ICAMP

CONFERENCE 2024

Job Changes And Skill Needs In Advanced Manufacturing Related To The Green And Digital Transitions

14 - 15 MAY

OSTERTAG Event Centre
Aalen, Germany

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

Expectations Of These Two Hours Breakout Session

LCAMP
Learner Centric Advanced Manufacturing Platform

Make you aware about the role of LCAMP Observatory

Make you aware of interactions between LCAMP Workpackages

Share with you first outcomes of this second year's analysis

By understanding interests of expected deliverables, make you sponsors of LCAMP project

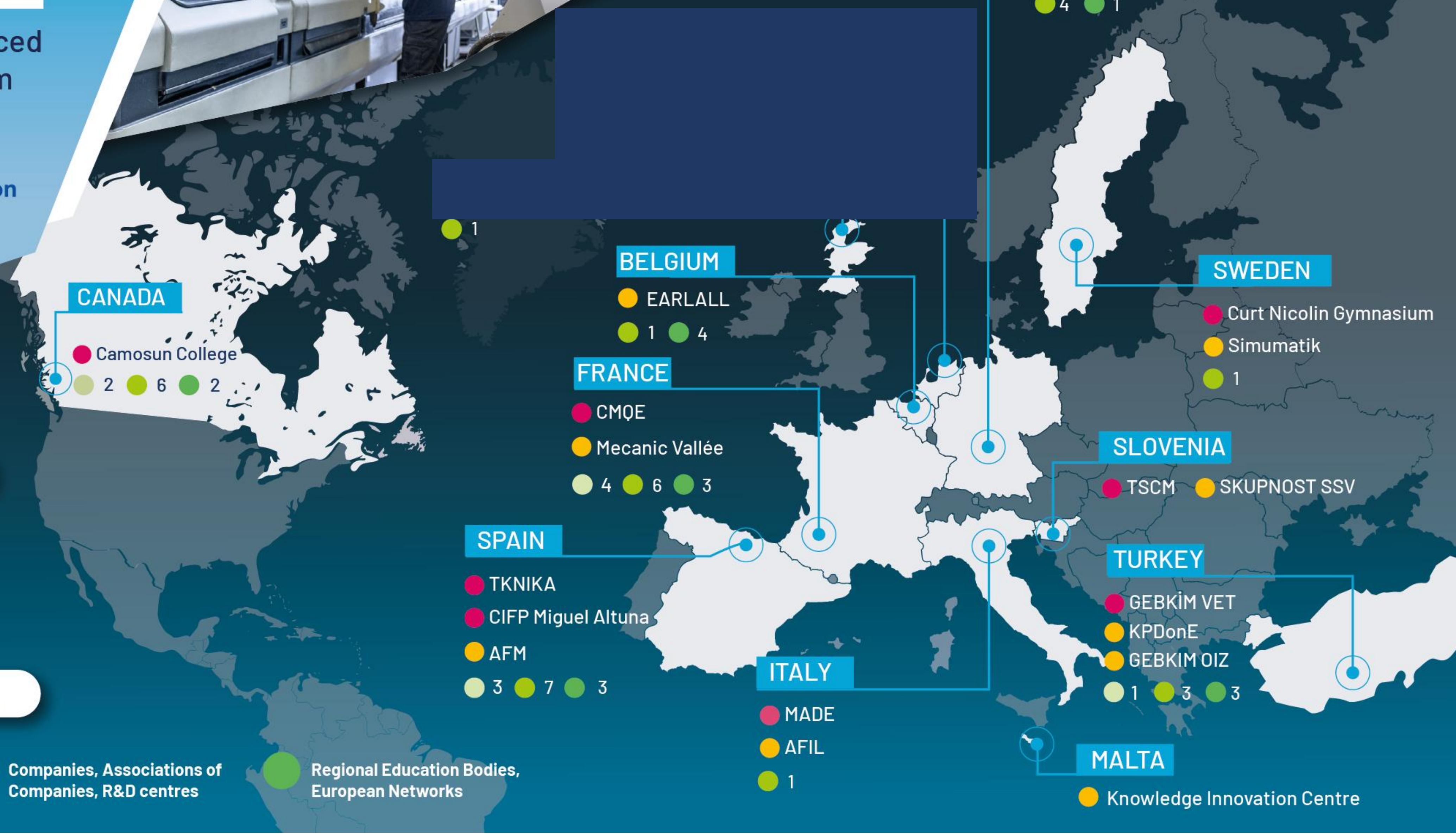
Agenda

- LCAMP project - executive summary
- WP3’s objectives and deliverables
- LCAMP Observatory - introduction
- LCAMP Observatory – methodology / outcomes
- Survey / First results on second year report

LCAMP

Learner centric Advanced Manufacturing Platform

Co-funded by the European Union



20 Full Partners

- VET providers
- Industrial Associations, VET Associations

60 associate partners

- VET/HVET Centres and VET Associations
- Companies, Associations of Companies, R&D centres
- Regional Education Bodies, European Networks

CONSORTIUM

Consortium LCAMP.

Learner Centric Advanced Manufacturing Platform

The LCAMP project aims to support and empower regional Advanced Manufacturing Centres of Vocational Excellence (CoVE) to become more resilient, innovative and better equipped to train, upskill, and reskill young and adult students to successfully face the digital and green transitions.

In the context of LCAMP you will find from the development of skills and competences to their provision; in addition to the design of learning pathways, micro-credentials, active methodological approaches, articulation of services and innovation for SMEs.

Co-funded by the European Union

TIMELINE

LCAMP
Learner Centric Advanced Manufacturing Platform

June 2022
- Launch of the project

November 2023
- LCAMP Skills Assessment toolkit (WP5)
- Opening the Collaborative Learning Factory (WP6)

June 2024
- LCAMP Observatory is running (WP3)
- Annual Conference I (WP9)

November 2024
- LCAMP micro-credentials system is created (WP5)

May 2025
- First collaborative activity among partners is created (WP6)
- ADMA and LCAMP Collaboration (WP7)

June 2025
- LCAMP Alliance running (WP2)
- Annual Conference II (WP9)

December 2025
- Open Innovation Community (WP4)

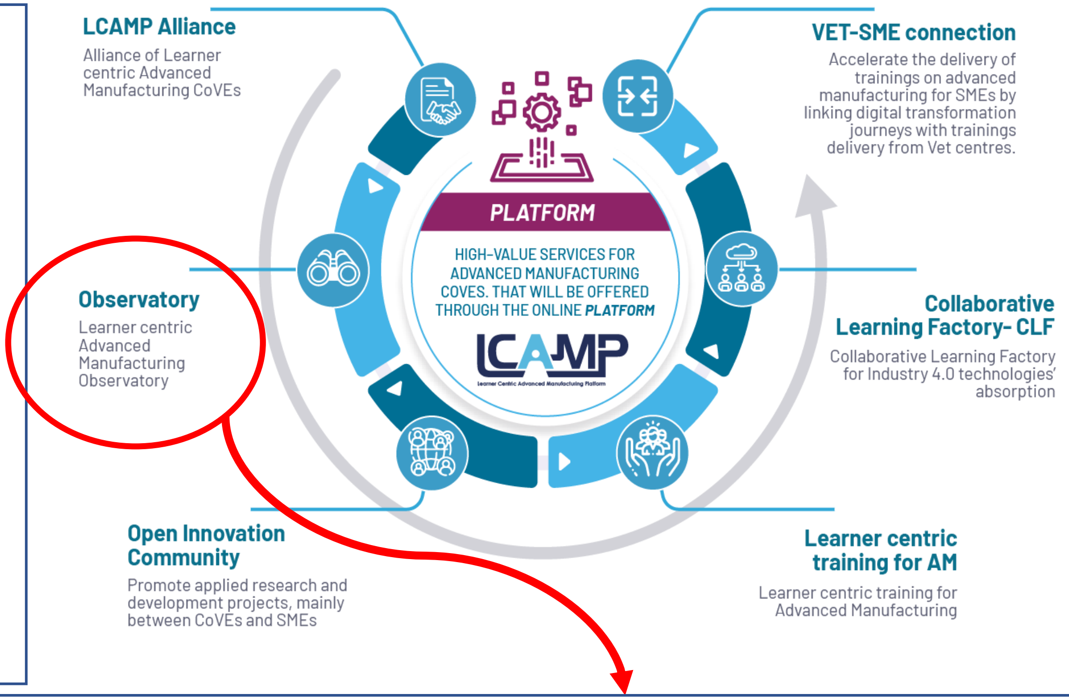
February 2026
- Advanced Manufacturing Excellence Discovery Platform (WP8)

April 2026
- Presentation of the roadmap for the next years endorsed by the Alliance members (WP10)

May 2026
- Final Annual Conference (WP9)

LCAMP project - executive summary

The LCAMP project under the CoVE initiative aims to enhance regional skill ecosystems in Advanced Manufacturing.



LCAMP plans to establish a European Platform of Vocational Excellence for Advanced Manufacturing, promoting resilience and innovation across regions through collaboration.

WORK PACKAGE 3 (WP3) – Observatory

LCAMP Observatory, is one of the services the LCAMP platform will put available for the final users. The Observatory is led by the French cluster Mecanic Vallée and the French VET centre CMQ.

LCAMP project - executive summary
Use cases examples

The LCAMP project will allow students and professionals to find everything ADMA related they might need.

Sophie: Student

"I like learning new things, especially when it comes to artificial intelligence"

Expectations

To have a place where all the information on the field of artificial intelligence is gathered & to no longer have to sort or double check the information she finds on a subject

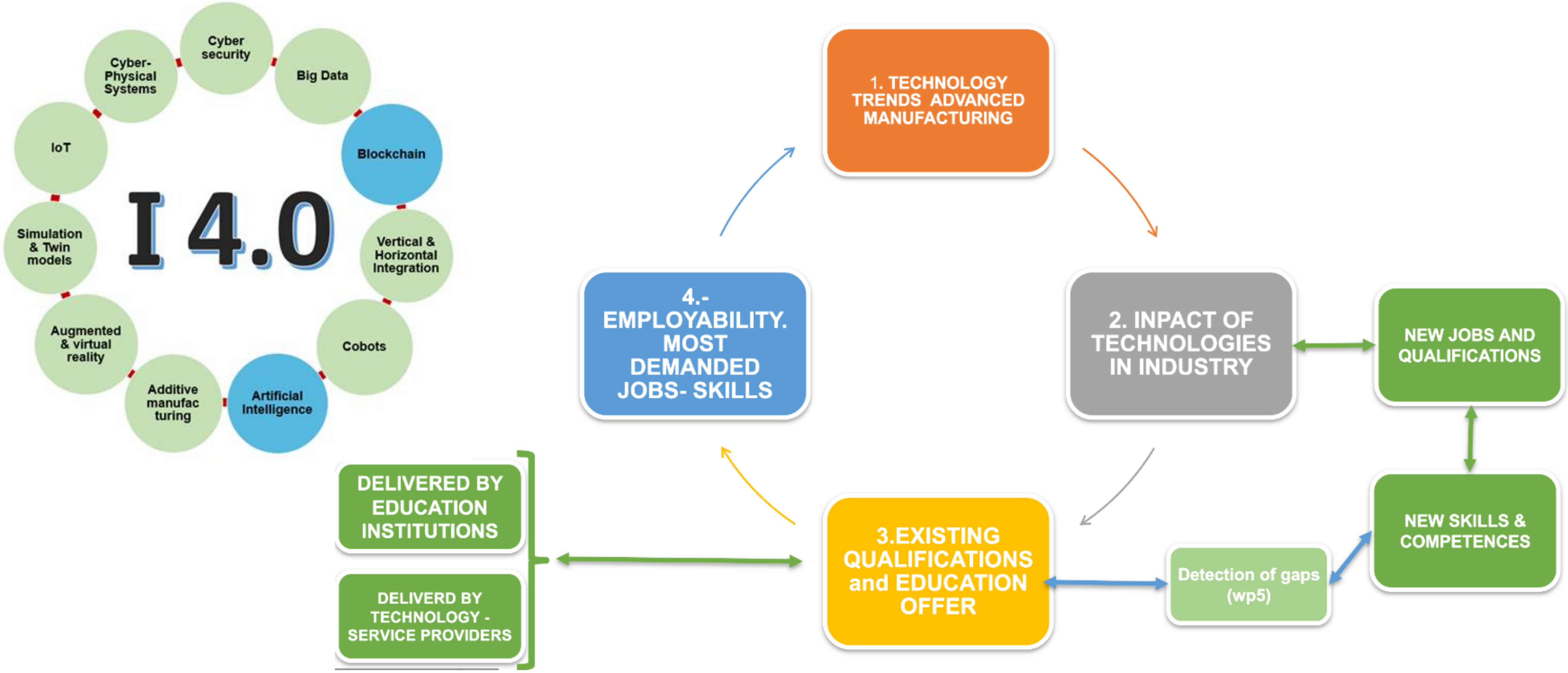
Leverage

She does not need this platform in her professional life

Brake

Since she has no theoretical knowledge on the subject, she is not able to sort out the information she finds

Trends impact on skills cycle



LCAMP Observatory - introduction
Role of the observatory

The LCAMP Observatory is **designed to provide high-value reports to VET stakeholders by collecting, filtering, and organizing relevant information on advanced manufacturing**. The current lack of access to this information is a barrier to the success of VET/HVET centers and small and medium-sized companies. By leveraging existing platforms and observatories in business and education, the **Observatory will offer accessible and validated information through a digital platform**, supporting technology integration in VET centers, curriculum revision, learning methodology updates, and continuous training improvements.

The LCAMP Observatory will be the **one-stop shop for all data and information generated**. It will collect the necessary information to create LCAMP deliverables and services, establish a sustainable structure, and promote the LCAMP platform and Open Innovation community. An **expert network from nine countries will validate the findings**, and yearly reports will summarize results for stakeholders to support informed decision-making.

LCAMP Observatory - introduction Roadmap

Throughout the LCAMP project, the Observatory will issue periodic reports covering technology trends, labour market changes, skill requirements, and occupations in Advanced Manufacturing:

Publication of a yearly reports:

- Report 1: June 2023, D3.2 – M12 → done, published
- Report 2: June 2024, D3.2 – M24 → ***will be delivered this year June ‘24***
- Report 3: June 2025, D3.2 – M36 → …

D3.2 M24: Objectives WP3 deliverables

LCAMP
Learner Centric Advanced Manufacturing Platform

ESCO Standards Jobs/occupation & Skills

ESCO*: multilingual classification of European Skills, Competences, Qualifications and Occupations. ESCO: part of the Europe 2020 strategy.

D3.2 - M12

Digital and green transition trends

WP3 Observatory

Selection of jobs impacted

Support: experts

WP5
Training Offers H-VET

WP8
Platform development

D3.2-M24: sub-reports

Present how a selection of jobs are impacted by Advanced Manufacturing Digital Technologies and Green Transition:

“which and how tasks are impacted”.

Describe modifications and evolutions of the related needed skills.

new / changing Job Profiles& Occupations

Area/Business

Future Skills Needs

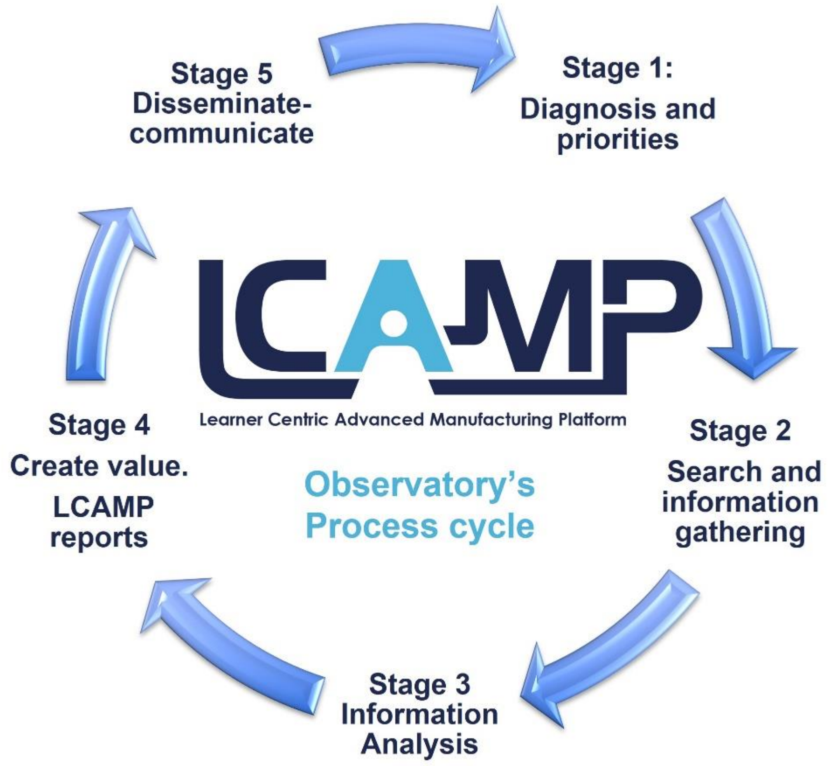
ESCO classification identifies and categorises skills, competences, qualifications and occupations relevant for the EU labour market and education and training. It systematically shows the relationships between the different concepts.

*https://esco.ec.europa.eu/en/about-esco

LCAMP Observatory – D3.2 M24 (year2) Objectives & Methodology

This second year of Observatory research is all about validating how to describe job impacts and related skills. It's also about validating the framework so that other work packages can use these Observatory results.

To build up the database and keep it up to date, the Observatory's operating methodology comprises a five-stage process, which will take place on a regular basis:



LCAMP Observatory – D3.2 M24 (year2) Methodology - Stage 01 Diagnosis and priorities

What we want to get from the observatory D3.2 - M24?

Report 2 **describes how digital and green transition trends identified in D3.2 (M12) are impacting a selection of jobs, and identifies the related skills needed**.

What for will do we use those outcomes?

D3.2 results are used by other LCAMP services:

- Learner Centric Training for Advanced Manufacturing (WP5)
- Platform (WP8) and Impact Assessment

What are the outcomes of the Observatory Report 2: June 2024, D3.2 –M24?

9 Sub-reports

LCAMP Observatory – D3.2 M24 (year2)
Methodology - Scope

Instead of finding new jobs, we chose existing jobs based on four criteria relevant to the sectors of interest to the LCAMP: machine tools, automotive, aerospace, electric and electronic industries, transport, and maritime.

1 - Employability: Based on the findings of common European reports, regional reports already available, a regional survey, or other regional methods, we can confirm that the selected job is in high demand and that demand is increasing rapidly.

2 - Smart Specialization Strategy: The selected jobs must align with the Smart Specialization Strategy (https://s3platform.jrc.ec.europa.eu/) in the relevant country.

3 - Education levels: The selected job roles can be performed at the EQF (European Qualification Framework) levels 3 to 6.

LCAMP Observatory – D3.2 M24 (year2) Methodology - Scope

4 - Job/tasks are impacted by the Digital and Green transition trends identified in first year's report,

1-1 Internet of Things (IoT) / Smart Sensors / 5G technology
1-2 Artificial Intelligence (AI) / Machine learning / Big Data Analytics
2-1 Virtual and Augmented Reality
2-2 3D scanning
3-1 Cybersecurity
3-2 Edge Computing vs Cloud Computing/Blockchain for Supply Chain/Quantum Computing
4-1 3D Printing/Additive Manufacturing
4-2 Robotics and Automation
4-3 Collaborative Robots (Cobots)
4-4 Digital Twins
4-5 Adaptive Manufacturing Systems
4-6 Predictive Maintenance

5-1 Renewable Energy Integration
5-2 Circular Economy
5-3 Energy Efficiency
5-4 Waste Reduction
5-5 Green Logistics and Supply Chain
5-6 Sustainable Material Innovation
5-7 Carbon Footprint Management
5-8 Eco-friendly Packaging
5-9 Biomimicry in Design
5-10 Sustainable IT Infrastructure
5-11 Environmental Monitoring and Reporting
5-12 Corporate Social Responsibility Initiatives

LCAMP Observatory – D3.2 M24 (year2) Methodology - Outcomes

Report 2 is constituted by the 9 Sub-reports below.

Sub-report reference	Sub-report scope	Objectives
D3.2 - M24 - A	Methodological sub-report	Describes the objectives and methodology applied to produce the analysis and the corresponding sub-reports.
D3.2 - M24 - B	Basque Country subreport	The purpose of each sub-reports is to present how jobs selected, tasks and related needed skills are impacted by Advanced Manufacturing Digital Technologies and Green Transition.
D3.2 - M24 - E	European level subreport	
D3.2 - M24 - F	French subreport.	
D3.2 - M24 - G	Germany subreport.	
D3.2 - M24 - I	Italy subreport.	
D3.2 - M24 - S	Slovenia subreport.	
D3.2 - M24 - T	Turkey subreport.	
D3.2 - M24 - R	Synthesis of all D3.2 - M24 sub-reports.	Provides a synthesis of all D3.2 - M24 reports.

LCAMP Observatory – D3.2 M24 (year2) Methodology - Stage 02 and 03 Search & information gathering and analysis

We are utilizing a range of methodologies for the Technology Surveillance and Competitive Intelligence systems. The information gathering strategy defined in the observatory draws upon the strengths of each method and combines them in a way that is most effective for the observation targets.

During this second year of the project, and specifically its analysis phase, the Observatory has primarily focused on secondary research activities, which play a significant role in the observatory. These activities include desk research. Web Scraping. “Real time” information. A review of relevant literature and publications, including scientific papers, non-scientific publications, sectorial magazines, and cluster reports. A review of the results of EU projects.

These researches were also validated through interviews with VET centers, teachers, and industrial companies in Basque Country and Germany.

LCAMP Observatory – D3.2 M24 (year2) Methodology – Stage 04 Extract value & Report creation - Role of experts

The Observatory's annual evaluations (2023-2026) involve experts from partner countries reviewing key trends identified by partners across sectors such as additive manufacturing, robotics, and virtual reality.

To provide the most accurate and up-to-date information, partners submit their trends through questionnaires based on their reports. These are then assessed by experts, who provide their agreement or disagreement with justification. The comparative analysis of results across countries informs the evaluation process.

The results will be compared between countries. The questionnaires were developed using a data table that describes the impacts of jobs and the related skills needed, which facilitates data gathering and analysis.

LCAMP Observatory – D3.2 M24 (year2) Inputs and first result

Sticking rules described previously, we have selected 75 industrial jobs and analyzed impacts on 40 ones:

- 6 for France,
- 4 for Germany,
- 17 for Basque Country,
- 3 for Italy,
- 4 for Slovenia,
- 6 for Turkey,

Six of these are commonly found in numerous countries.

LCAMP Observatory – D3.2 M24 (year2) Inputs and first result

75 jobs selected:

Esco code	Esco Occupation	Germany	Sweden	France	Turkey	Italie	Slovenia	Basque Count
1212	Human resource managers							
1345	Education manager							
2512	Software developers							
3112	Machine operator							
3511	Information and communications technology operations technicianstechnic							
7128	Pipe manufacturing line operator							
8142	Plastic products machine operators							
8212	Industrial electrical installer an							
8219	Production line assembler operator							
1213.2	Policy ManagerCorporate socia							
1213.8	sustainabilItaliey manager							
1219.2	Policy ManagerCorporate socia							
1219.6	Project Manager							
1321.2.1	industrial production manager							
1321.2.3	operations manager							
1324.3	logistics and distribution manag							
1324.8	Supply chain manager							
1330.3	Chief technology officer							
1330.7	ICT project manager							
2141.10	process engineer							
2141.4	Industrial Engineer							
2141.4.2.1	Automation Engineer							
2141.8	maintenance and repair engineer							

LCAMP Observatory – D3.2 M24 (year2) Inputs and first result

75 jobs selected:

Esco code	Esco Occupation	Germany	Sweden	France	Turkey	Italie	Slovenia	Basque Coun
2144.1	Mechanical engineer							
2144.1.3	Automotive engineer							
2151.1.3	electromechanical engineer							
2152.1	Electronics Engineer							
2152.1.1	Industrial computer engineer							
2152.1.13	Predictive maintenance expert							
2152.1.15	sensor engineer							
2152.1.9	microelectronics smart manufacturing engineer							
2163.1	industrial designer							
2166.1 ?	3D modeller ?							
2263.3.1	Ergonomist							
2412.3	corporate risk manager							
2421.4	lean manager							
2433.1	Electrical eta mechanical TAS operator							
2511.11	ICT intelligent systems designer							
2511.17	integration engineer							
2511.2	computer vision engineer							
2511.3	Data Analyst							
2511.6	enterprise architect							
2512.4.1	Blockchain Developer							
2514.4	numerical tool and process control programmer							
2519.1	data qualItaliey specialist							
2522.1.1	ICT network administrator							
2529.4	Ethical Hackers (main tItaliele of ESCO occupation)/CybersecurItaliey specialist (Alternative label put o							

LCAMP Observatory – D3.2 M24 (year2) Inputs and first result

75 jobs selected:

Esco code	Esco Occupation	Germany	Sweden	France	Turkey	Italie	Slovenia	Basque Count
2529.8	ICT securItaliey manager							
2619.12	Regulatory Affairs Manager (Main tItaliele) / Compliance Officer (alternative label that i think will sulta							
2619.4	data protection officer							
3114.1.10	sensor engineering technician							
3115.1.11	Mechanical technical office operator							
3118.1	3D printing technician							
3118.3.6	Electrical technical office operator							
3119.2.1	Robotics engineering technician							
3122.3	Metal injection moulding machine operator							
3122.4.13	plastic and rubber products manufacturing supervisor							
3139.1	automated assembly line operator							
3139.2	Industrial robot controller							
3343.1.7	supply chain assistant							
3512.3	ICT securItaliey technician							
3515.1.6	Mechanical maintenance							
7212.3	Welder (metal)							
7212.3.2	Laser welding robot operator p							
7213.1	boilermaker							
7223.21	stamping press operator							
7223.4	Computer Numerical Control m							
7223.4.4	Bar turning lathe and milling operator							
7223.7	fItalieter and turner							
7233.12	Injection moulding machine operators-technicians in general							
7411.1	Electrical maintenance operator							

LCAMP Observatory – D3.2 M24 (year2) Inputs and first result

75 jobs selected:

Esco code	Esco Occupation	Germany	Sweden	France	Turkey	Italie	Slovenia	Basque Coun
7412.10	power tool repair technician							
7543.9	product qualltaliey controller							
8211.2	Machine assembly operator							
9333.8	Factory warehouse operator							

LCAMP Observatory – D3.2 M24 (year2) Inputs and first result

A total of 34 different jobs have been analyzed, with results and trends already available for 16 of them:

Esco code	Esco Occupation	Germany	France	Turkey	Italie
8212	Industrial electrical installer an				
1213.8	sustainabilItaliey manager				
2141.4.2.1	Automation Engineer				
2152.1	Electronics Engineer				
2152.1.13	Predictive maintenance expert				
2163.1	industrial designer				
2511.3	Data Analyst				
2511.6	enterprise architect				
2529.4	Ethical Hackers				
2529.8	ICT security manager				
3114.1.10	sensor engineering technician				
3118.1	3D printing technician				
3139.1	automated assembly line operator				
3139.2	Industrial robot controller				
7223.4	Computer Numerical Control m				
7543.9	product qualItaliey controller				

Job Changes And Skill Needs In Advanced Manufacturing Related To The Green And Digital Transitions

Time to discuss, share first results, take your feed-backs/point of view.

Take your phone, scan the QR Code below and please follow the conductor.

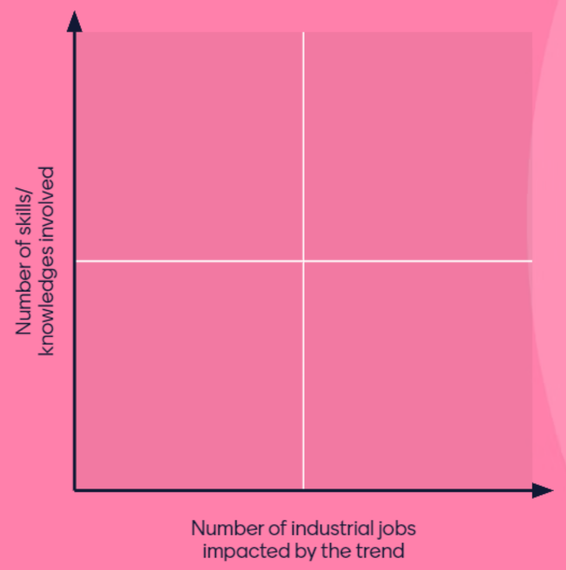
Join at menti.com | use code 5664 6352

Who are we - where do we come from?

1st	1 - Come from VET
2nd	2 - I come from a government
3rd	3 - I come from Industry
4th	4 - I'm a learner

Join at menti.com | use code 5664 6352

Estimate level of impacts for each following Digital Trend

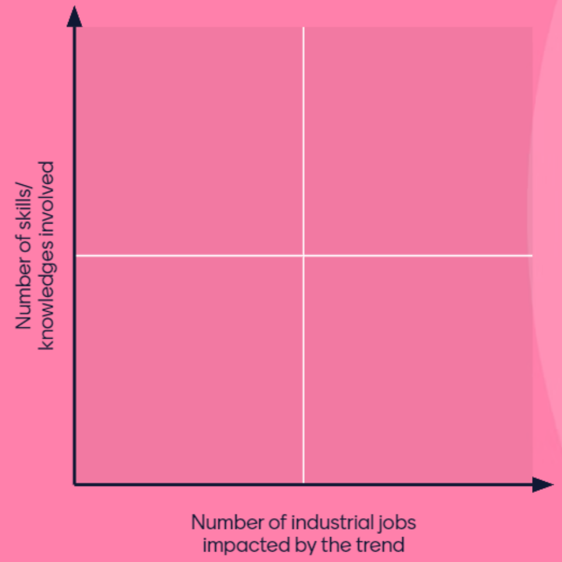


1. 1-1 Internet of Things (IoT) / Smart Sensors / 5G technology
2. 1-2 Artificial Intelligence (AI) / Machine learning / Big Data Analytics
3. 2-1 Virtual and Augmented Reality
4. 2-2 3D scanning
5. 3-1 Cybersecurity
6. 3-2 Edge Computing vs Cloud Computing / Blockchain for Supply Chain / Quantum Computing
7. 4-1 3D Printing/Additive Manufacturing
8. 4-2 Robotics and Automation
9. 4-3 Collaborative Robots (Cobots)
10. 4-4 Digital Twins
11. 4-5 Adaptive Manufacturing Systems
12. 4-6 Predictive Maintenance

Learner Centric Advanced Manufacturing Platform

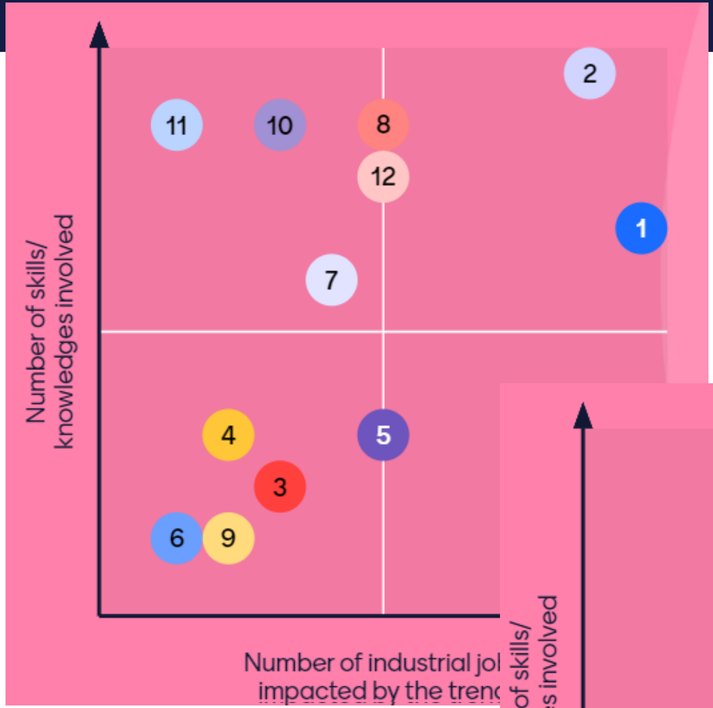
Join at menti.com | use code 5664 6352

Estimate level of impacts for each following Green Transition Trend

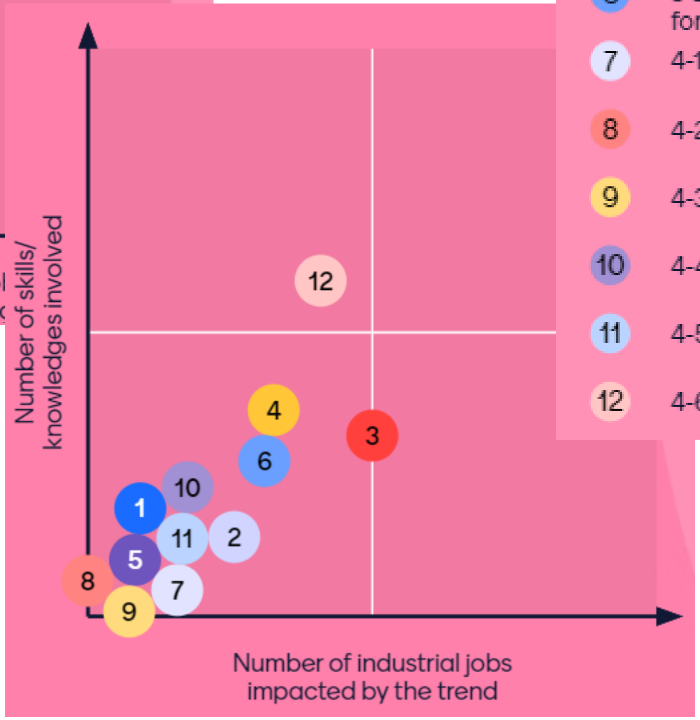


1. 5-1 Renewable Energy Integration
2. 5-2 Circular Economy
3. 5-3 Energy Efficiency
4. 5-4 Waste Reduction
5. 5-5 Green Logistics and Supply Chain
6. 5-6 Sustainable Material Innovation
7. 5-7 Carbon Footprint Management
8. 5-8 Eco-friendly Packaging
9. 5-9 Biomimicry in Design
10. 5-10 Sustainable IT Infrastructure
11. 5-11 Environmental Monitoring and Reporting
12. 5-12 Corporate Social Responsibility (CSR) Initiatives

Level of impacts related to Digital and Green Transition trends – First results



1. 1-1 Internet of Things (IoT) / Smart Sensors / 5G technology
2. 1-2 Artificial Intelligence (AI) / Machine learning / Big Data Analytics
3. 2-1 Virtual and Augmented Reality
4. 2-2 3D scanning
5. 3-1 Cybersecurity
6. 3-2 Edge Computing vs Cloud Computing / Blockchain for Supply Chain / Quantum Computing
7. 4-1 3D Printing/Additive Manufacturing
8. 4-2 Robotics and Automation
9. 4-3 Collaborative Robots (Cobots)
10. 4-4 Digital Twins
11. 4-5 Adaptive Manufacturing Systems
12. 4-6 Predictive Maintenance

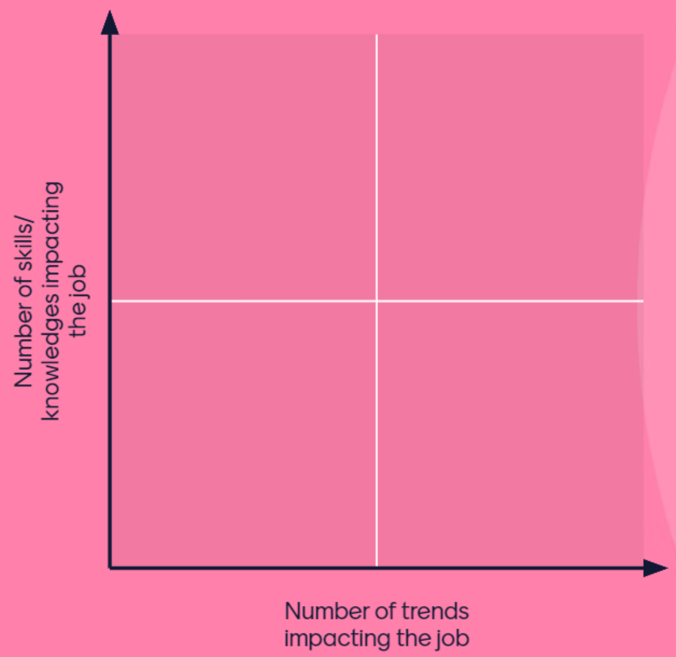


1. 5-1 Renewable Energy Integration
2. 5-2 Circular Economy
3. 5-3 Energy Efficiency
4. 5-4 Waste Reduction
5. 5-5 Green Logistics and Supply Chain
6. 5-6 Sustainable Material Innovation
7. 5-7 Carbon Footprint Management
8. 5-8 Eco-friendly Packaging
9. 5-9 Biomimicry in Design
10. 5-10 Sustainable IT Infrastructure
11. 5-11 Environmental Monitoring and Reporting
12. 5-12 Corporate Social Responsibility (CSR) Initiatives

Join at menti.com | use code 5664 6352

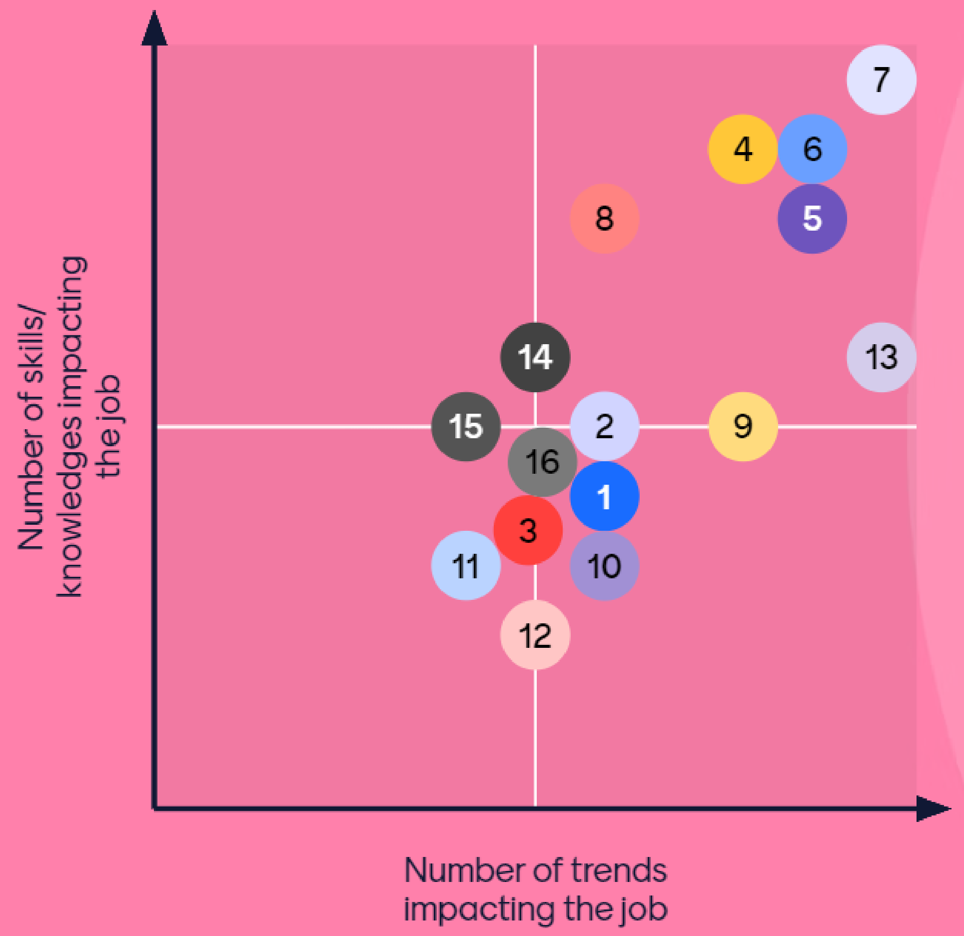
Open Mentimote

Estimate impacts for 16 jobs



1. Predictive maintenance expert
2. industrial designer
3. sensor engineering technician
4. 3D printing Technician
5. Industrial robot controller
6. product quality controller
7. Computer Numerical Control machine operator
8. Industrial Electrical Installer And Assembly Operator
9. enterprise architect
10. Data Analyst
11. Automation Engineer
12. Ethical Hackers
13. Sustainability Manager
14. ICT Security Manager
15. Electronics Engineer
16. Automated Assembly Line Operator

Level of impacts related to 16 jobs analyzed – First results



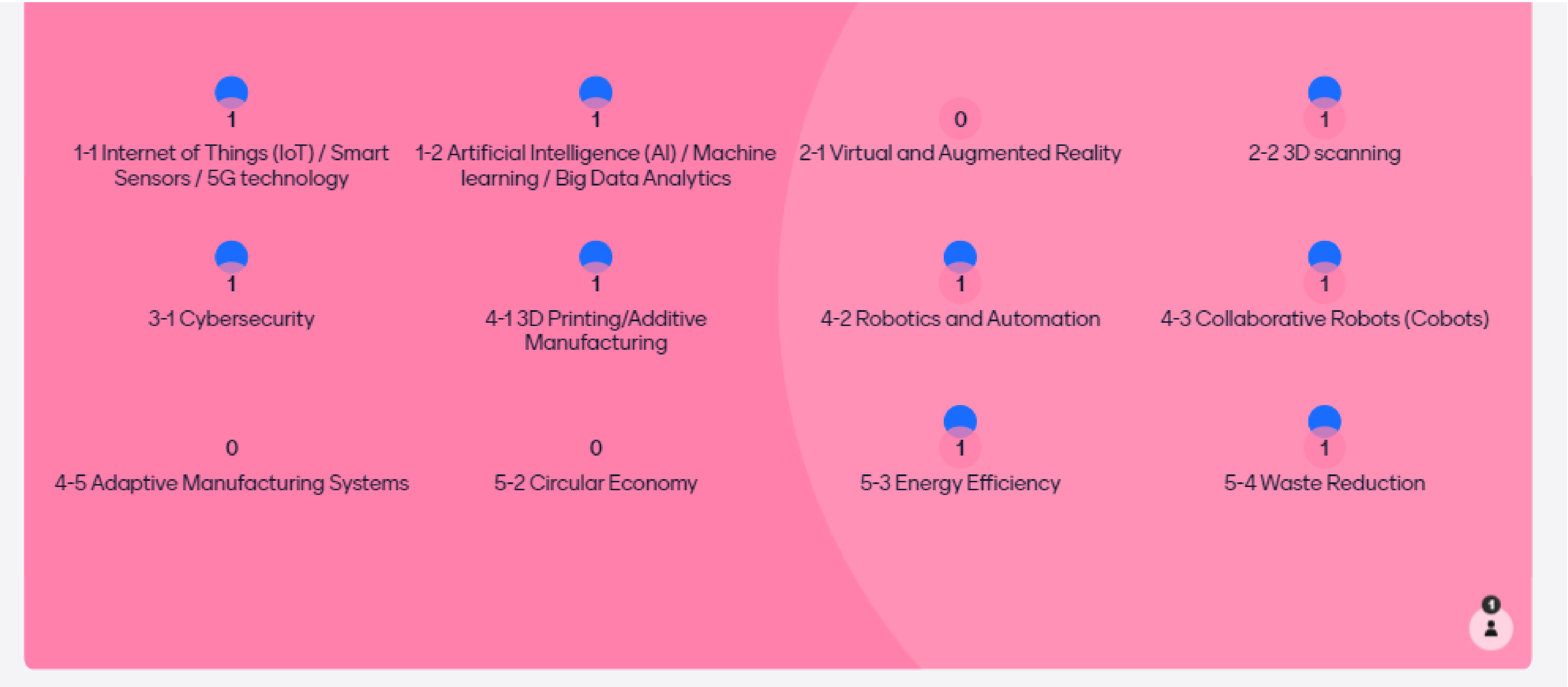
1. Predictive maintenance expert
2. industrial designer
3. sensor engineering technician
4. 3D printing Technician
5. Industrial robot controller
6. product quality controller
7. Computer Numerical Control machine operator
8. Industrial Electrical Installer And Assembly Operator
9. enterprise architect
10. Data Analyst
11. Automation Engineer
12. Ethical Hackers
13. Sustainability Manager
14. ICT Security Manager
15. Electronics Engineer
16. Automated Assembly Line Operator

Join at menti.com | use code 5664 6352

Impact analysis for Product Quality Controller

0	0	0	0
1-1 Internet of Things (IoT) / Smart Sensors / 5G technology	1-2 Artificial Intelligence (AI) / Machine learning / Big Data Analytics	2-1 Virtual and Augmented Reality	2-2 3D scanning
0	0	0	0
3-1 Cybersecurity	4-1 3D Printing/Additive Manufacturing	4-2 Robotics and Automation	4-3 Collaborative Robots (Cobots)
0	0	0	0
4-5 Adaptive Manufacturing Systems	5-2 Circular Economy	5-3 Energy Efficiency	5-4 Waste Reduction

Impact analysis for Product Qualitty Controller – First results

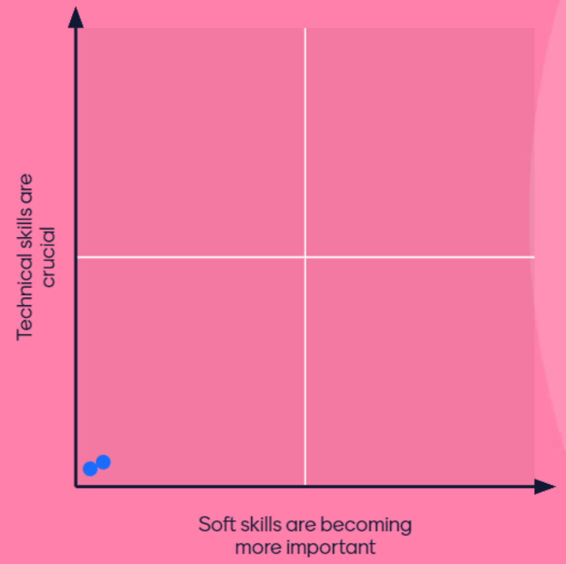


Join at menti.com | use code 5564 6352

Let's focus on Skills/knowledge management

Join at menti.com | use code 5664 6352

"Advanced Manufacturing" impacts: Soft vs technical skills



1 How future relationship between "transversal soft skills" and "technical hard skills" be affected by "Advanced Manufacturing"?

Join at menti.com | use code 5664 6352

Focus on Skills' management

- The manufacturing sector will require greater creativity and innovation regarding personal skills
- The evolution of specific jobs depends / varies among / on the company
- The evolution of specific roles varies across the market and the technical conditions
- The main goal of digital transformation initiatives is to improve company performance, with less focus on individual employees.

LCAMP
Learner Centric Advanced Manufacturing Platform

Join at menti.com | use code 5664 6352

If you were training people in "Advanced Manufacturing", what would be the most important skill / knowledge / comptency for them to have?

0 responses

Join at menti.com | use code 5664 6352

What kind of report would you like from LCAMP Observatory?

0 responses

Join at menti.com | use code 5664 6352

Thank you for completing the survey!