Federal Ministry
for Economic Affairs
and Energy

Germany's Digital Agenda and the Role of Standardization

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Digitization in Industry

- Digitization in industry can be described as establishing a connection between the physical and virtual worlds.
- Processes, manufacturing, products, and services will all undergo radical change.
- This will lead to major systemic disruptions with deep and far-reaching implications.

Germany's Digital Agenda for Industry

- The German government will lean on its pro-active economic and innovation policy as its implements the Digital Agenda – which includes the key priority of *Industrie 4.0*
- **Vision**: For Germany to successfully realise the digital transformation – with a clear focus on people and their needs and requirements. The three core objectives are: Growth and employment, access and participation, confidence and security
- The digitized world is about developing efficient manufacturing and tailor-made solutions for people and producing products and services in batch size 1

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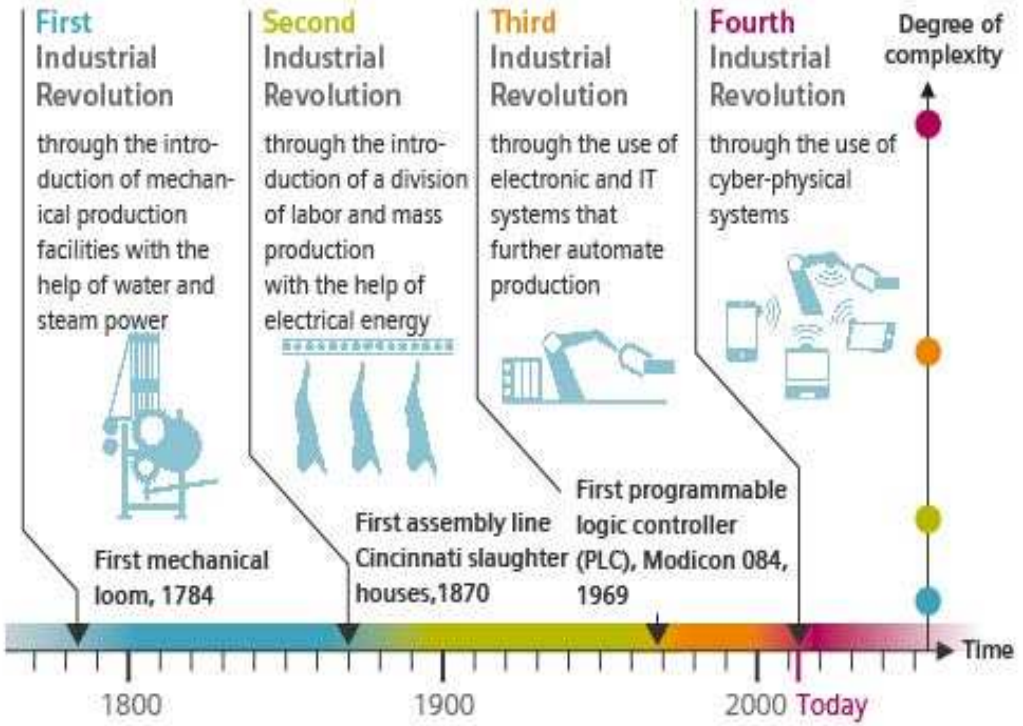
Industrie 4.0 - The next Industrial Revolution

From Industry 1.0 to Industry 4.0



Source: DFKI (2011)

Technological Drivers of *Industrie 4.0*

- Cyber-physical production systems
- Integrated data, data flows, and big data
- Cloud technologies
- Additive manufacturing processes

Potential Applications along the Value Chain

- Product development and production engineering
- Manufacturing equipment to be self-learning
- Logistics to play a key role in value creation in the industrial sector

Fields of Action for Industry and Government

- Standardization and certification have an overarching function
- Standards: e.g. in order to be used in industrial applications, ICT must meet specific needs
- Standardization should not slow down innovation needlessly

Standardization for *Industrie 4.0*

- Standardization is an international process!
- ICT standards for *Industrie 4.0* cover various fields of application
- German companies can play an important part in the setting of standards for the global market – the new plattform Industrie 4.0 should be used to coordinate the activities together with European partners

Criteria for Standardization in *Industrie 4.0*

- With regard to standardization, the German government attaches particular importance to the following criteria:

(1) Transparency

(2) Plurality

(3) Decision-making by consensus (as a general rule)

(4) Arbitration procedures

- These criteria particularly apply to forums and consortia

Relevant Specifications

- **RAMI 4.0** (Reference Architecture Model *Industrie 4.0*) of the *Industrie 4.0* platform
- **OPC UA** (OPC Unified Architecture)
- **ROS Industrial**: adapting the Robot Operating System open source software framework for industrial applications
- **eCl@ss:** product data standard for the classification of products / services
- **AutomationML:** data format for plant engineering information, ISO/IEC-Standard

Key questions for further discussion

- What are areas where standards are needed?
- What should be the process for developing standards for *Industrie 4.0*?
- Who has the authority and capability to create and promote standards?
- To what extent should these standards be binding?
- Is there a need for certification procedures?
- What is the role of OMG?

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Logo

"Learning is like rowing against the current: as soon as you stop, you drift backwards."

Laozi

Thank you for your attention

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