# LCAMP ACTIVITIES

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# LCAMP Activities

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**What's the connection between a robot playing table tennis and LCAMP?**

**Let's discover it**

# LCAMP Activities

- SME-VET Connection, Pili Alonso (TKNIKA Director)
- LCAMP Skill Finder, Diana Miceli (KIC Senior Research)
- Learning Factories Self-Assessment Tool, Unai Ziarsolo (CIFP MIGUEL ALTUNA LHII)
- Joint Activities (Mobilities), Arvid Carlsson (CNG) and Rikar Lamadrid (CIFP ZORNOTZA LHII)

# Open Innovation Commnunity & SME-VET Connection

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# Open innovation community


- Transfer knowledge to the business network through vocational training centres
- Create Open Innovation Community
- Develop innovation projects

**www. Lcamp.eu/oic-projects**

# ABOUT OIC PROJECT

Dive deeper into collaborative research and development projects.

### Small to Medium Enterprises (SME)

Small and Medium-Sized Enterprises collaborative research and development projects

Search now

### Vocational Education and Training (VET)

Vocational Education and Training collaborative research and development projects

Search now

IMPROVE COMPETITIVENESS

VET TECHNICAL KNOWLEDGE

# Open innovation community

## IMPACT IN THE BASQUE COUNTRY:

✓Good response countries involve in LCAMP WP7
✓Countries will develop SME – VET innovation projects until December
✓14 advance manufacturing projects in Basque Country (2 finished)
✓

## EUROPE & CANADA

✓Slovenia, France, Turkey, Germany, Italy
✓Sweden with Curt Nicolin Gimnasiet by years
✓

# EXAMPLE 1 : CANADA, Development of an automatic bottling system Camosun College – Camosun Innovates

**Description**: Development of an automated process to fill and cap containers of various sauces and spices.

**Requirements:** Mechanical engineering knowledge, manufacturing knowledge, 3D printing and design.

**Result:** A fully automated bottling line developed, documentation and digital integration.


# EXAMPLE 2 : CANADA, Development of monitoring equipment form geoduck farming. Camosun College – Camosun Innovates

**Description**: Enhancing the sustainability and efficiency of shellfish production with an automation for monitoring  of critical variables

**Requirements**: Mechanical engineering knowledge, manufacturing knowledge, 3D printing and design.

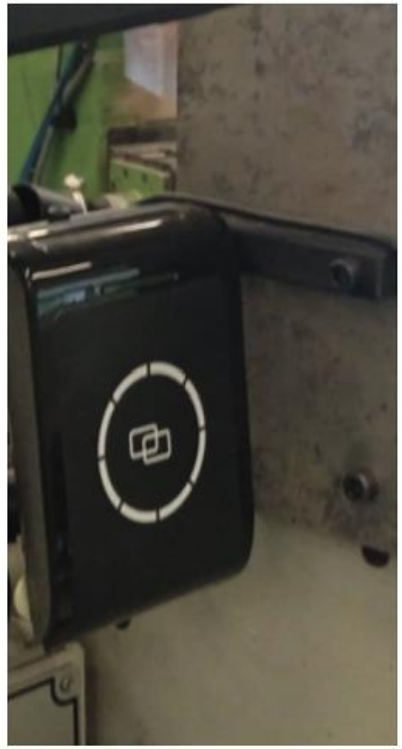
**Result**: Reduction in workload in shellfish production, and significant decrease of interruptions.

# EXAMPLE 3 : Basque Country, Lathes and Milling machines
## Gizarte berrikuntza / Megabi Soluciones

**Description**: Implement a control and digitalization system in conventional lathes and milling machines, allowing real-time monitoring

**Requirements**: Mechanical and electronic engineering knowledge, manufacturing knowledge, and design.

**Result**: Modernisation of conventional equipment using digital technologies, optimisating industrial processes and traceability



# **Skill Finder**
Connecting People with the Right Skills

Co-funded by
the European Union

# The Skills Challenge

Finding the right skills is like completing a puzzle:

- Some pieces are clearly defined
- Some remain hidden
- Finding the right match is challenging

**Has your organization struggled with skill matching?**

# The Three Skills Challenges

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**1**

**IDENTIFYING**

Which skills are needed for specific roles

**2**

**FINDING**

People possessing such skills / self-evaluation / skill gap analysis

**3**

**VERIFYING**

That skills have been properly acquired

## What's your biggest skills management challenge?

# A Complete Solution

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Learner Centric Advanced Manufacturing Platform

**SKILL FINDER**

Identifies & matches skills to learning outcomes

+

**MICRO-CREDENTIALS**

Verifies & recognises these skills

=

**COMPLETE ECOSYSTEM**

End-to-end skills solution

# How to Form Education Pathways

# What is Skill Finder?

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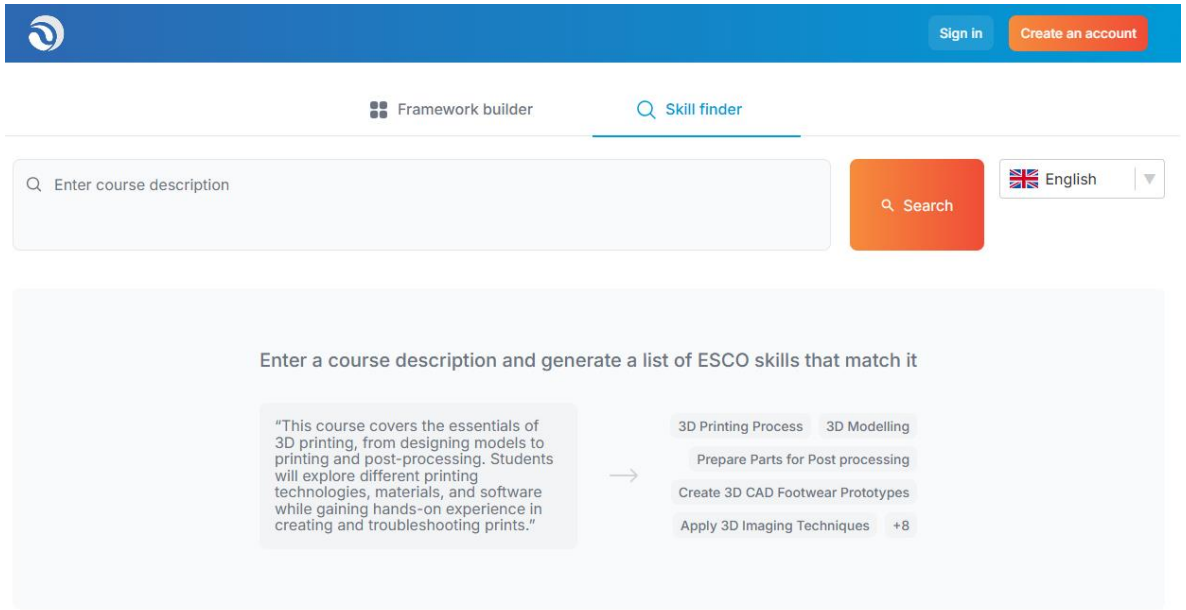
**AI-powered tool revolutionizing skill identification & matching.**

Key Capabilities:

1. Semantic search across multiple frameworks
2. Integrate via API with your HR system
3. Machine-readable skill outputs

**Final Goal:** Automated skills mapping & gap analysis.

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Co-funded by the European Union

# Interactive Demonstration

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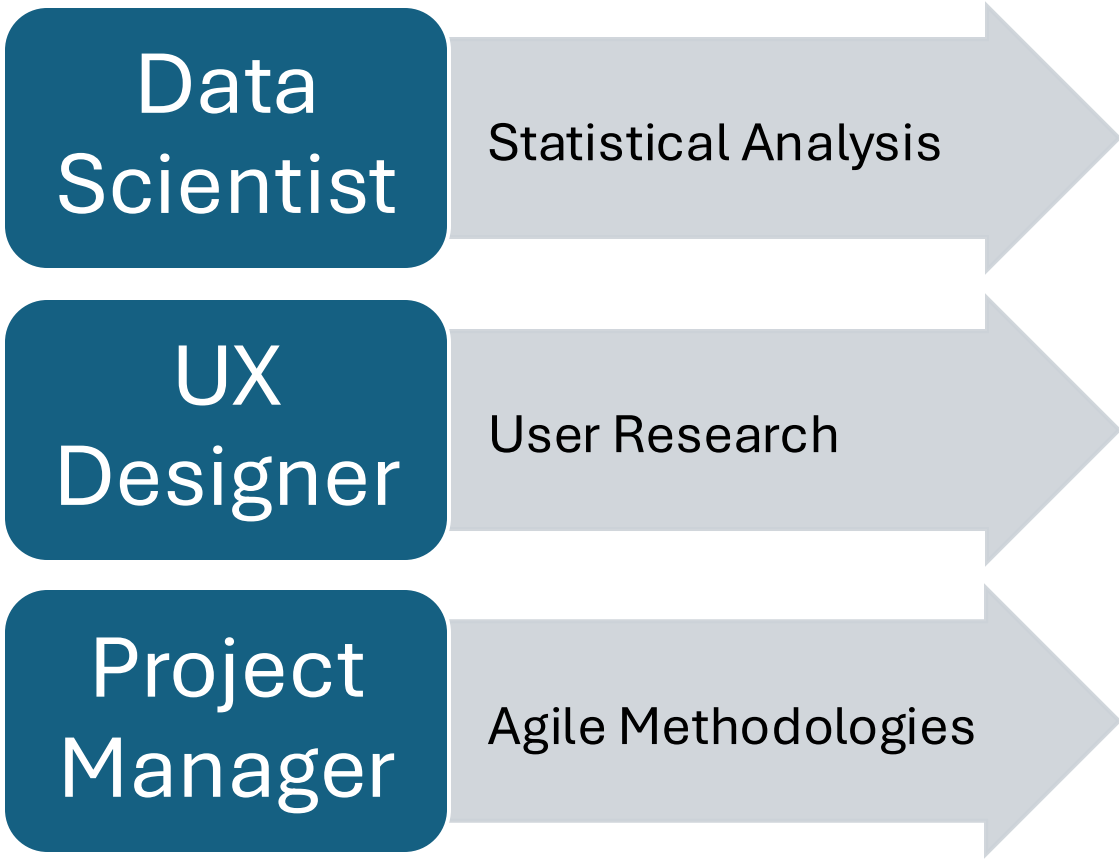
## Interactive Demonstration

## Manual Matching vs. AI Matching

Let's see how quickly we can match job descriptions with skills manually...

Now, let's see how Skill Finder does this automatically using semantic understanding.

***Notice how the system understands related concepts, even with different terminology.***




https://esco.ec.europa.eu/en/classification/skill_main

VS

https://skilldata.info/

# Enter Micro-credentials

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## Digital Certificates that verify specific skills are:

- Granular - focus on specific competencies.
- Digital - easily shared & verified.
- Secure - using advanced encryption.
- Legal validity - aligned with eIDAS

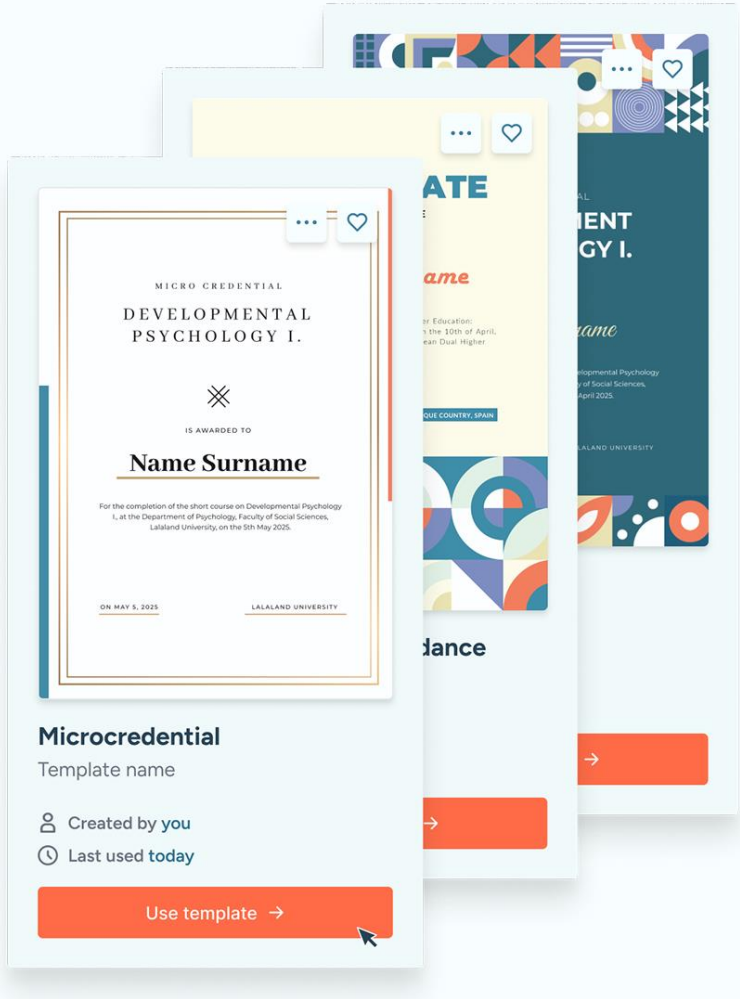


Image from: https://velocert.com/

# Benefits For All Stakeholders

**For Learners**
Clear pathways to in-demand skills and recognised qualifications

**For Educators**
Alignment of curricula with industry needs

**For Employers**
Reliable verification of candidates' capabilities

***How could this approach help address skills challenges in your context?***

**For Policymakers**
Better data on skills gaps and workforce development

# Get Started Today

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Learner Centric Advanced Manufacturing Platform

## Explore Skill Finder

**skilldata.info**

*Create a seamless skills ecosystem for your organization!*

**Thank you!**

Questions? I'd be happy to answer.

# Learning Factories' Self-Self Assessment Tool LF-SAT

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# INTRODUCTION

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## LCAMP WP6 Collaborative Learning Factory

Outputs and deliverable from WP6

**Reports:**

- **Research on the role of learning factories in VET education.** June 2023
- **Morphology of the LCAMP Collaborative Learning Factory CLF** December 2023
- **Guidelines for the implementation of Industry 4.0 technologies in VET labs** December 2024

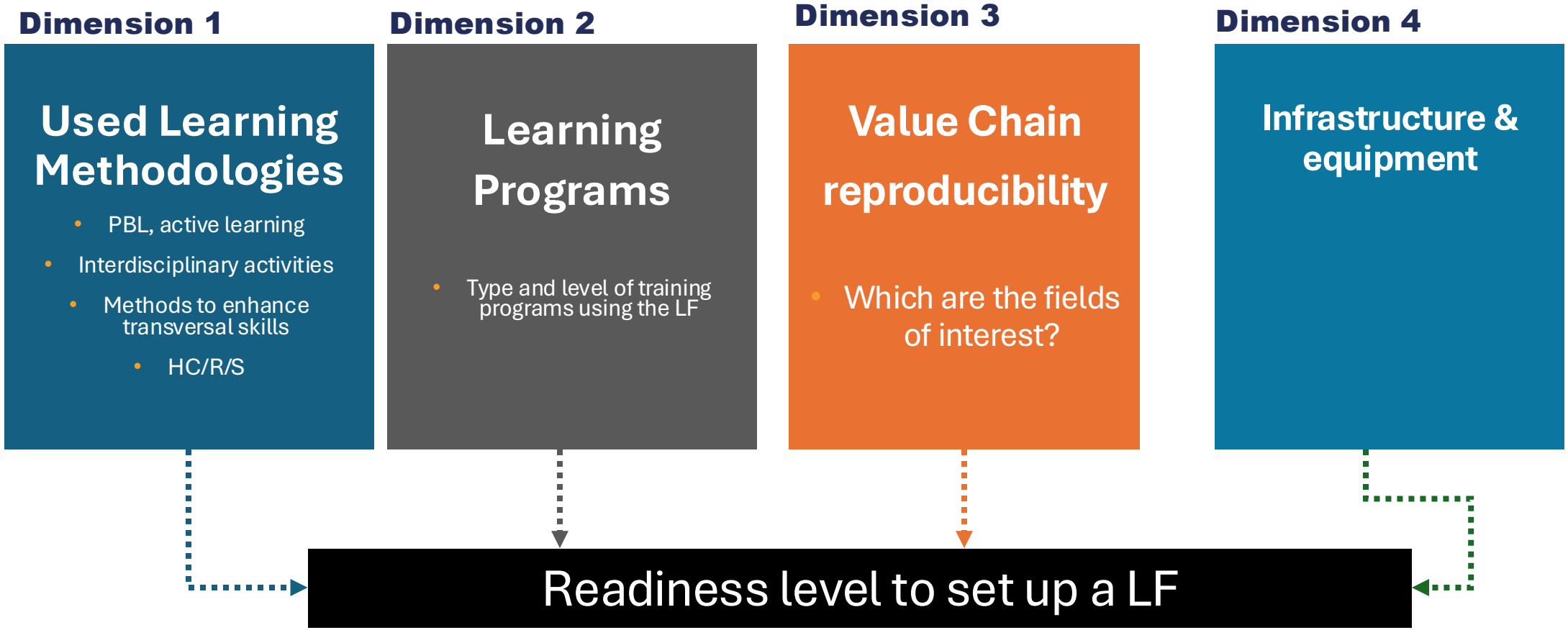
**Online interactive tool**

- **Self Assessment tool for learning factories** November 2024

# Learning Factories' -Self Assessment Tool LF-SAT

Learner Centric Advanced Manufacturing Platform

This tool is designed to help VET schools assess the current maturity level of learning factories within vocational education and training (VET) institutions or universities of applied science. Through a series of questions across **four key domains**, users will gain insights into areas of strength and opportunities for growth in their learning environment.



# Learning Factories' -Self Assessment Tool LF-SAT

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| Description of the Current situation | Target situation | Target situation | Description of the Current situation |
|---|---|---|---|
| **Methodologies used** | **Learning Programs** | **Value Chain reproducibility** | **Infrastructure & equipment** |

**Action based Methodologies.**

1. Traditional methodologies
2. Hands-on training and active methodologies PBL/CBL
3. Interdisciplinary training
4. KPIs
5. Soft-digital-green skills
   - Frameworks
   - KPIs

| Study program (illustrative example) | EQF |
|---|---|
| Process engineering | 5-6 |
| Product-design | 5 |
| Automation | 5 |
| Manufacturing processes. Machining, additive manufacturing, assembly | 4-5 |
| Logistics and supply-chain | 5 |
| Sustainability | 5 |
| Industry 4.0, smart manufacturing | 5 |
| Smart Maintenance | 4-5 |
| Add others | |

**Value chain steps to assess**

1. Product Design
2. Process engineering
3. Manufacturing, quality control & maintenance
4. Logistic
5. Virtualization

1. IT/OT infrastructure and connectivity
   1. Digital infrastructure
   2. Connectivity
   3. IT/OT Cybersecurity
2. Data analysis and operation
3. Automation
   1. Traceability
   2. Equipment & machines
4. Maintenance
5. Sustainability

# Instruction to access the LF-SAT


https://lcamp.eu/activity/collaborative-learning-factories/

# My profile

Dashboard | Change Password | Logout

Welcome, editor4

editor4

From your account dashboard you can edit your profile details and edit your password.
Not editor4? Sign out

# My reports

View your previous assessment reports

## Value chain

Assessment date
**February 20, 2025**

Organisation

## Learning programs

Assessment date
**February 20, 2025**

Organisation

## Value chain

Assessment date
**February 19, 2025**

## Learning methodologies

Assessment date
**February 19, 2025**

# LF-Self Assessment Tool

## REPORT’s dimension

## Equipment and digitalisation

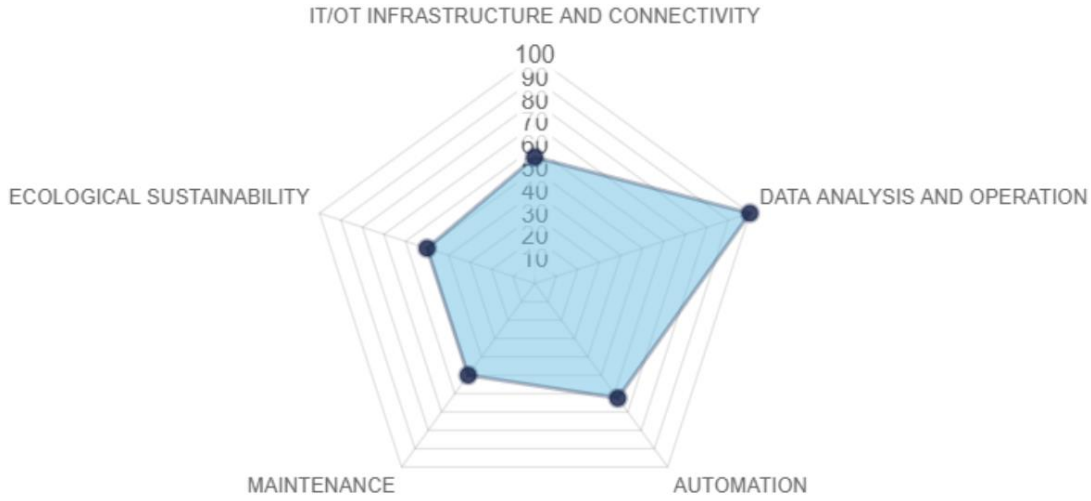
https://lcamp.eu/activity/collaborative-learning-factories/

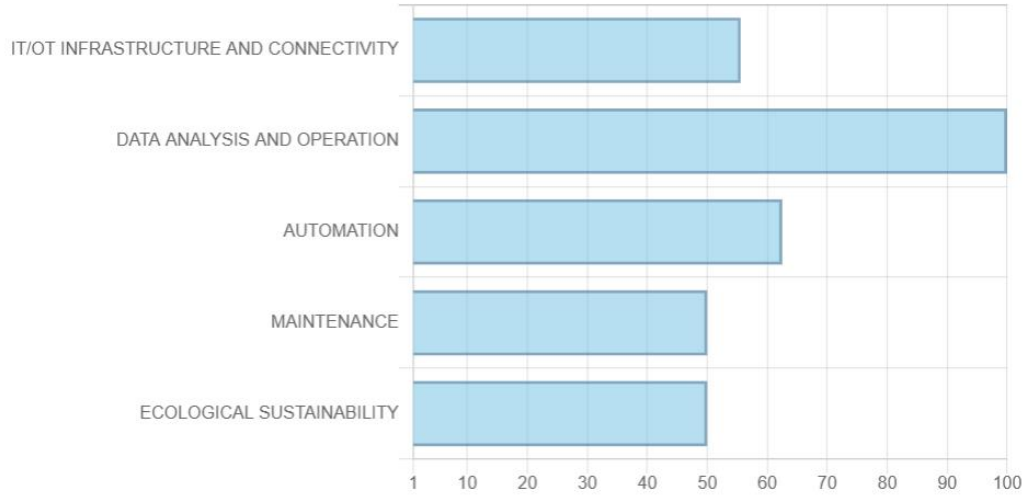
https://community.lcamp.eu/user-login/

# Equipment and digitalisation

**Learning factory equipment**
Running level

**Score**
64.54 %



# Equipment and digitalisation

## IT/OT INFRASTRUCTURE AND CONECTIVITY

### Running Level (50-90 Points)

**Strengths:**

- Your lab is a highly connected and digitized environment, demonstrating strong IoT readiness.
- With robust infrastructure, integrated data systems, and advanced cybersecurity measures, your lab is well-equipped to provide a realistic Learning Factory experience.

**Gaps:**

- **Connectivity and Integration:** Over 50% of machines are connected to the IoT network. High connectivity capacity, with more than 80% of machines suitable for integration without retrofitting. Over 50% of legacy equipment is retrofitted with connectivity modules or digital identification tags. Over 50% of machines generate real-time process data and integrate with the organization's information system.
- **Digital Infrastructure:** A fully operational digital platform exists for planning tasks and managing work orders.
- **Cybersecurity:** General cybersecurity awareness covers more than 50% of connected devices, access points, and the digital structure. Cybersecurity protocols are implemented for over 50% of connected devices. The lab's digital networks fulfill more than 50% of established cybersecurity requirements.

**Recommendations:**

- **Achieve Full IoT Integration:** Work toward connecting 80%-100% of machines, ensuring seamless interoperability and full data flow across the lab.
- **Adopt Advanced Cybersecurity Frameworks:** Implement cutting-edge cybersecurity technologies, such as AI-driven threat detection and comprehensive device-level encryption.
- **Enhance Real-Time Analytics:** Develop advanced data analytics capabilities, including predictive and prescriptive models, to maximize learning and operational efficiency.
- **Foster Cross-Disciplinary Collaboration:** Integrate interdisciplinary activities within the Learning Factory to simulate complex, real-world manufacturing scenarios.
- **Pursue Certification and Compliance:** Align the Learning Factory's IoT infrastructure and processes with international standards and certifications, such as ISO 27001 for cybersecurity and I4.0 compliance, to ensure best practices and credibility.

**Workshop equipment acts as a stand-alone system (and is not connected to the network).**

No

**Rate your interest**

| | No interest | On < 25% of the machines | Between >25%->75% of the machines | On >75% of the machines | Score |
|---|---|---|---|---|---|
| Lab equipment (machines) has controls and/or sensors for data adquisition | | | ✓ | | 10 |
| Production machines/equipment are connectable with the school's digital infraestructure, . (Means of machine-to-machine communication exist | | | ✓ | | 10 |
| There is a digital platform for planning tasks and work orders. | | | ✓ | | 10 |
| The equipment is connected to a company network, allowing the transfer of information to and from machines. | | | ✓ | | 10 |
| Important legacy equipment is digitally enabled through a connectivity module and/or digital identification tags. | | | ✓ | | 10 |
| To what extent is data created in real time along the value chain (information collected from machines and processes) integrating into the organization's information system | | | ✓ | | 10 |
| The general security situation (cybersecurity) of each device, access point and, in general, digital structure is known. | | ✓ | | | 5 |
| Cybersecurity protocols are in place in all the connected equipment | | ✓ | | | 5 |
| The labs digital network(s) fulfill the stablished cybersecurity protocols | | ✓ | | | 5 |

**Which platform? Select one**

MES

# Equipment and digitalisation

## AUTOMATION - equipment

### Ready Level (50-120 Points)

**Strengths:**

- The school is well-equipped, with a broad range of available equipment that covers various areas of study.
- Some equipment is already integrated into the learning factory, enabling interaction between machines and other elements, which helps simulate real-world manufacturing processes.
- The foundation of a learning factory is in place, allowing for more advanced integration and collaboration between equipment and learning environments.

**Gaps:**

- Some equipment is still isolated in dedicated labs, limiting full integration and cross-disciplinary learning.
- While some equipment interacts within the learning factory, the integration may not be seamless or comprehensive, hindering the potential for efficiency and scalability.
- The learning factory may not yet be fully optimized for all types of equipment or processes.

**Recommendations to Improve:**

- **Expand Equipment Integration:** Incorporate isolated equipment into the learning factory to enhance overall connectivity and efficiency.
- **Standardize Integration Protocols:** Ensure that all equipment, regardless of its primary function, can interact smoothly within the learning factory.
- **Optimize Learning Factory Processes:** Improve automation, connectivity, and data sharing between equipment to enhance efficiency.
- **Increase Cross-Disciplinary Collaboration:** Encourage cooperation between labs to promote shared use of technologies and equipment across different fields.

**Do you have equipment from the following list?**

| | No | In specific labs | Integrated in processes, connected with other machines | Score |
|---|---|---|---|---|
| Sensors | | ✓ | | 5 |
| PLCs | | | ✓ | 10 |
| Industrial PCs | | | ✓ | 10 |
| Industrial robots | ✓ | | | 0 |
| Collaborative robotics | | | ✓ | 10 |
| AVG | | | ✓ | 10 |
| Artificial vision for guiding robots/cobots | | ✓ | | 5 |
| Artificial vision for other applications (quality control etc.) | ✓ | | | 0 |
| 3D printing with metals | | | ✓ | 10 |
| 3D printing with polymers | | | ✓ | 10 |
| Reverse engineering. 3D Scanners | | ✓ | | 5 |
| Measurement systems (integrated into the process) | | ✓ | | 5 |
| Automatic/smart warehouses (integrated into the process) | | ✓ | | 5 |
| Augmented reality | ✓ | | | 0 |
| Virtual reality | | | ✓ | 10 |
| Digital twins | | | ✓ | 10 |
| Wearables (portable systems) | | | ✓ | 10 |

**Part score**

115/170

# LF-Self Assessment Tool

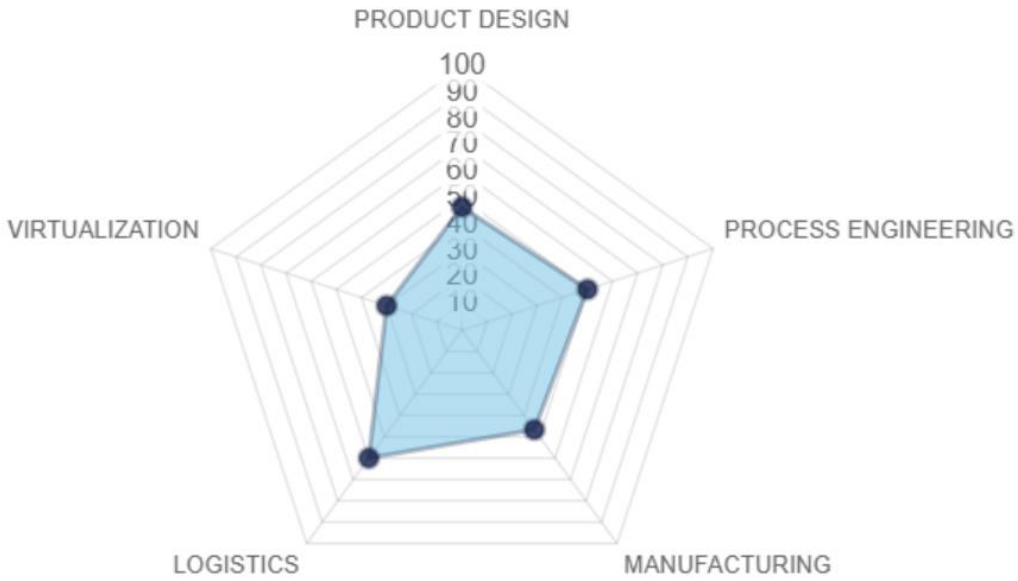
## REPORT’s dimension

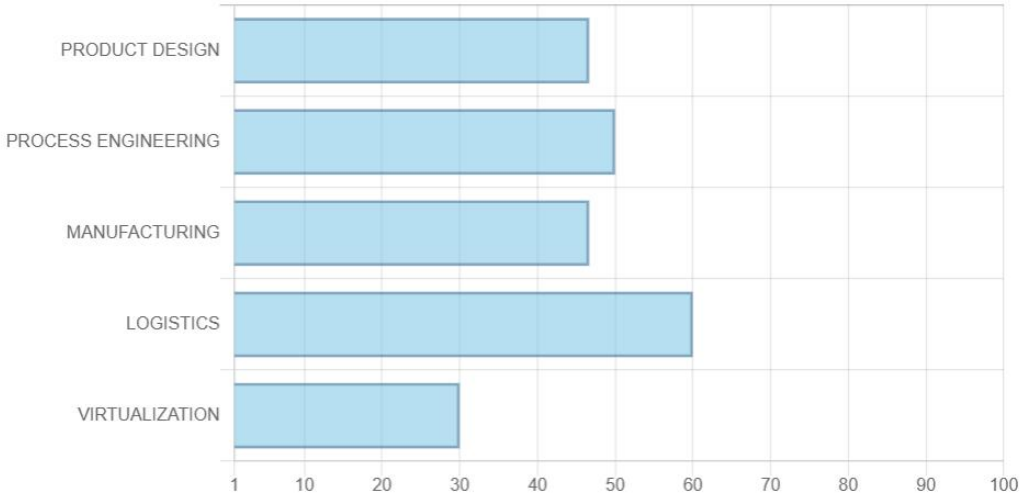
## Value chain reproducibility

## Value chain

**Learning factory**
Ready level

**Score**
47.06 %



# PROCESS ENGINEERING

You have identified some activities associated with the process engineering phase as being transversely related to the curriculum to be implemented in the learning factory. Yet, these activities are not the primary focus of the curriculum you aim to primarily address.

### Key Considerations

- **Influence on Value Chain Activities:** Although process engineering is not the central emphasis of your learning factory, it significantly affects many aspects of its operation, including the value chain activities that are the main focus of your learning initiatives. The manufacturing process implemented will influence all steps in the value chain, either directly or indirectly. Regardless of the product and process chosen, it is critical to establish a robust process that ensures appropriate task planning and scheduling (Section 2.1: Planning/Scheduling).
- **IoT Infrastructure and Digitization:** Achieving a digitized learning factory requires a consistent IoT infrastructure, regardless of the level of digitization. This infrastructure should be designed to scale as the learning factory evolves (Section 2.4: IoT Infrastructure/Data Acquisition/Digitization of Production). These foundational tasks must be carefully defined, as they underpin all other tasks and provide essential support for their successful execution.

### Additional Areas for Development

- **Lean Manufacturing:** (Section 2.2)
- **Automation:** (Section 2.3)
- **Robot Integration (e.g., cobots, AGVs, robots):** (Section 2.4)
- **Energy Efficiency and Sustainability:** (Section 2.5)

### Recommendations

- Ensure your learning factory is technically equipped to support learning activities related to process engineering.
- Consider developing an investment plan from a process engineering perspective to scale and optimize the learning factory.
- Recognize that process engineering is closely tied to product design. It is essential to integrate product design considerations into your planning to ensure alignment with process engineering goals.

| | No interest | Minimum interest | Medium interest | Great interest | Score |
|---|---|---|---|---|---|
| Planning/scheduling | | | ✓ | | 6 |
| Lean manufacturing | | | ✓ | | 6 |
| Automation | | ✓ | | | 3 |
| Robot integration (cobots, AVG, robots...) | | | ✓ | | 6 |
| IoT infrastructure/Data acquisition/Digitalization of production | | ✓ | | | 3 |
| Energy efficiency/sustainability | | | ✓ | | 6 |

**Part score**

30/60

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# THANK YOU

# Mobilities among LCAMP-ers

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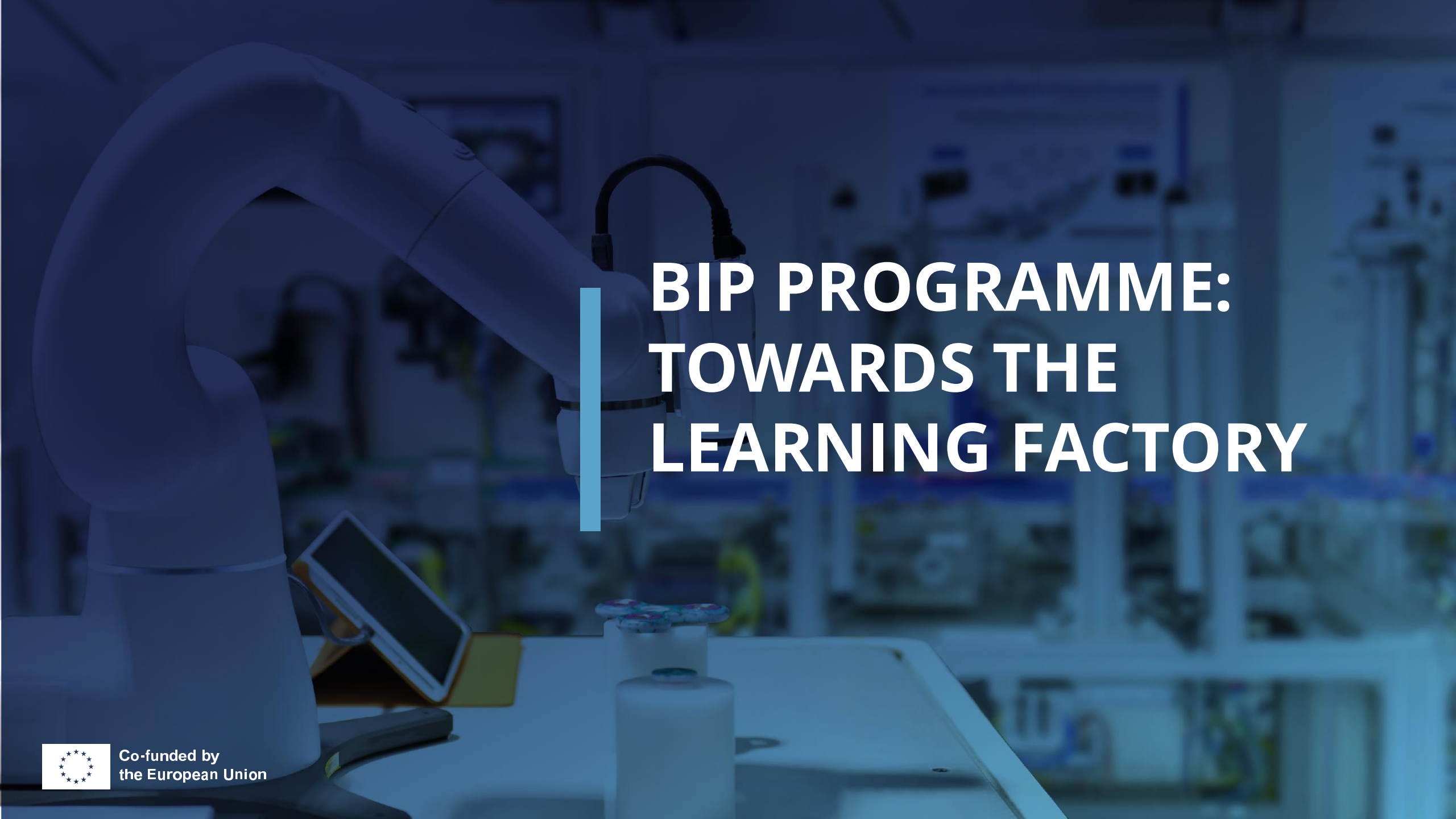
# Mobilities among LCAMP-ers



# BIP PROGRAMME: TOWARDS THE LEARNING FACTORY

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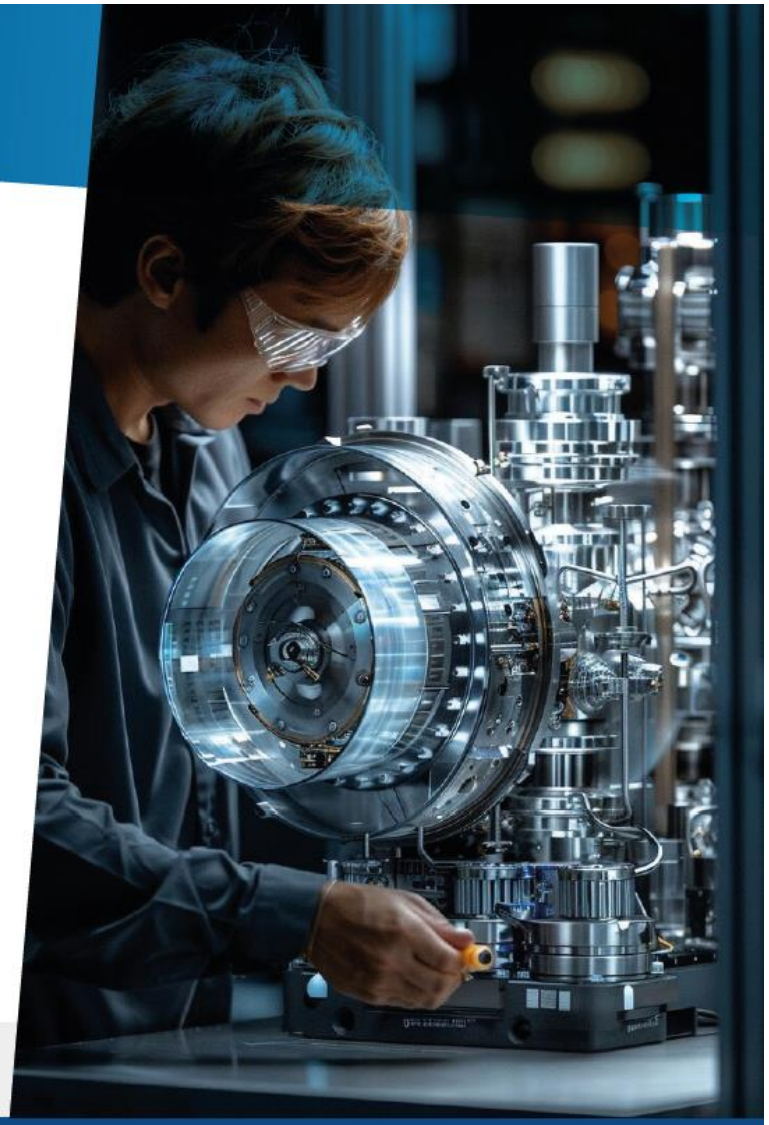
Learner Centric Advanced Manufacturing Platform

BLENDED INTENSIVE PROGRAMME (BIP).
ERASMUS +

# TOWARDS THE LEARNING FACTORY EQF5 / EQF6

**COURSE** ONLINE & IN-PERSON

*Based on LCAMP project.*
*CoVE in Advanced Manufacturing*



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## COURSE DATES

Online
25 March

In-person
From 31 March to 4 April

Online
11 April

## LOCATION

Basque Country

## LANGUAGE

English

*"This training course is designed to equip teachers from across Europe with the knowledge and practical skills needed to integrate the "Learning Factory" concept into their teaching practices and transfer knowledge to industrial environments."*

Co-funded by the European Union

EUSKO JAURLARITZA
GOBIERNO VASCO
HEZKUNTZA SAILA
DEPARTAMENTO DE EDUCACIÓN

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LANBIDE HEZIKETA

ikasLAN
Mobility

CENTRO INTEGRADO DE FORMACIÓN PROFESIONAL
ZORNOTZA
LANBIDE HEZIKETAKO IKASTETXE INTEGRATUA

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BLENDED INTENSIVE PROGRAMME (BIP). ERASMUS +

# TOWARDS THE LEARNING FACTORY

## Learning Outcomes

### OBJECTIVE 1

Equip teachers from across Europe with the knowledge and practical skills needed to integrate the "Learning Factory" concept

### OBJECTIVE 2

Empower teachers to drive the transformation of EFQ5 / EFQ6 to become more digital, green, sustainable and inclusive

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# Course Schedule

* LF = Learning Factory

## Session 1

### Topics

- Introduction to the concept of LF and the LCAMP project.
- Assessment of readiness for LF using the LF-Self Assessment Tool.

### Date & Time

25 March
9:30 - 11:45 AM

### Mode

Online

## Session 2

### Topics

- Theoretical and practical session on LF.

### Date & Time

From 31 March
to 4 April.

### Mode

In-person

## Session 3

### Topics

- Workshop on evaluation and future opportunities.

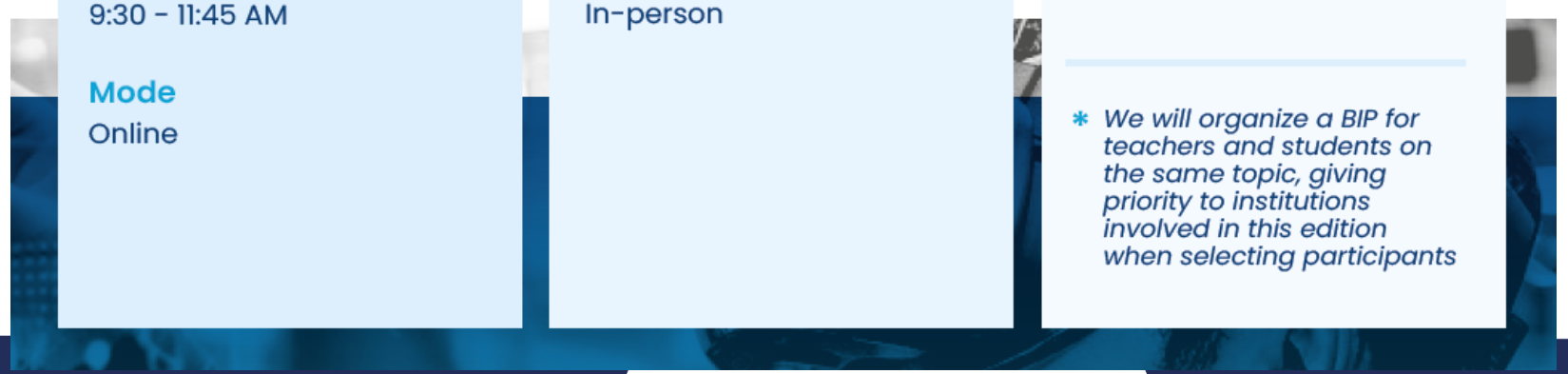
### Date & Time

11 April
9:30 - 11:00 AM

### Mode

Online

* *We will organize a BIP for teachers and students on the same topic, giving priority to institutions involved in this edition when selecting participants*




Behind this BIP program, the real objective is to show participants that setting up a Learning Factory is a process in which, step by step, the Learning Factory must be built

# LCAMP ALLIANCE

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Learner Centric Advanced Manufacturing Platform


**The LCAMP ALLIANCE is being established to connect and strengthen Centres of Vocational Excellence (CoVEs) in Advanced Manufacturing.**

**Its goal: empower regions to upskill and reskill learners for the digital and green transitions through innovation, resilience, and strong industry partnerships.**

# LCAMP ALLIANCE

LCAMP
Learner Centric Advanced Manufacturing Platform

LCAMP ALLIANCE

Be part of an innovative hub in the Advanced Manufacturing sector and benefit from:

- ✓Global networking opportunities
- ✓Knowledge-sharing with experts
- ✓Building partnerships
- ✓Participating in training and events
- ✓Facilitating mobility exchange opportunities for learners and staff
- ✓Advice and expertise from peers

# LCAMP ALLIANCE

Learner Centric Advanced Manufacturing Platform

## Activities:

### CAPACITY BUILDING & TRAINING

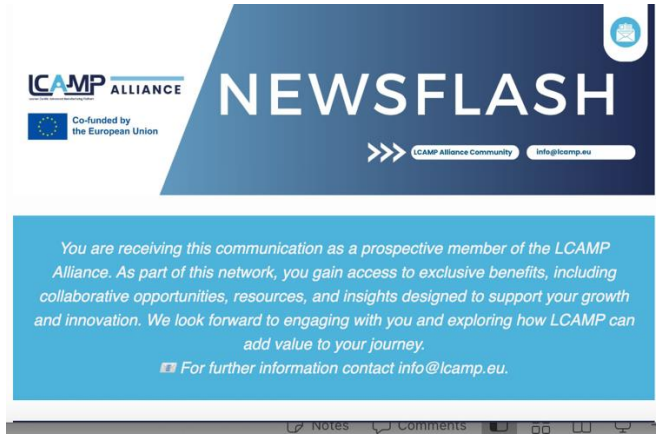

**Webinar (19.03.2025) "Advanced Manufacturing Skills Analysis – Exploring Challenges and Opportunities Across European Regions"**

→ Featuring a presentation by Cedefop, sharing key insights from their study on artificial intelligence and skills foresight.

### NETWORKING

- Annual Conferences (Aalen, Finspång and one more to come) + 200 participants
- Mobility opportunities between VET Schools
- Collaborative Learning Labs

### KNOWLEDGE-SHARING




**New tools:**

- e-bulletin with key information about the Advanced Manufacturing
- LinkedIn Community

# LCAMP ALLIANCE

What's next?

1

**We want to get to know you!**
Contact us at
**info@lcamp.eu**

2

Enjoy the services of the Alliance and Connect with **experts** and **peers**

LCAMP ALLIANCE

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# THANK YOU

info@lcamp.eu

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