A renewed industrial strategy: 
Key elements and changing value chains

European Industry Partnerships for New Digital Age,
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Digitising European Industry

[Diagram showing the various initiatives and components of digitising European Industry.]

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STRATEGY FOR EUROPE TO LEAD THE WAY

- Boosting EU’s technological and industrial capacity & AI uptake
- Preparing for socio-economic changes
- Ensuring an appropriate ethical and legal framework

Development and use of AI for good and for all
Common European Data Space

Free flow of data (across sectors and MS)

Data Governance (GDPR, data sharing rules)

Rich pool of available data (open and closed)

Large data spaces per sector

High-value data sets from the public sector

Data platforms for pooling and sharing

Interoperability

Cloud storage and processing

Health

Industry

Agriculture

Finance

Transport

Personal data spaces
Important Projects of Common European Interest (IPCEI)

- Simpler state aid rules to fill funding gap for ambitious transnational innovation projects
- R&D&I incl. first industrial deployment
- Spill-over effects

Strategic Forum for IPCEI

- Commission expert group established in 2018
- To identify key strategic value chains for joint or well-coordinated investment and action
- To develop joint vision/actions for these value chains
Key strategic value chains prioritised by the Strategic Forum

- Microelectronics*
- Batteries*
- High-performance computing*
- Connected, clean and autonomous vehicles
- Smart health
- Low-carbon industry
- Hydrogen technologies and systems
- Industrial Internet of Things
- Cybersecurity

* already ongoing initiatives.

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**Value chain of IIoT**

<table>
<thead>
<tr>
<th>Capturing data</th>
<th>Transferring data</th>
<th>Processing data</th>
<th>Analysing Data</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hardware components</strong></td>
<td><strong>Connectivity and ICT technologies</strong></td>
<td><strong>Platform development</strong></td>
<td><strong>Analytical software</strong></td>
</tr>
<tr>
<td>- (smart) sensors, actuators, modules, semiconductors, antennas, cables, ...</td>
<td>- short and long range communication</td>
<td>- Network device design</td>
<td>- Big Data analysis</td>
</tr>
<tr>
<td><strong>Hardware technologies</strong></td>
<td>- broadband and lowband wireless networks</td>
<td>- Process automation</td>
<td>- predictive analysis, machine learning, data integration, ...</td>
</tr>
<tr>
<td>- micro-and nanotechnology, sensor technologies, ...</td>
<td>- networking infrastructure</td>
<td><strong>Software and interface development</strong></td>
<td><strong>Artificial intelligence</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Cybersecurity</td>
<td>- deep learning, decision management, natural language processing, ...</td>
</tr>
</tbody>
</table>

**IIoT solutions and applications cover most industry sectors:**
- (Smart) Industry: robotics, automation, operations optimization, inventory management, industrial control, predictive maintenance, ...
- (Smart) Energy: energy management, smart power/utilities, smart grids, ...
- (Smart) Mobility: fleet management, autonomous vehicles, ...

*Source: IDEA Consult*
Common European Industrial IoT and Data Ecosystem

Digital Industrial Platforms driven by EU actors

- Secure & Trusted Data Spaces
- Industrial Cloud-Edge Infrastructures
- Tools for Data Analytics and AI
- 5G Industrial Infrastructure

Instantiation in verticals

- Manufacturing
- Construction
- Energy
- Agriculture
- Logistics
- Health
- Mobility
- ...

Governance

- Regulatory Framework, Standardisation & Spectrum

Industry and MSs Support

- Industry and MSs Support

Cybersecurity and end-to-end security

- Skills development

Scale-up: DEP, HE, MSs Programmes, ...
• “We will need to invest in innovation and research, redesign our economy and update our industrial policy”
• “I will put forward my plan for a future-ready economy, our new industrial strategy.”
• “Our economic policy must go hand in hand with social rights, Europe’s climate-neutrality objective and a competitive industry.”
Stimulate Research and Innovation??

- Artificial Intelligence, data and robotics
- High-performance computing
- Key Digital Technologies
- Smart Networks and Services

- Cloud computing, i.e. roll-out of cloud federation of infrastructures and services??
- AI infrastructure based on HPC centres??
- Quantum technologies??

- Priorities? Negative priorities?

UvdL: “I will make sure that we prioritise investments in Artificial Intelligence, both through the Multiannual Financial Framework and through the increased use of public-private partnerships”
Important Projects of Common European Interest?

• Alliance between Commission, Member States and industry to support the strategic value chain on Industrial Internet of Things?

• Important Projects of Common European Interest?
  • Strategic value chain on Industrial Internet of Things?
  • Second IPCEI in microelectronics?

• Mission letter Margrethe Vestager, Executive Vice-President-designate for a Europe fit for the Digital Age:
  • “Competition will have an important role in our industrial strategy. The competitiveness of our industry depends on a level playing field that provides business with the incentive to invest, innovate and grow. EU State aid rules should support this where there are market failures and the need to strengthen value chains. As part of this, you should continue to work with the Member States to make the most of Important Projects of Common European Interest.”
European Future Fund

- Sovereign wealth fund

- Dirigism approach vs welcome support for EU champions?
**Competitive fit – we evaluate key factors supporting competitive strength for the IIoT value chain**

- The EU invests almost **EUR 500 m** in IoT-related research, innovation and deployment
- **5 - 7x less investment** in AI in Europe than in the US and China

- **Uniform legal requirements** for product liability/safety on the EU level, but **scattered national regulatory** landscape regarding testing rules
- **Initiatives to support IIoT development** on the EU-level\(^2\) and on a national level\(^3\)

- **Faster growth in STEM graduates** than the US
- **5.7 m software developers** compared to 4.4 m in the US – but net outflow to the US
- **Lack of 0.7 m workers** with advanced technological capabilities in Germany alone especially on rural SME sites

- **Europe has the largest share of top 100 AI research institutions** (32 vs. 30 from the USA and 15 from China)
- **Open science/collaboration** promoted, e.g. **free-of-charge publishing** by all research projects under Horizon 2020 and plans for a **European Open Science Cloud** in 2020
- **Widening gap in patents** in digital, AI, quantum computing and big data\(^1\)

- **Europe is lacking platform and technology providers**
- EU IIoT landmark project **AI4EU** and **digital innovation hubs** aim to create a dynamic European IoT ecosystem, entailing cross-sectoral partnerships and collaboration
- **Lower readiness** for AI diffusion (33% behind the US, 5% behind China)

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1. Per capita ratio: 1.5 in EU vs. 2.5 in US
2. E.g. Digitising European Industry, European Data Economy Initiative
3. E.g. “Plattform Industrie 4.0” in Germany, “Alliance pour l’Industrie du Futur” in France

SOURCE: McKinsey Global Institute analysis; McKinsey project team

McKinsey, Industrial Internet of Things Strategic Value Chain, July 2019
Regulatory framework for AI

- UvdL: “In my first 100 days in office, I will put forward legislation for a coordinated European approach on the human and ethical implications of Artificial Intelligence. This should also look at how we can use big data for innovations that create wealth for our societies and our businesses.”

- Any views?
• Uptake of digital technologies by SMEs

• European Green Deal
  • Part of UvdL first 100 days in office
  • Threats or opportunities??
  • Twin climate and digital transitions??

• Standardisation