



Digital Twin

on smart manufacturing

WP2: Curriculum & methodology

D2.2: Digital Twin Job Profile



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1. Introduction

The D2.2: Digital Twin Job Profile, aims at creating a detailed profile description of the Digital Twin Technician in accordance with ESCO classification.

With the help of ESCO [website](#), the European classification of skills and occupations (explained in the D2.1), the Digital Twin job profile has been developed, together with the needs' analysis carried out by the partners during the application stage, physical discussions during transnational meetings of on-going projects and web meetings. After an extensive analysis and desk research of all the different skills and knowledge that the database of ESCO possesses, we have selected the ones that can be related to Digital Twin. From there we identified the competences that a Digital twin technician should have.

As explained in the D2.1 Digital Twin Skills index, we have created a survey for different stakeholders that have experience in Digital twin to answer and give their opinion about the relevance of these competences, in order to have a solid result to support or reject the results obtained at the previous research stage.

2. Job profile of a Digital Twin Technician

A Digital Twin Technician will help create a virtual representation of major industrial products or systems created with 3D design software, using real-time data, simulations, machine learning and deep technologies.

With the answers gathered in the survey, these are the following competences aligned with ESCO that a Digital Twin technician should have. They are categorized as Essential/Relevant or Useful.

Survey outcomes are available as Annex in D2.1 Digital Twin Skills index.

Competences*

Technical skills	Essential/ Relevant	Useful
- Create digital twins using 3D software and run simulations to measure product performance in varying conditions.	X	
- Integrate simulation processes in a physical automated process.	X	

*Competence: according to ESCOpedia competence means the proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development " <https://ec.europa.eu/esco/portal/escopedia/Competence>

- Draw insights from in-use product data to design new products and business models.	X	
- Use basic machine learning along with real-time usage and performance data to optimize product performance and services.	X	
- Possess a good knowledge of manufacturing process flow analysis.	X	
- Programming skill for simulation creation and implementation.	X	
- Possess some knowledge of VR/AR application in industry.		X
- Utilize Programmable Logic Controllers or PLC's, computer control systems used for the monitoring and control of input and output as well as the automation of electromechanical processes.	X	
- Utilize different types and brands of robots (industrial or collaborative).		X
Soft skills		
- Ability to coordinate tasks and enhance skills and strengthen the motivation and commitment of employees to achieve expected results.	X	
- Ability to plan time and tasks autonomously, and to regulate behaviors, thoughts, and emotions in a productive way.	X	
- Ability to implement strategies for effecting change, controlling change and helping people to adapt to change, and also coping with unforeseen events.	X	
- Ability to work with one or more people effectively in order to accomplish a common goal.	X	
- Ability to effectively question, analyze, interpret and evaluate the information received to form a judgment. Know how and where to find the information necessary to manage the digital twin process.	X	

- Ability to collaborate and communicate effectively with multidisciplinary teams in all kinds of situations.	X	
- Ability to set and deal with problems in order to define appropriate and intelligent solutions.	X	
- Ability to do what needs to be done and having the desire to act in a certain way to achieve a certain end.	X	
Green skills		
- Understand processes behind a smart manufacturing environment considering aspects such as infrastructure, water, green and social spaces, circular economy, energy conservation and waste management.		X
- Evaluate and analyze the amount of energy used, in order to support measures that save energy by reducing the demand, encourage efficient use of fossil fuels, and promote the use of renewable energy.		X
- Adopt a sustainability-oriented mindset by implementing designed measures to reduce pollution on the environment.		X

Additional competences:

- Basic knowledge of physics, pneumatics, electronics.
- Knowledge of the internet of things (IoT), artificial intelligence and machine learning
- Integration of communication protocols and/or IT systems
- Understanding the principles of operation and failure of plant equipment
- Managing large amounts of data with confidentiality and traceability