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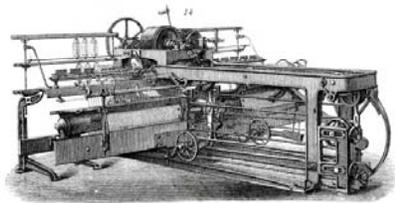


Eckard Eberle, CEO Industrial Automation Systems

Industry 4.0 – A vision on the way to becoming reality

Industry 4.0 – what is it?

The history of the industrial revolution

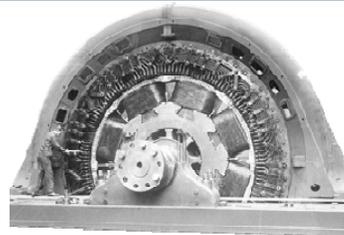


Mechanical loom

End of 18th century

1. Industrial revolution

Introduction of mechanical production plants using water and steam power

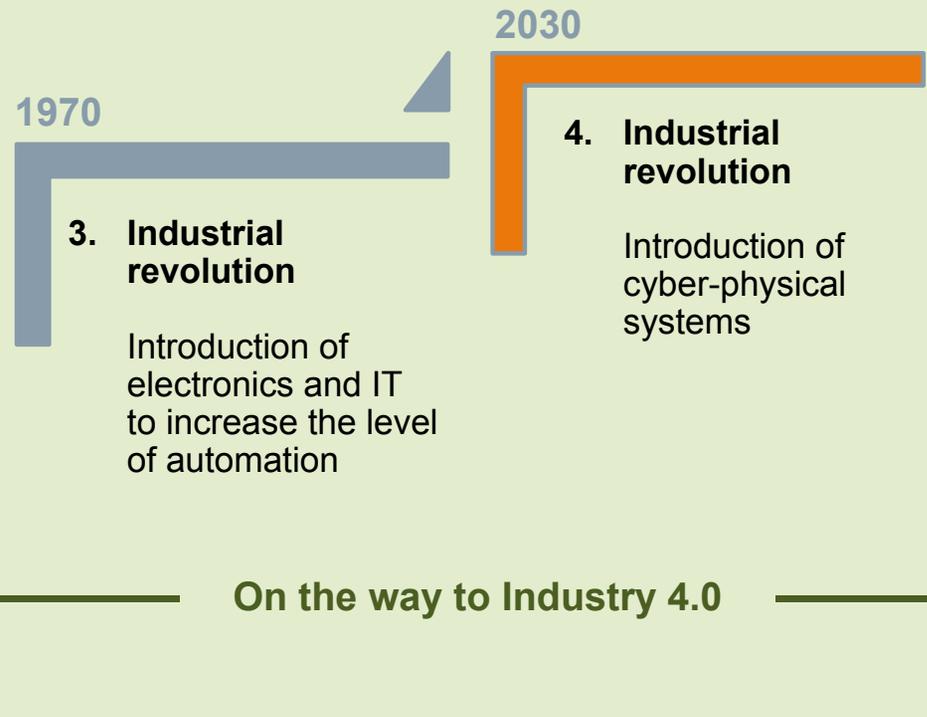


Siemens single-phase generator

End of 19th century

2. Industrial revolution

Introduction of mass production based on the division of labor using electrical energy



On the way to Industry 4.0

The next step: Integration of product and production lifecycle

Yesterday



Introduction of electronics to automation

Today



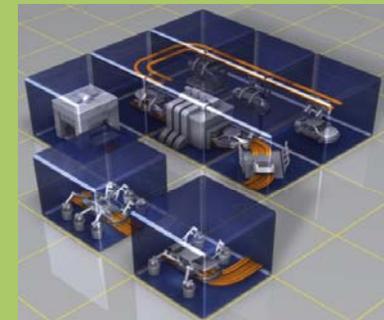
Modular, IT-supported automation

Tomorrow



Integration + optimization of the entire production process through innovative software systems

Day after tomorrow



Self-optimization of cyber-physical systems building on the analysis of virtual models of possible actions

Industry 4.0

Integration of product and production lifecycle

Getting from the product idea to production faster



One digital platform for the integration of both lifecycles provides...

- ...continuous data flow from product design to production
- ...common data model
- ...seamless connection of virtual and real world



Digital platform for the integration of both lifecycles

Our electronics plant is one of the first users

Siemens plant in Amberg



Yesterday:

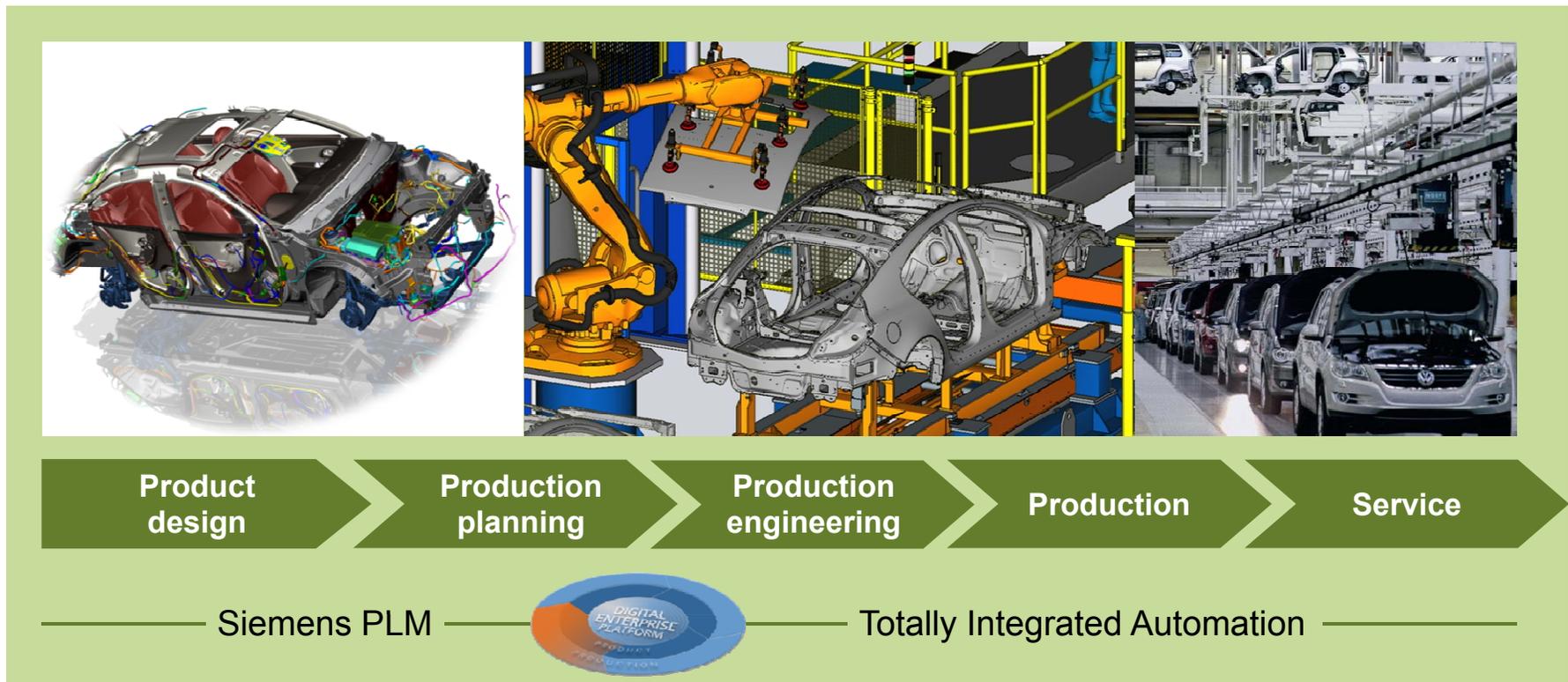


Today:



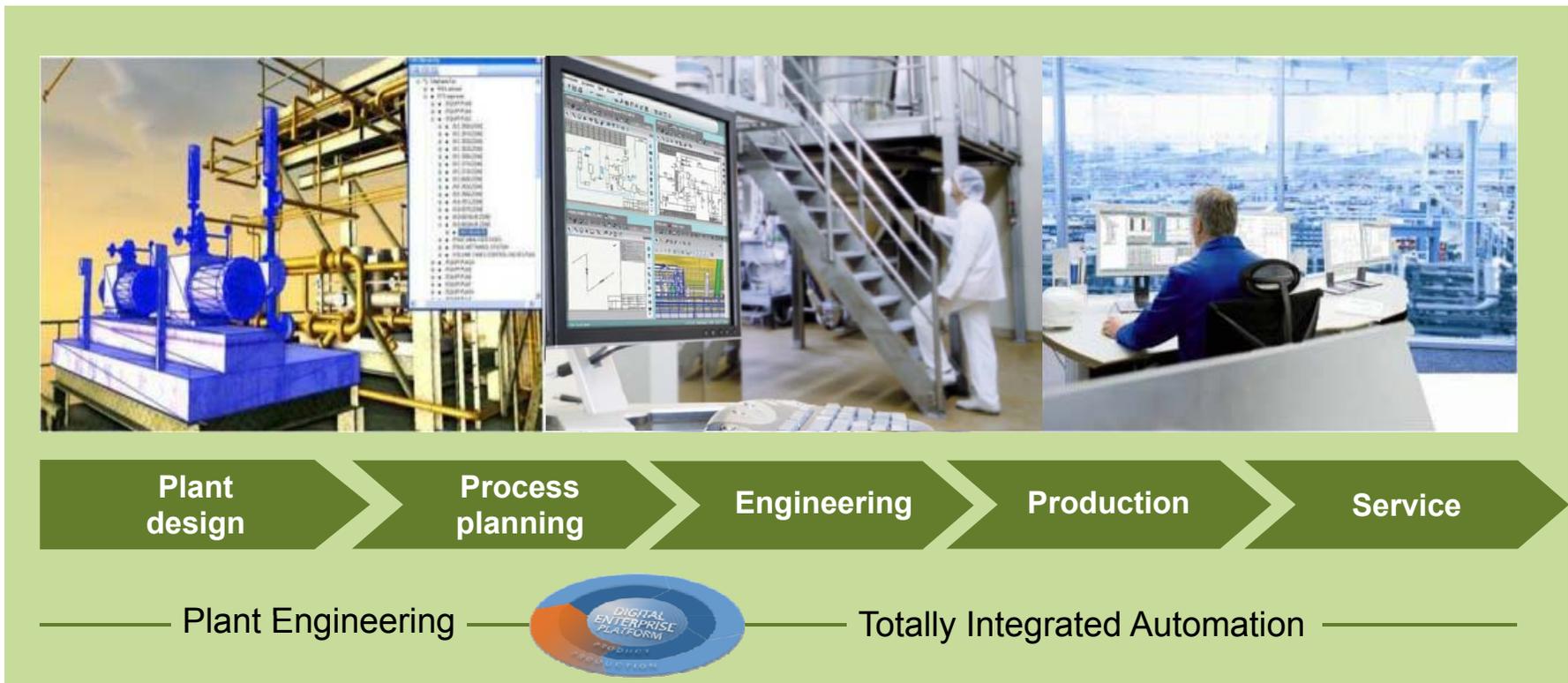
Another example: “the automotive industry”

Integration over the entire tool chain



Another example: “the process industry”

Integration over the entire plant lifecycle



On the way to Industry 4.0

There's still a long way to go!

Yesterday



Introduction of electronics to automation

Today



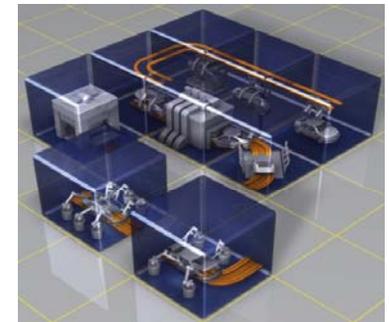
Modular, IT-supported automation

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Self-optimization of cyber-physical systems building on the analysis of virtual models of possible actions

Industry 4.0

Industry 4.0

Production based on cyber-physical systems

Cyber-physical systems are...

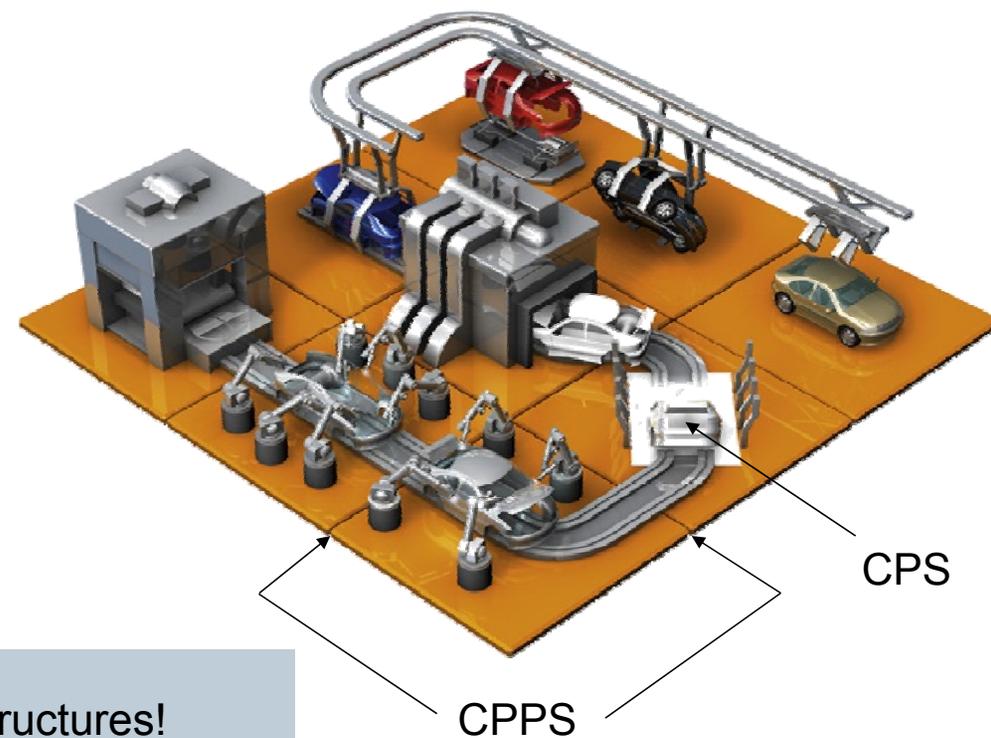
Intelligent products (CPS)

- The product to be manufactured has all necessary information about its production steps

Autonomous production facilities (CPPS)

- Self-organization of networked production facilities with consideration of the entire value chain
- Production steps are negotiated flexibly based on the current situation

Reduction of complexity with “more intelligent” structures!



Cyber-physical production systems...

...have all information in the form of a “digital shadow”

Cyber-physical production system:



Physical production facility

+



Digital shadow

Contains all information on...

- Mechanics (CAD)
- Electrics (CAE)
- Automation, HMI
- Safety, Security
- Maintenance
- Location, identity
- Status
- SW version
- Interfaces
- ...

The digital shadow is always up-to-date and is expanded throughout the entire lifecycle



Product design



Production planning



Production engineering



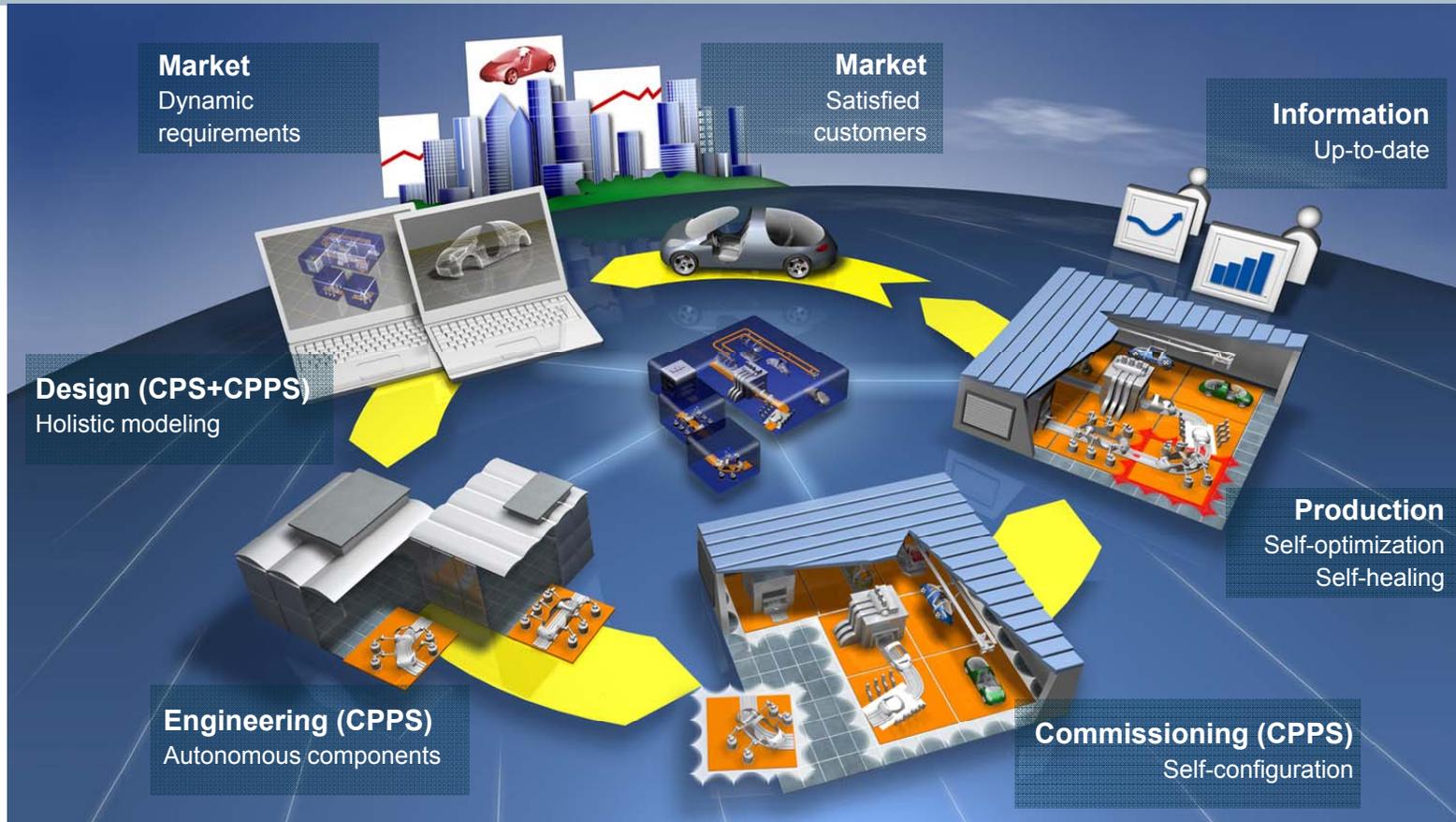
Production



Service

Vision of Industry 4.0

Faster time to market, higher flexibility and lower complexity



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Industry 4.0

The importance of people will increase!

- **On the creative side**
in product and production design



- **On the operative level**
as creative planners,
controllers and supervisors

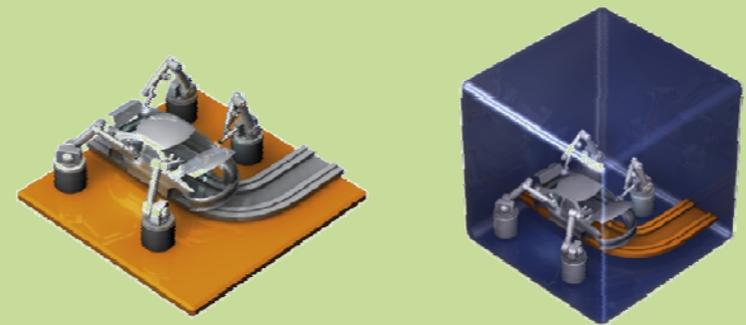
Industry 4.0

A prerequisite is the establishment of a “digital enterprise platform”



Digital enterprise platform

Complete IT integration and data harmonization between "shop floor" and "top floor"



Cyber-physical systems

Reduction of complexity with “more intelligent” structures

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