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Digital Transformation Competence Index

DTAM

DIGITAL TRANSFORMATION IN ADVANCED MANUFACTURING

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liverable factsheet

Project number:	621496-EPP-1-2020-1-ES-EPPKA2-SSA
Project acronym:	DTAM
Project Title:	Digital Transformation in Advanced Manufacturing
Work package:	WP2: Training Methodology and Curriculum
Title of Deliverable:	Digital Transformation Competence Index
Editor(s):	Jokin Goioaga
Reviewer(s):	Anabel Menica and all

Introduction

The DTAM project will design and deliver a new curriculum on digital competence* for technicians in the AM sector. The proposed curriculum will focus on deploying and managing digitalisation technology in the AM sector. It aims to match the skills needs of EU Industry which is rapidly implementing AM technology assisted by ICT. The Digital Transformation Competence Index (technical and transversal competences) for EU technicians in AM (Talent 4.0 Profile) will outline the general set of skills and competences needed to deploy and manage digital tools in Smart Manufacturing. The DTAM Digital Transformation Competence Index will form the basis upon which the final Curriculum contents will be defined and Learning Outcomes (LOs) in terms of knowledge, technical and soft skills for technicians designed. This Index should be easily understood by the stakeholders (VET providers, employers and employees) and it should provide the main information to support the design of the curricula. It also provides a basis for competence analyses and guidance for further definition of learning outcomes and qualification assessment. The DTAM project will prepare:

- ICT technicians to approach and understand digital technology in relation to AM processes and machinery (how to install, configure and monitor cyber physical intelligence and tools in AM environments).

- Robotics and Automation (or other OT) technicians with the ability to understand and manage digitalisation tools and the most advanced AM technologies for secure deployment and maintenance.

DTAM project will offer reskilling and upskilling opportunities to technical students and workers. It will allow technicians to understand, install, configure, monitor, analyse, transfer data and maintain digital systems in advanced manufacturing environments.

The Digital Transformation Competence Index has gathered data from multiple-sources which include (a) formal public and informal messages (from Govt. bodies, Industry and VET stakeholders), at conferences, in policy directives and communications, (b) desk research input from relevant papers and EU sources as well as close research into previous project initiatives and (c) a series of direct round table regional sectoral discussions. It has been developed according to the needs for a type of qualification in the labour market (i.e. the need to deploy and manage digital tools in Smart Manufacturing) and it has been verified by industrial and digital transformation experts (see the list of consulted stakeholders below).

*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

Transformation in Advanced Manufacturing Technician

Description

He/she understands, installs, configures, monitors, analyses, transfers data and maintains digital systems in advanced manufacturing environments.

Competences*

Technical- The DTAM technician will be able to:

- Understand the importance of the production key performance indicators (KPIs) and be able to take them into account when designing and configuring the digital systems.
- Apply industrial communication solutions, carrying out data collection and integrating data storage systems.
- Analyse the information collected as a result of digitalisation to optimise the processes involved.
- Understand the process of integrating a production control system with the company's digital management systems.
- Identify the different technologies, architectures and protocols that make an IOT ecosystem possible.

- Design and deploy communications networks for IoT devices, selecting the most appropriate technology.
- Design and program connected devices and use data processing techniques for decision making.
- Work with data generated within the industrial environment, from its capture and storage to its exploitation through data processing methods.
- Determine organizations' cybersecurity risk profiles by identifying good practices, standards and applicable regulations.
- Collaborate in the production of cybersecurity reports on industrial systems and environments.
- Establish the configuration of industrial control systems minimizing the risks of the organization.
- Do a preliminary assessment of IT/OT networks.
- Contribute to adapting the processes and/or machines by incorporating the selected digital technologies taking into account safety, efficiency and sustainability criteria.
- Contribute to the evaluation of the improvement in digitized maintenance processes by monitoring the evolution of the identified indicators.

Transversal and Entrepreneurial – The DTAM technician will be able to:

- adapt to new situations
- break down information into smaller categories to draw conclusions
- find solutions to difficult or complex issues
- plan

- communicate effectively in all kind of situations
- self-learn
- work together in a group effectively and efficiently.

EQF Levels

EQF levels 4-5

Prerequisite Knowledge

- Standard network hardware knowledge such as a network interface card, a switch, a router.
- Basic knowledge of IP addressing, network masks, default gateways.
- The basics of computer networks, how does the internet work, common networking standards.
- Familiarity with basic electrical concepts
- Basic knowledge of programming (for example C language)
- Basic knowledge of what is an operative system, digital certificates, antivirus systems, VPN, web-browsers

References

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- Automation World: Training Today's Workforce to fill Skills Gaps. The National Association of Manufacturers_NAM (US)
- European Semester Country Report_Spain (2019)
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- Skills for Industry Curriculum Guidelines 4.0 Future-proof education and training for manufacturing in Europe. Final Report. January 2020: https://op.europa.eu/en/publication-detail/-/publication/845051d4-4ed8-11ea-aece-01aa75ed71a1
- OECD (2018) "The Future Education and Skills: Education 2030": https://www.oecd.org/education/2030/E2030%20Position%20Paper%20(05.04.2018).pdf
- ESCO - Ocupaciones - Comisión Europea (europa.eu): ESCO - Ocupaciones - Comisión Europea (europa.eu)
- ESCOpedia: ESCO - ESCOpedia - Comisión Europea (europa.eu)
- Restart 4.0
- TRANSIT
- EXAM 4.0
- Industrial Cyber Security 4.0.
- SEnDIng
- LAIT
- RESTART

Stakeholders consulted:

- ADDIMAT- additive sector
- AFMEC - contract manufacturing sector
- C2b.-Campus to Business
- Talio Training
- IES Xabier Zubiri Manteo
- TKNIKA
- Università del Piemonte Orientale
- Confindustria Cuneo
- HMS (Hellenic Maintenance Society)
- SEPVE
- Federation of Enterprises and Industries of the Peloponnese & Western Greece
- Mondragon University
- NexMachina Solutions
- Womaster
- Kolbi
- Purple Blob
- Symplio LifeStyle Technologies
- Grupo Arteche
- RKL Integral
- ZIV company

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