

Future Challenges of Automation for Intelligent Technical Systems



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Welcome to PHOENIX CONTACT Electronics



PHOENIX CONTACT Brief Portrait



- Phoenix Contact GmbH & Co. KG, Blomberg/Bad Pyrmont
- Market leader in electrical connection and automation technology
- Founded in Essen in 1923
- 12,000 employees worldwide
- Annual turnover 2011: € 1,520 million
- 48 own sales subsidiaries worldwide
- 30,000 active products
- 2,000 new products every year

What are the Challenges for the Manufacturing Industry?

- Shortening of the product life cycles
- Reduction of lot sizes
- Increasing diversity of versions
- Price decline and cost pressure
- Varying utilization
- Shortening of the return-on-investment time
- Saving of resources, energy efficiency



- Globalization
- Individualization
- Sustainability
- Economic cycles

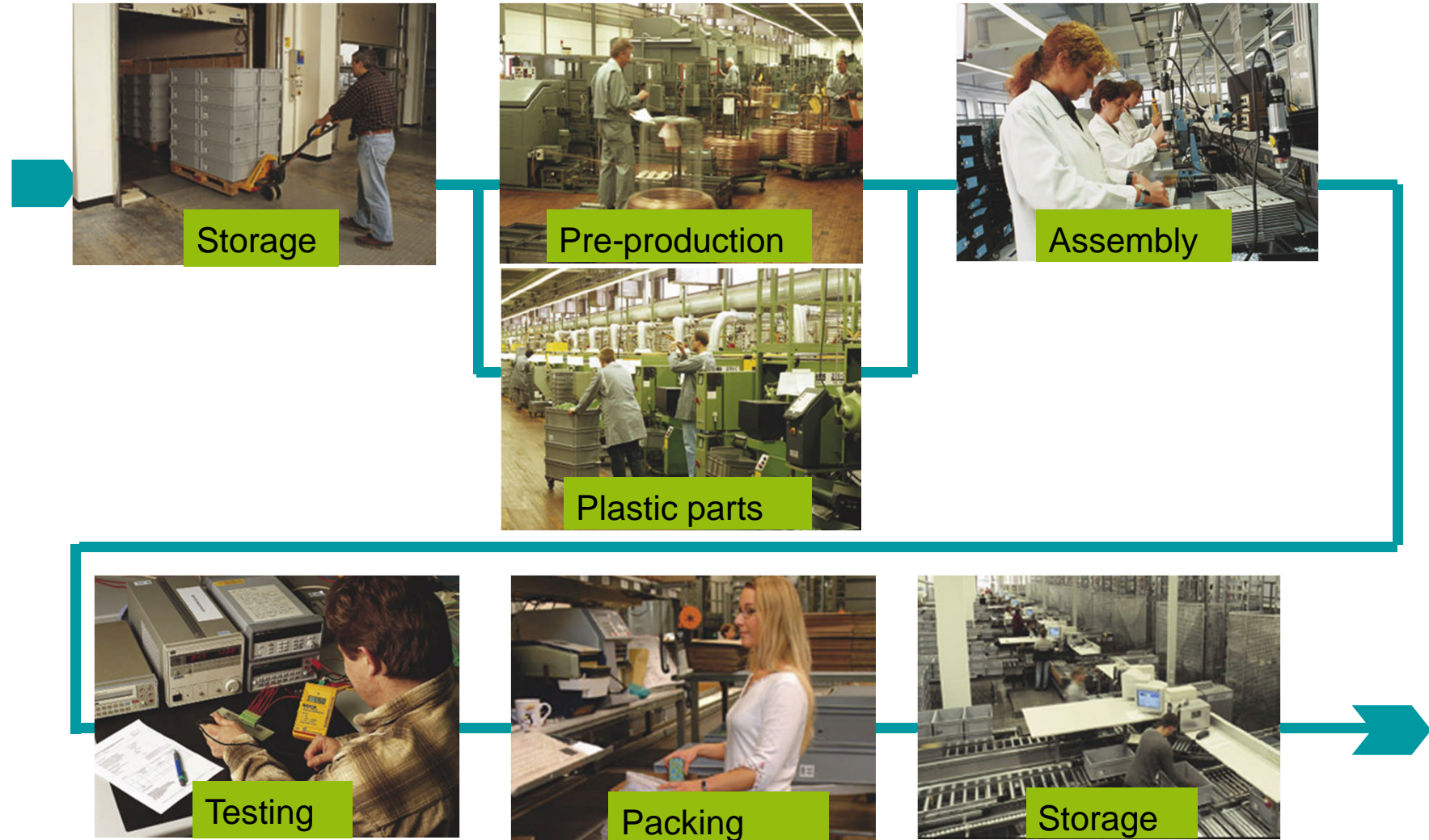
Productivity and Cost Cutting

- Increasing the flexibility of systems and machines
- Modular, adjustable automation concepts
- Ideal utilization of the production resources
- Short through-put times
 - From incoming materials to delivery
 - From the order to the machine
- Energy-optimized production

The solution:

**Integration of the horizontal value-added processes
and the vertical business processes**

Horizontal Integration along the Value-Added Chain



Vertical Integration along the Business Processes



Production



Planning



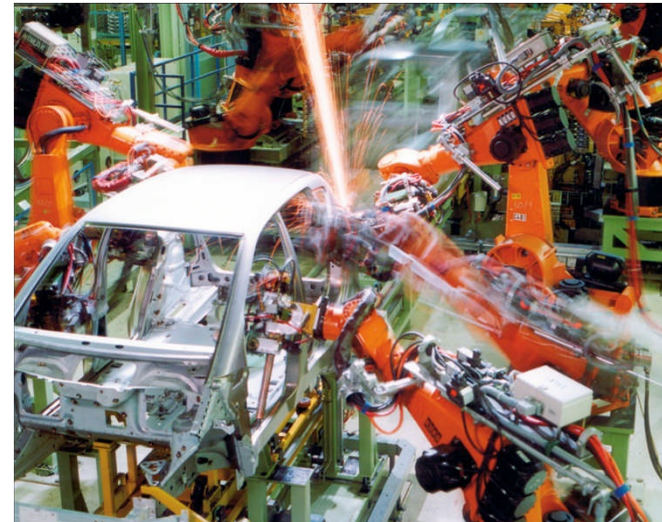
Administration



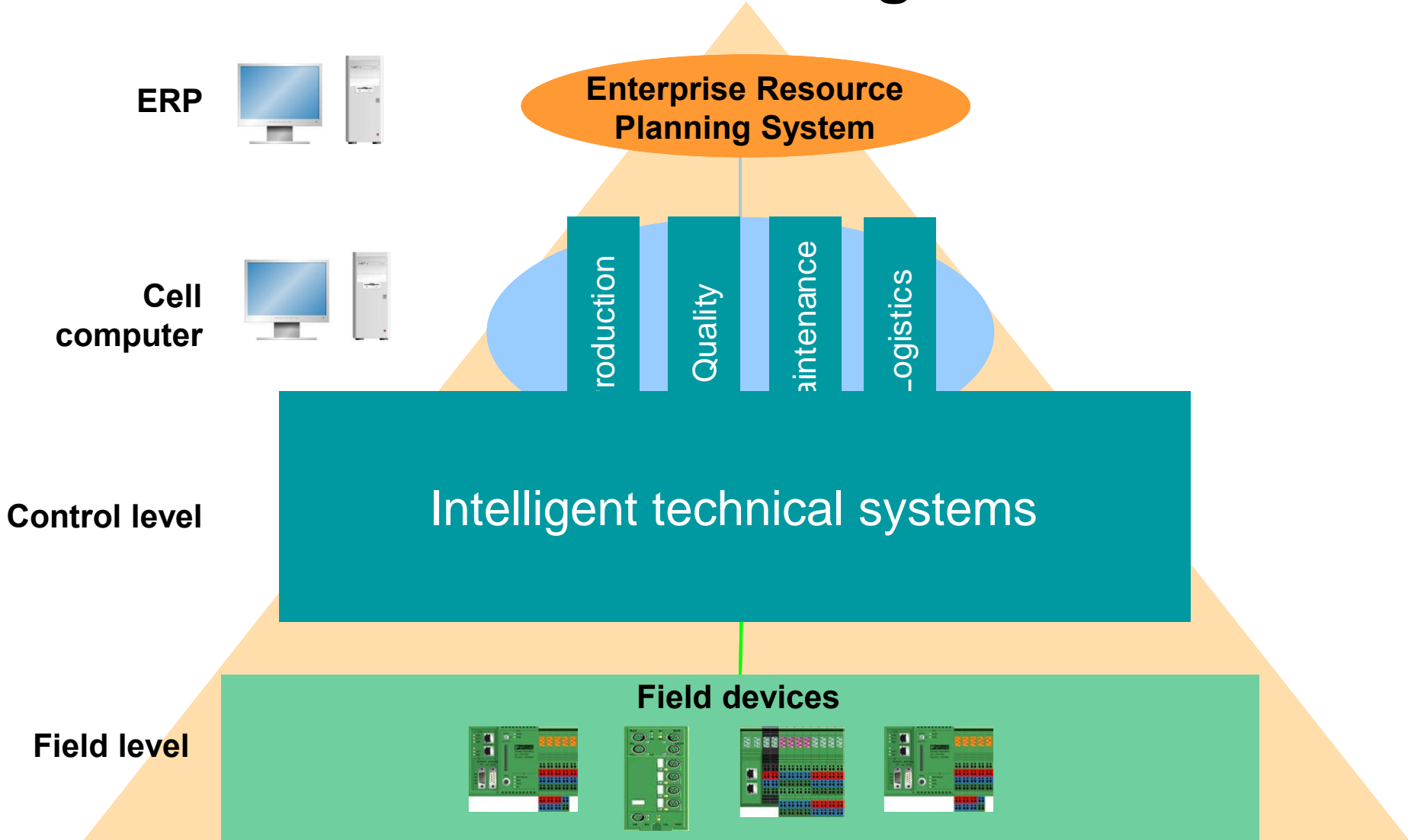
Purchasing
Delivery
Maintenance

The Key to Integration is Information Technology

- Communication within the machine or part of the system
 - Decentralized I/O's
 - Distributed automation
 - Modularization
- Communication along the added value
 - Linking of the process chain
 - Transparency regarding process statuses
- Communication along the business processes
 - From Production up to the Web



Horizontal and Vertical Integration ...



Intelligent Technical Systems

Innovative advance towards technical systems with inherent partial intelligence

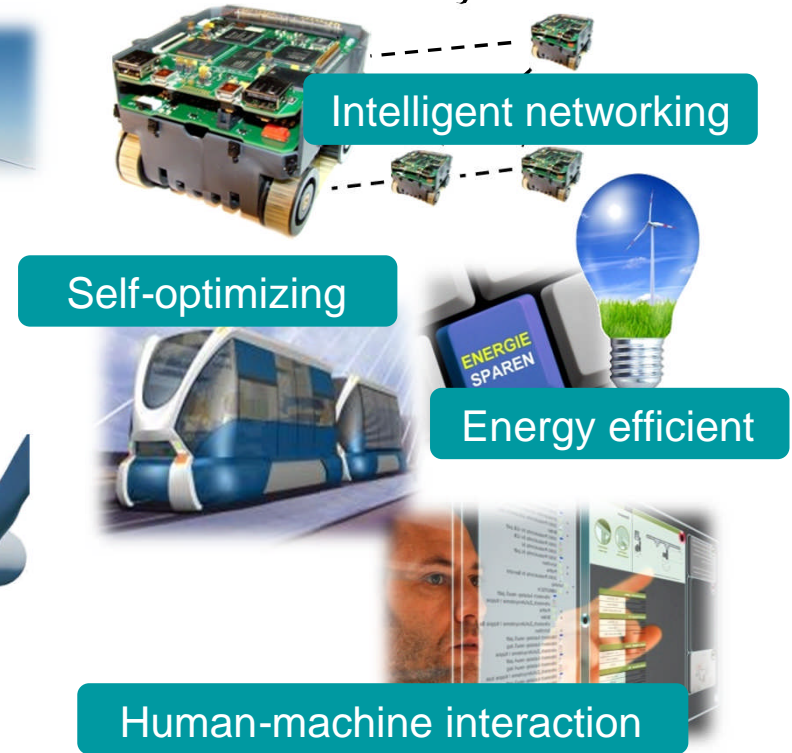
Mechanical



Mechatronics



Intelligent Technical Systems



Intelligent networking

Self-optimizing

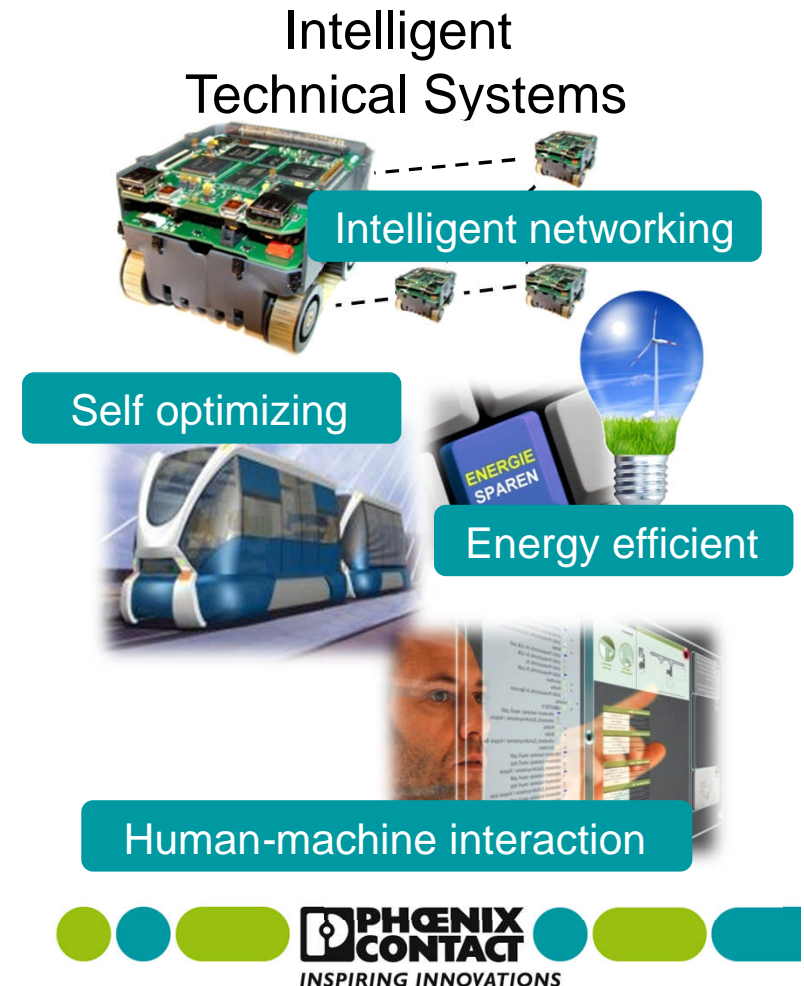
Energy efficient

Human-machine interaction

Intelligent Technical Systems

Innovative advance towards technical systems with inherent partial intelligence

- ... interaction with the environment and automatic adjustment to it (**adaptive**)
- ... also manage unexpected situations in a dynamic environment not necessarily considered by the developer (**robust**)
- ... anticipation of the effects of future influences and states (**proactive**),
- ... consider the specific user behavior (**user friendly**).



Cluster Intelligent Technical Systems OWL- It's OWL

Vigorous industry
machine engineering, electrics/electronics,
automobile supplier

AEG
POWER SOLUTIONS

BECKHOFF

BENTELER

BHTC

CLAAS

DELTA

DENIOS

GILDEMEISTER

GOLDBECK

HARTING

HAYER & BOECKER

KELLER

HESSE & KNIPPS
SEMICONDUCTOR EQUIPMENT

Hettich

Kannegiesser

KEB

Kemper
Baker's friend

Lenze

Miele

PHENIX CONTACT

WAGO
INNOVATIVE CONNECTIONS

Weidmüller

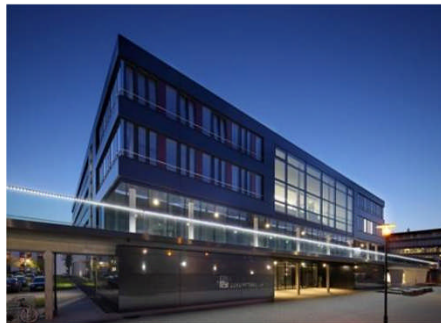
WINCOR NIXDORF

WITTENSTEIN
motion control

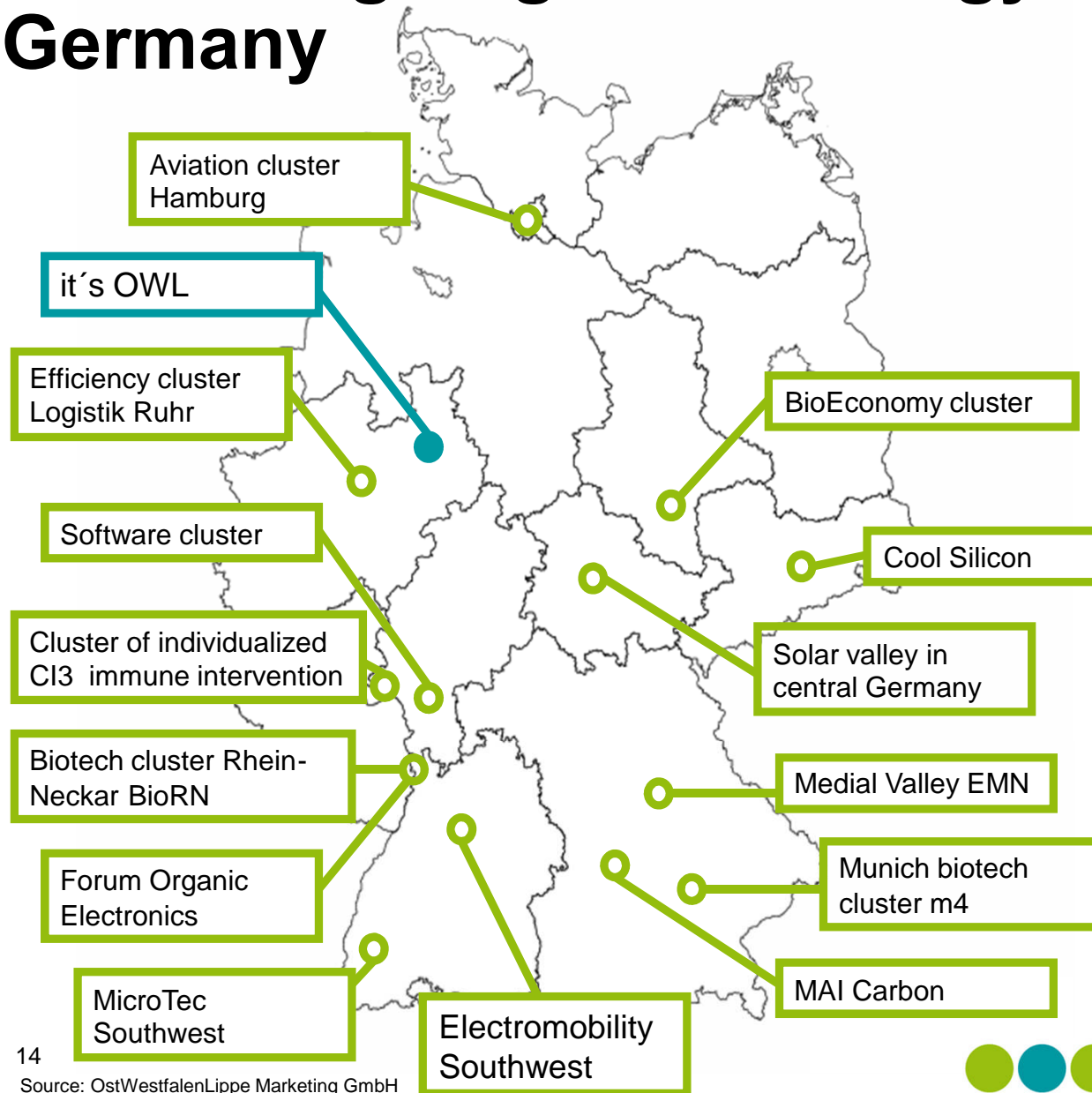


Cluster Intelligent Technical Systems OWL- It's OWL

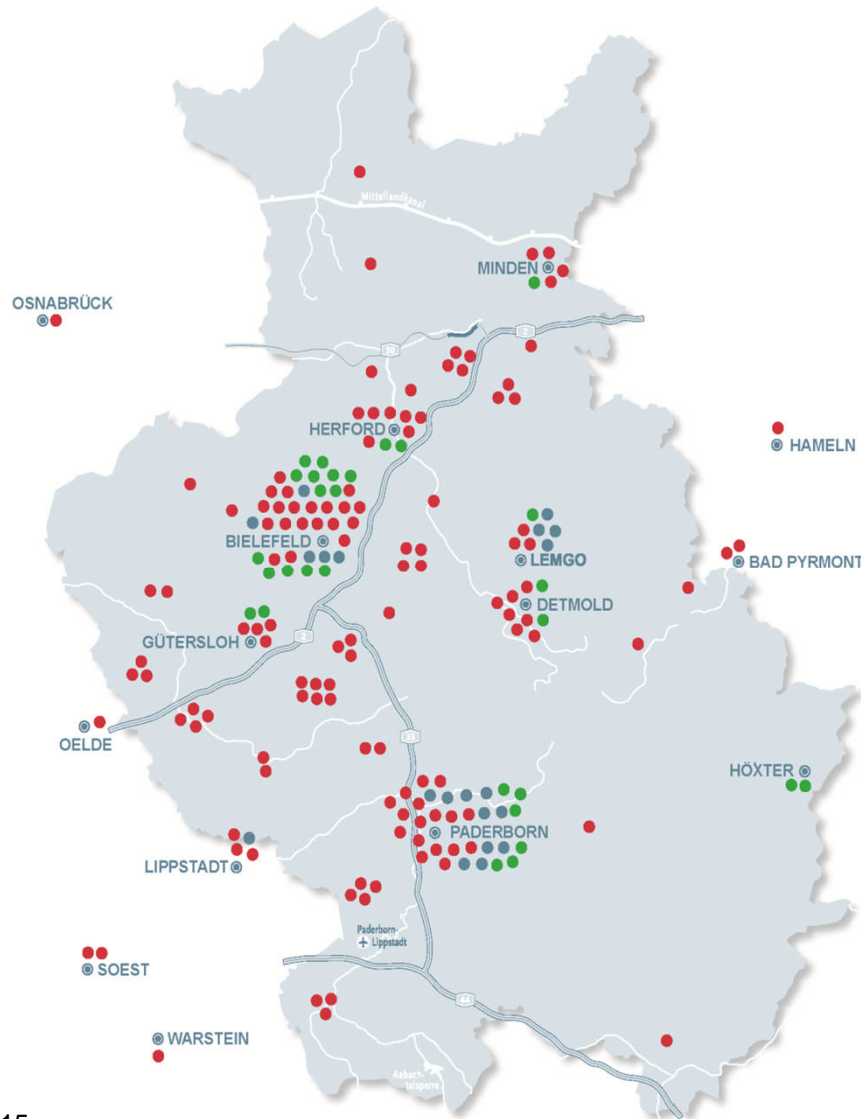
High-performance research



15 Leading Edge Technology Cluster in Germany



It's OWL - Intelligent Technical Systems



174 cluster partners

- 25 core companies (investment in 34 innovative projects)
- 78 basic companies (participation in transfer projects)
- 24 engineering and consulting companies (multipliers)
- 17 universities & centers of excellence
- Clustervolume: 100 m€

- companies
- universities and research institutions
- business-related institutions (branch initiatives, chambers of industry and commerce, business development institutions u. a.)

It's OWL- Intelligent Technical Systems

Phoenix Contact and it's OWL

- “The it's OWL leading edge technology cluster will continue to strengthen the outstanding innovative power of the region and make the high-tech location of OWL visible well beyond our own borders.
- We shall invest approx. 3 million Euros to develop an "adaptive" automation technology that allows more flexible design of machines and systems.”



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