

# INDUSTRY 4.0

A VISION FOR ADVANCED MANUFACTURING TECHNOLOGY

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# INTRODUCTION

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The Industry 4.0 concept is based on the ability of people, machines, devices, logistics systems and products to communicate and collaborate with each other.

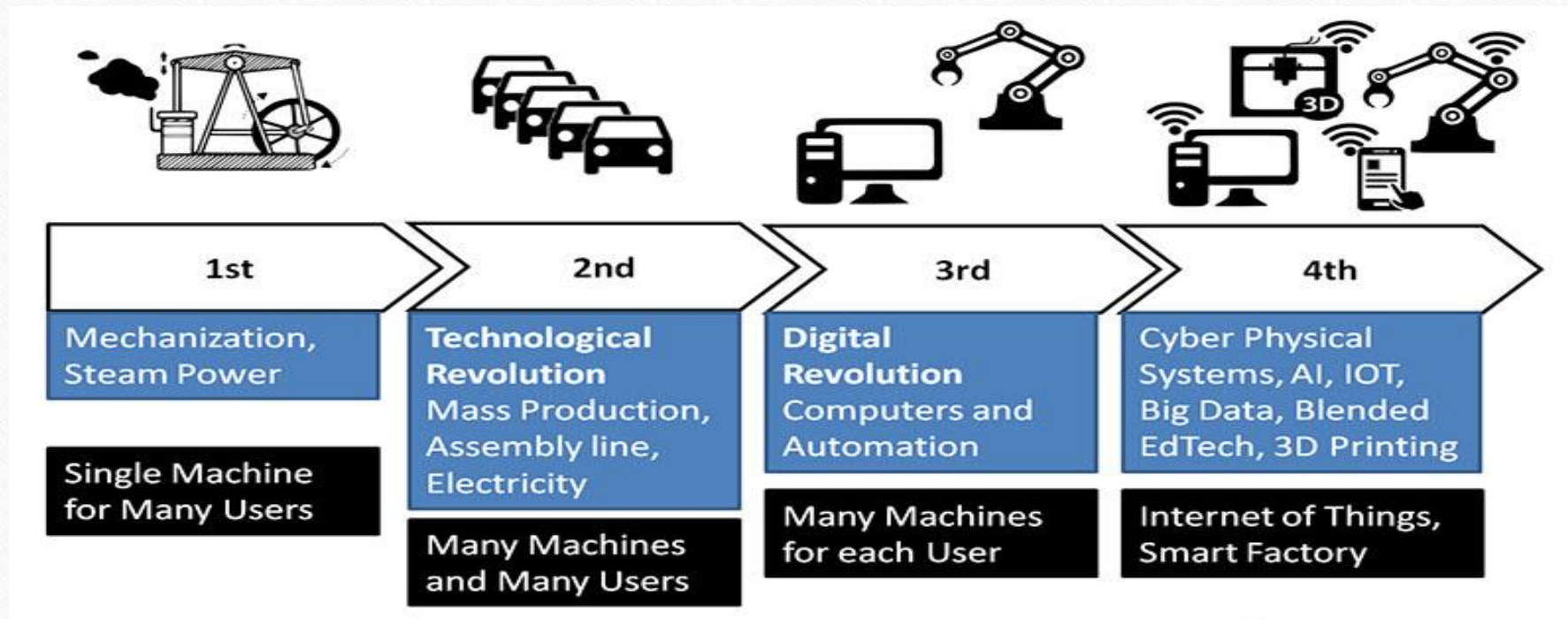
Industry 4.0 components the organization will gain flexible manufacturing processes, will be able to analyze large amount of real time data and will improve the processes of strategic and operational decision making.

The analyzing of related data within a ubiquitous system with the fusion of digital data and physical objects has the ability to transform every industrial sector in the world to evolve much faster and with greater impact than any of the three previous industrial revolutions.

The main objective of this study was to analyze differences among companies from five European countries in the context of readiness for Industry 4.0 in seven selected areas to control of manufacturing products and machines acting simultaneously and smartly.



# INDUSTRY 4.0



# INDUSTRIAL REVOLUTION

## (INDUSTRY 4.0)

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The first industrial revolution(1760-1830):

The first revolution is the invention of steam,water and machines. The usage of water and steam power and all sorts of other machines. It is the industrial transformation of society with trains. It is also a mechanization of manufacturing and loads of smog.

The second industrial revolution(1870-1969):

It was triggered by electrification that enabled industrialization and mass production. The electricity, new manufacturing Inventions which it enabled and mass production and extended automations. It was the introduction of mass production but without the possibility of products customization.

The third industrial revolution(1970-1990):

It is characterized by the digitalization with introduction of microelectronics and automation. It is everything to rise of computers, computer networks, rises of robotics in manufacturing It handles and shared the information the information and connects the internet . In manufacturing this facilitates flexible production.



The fourth industrial revolution(2014):

Industry 4.0 signifies the promise of a new Industrial Revolution one that marries advanced production and operation techniques with smart digital technologies to create a digital enterprise that would not only be interconnected and autonomous but could communicate, analyze, and use data to drive further intelligent action in the physical world.

It brings together digital, physical and biological systems.

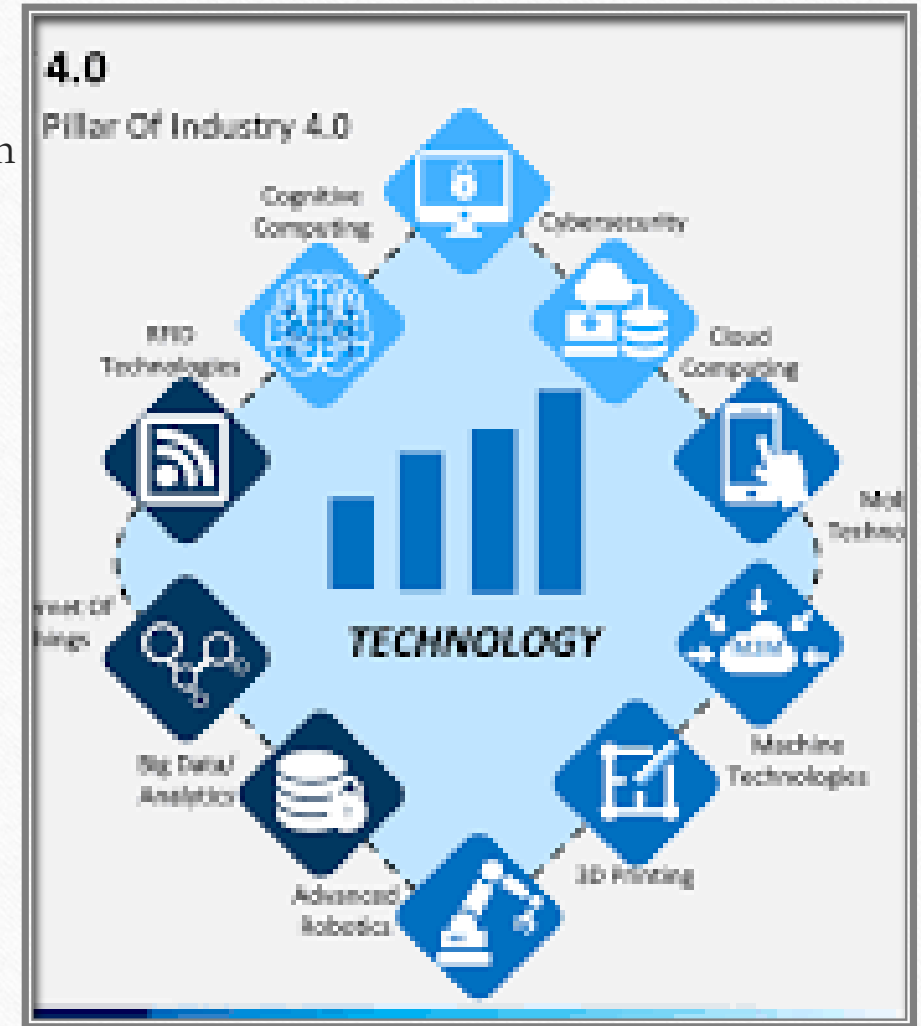
It is symbolized by the real time data exhibited by the machines.

It encompasses use of Robotics

Artificial intelligence

Smart manufacturing

Increasing digitisation



## TECHNOLOGIES :

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- Vertical Integration:

Vertical integration means integration of intelligent manufacturing systems (intelligent factories, products, intelligent logistics, production, marketing, services) with customer orientation.

- Horizontal Integration:

Horizontal integration refers to integration through new global networks that create added value (integration of business partners and customers, new business models, cooperation with other countries).

- Accelerating exponential technology:

Accelerating through exponential technologies means that technologies will be able to apply massively on the market because their price will drop rapidly and power will grow (e.g.: sensors) (Deloitte 2015).

- Application of Technology:

Application of technology is provided throughout the value chain, not only in the production process but also in the whole product life cycle.



## CHARACTERISTICS:

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- Cyber Physical System(CPS):

Industry 4.0 can be played as a cyber-physical system study where the advances and speed of development in communication and calculation form the cyber-physical system and Industry 4.0. CPS has sensors installed in the entire physical aspects in order to connect the physical things with virtual models.

- Internet of Things(IoT):

IoT can provide advanced connectivity of systems, services, physical objects, enables object-to-object communication and data sharing. It has aspects like heating, lighting, machining, remote monitoring.

- Internet of Services(IoS):

The IoS acts as service vendors to provide services through the internet according to the type of digitalization of services. and so on...



## Implementation Revolution of industry 4.0:

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According to a Cisco Systems survey conducted in April 2011, approximately 50 billion facilities will be connected to the Internet by 2020. Czech authors define 5 levels of digital forwardness.

- At the first level, there is a company that has an established information system for management of production and does not use internet.
- At the second level, companies have an interactive website, a software- driven business, automation, and are considering to build up a digital strategy. Multi-channel solutions (web, mobile, tablets, social networks), defined digital strategy and integrated 138 L.
- At the third level of digital forwardness.
- The fourth industrial revolution is also recognized in Slovakia. According to Lacko, Slovak companies focus in particular on increasing the efficiency and effectiveness of internal processes (Lacko 2018)
- At the highest level, there are companies that have a digitization platform with online and off-line worlds in one integrated and economical unit.

## CONCLUSION:

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- The external environment is currently favorable to investment and innovation activities. Economic stability and long-term economic growth have ensured an undisturbed environment with low interest rates and no major fluctuations in capital markets.
- Industry 4.0. Most states in Europe have built their own strategic documents, with a rich expert discussions, and their set strategic goals are also institutionally supported. We are witnessing an increasing number of research articles on Industry 4.0.
- Balanced results on the “Ability of technologies and knowledge to develop new products / services” are the result of the same issue being discussed in all countries.
- Traditionally, in the Slovak and Czech economies, companies relied on a high-quality education system in the country and the staff coming from the schools trained.
- Alternative financial resources to realize the necessary investments in automation digitization.



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THANK YOU