Erasmus +

Spolufinancované z programu Európskej únie Erasmus+

NEWSLETTER no.2

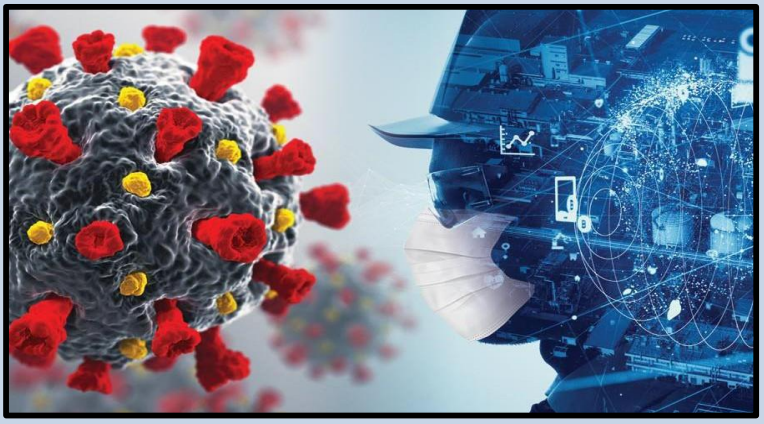
„ TECHNOLOGY INDUSTRY 4. FOR TEACHERS AND TRAINERS OF VOCATIONAL EDUCATION"

Project number:
2019-1-SK01-KA202-060772

the program Erasmus + for Education and Training, Key Action 2 - Strategic Partnerships

Industry 4 and COVID-19

COVID-19 affected everyone, not excluding industry. He had to adapt to the new reality. As companies sought solutions, Industry 4.0 technologies became an integral part not only of how to survive a pandemic, but also of how to exist in a post-pandemic world.
Fourth-Industrial Revolution technologies have proven to be a key driver of resilient supply chains that help companies survive a pandemic.
Companies that invest in These technologies can save money and increase your dexterity in addressing future challenges.
So how are the companies prepared to resume production in the near future? How can owners and suppliers in the value chain be smarter? Part of the response is the smooth construction of Industry 4 and a reassessment of the integral role of automation, communication and even localization.



Industry 4.0 has four basic directions for achieving competitiveness:

1. Networking and data collection using the Internet of Things, cloud technology
2. Analysis and intelligence, including advanced analytics, machine learning, and artificial intelligence.
3. Human-machine interaction including virtual and augmented reality, robotics and automation.
4. Advanced engineering including production of additives, renewable energy and nanoparticles.

Accelerated Adopting some Industry 4.0 technologies that help companies adapt quickly to new standards is the right choice.
Investments are not enough to transform a company into these basic directions. Dominant are people and their knowledge for Industry 4.

Project Outputs

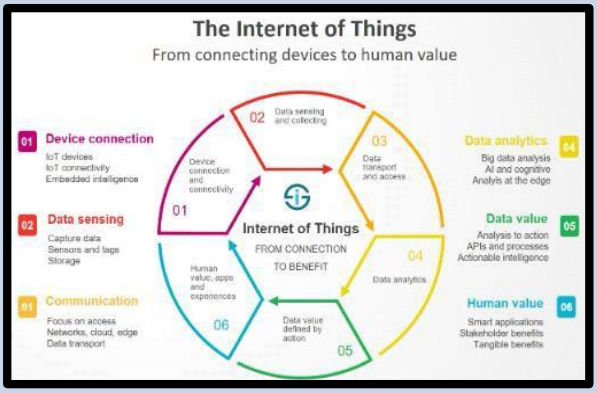
O3- Technology Industry 4

Intellectual output O3 is the most important output of the project. Output O3 is divided into 7 modules:

MODULE 1: The Internet of Things

Once One of the key technologies for smart manufacturing is the Internet of Things (IoT), which is the creation of a global information network composed of a large number of interconnected "things". The "things" of production can be, for example, materials, sensors, actuators, controllers, robots, people, machines, equipment, products and equipment for material handling.

Lesson 1.1: Internet of Things, Industrial Internet of Things Lesson 1.2: Automatic production data collection



MODULE 2: Advanced Robotics

Industrial robots have many benefits regardless on which type of industrial robot is implemented. If the robot is properly programmed to meet the unique needs of a particular application, it will almost certainly outperform manual work.

A new type of robot has now entered the industrial environment, the main feature of which is the ability to work safely with humans. Collaborative robots represent a new technology that requires new approaches, new methodologies and designs. In the case of collaborative robots, many new aspects need to be reconsidered, such as: recognizing the opportunities that "cobots" bring, what they can do, how they can behave in cooperation with humans, and what area or operations they are suitable for.

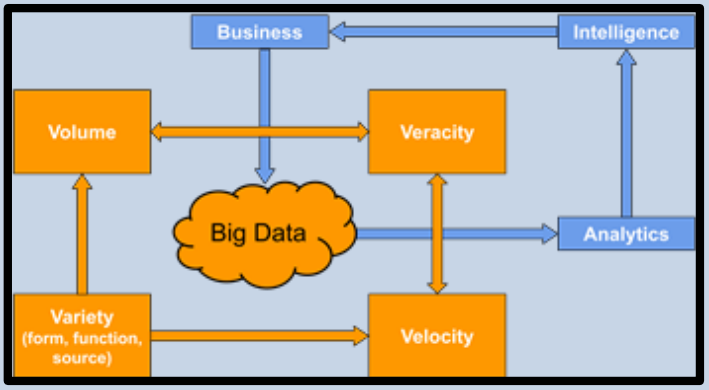
Lesson 2.1: Industrial Robotics Lesson 2.2: Collaborative Robots
Lesson 2.3: Bin-Picking Robotic Systems

Project Outputs

MODULE 3: Big Data Analysis

This module contains introductory topics on big data analysis and applications in the context of Industry 4.0. To obtain the basic concepts introduced no prior knowledge is required with the teaching material provided. Some of the presented use cases require an understanding of software tools for data manipulation and processing.

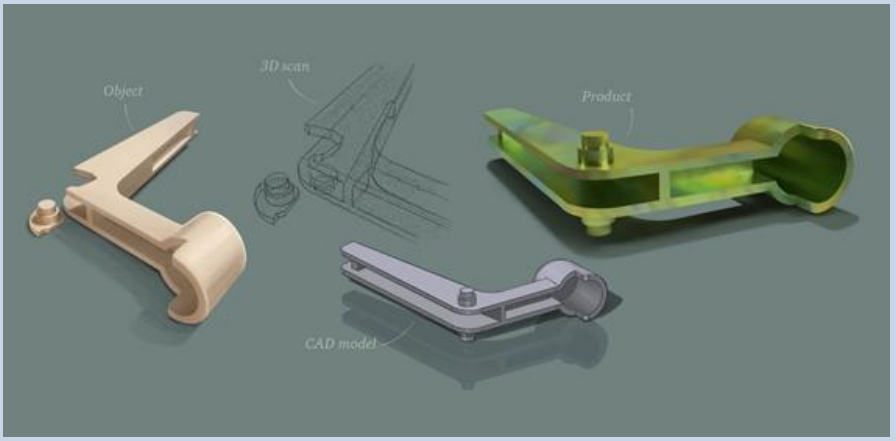
Lesson 3.1: Introduction to big data analysis
Lesson 3.2: Visualization, process, tools and people. Privacy Lesson 3.3: Applications and use cases in the big data industry



MODULE 4: 3D printing, additive production

This module contains introductory topics on 3D scanning, reverse engineering data acquisition, rapid prototyping, reverse engineering and additive 3D printing technology. Professional 3D modeling of new parts and assemblies designed for the production of 3D printing. Reverse engineering - conversion of a physical part into a digital model.

Lesson 4.1: 3D scanning - a method of data acquisition in reverse engineering
Lesson 4.2: Rapid prototyping. Reverse engineering
Lesson 4.3: Additive technology - 3D printing

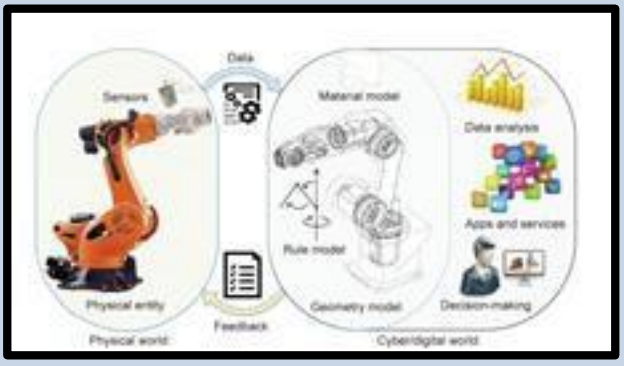


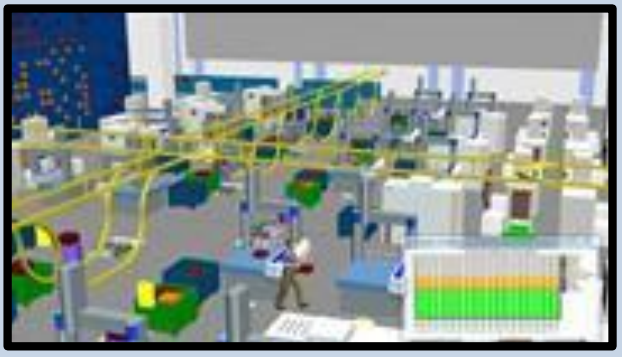
Project Outputs

MODULE 5: Digital twin

This module contains introductory topics on digital twins, tools for creating digital twins and a methodological framework for creating digital twins.
Basic concept of digital twin refers to the virtual representation of physical objects, processes, people, data, systems, or environments. The digital twin is therefore the only tool that allows continuous and continuous optimization.

Lesson 5.1: Digital Twin
Lesson 5.2: Tools for creating digital twins
Lesson 5.3: Methodological framework for creating digital twins





MODULE 6: Virtual reality

This module contains introductory topics about virtual reality and virtual reality applications in production. Virtual reality (CoR) is currently a phenomenon that is increasingly being transferred from the scientific field to real life, and its application can be observed in several sectors. This technology provides a whole new perspective on various areas that we would find very difficult to reach as ordinary mortals. It allows you to see and even feel things that are often very difficult to achieve in real life.
To obtain the basic concepts introduced no prior knowledge is required with the teaching material provided. Some of the presented use cases require an understanding of software tools for data manipulation and processing.

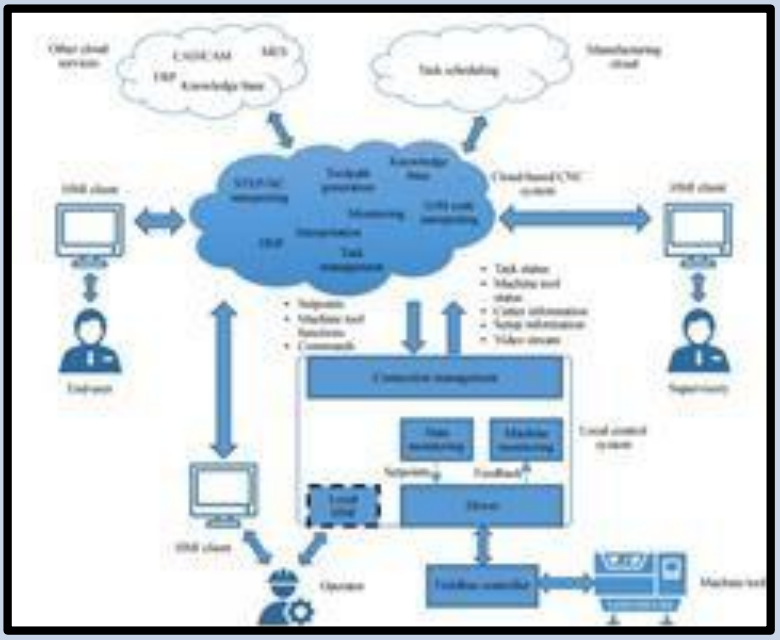
Lesson 6.1: Virtual Reality
Lesson 6.2: Virtual Reality Applications in Manufacturing

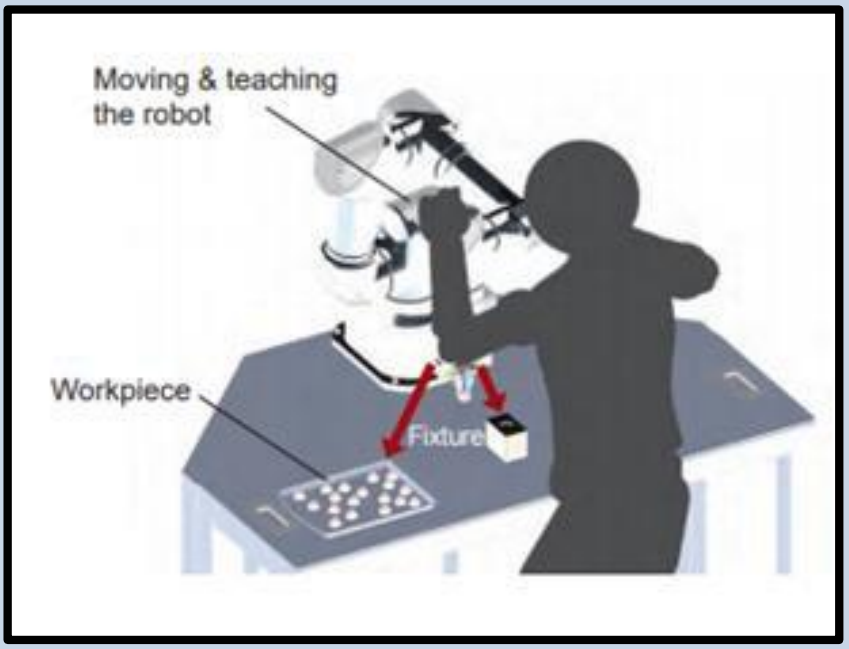
Project Outputs

MODULE 7: Artificial intelligence

Smart Factory 4.0 - a flexible system that uses artificial intelligence (AI) to automatically optimize performance and link the previous elements of the production line to autonomous control of production processes.

Lesson 7.1: Artificial intelligence in production
Lesson 7.2: Intelligent products, machines, robots
Lesson 7.3: Technologies - methods of artificial intelligence used in production





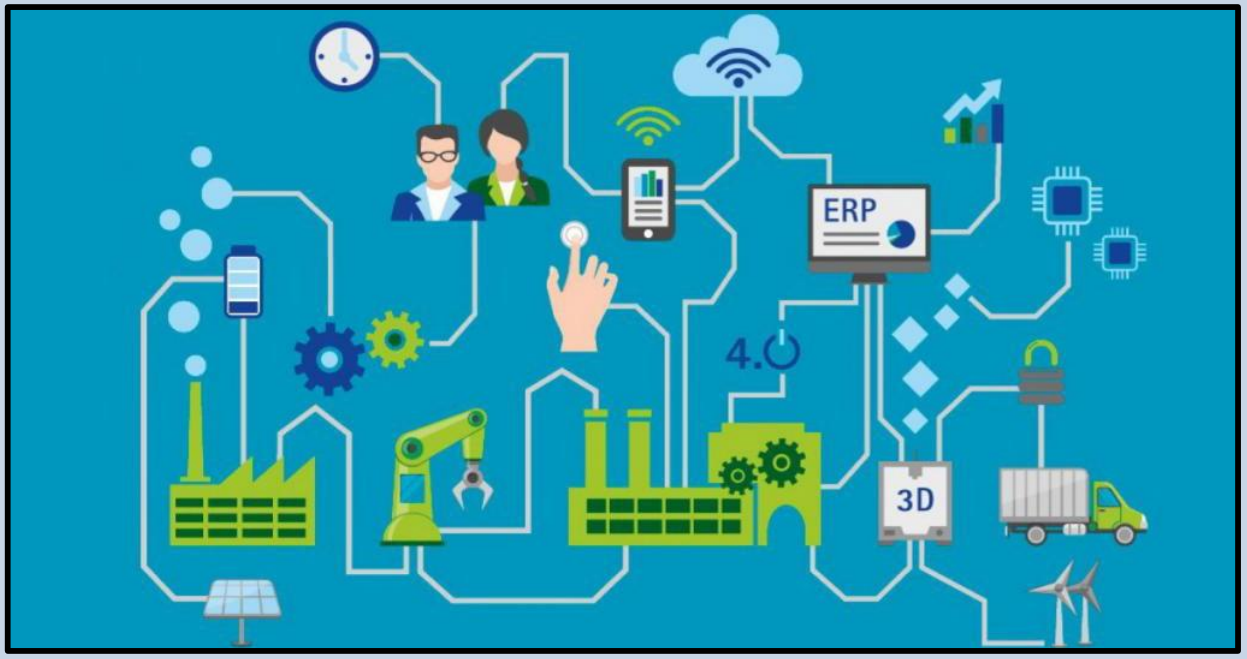
Spread and exploitation of results

The aim of the project is to provide results and tools designed for their sustainable use by the target group even after the end of the project. To achieve this goal, the main results of the project will be processed online and placed on the web for their time and space unlimited use by the target group.

Modular structure

educational ICT platform will enable its extension according to needs and requirements, whether by integrating new teaching materials or new functions.

The results of the project will be further disseminated to the target group that will use the educational materials, the ICT learning platform and virtual models, in this form the results of the project will reach other teachers of vocational subjects in secondary and vocational schools as well as their students, to whom they will further provide this information at the regional and national level.



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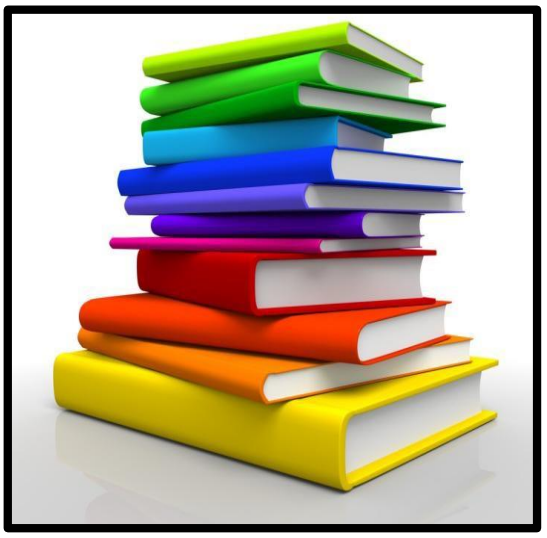

http://projectti4.eu

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