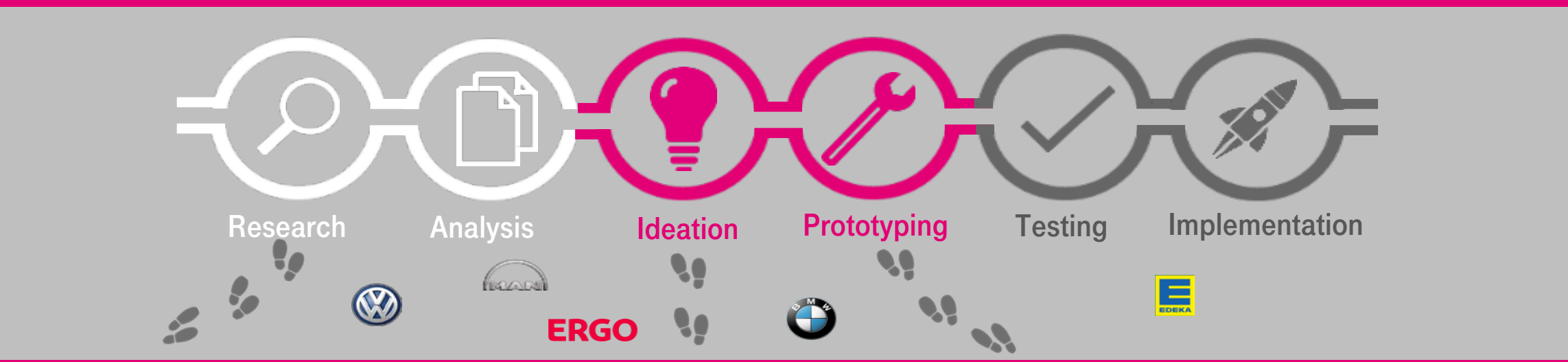
PLENTY OF SPACE FOR YOUR SOLUTION

 <p>Start 2004</p>	 <p>Start 2008</p>	 <p>Start 2010</p>	 <p>Start 2014</p>	 <p>Start 2016</p>
DIGITAL INNOVATION ARENA	CREATION CENTER	INNOVATION CENTER	PROTOTYPING /DATA LAB	AGILE APPLICATION LAB
Research departments at Telekom, universities and start-ups collaborate with you on innovation	User-centric consulting and innovation platform with Design Thinking expertise	Insights into digital opportunities through Live Use Cases, joint Ideation Work-shops and co-innov. projects	Ready-to-use prototyping /Big Data infrastructure (platforms, AI tools) for customer-specific scenarios	Implementation of concepts in pilot projects including with DevOps



END-TO-END CAPABILITIES WITH FLEX. ENTRY POINTS

OUR MODULAR APPROACH ALONG THE VALUE CHAIN



TRANSPARENT PRICING BASED ON
S/M/L STANDARD
MODULES



THANK YOU FOR YOUR ATTENTION – AND: HAVE A GOOD PROPOSERS' DAY



WE SHAPE THE FUTURE

Telekom Innovation Laboratories

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Telekom Innovation Laboratories

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