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DigI-VET
Fostering Digitization and Industry 4.0 in vocational education
2018-1-DE02-KA202-005145

DigI-VET

Research Results – Competence Profil in Digitsation and Industry 4.0

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Asociatia Oamenilor de Afaceri Arges

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The competence profile in Digitisation and Industry 4.0

In this report we sought to establish the benchmark for our country in order to ensure that the specific and local contexts are understood and that innovation actions are coherent with local and regional economic development strategies.

This was combined by the research realized by us but also interviews and discussions done with local actors. This emerging competence profile is important for developing the teaching materials and the curriculum addressed at fostering the digital competences.

Feedback from local partners:

What are the core priority skills that should be addressed through the curriculum for a successfully working in Digitisation and Industry 4.0?

- Transversal competencies such as creativity, entrepreneurial thinking, problem solving, conflict solving, decision making, analytical skills, research skills, and efficiency orientation
- Action-related competencies like Leadership and Management, that also refers the ability to take individual or socially constructed ideas into action
- Supporting and Cooperating by adhering to principles
- Personal competencies that reflect the the ability to act in a reflective and autonomous way.
- Good communication skills and implementation of various learning methods and techniques for teaching.
- Social/interpersonal competencies that refers to the ability of employees to communicate, cooperate and to establish social connections and structures with other individuals and teams, to build and maintain maintaining networks of experts. Social competencies such as intercultural skills, language skills, networking skills, ability to work in a team, ability to be compromising and cooperative, ability to transfer knowledge
- Personal competencies that includes flexibility, ambiguity tolerance, motivation to learn, ability to work under pressure, sustainable mindset and compliance

- State-of-the-art knowledge and process understanding on key technologies like: a) The industrial Internet of Things; b) Augmented reality c) Autonomous robots; d) Horizontal and vertical system integration; e) Simulation; f) Cybersecurity; g) The cloud; h) Big data and analytics. But this list must be adapted according to specific need.
- Software is the key enabler of Industry 4.0 initiatives - development and operation of software systems.
- Other different technical skills needed includes business analysis, software development and testing, quality assurance but as well system operation skills such as database and network administration, web site management, security, source control, continuous integration, infrastructure automation, deployment automation & orchestration , service orchestration, cloud, and on testing automation.

The fact is that the skills needed for Digitisation and Industry 4.0 are numerous and diverse, but the identified skills could be mostly constrained in the categories below.

Leading & Deciding		
1.1.: Deciding and Initiating Action		
KNOWLEDGE	**SKILLS**	**RESPONSIBILITY and AUTONOMY**
- Decision Making - Taking Responsibility - List common learning practices, particularly in the work-based situation - Name the skills needed at the work place of the identified occupational area - Define the skills needed at the work place - Know the existing resources to support training processes of	- Map existing resources to support processes aimed at developing digitization and Industry 4.0 - Analyse socioeconomic systems - Obtain information about resources needed for the development of the process - Outlining existing resources related to access to know-how and potential partners	- Analyse socioeconomic systems and processes relationship - Analyse socioeconomic systems - Improve employability by including gender approach within training programmes - Visiting enterprises already engaged in the process, check of suitability of applying the method, identify all the

learners' - Identify suitable examples - Know the legislation on continuing training - Know the documentation related to Erasmus+ projects - Know the national and European legislation regarding the Digitization and Industry 4.0 towards the companies.	- Observe information about legislation - Recognize the skills needed at the work place (of team members) - Explain the action plan or programme to the employer in order to make clear the whole framework - Identify clearly a the team within the company - Acting with confidence - Acting on initiative	needed team members and which competences do they need. - Recognize social context analysis related to labour market and social inclusion processes of adult unemployed - Identify what actions you can take to lower the risks when making a decision
1.2: Leading and Supervising		
KNOWLEDGE	**SKILLS**	**RESPONSIBILITY and AUTONOMY**
- Make the team feel invested in the accomplishments of the skunk works project. - Highlighting any bonus system your company operates.	- As this type of project will involves staff members from different companies and departments and with different working practices who would not usually work together it is important to adapt to different people and circumstances, and handle unforeseen events with grace - Lead others when needed and build consensus, but not to take over the work of the team or stifle the creativity of others.	- Find out if the persons which have experience as a team leader. - Enjoy autonomy in their organizations. - See if your potential member can describe a situation where you demonstrated flexibility. - See if they like routine work or non-routine tasks. - Ask about situations in which they had to work on a variety of projects simultaneously.

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Teamwork		
KNOWLEDGE	**SKILLS**	**RESPONSIBILITY and AUTONOMY**
- Collaborate and work harmoniously with others; - Makes constructive suggestions; - They pay attention to one another; - Define precisely what team members responsibilities and tasks - Understand the communication techniques (great relational skills: empathy, listening…)	- Monitor the organisation of the tasks - Recognize the practices, skills-based approach	- Help the team members and partners by providing advice and support - - To assume roles and take on board the responsibilities assigned to them.
Creativity		
KNOWLEDGE	**SKILLS**	**RESPONSIBILITY and AUTONOMY**
- Thinking 'outside the box' - To be able to explain their vision - Engage in creative problem-solving to come up with suitable solutions that will address the identified needs. - Know how to identify methods and techniques to improve active participation of all team	- See if you can find out what the most creative or innovative project they have worked on. - Assess the all teams involved and their creativity potential - Find out what is their idea of 'think outside the box', ask them to tell you about a project they worked on where a conventional	- To identify the real problems affecting implementing digitization - Analyse the situation in order to concretise the tailor-made strategy - Setting goals/establishing an operational action plan - Organise needs-orientated workshops -

members and partners. - Know how to research and organize statistical data, business analysis and know the main market strategies - Know how to design new online tools -	approach was not suitable. - Prepare the worksheet for practical work/designing and preparing materials - Design methods and techniques to improve active participation of all members - Collect information and data for tailor-made and needs oriented strategies	
Comunication and networking		
KNOWLEDGE	**SKILLS**	**RESPONSIBILITY and AUTONOMY**
-Communication theories and techniques -Being able to convey information to others in a simple and unambiguous way. It involves the distribution of messages clearly and concisely, in a way that connects with the audience -Direct, succinct communication provides clear direction and avoids misunderstanding and confusion in terms of the work process. -Wide contact network of technology transfer stakeholders (national and	- Develop good and stable relationships with his team - Speak in public, presentation skills - Recognize the needs of analysis in networking	- Manage place and resources for the activities - Find out if the team members are willing to work through conflicts opposed to avoidance of conflict. - Do they think everyone has a chance to state his or her views? - Ask them about an experience were when their communication skills were powerful enough to enable them to influence the way others thought or acted, even in

international)		a very difficult situation.
Planning and Project management		
KNOWLEDGE	**SKILLS**	**RESPONSIBILITY and AUTONOMY**
- Fundamentals of Project management (with a focus on Innovation management) -Operational & strategic planning -Coordination of the work team	- Plan innovative pedagogical methods and techniques to improve communication and process integration - Mastering planning tools - Ensure the correlation chart of activities with the objectives - Define time schedules - Plan innovative methods and techniques to improve process development - Ensure the correlation chart of activities with the objectives	- Plan meeting sessions - Analyse the situation of the project in order to concretise the tailor-made planning process and implement project management - Setting goals/establishing an operational action plan - Organise needs-orientated workshops - Manage place and resources for the activities
State-of-the-art knowledge and process understanding on key technologies like:		
KNOWLEDGE	**SKILLS**	**RESPONSIBILITY and AUTONOMY**
- The industrial Internet of Things; - Augmented reality - Autonomous robots;	- See if you can find out what the most how you can use the different technologies on innovative project they have worked on.	- Search for data - Analyze the gathered information - Be updated

- Horizontal and vertical system integration; - Simulation; - Cybersecurity; - The cloud; - Big data and analytics.	- Patent databases - Journals and publications of the innovation sector Innovative companies databases	
Results orientation and experience		
KNOWLEDGE	**SKILLS**	**RESPONSIBILITY and AUTONOMY**
- Knowing what results are important, and focusing resources to achieve them. - Work in relevant organization.	- Being confident their approach is important so confidence will grow.	- See if your team members are passionate with the identified areas. - Stays focused on results. - Effectively engages team members' participation in achieving goals
Problem solving		
KNOWLEDGE	**SKILLS**	**RESPONSIBILITY and AUTONOMY**
- The issues can vary in complexity, with some situations requiring a simple solution and others demanding more thought and skill to overcome.	This allows the team member to define the problem, generate solutions, select and implement the identified solution.	Members know and use problem- solving steps.