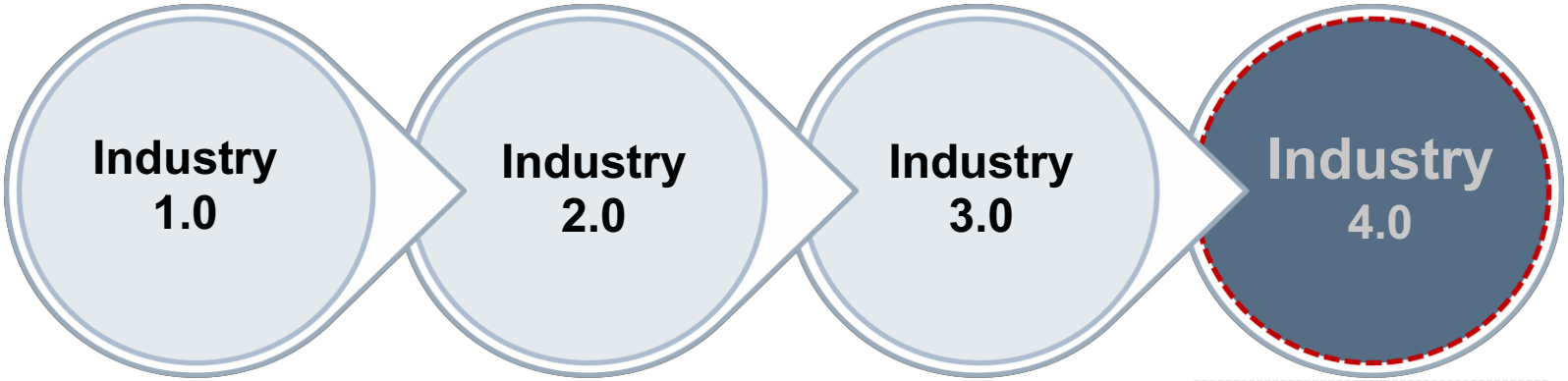
INDUSTRY 4.0

Industry 4.0 is in the trends of the **industrial revolutions**

focusing more on the big data implied and managed



1760s to 1900

Use of steam and mechanically-driven production facilities

1900 to 1970s

Electric power-driven mass production based on division of labor

1970s to date

Extensive use of controls, **IT, and electronics** for an **automated and high productivity** environment

Future & Smart:

based on the **integration** of **virtual** and **physical production systems**

DEFINITION OF INDUSTRY 4.0

INDUSTRIE 4.0 represents the **coming fourth industrial revolution** on the way to an **Internet of Things, Data and Services Established in Europe (Germany)**

"The **information-intensive** transformation of manufacturing in a **connected environment** of data, people, processes, services, systems and production assets with the generation, leverage and utilization of actionable information as a way and means to realize the **smart factory and new manufacturing ecosystems**"

Smart industry or "INDUSTRIE 4.0" refers to the **technological evolution from embedded systems to cyber-physical systems**…

Decentralized intelligence helps create
intelligent object networking and independent process management,
with the **interaction of the real and virtual worlds**
representing a crucial new aspect of the manufacturing and production process

Source: Frost & Sullivan

INDUSTRY 4.0 – EUROPE 2013

Industry 4.0 was a spreading trend toward an evolution of traditional **industrial processes** and **it became** a reality

Industry 4.0 (**I4.0**) has multiple meanings

- connects / merges **production with ICT**
- merges **customer data with machine data**
- goes **M2M**: Machines communicate with Machines
- **components and machines** autonomously manage **production in a flexible, efficient, and resource-saving manner**

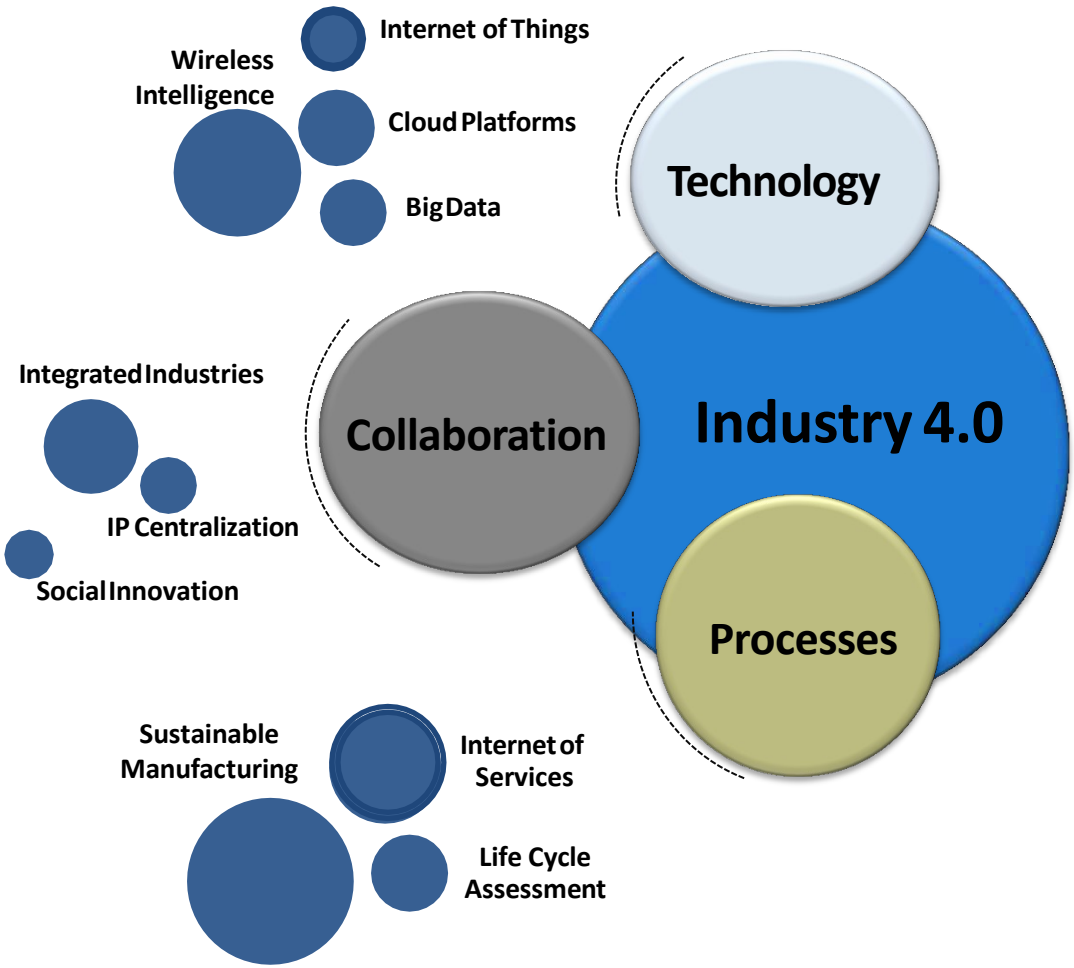
INDUSTRY 4.0 ENVIRONMENT

Industry 4.0 is in the sense of
product innovation in manufacturing

as an effort

in three areas

- **Technology**
- **Collaboration**
- **Processes**



Source: Frost & Sullivan

INDUSTRY 5.0 – EU COMMISSION DEFINITION

Industry 5.0 encompasses manufacturing to extend the scope of focus on society with specific more societal goals (**2021**)

- **Human-centric**
- **Sustainable**
- **Resilience**

Source: Frost & Sullivan

INDUSTRY 5.0 – EU COMMISSION

Industry 5.0 encompasses manufacturing to extend with specific more societal goals

- **Human-centric** - **human needs and interests at the heart of the production process**. *Rather than asking what we can do with new technology, we ask what the technology can do for us*. Rather than asking the industry worker to adapt skills to the needs of rapidly evolving technology, we want to use technology to adapt the production process to the needs of the worker
- **Sustainable** - develop circular processes that **recycle natural resources, reduce waste and environmental impact**. *Sustainability means reducing energy consumption and greenhouse emissions*
- **Resilience** - develop a higher degree of **robustness in industrial production**, against disruptions and support critical infrastructure in times of crisis, and overcome the fragility of our current approach to globalized production, by developing sufficiently **resilient strategic value chains, adaptable production capacity and flexible business processes**, *especially where value chains serve basic human needs, such as healthcare or security*

Source: Frost & Sullivan