LCAMP

Learner Centric Advanced Manufacturing Platform

STRATEGIC PLAN OF THE LCAMP ALLIANCE

2023-2027

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TKNIKA – Basque VET Applied Research Centre, CIFP MIGUEL ALTUNA Centro Integral de Formación Profesional; DHBW Heilbronn – Duale Hochschule, Baden-Württemberg, Curt Nicolin High School, Da Vinci College, AFM – Spanish Association of Machine Tool Industries, EARLALL – European Association of Regional & Local Authorities for Lifelong Learning, FORCAM, CMQE: Association campus des métiers et des qualifications industrie du future, MV: Mecanic Vallée, KIC: Knowledge Innovation Center, MADE Competence Center Industria 4.0; AFIL: Associazione Fabbrica Intelligente Lombardia, SIMUMATIK AB; Association HVC Association of Slovene Higher Vocational Colleges; TSCMB:Tehniški šolski center Maribor, KPDoNE: Kocaeli Directorate Of National Education; GEBKİM OIZ and CAMOSUN college.

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Glossary and acronyms

Acronyms

AI Artificial Intelligence

AM Advanced Manufacturing

Cedefop European Centre for the Development of Vocational Training

CoVE Centres of Vocational Excellence

C-VET Continuing vocational education and training

EAfA European Alliance for Apprenticeships

EC European Commission

ECVET European Credit System for Vocational Education and Training

EntreComp The Entrepreneurship Competence Framework

EQAVET European Quality Assurance in Vocational Education and Training

EQF European Qualifications Framework

ESCO European Skills, Competences and Occupations

ETF European Training Foundation

EU European Union

EXAM 4.0 Excellent Advanced Manufacturing 4.0 (project)

HE Higher Education

HVET Higher Vocational Education and Training

I4.0 Industry 4.0

I5.0 Industry 5.0

I-VET Initial vocational education and training

KET Key Enabling Technology

LCAMP Learner Centric Advanced Manufacturing Platform for CoVEs (project)

OECD Organisation for Economic Cooperation and Development

RIS3 Smart Specialisation Strategy

S3 Smart Specialisation Strategy

SME Small and Medium Sized Enterprises

STS Science Technology and Society Studies

SWOT Strengths, Weaknesses, Opportunities, Threats

TVET Technical and Vocational Education and Training

VET Vocational Education and Training

WBL Work-Based Learning

Executive Summary

This document presents the LCAMP Alliance 2023-2026 strategy. The document will be concretised through the annual plans of the LCAMP Alliance, foreseen as three annual deliverables due in month 12, 24, and 36 of work package 2 of the project.

Overview

In the first section, we analyse the European context in the fields closely connected to the topics more related to the project. The analysis is a combination of the description of the current situation and foresight exercise. We aim to describe what the situation is and how it could evolve. As with any forecasting exercise, we might make wrong assumptions about future development. This section will be closed with a list of challenges related to the fields under analysis.

For the analysis of the context, we have revised existing sources of information, emphasising publications of trustworthy organisations, such as the European Commission, Cedefop, the Joint Research Centre of the European Commission, UNESCO, UNESCO-UNEVOC, Eurostat, and world-class researchers in their respective topics.

In section two, we identify our competitive advantage. Here, we define the main strengths of our Strategic Alliance, these that we should be able to exploit, through concrete annual plans, in the next few years.

In section three, we define our vision, mission, and core values, as well as the strategic objectives of the LCAMP Alliance.

The identification of our competitive advantage and the statement of LCAMP Alliance's vision, mission, core values, and Strategic Objectives are the result of teamwork. In particular, the team went through discussions, brainstorming and information gathering, thanks to digital tools and document reviews.

The LCAMP project partnership is composed of companies, company associations and clusters, VET centres, universities of applied sciences, international networks, and authorities[1]. This provides a large vision to design a sound strategy for the Alliance. We also build on the developments of the Excellent Advanced Manufacturing, EXAM 4.0, project, for which LCAMP, the current project, can be considered a scale-up[2].

[1] The composition of the current LCAMP Alliance can be consulted in Annex I.
[2] The first draft of the LCAMP Alliance can be traced back to the community built, without much success, in the EXAM4.0 project. It is attached to this document in Annex II.

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1 CONTEXT ANALYSIS

A series of unexpected events are affecting Europe in many aspects (economy, innovation, education, foreign policy, etc.). Among the most unpredicted, we can name the measures to fight the negative consequences of the COVID-19 pandemic that caused a deep economic crisis, accelerated some social changes (remote working, increased digitalisation), and exposed the weaknesses of Europe's inability to produce very basic goods due to its dependency on other countries; the Russian invasion of Ukraine which is provoking an energy crisis, the soaring prices of many goods, and a changing geopolitical landscape.

There are also other events (not unexpected but still relevant) that are causing changes, such as an ageing population combined with a low birth rate, that is challenging our education and welfare systems and making lifelong learning a priority; new forms of employment (due mainly to the platform economy) that are threatening welfare systems and social security; and many others like terrorist attacks, migration, or political extremism, to name only a few. as Among the "previous trends" that are still relevant and that have been reinforced by the aforementioned events, are digitalisation, greening, Industry 4.0, and the promotion of regional innovation strategies.

Digitalisation, although it has been reinforced by the COVID-19 pandemic, has been a European priority for many years, and it continues to be so with the new European Digital Strategy, *A Europe fit for the digital age*. The same goes for environmental sustainability, notably strengthened by the ambitious goals of the European Green Deal. The digitalisation of industry and the so-called "platform economy" were also relevant trends before the pandemic. Industry 4.0, now being reinterpreted under the new paradigm of Industry 5.0, was, and still is, a very relevant trend that will continue. The tendency to improve VET and to promote European cooperation in VET is not new either.

In this context, where new and previous trends meet, Europe aims at becoming a green, digital, and fair economic player. The green and digital transitions are commonly referred to as the "twin transitions" and they are overarching priorities that are being instilled in every aspect of our lives.

We will analyse the impact of the "twin transitions" and what we have called the "previous trends" as far as Vocational Education and Training, Advanced Manufacturing, and regional innovation systems are concerned. A comprehensive in-depth reflection- of all the influences of the "twin transitions" is out of our scope.

All this is very much aligned with the European Commission's priorities, Political Guidelines, 2019-2024 (Leyen, U 2019):

- A European Green Deal.
- An economy that works for people.
- A Europe fit for the digital age.
- Protecting our European way of life.
- A stronger Europe in the world.
- A new push for European democracy.

1.1 Principles

Before we move to the context analysis, it is important to clarify that the Strategic Planning of the LCAMP Alliance is based on nine general principles that will guide us in navigating through our context.

It is impossible to analyse a context from a neutral perspective. Even if someone strives for total objectivity, it is very doubtful that anyone could achieve it. More so if we consider that we are doing strategic planning, not a piece of research. For this reason, we consider that the fairest thing to do is to state our principles, and our assumptions, with clarity.

Principle 1: Economic growth must not follow a predefined path

Economic growth is not a predefined concept, but rather a tendency that can and should have a specific direction. In other words, growth must not follow a concrete path; as economic prosperity and social well-being can be achieved at the same time.

We believe that various stakeholders can work together and can support Europe in becoming an economically competitive - but green and fair - society at the same time.

This means that governments (from the local to the national level), companies, VET centres, and other agents, have the capacity of shaping the future and of supporting a specific path of economic growth.

Principle 2: Interaction relationships through systems, ecosystems, networks, communities, platforms, quadruple helixes, etc.

An analysis of recent European Commission plans, strategies, and publications reveals that there is a growing emphasis on understanding that things happen through the interaction of different stakeholders.

It is common to talk about systems, ecosystems, networks, communities, triple, quadruple, or n-duple helixes, and about platforms, which are becoming a new buzzword with ambitious meanings - ranging from ecosystems to digital service platforms.

The European Commission defines a “Skill ecosystem” in the Erasmus+ Programme Guide (European Commission, Version 1 2023) as:

> *regional or sectoral social formations in which human capability is developed and deployed for productive purposes. Their basic elements are business settings and associated business models, institutional/policy frameworks, modes of engaging labour, the structure of jobs, as well as the level of skills and systems for their formation.*

And, as pointed out in the BEYOND 4.0 research project (Warhurst et al 2019):

> *The ecosystem concept is built on the natural ecosystem analogy, defined as a biotic community, its physical environment, and all the interactions possible in the complex of living and non-living components. The concept of (business, entrepreneurial, innovation, skills) ecosystem is focused on the co-evolution in social and economic systems, in particular networks of organisations that together constitute a system of mutual support and co-evolving contributions with specific goals (business goals; entrepreneurial activity; innovation purposes; skilling activities). The concept challenges the idea that the market principle is the only principle structuring relationships in the economy As a new form of economic coordination, the ecosystem concept allows us to make understandable how practices are structured in another way that would be expected from market exchanges. Trust, relationships, co-creation, alignment and collective learning are needed to create and sustain new value in specific contexts.*

The concept of the ecosystem will be important in our understanding of:

- **VET**, as part of a skills and innovation ecosystem. The concept of ecosystem is important as well in the definition of a Centre of Vocational Excellence (CoVEs), the main European initiative to which our project belongs.
- **Advanced Manufacturing and Industry 5.0**, because we understand that technology, science, and society shape each other in a process of co-construction and that the implementation of new technologies does not follow a linear path, but an interactive movement where different social agents are key.
- **Innovation**, because a lot of innovation is the result of knowledge-related interactions between users, companies, universities, and many other agents.

VET is all too often a forgotten player in the Advanced Manufacturing ecosystem. It plays a relational role that cannot be ignored, offering the foundation of technical knowledge, while also providing a conduit for new ideas and innovation in the industrial sectors.

Principle 3: Against technological determinism

Although there are many versions of it, two features define technological determinism (Wyatt 2008):

- Autonomy of technology from society: Technology is autonomous from society. Technology and society are separated.
- Influence of technology over society: Technology defines a society and history.

This view of technology is part of our daily lives. It is common to think about technology in terms of famous inventors who come up with great ideas that changed the world. It can also be related to the fact that, for most of us, technology is given, an artefact that appears in our lives and that we learn how to use without playing any relevant role in it (Wyatt 2008). And it can also be related to how we study indigenous societies or our history (stone age, iron age, etc.).

The LCAMP Alliance assumes that this is not the case because:

- An analysis of history or a review of the literature produced in Science Technology and Society (STS) studies shows that technology and society are not independent. They shape each other in a process of co-construction.
- The “big-bang” type of invention, if it exists at all, is very rare. Most new technologies appear as a result of a long process of small changes in which several actors participate.
- It is important to acknowledge the relevance of other stakeholders (apart from the builders of technology) in the creation of new technologies. In this sense, the role of users has been researched in the last few years (von Hippel 2006, Oudshoorn and Pinch 2005; Oldenziel and Hard 2013).

We can find examples of technological determinism in most official documents, but we think that the European Commission is starting to reflect on the new Industry 5.0 paradigm, where they emphasise the human and social side of technology.
We need to approach technology as a socially negotiated and shaped element, where VET can play a crucial role.

Principle 4: Digitalisation will be more constructive than destructive

Leaving aside its effects on our daily lives, digitalisation can seriously impact the world of work.

Digitalisation and Industry 4.0 are expected to replace certain tasks. This will have an impact on employment, especially in the Advanced Manufacturing sector. We can foresee different scenarios:

- Scenario 1: nothing will happen. There will not be any revolution and digitalisation will not impact employment.
- Scenario 2: There will be a massive destruction of employment that will never be recovered because we will not need as many workers as we need now.
- Scenario 3: There will be a polarisation of employment, with very high or very low positions, but the middle levels will disappear. Also referred to as the “barbell phenomenon” (Chalofsky, N. F. 2014).
- Scenario 4: There will be an increase in middle-level technicians and high positions. Only the lower-level jobs with very routinized tasks will disappear.

The LCAMP Alliance assumes that Scenario 4 will be the case and that digitalisation will not be destructive. More employment will be created, and, although millions of workers will have to be up and reskilled, job quality will improve.

This scenario is positive because it means that job quality, and with it, the well-being of European citizens, will improve in terms of safety, complexity of the tasks to be carried out by workers, salary, etc.

Principle 5: Digitalisation goes beyond introducing new tools in our work

Hypothetically we can see digitalisation as the adoption of a new technology that will make our work more productive which will make some aspects of our work easier or that will allow us to replace paper, etc. This is a weak understanding of what the adoption of digital technologies entails.

Digitalisation modifies how we work, how we communicate and how we live. An approach to digitalisation that considers questions such as “what skills do our students need to handle

digital technology A and B? What skills do workers need to use digital technology C? ” do not grasp the complexity of the issue.

The adoption of most new technologies literally changes our lives and we should address digitalisation with this broad mindset.

VET can be important in that opening communication channels between companies, workers, teachers, students, and authorities. All the stakeholders in society will have to adapt to the new reality if we want to grasp the potential benefits of digitalisation.

Principle 6: Education, including VET, does play, and will continue playing, a key role in achieving the aims of becoming a sustainable, fair, and highly digitalised Union

Education systems, including VET, will be a key driver for us to achieve the goal of becoming a competitive, green, digitalised, and fair society.

The European Skills Agenda states (European Commission 2020):

> *The green and digital transitions as accompanied by demographic trends are transforming how we live, work and interact. We want to ensure people have the skills they need to thrive. The coronavirus pandemic has accelerated these transitions and brought new career challenges for many people in Europe. In the aftermath of the crisis, many Europeans will need to retrain in a new skill or improve their existing skills to adapt to the changed labour market. The Skills Agenda aims to improve the relevance of skills in the EU to strengthen sustainable competitiveness, ensure social fairness and build our resilience.*

The Council Recommendation on vocational education and training for sustainable competitiveness, social fairness and resilience (24 November 2020) or the Osnabrück Declaration on vocational education and training as an enabler of recovery and just transitions to digital and green economies follow a similar direction:

> *Excellent and inclusive European VET is more than a response to developments and challenges that individuals and organisations face; VET is an enabler of innovation and an essential foundation for green, digital and sustainable growth. It enhances countries' resilience to crisis, develops quality opportunities of lifelong learning for all citizens and turns the digital and green challenges into driving forces that are able to reconcile sustained recovery, environmental sustainability and fair distribution of the benefits of growth among all citizens and societies. Excellent and inclusive European VET is equally necessary for the competitiveness of European enterprises and a well-functioning European labour market.*

Along the same line, the LCAMP Alliance believes that VET is vital to the survival and success of Advanced Manufacturing (AM). AM cannot renew and refresh its employee bases, it cannot, and will not, provide the breadth of understanding required from a 21st-century workforce, and most importantly it is a profoundly conservative environment that does not instigate innovation. VET is the source of those things, and it is a prime mover for change and progress in the industry and at its fringes.

Principle 7: Broad conception of technology and knowledge

The LCAMP Alliance is focused on technology and knowledge. We are a diverse group of organisations (European networks, policymakers, researchers, VET centres, companies, clusters, company associations, etc.) working together in advanced manufacturing to generate and disseminate knowledge about technology in advanced manufacturing.

We adopt a wide definition of technology. For us technology will mean (Bijker 1995):

- The knowledge required to handle a specific technology, or artifact, or a group of them.
- The artifacts themselves, like a computer, a robot, or a pencil.
- The reflection about the previous two, as in reflecting about I4.0, I5.0, digitalisation or advanced manufacturing.

As for knowledge, there are different types that are relevant to our field of activities (Jensen et al. 2007): knowledge-what, knowledge-why, knowledge-who, and knowledge-how. All of them are important, but we are aware that VET is related to knowing *how* to do things, more than to knowing *why* or *what*.. This type of "knowledge-how" is key in making anything work and, therefore, VET is a key agent in achieving the twin transitions.

> *Know-how will typically be learnt in apprenticeship-relations where the apprentice follows his master, studies his 'body language' as well as his spoken language and relies upon his authority. Know-how is what characterizes a skilled worker and artisan but it is also something that distinguishes the first-rate from the average manager and scientist. (cited from Jensen et a. 2007)*

Principle 8: the importance of incremental innovation and traditional industrial sectors

There are some innovations that are labelled as radical or disruptive. They are innovations that introduce new products or services which replace existing ones and cause major disruptions in the sectors affected by them. These are the type of innovations that cause economic breakthroughs.

In the face of such innovations, there are other, more humble ones, that can be referred to as "incremental" innovations. They are small improvements in a process or product, and they do not cause economic breakthroughs or disruptions.

VET can be an important supporter of incremental innovations, and they are very important for the competitiveness of European companies. VET is a conduit, a transition point, and a two-way communication pathway for traditional knowledge bases and innovation alternatives. Competition does not come exclusively from within the sector, it comes from those who bring new knowledge and new perspectives to the field.

This is closely related to the relevance of more "traditional" industrial sectors. Sometimes, innovation and research tend to focus on the frontiers of knowledge and work with brand-new high-tech sectors. While investing in the frontiers of knowledge can be important for the future, the present compels us to not forget the more traditional sectors. These more traditional industries employ millions of people and they need to continue innovating if they are to continue being competitive. VET can play a role in that.

Principle 9: the importance of the local level and the smaller companies

Although the national and regional levels are critical in Europe, the work that VET does at the local level is vital: it works with the local enterprises, usually, SMEs, trains students from the area, and reskills and upskills local workers. The proximity of VET to the local context makes it an excellent agent to promote local well-being and economic competitiveness.

In a similar way, SMEs are very relevant companies for local wellbeing and tend to be connected to VET centres. SMEs are important for the well-being of the European level because they make up a big share of the total number of European companies and because they employ millions of people.

VET is especially well-placed to work at the local level and to collaborate with SMEs. VET serves the explicit needs of SMEs while expanding their capabilities and anticipating their future growth areas.

It is the seed of innovation, the hidden potential of multiple minds at work on persistent problems.

Principle 10: working together works

In line with the European initiative on centres of vocational excellence, the LCAMP Alliance believes that VET centres should:

- Follow their regional and local strategies and align their activities with them.
- Connect with other agents at local and regional levels: companies, associations, governments, researchers, etc.
- Connect with other similar ecosystems at the international level.

The reason to connect with others is that knowledge and technology, as defined above, are to some extent universal phenomena. We hope that by working together, we can learn more and have a bigger impact.

Conclusion

In relation to the previous nine assumptions or principles, we can say that:

- Together with other stakeholders, VET centres have the capacity of shaping the future and the capacity of supporting a specific path of economic growth.
- VET is an important stakeholder of the skills and innovation ecosystem, or a relevant subsystem together with other subsystems that make the whole system.
- VET should be an important part of a non-technologically deterministic way of approaching technology, in line with the new European Industry 5.0 paradigm.
- The process of digitalisation will create more employment and VET will play a key role in upskilling and reskilling millions of workers, whose job quality will improve.
- The process of digitalisation goes beyond the adoption of new technologies, it will modify many aspects of our personal and professional lives and it should be approached in all its complexity.
- VET is very important for Advanced Manufacturing to thrive.

- VET is key in the dissemination and generation of know-how type of knowledge and a key agent in the diffusion of technology, as defined above.
- VET can support incremental innovation in traditional sectors.
- VET should be connected to other agents at all levels, including international cooperation.

2 VOCATIONAL EDUCATION, ADVANCED MANUFACTURING, AND REGIONAL INNOVATION TRENDS IN EUROPE

In this section we analyse the most relevant trends (in relation to LCAMP) in:

- Vocational education and training.
- Advanced Manufacturing, Industry 4.0, and Industry 5.0.
- Regional Innovation.

The section closes with a list of challenges lying ahead for the LCAMP Alliance.

2.1 Vocational education and training (VET)

2.1.1 An open conception of VET

The meaning of the term “vocational education and training” is vague in Europe. With “VET” we refer to:

- Different levels of education according to the European Qualifications Framework (EQF). We can find VET studies from very low EQF levels to EQF level 8 and there is no homogeneity across Member States.
- Different duration of the study paths. There is no such thing as a definite duration of a VET degree.
- Different training modalities. VET could be studied in a variety of ways: different models of apprenticeships including dual education, blended learning, online, part-time, night offer, etc.
- VET systems are differently managed in Europe: public systems, public-private partnerships, private management, national government management, regional government, etc. And the same goes for VET centres and studies: there are very different management and leadership models with profound implications.
- Different functions of VET providers, ranging from countries where their only mission is to provide initial training, to countries where VET centres provide a wide array of services apart from initial training.
- Different types of institutions provide it.
- Varying levels of popularity of VET studies. How VET is perceived in a specific society.
- Different names.

The two most accepted definitions of VET are given by:

- UNESCO: TVET (Technical Vocational Education and Training): All forms and levels of the education process involving, in addition to general knowledge, the study of technologies and related sciences, the acquisition of practical skills, know-how, attitudes and understanding relating to occupations in the various sectors of economic and social life. UNESCO-UNEVOC. TVETipedia Glossary.
- Cedefop: VET (Vocational Education and Training): Education and training which aims to equip people with knowledge, know-how, skills and/or competences required in specific occupations or more broadly in the labour market. Cedefop. Terminology of European Education and Training Policy. Glossary.

And indeed, there are some features in both definitions that deserve some attention (Hazelkorn and Edwards, 2019: 9-10) and could explain why they are widely accepted:

- They identify VET with a specific educational approach rather than with a specific type of institution.
- They do not pay any attention to the qualification levels. They are dealing more with the approach, than with the level.
- They do not specifically refer to any age cohort as the recipient of VET.
- They encompass initial VET and continuing VET.

The LCAMP Alliance will adopt the definition of VET of the Council Recommendation on vocational education and training for sustainable competitiveness, social fairness and resilience:

> *Vocational education and training is to be understood as the education and training which aims to equip young people and adults with knowledge, skills and competences required in particular occupations or more broadly on the labour market (21). It may be provided in formal and in non-formal settings, at all levels of the European Qualifications Framework (EQF), including tertiary level, if applicable*

This definition implies that for the LCAMP Alliance VET:

- Involves young students and adults. In other words, all age groups, all European citizens, are potential VET students.
- Aims to equip any person with knowledge, skills and competences related to the labour market. At the same time, VET can have other functions, such as entrepreneurship or research.
- Studies do not need to be connected to a particular occupation. They can be, but they can have a broader focus, although always in connection with the world of work.
- Take places in formal and informal settings.
- Covers VET at tertiary level. We consider Higher VET a part of VET, not a part of the Academic Education.

From an international perspective, this definition is convenient because it allows us to be inclusive by acknowledging that different contexts exist. The LCAMP Alliance conceives VET in that broad sense.

2.1.2 From convergence to divergence and back to convergence of VET systems

The main historical antecedent of the variety of VET systems in Europe is the Middle Ages guild system[3]. Established in the 12th century, this system was in force until the industrial revolution.

Among other things, (fixing prizes, telling how things should be done, defining guild membership requirements, designing measures to take care of poorer members and widows and orphans) guilds defined the training of apprentices and journeymen. It established a three levels hierarchy:

- Apprentice.
- Journeyman
- Master

> *Only after a trial period lasting several weeks were apprentices accepted into a guild. The family generally paid the master a fee to cover the apprentice's food and lodging. The apprenticeship generally lasted from two to four years, and longer in very specialised occupations.*
>
> *The period of apprenticeship ended with a specialised examination when the apprentice was "discharged". Each trade or craft had its own customs for this "discharge" and for the former apprentice's acceptance into the community of journeymen. Journeymen's vocational qualifications were recognised in other countries. Generally without family ties, they travelled from place to place, to augment and broaden their skills by learning from masters in other countries: an early form of occupational mobility in Europe. After journeymen had acquired sufficient experience, they would apply to a guild for admission as masters*. (Cedefop 2004)

After the 18th and 19th centuries the guild system lost force because it was in opposition to the "free play of forces" encouraged by the new economic system that was slowly being established in Europe. From that time onwards, three archetypical models of VET emerged in Europe. The table[4] below summarises the main features of each one of them (Cedefop 2004)[5]:

[3]"The medieval guilds were generally one of two types: merchant guilds or craft guilds. (…). Craft guilds, on the other hand, were occupational associations that usually comprised all the artisans and craftsmen in a particular branch of industry or commerce. There were, for instance, guilds of weavers, dyers, and fullers in the wool trade and of masons and architects in the building trade; and there were guilds of painters, metalsmiths, blacksmiths, bakers, butchers, leatherworkers, soap makers, and so on. Guilds performed a variety of important functions in the local economy. They established a monopoly of trade in their locality or within a particular branch of industry or commerce; they set and maintained standards for the quality of goods and the integrity of trading practices in that industry; they worked to maintain stable prices for their goods and commodities; and they sought to control town or city governments in order to further the interests of the guild members and achieve their economic objectives." (Britannica, T. Editors of Encyclopaedia, 2023, February 18).

[4] The table gives a good insight and overview of the different models in Europe. However, the statements in the first line for the organisation of the dual model in Germany do not imply all information. For example, chambers are self-regulating in Germany and the Chamber of Crafts is only one of four main chambers.

[5] There are different reasons for the emergence of different VET systems in Europe: different speeds and periods of "Industrial Revolution", different political systems and movements in European countries that led to divergent systems, different types of economic activities, different religious doctrines, different cultures, etc.

The three “classical” models of vocational education and training:			
	The liberal market model: Britain	The state-regulated model: France	The dual corporate model: Germany
Who determines how vocational education and training is organised?	Negotiated “in the market place” between representatives of labour, management, and providers of vocational education and training.	The state.	State-regulated chambers of craft trades, arranged by profession.
Where does vocational education and training take place?	There are many options: in schools, in companies, in both schools and companies, via electronic media, etc.	In special schools, so-called “production schools”.	In predetermined alternation between companies and vocational schools (“dual model”).
Who determines the content of vocational education and training?	Either the market or the individual companies, depending on what is needed at the moment. The content is not predetermined.	The state (together with social partners). It does not aim primarily to reflect practice in enterprises, but relies instead on more general, theoretical training.	Entrepreneurs, unions, and the state jointly decide.
Who pays for vocational education and training?	As a general rule, the people who receive the vocational education and training are the ones who pay for it. Some companies finance certain courses, which they themselves provide.	The state levies a tax on companies and finances vocational education and training, but only for a certain number of applicants each year.	Companies finance training within the enterprise and can set off the cost against tax. Trainees are paid a contractually determined sum Vocational schools are financed by the state.
What qualifications are gained at the end of vocational education and training, and to	There is no monitoring of training, not are there universally	There are state certificates which also entitle the best graduates to go on to higher courses.	The qualifications are generally recognised as entitling their holders to work in

what opportunities do these qualifications lead?	accredited final examinations.		relevant occupation and to go on to higher courses.

Although it is difficult to find ideal instances of these models now, the current VET systems can be considered as an unbalanced combination of them. A combination in which the features of one of the ideal models tend to prevail over characteristics borrowed from the others.

Even if it is true that, since the Industrial Revolution Europe has had a variety of VET systems, it is also true that, since the Treaty of Rome in 1957, VET has been a matter of European cooperation, mentioned in relevant European policies over the years:

- In 1953, the first report of the European Coal and Steel Community pointed out that VET could improve safety in some occupations as mining. After that a “Permanent Commission for Vocational Training” was established.
- In 1957, the Treaty of Rome emphasised the relevance of VET.
- In 1960, The Council of Ministers fostered the implementation of the VET programme of 1957.
- In 1953, the first report of the European Coal and Steel Community pointed out that VET could improve safety in some occupations as mining. After that a “Permanent Commission for Vocational Training” was established.
- In 1957, the Treaty of Rome emphasised the relevance of VET.
- In 1960, The Council of Ministers fostered the implementation of the VET programme of 1957.
- 1963 10 common principles for VET were defined, this created a kind of European VET policy. 1975, Cedefop, the European Centre for the Development of Vocational Training, was launched to support with its research activity the goals of the Treaty of Rome.
- 1973, the Yom Kippur war strengthened the trend to give importance to VET.
- 1975, Cedefop, the European Centre for the Development of Vocational Training, was created.
- In 1986, Leonardo da Vinci was introduced (among other European Action Programmes) to support innovation in Lifelong Learning.
- 1991, the Memorandum on Vocational Training in the European Community was published.
- 1992 the Maastricht Treaty established community policies in six areas, including VET.
- 1995, Leonardo supports collaboration among different agents to strengthen mobility and innovation. In the same year, the European Training Foundation was created.
- 2000, heads of state and government tackled education policy at the European Council in Lisbon. The European Union set the goal of becoming the most competitive and dynamic knowledge-based society in the world by 2010.
- 2001, The European Council set three goals: a) improving the quality and effectiveness of education and training systems in the European Union; b) facilitating access for all to education and training systems; c) opening up education and training systems to the wider world. We can set the start of the “Bruges-Copenhagen process” in the same year. “The Process is named after the “Bruges” initiative of the heads of vocational education and training (October 2001), which resulted in November 2002 in the

education ministers of 31 European countries (EU Member States, candidate countries and those in the European Economic Area-the EEA) adopting the “Copenhagen Declaration” on enhanced European cooperation in vocational education and training”.

- 2022 the Copenhagen Declaration in 2002, and the European dimension in VET has been reinforced.
- 2004, the Maastricht Communiqué linked VET with the Education and Training 2010 work programme (later Education and Training 2020).
- 2010 the Bruges Communiqué on Enhanced European Cooperation in Vocational Education and Training set out the EU 2020 VET agenda.
- 2012 the Rethinking Education Communication called member States to promote dual VET.
- 2015, the Riga Conclusions, showed the commitment of the ministers of the Member States to promote high-quality VET.
- 2016 the new European Skills Agenda.
- 2018 the Commission launched the initiative of Centres of Vocational Excellence.
- 2020 Skills Agenda and Recommendation and Osnabrück Declaration.
- 2021 New Erasmus+ with a funding of 400 million of euros for the CoVEs.
- 1973, the Yom Kippur war strengthened the trend to give importance to VET.
- 1975, Cedefop, the European Centre for the Development of Vocational Training, was created.
- 1986, Leonardo da Vinci was introduced (among other European Action Programmes) to support innovation in Lifelong Learning.
- 1991, the Memorandum on Vocational Training in the European Community was published.
- 1992 the Maastricht Treaty established community policies in six areas, including VET.
- 1995, Leonardo supports collaboration among different agents to strengthen mobility and innovation. In the same year, the European Training Foundation was created.
- 2000, heads of state and government tackled education policy at the European Council in Lisbon. The European Union set the goal of becoming the most competitive and dynamic knowledge-based society in the world by 2010.
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- 2022 the Copenhagen Declaration in 2002, the European dimension in VET has been reinforced.
- 2004, the Maastricht Communiqué linked VET with the Education and Training 2010 work programme (later Education and Training 2020).
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- 2012 the Rethinking Education Communication called member States to promote dual VET.

- 2015, the Riga Conclusions, showed the commitment of the ministers of the member States to promote high quality VET.
- 2016 the new Skills Agenda.
- 2018 the Commission launched the initiative of Centres of Vocational Excellence.
- 2020 Skills Agenda and Recommendation and Osnabrück Declaration.
- 2021 New Erasmus+ with a funding of 400 million of euros for the CoVEs.
- In 1957, the Treaty of Rome emphasised the relevance of VET.
- In 1960, The Council of Ministers fostered the implementation of the VET programme of 1957.
- 1963 10 common principles for VET were defined, this created a kind of European VET policy. 1975, Cedefop, the European Centre for the Development of Vocational Training, was launched to support with its research activity the goals of the Treaty of Rome.
- 1973, the Yom Kippur war strengthened the trend to give importance to VET.
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As the list shows, even if the competence of education belongs to each Member State[6], VET systems have been a subject of European cooperation since the late 1950s. This cooperation has been successful in some respects and not so successful in others.

Among the successes, or relative successes, we could name (Markowitsch 2019: 12): Europass, Common European Reference for Languages, EQAVET (European Quality Assurance in Vocational Education and Training), ESCO (European Skills, Competences, and Occupations), EQF (European Qualifications Framework), EAfA (European Alliance for Apprenticeships), ECVET (European credit system for vocational education and training), CoVEs (Centres of Vocational Excellence).

But whatever the successes or failures, the important point is to acknowledge that this cooperation process will continue to be strengthened in future years. It is also important to note that there are common trends, shared by many European VET systems, that are very relevant for the LCAMP Alliance, and that could also contribute, in the form of shared challenges with diverse solutions, to the construction of a European dimension of VET.

2.1.3 Multifunctional VET systems

The primary function of a formal VET centre is to train students giving them the knowledge, competences and skills required by a specific job or occupation. This training is usually extended to reskilling and upskilling functions as part of continuing VET.

Cedefop defines Initial and continuing VET as follows (Cedefop. Terminology of European Education and Training Policy. Glossary):

- Initial education and training: General or vocational education and training carried out in the initial education system, usually before entering working life. Comments:
  - Some training undertaken after entry into working life may be considered initial training (such as retraining);
  - Initial education and training can be carried out at any level in general or vocational education (full-time school-based or alternate training) or apprenticeship pathways.
- Continuing education and training: Education or training after initial education and training - or after entry into working life, aimed at helping individuals to:
  - improve or update their knowledge and/or skills;
  - acquire new competences for a career move or retraining;
  - continue their personal or professional development.

  Note that continuing education and training is part of lifelong learning and may encompass any kind of education (general, specialised or vocational, formal or non-formal, etc.). It is crucial for the employability of individuals.

We will refer to VET centres providing initial and continuing VET as “uni-functional” VET centres because they perform a single function: training.

[6] In accordance with the subsidiarity principle, primary responsibility for education and training policies lies with the Member States, with the European Union having only a supporting role. See article 165 and 166 of the Treaty of the Functioning of the European Union.

But many VET centres extend the scope of their activities further: technical services for companies, working as incubators for entrepreneurs, providing services for the community, etc. We will refer to them as “multi-functional VET centres”. Multifunctional VET centres are centres that perform the activities of an “unfunctional VET centre” (training) and complement them with other activities that differ from training (Retegi and Navarro 2018). The European initiative on Centres of Vocational Excellence is advocating for multifunctional VET centres (Erasmus+ Programme Guide):

> *The concept of Vocational Excellence proposed here is characterised by a holistic learner centred approach in which VET:*
>
> - *Is an integrated part of skills ecosystems, contributing to regional development, innovation, smart specialisation and clusters strategies, as well as to specific value chains and industrial ecosystems;*
> - *is part of knowledge triangles, working closely with other education and training sectors, the scientific community, and business;*
> - *Enables learners to acquire both vocational (job specific) as well as key competences through high-quality provision that is underpinned by quality assurance;*
> - *Builds innovative forms of partnerships with the world of work, and is supported by the continuous professional development of teaching and training staff, innovative pedagogies, learner and staff mobility and VET internationalisation strategies;*

LCAMP will address both uni-functional and multifunctional VET centres but we will defend the development of multifunctional VET centres as a relevant element for local and regional development. We believe that, apart from training people, VET centres can help companies (especially SMEs working in more traditional technologies and sectors) to be more competitive, help regional ecosystems to exploit innovation and benefit from new technologies, promote entrepreneurship, and even work as a “boundary spanner” making agents with varying goals and interests meet and work together.

2.1.4 Expansion of VET to lower and higher EQF levels

On the one hand, the need for inclusion is provoking the expansion to lower levels of secondary education. The usual level of most VET systems in Europe was the non-compulsory secondary level and now, some VET studies are addressing lower levels to ensure the inclusion of all students. On the other hand, the requirements of more and more practical competences of the labour market are causing tertiary-level studies to “VETicise” (Hazelkorn and Edwards 2019). The “VETisation” of tertiary-level education can be seen as a consequence of a combination of the difficulties of the labour market to absorb university graduates with academic-background education, and the demand for more knowledge, skills and competences from VET graduates. It seems that, if European advanced manufacturing companies want to increase their competitiveness, they will need individuals with tertiary education who are trained in a practical, hands-on, way. The conclusion is that:

- Many students are being misguided to academic studies that are not needed in the labour market.
- The labour market requires a different type of knowledge than the academic knowledge (know-what, know-why) style of knowledge.

As a response to the challenge, some countries have developed two separate paths of tertiary education, one more academic and the other more VET style.

This also means that distinctions between academia and VET are starting to blur, which will have serious implications for both subsystems.

2.1.5 VET as a reskilling and upskilling agent

As a result of the twin transitions and the adoption of other new (not necessarily digital) technologies, new jobs will appear, existing jobs will be modified and, even if the job does not change, the way of carrying out certain tasks will be modified. This means that a lot of people of working age will need upskilling and reskilling in Europe. Although VET cannot be the sole agent in that, as part of the skill ecosystem, VET will be vital in tackling this skill, competence, and knowledge gap. Without it, Europe will lose economic competitiveness and wealth.

The low birth rate and the extension of life expectancy are other reasons for the relevance of upskilling and reskilling. People will have to stay longer in the working life in jobs that will be under modification.

In addition, the trends of the labour market show that the type of employment is changing. We find fewer permanent jobs now and many people will change jobs more than once in their working life. They will need upskilling and reskilling to navigate job changes with success.

In relation to upskilling and reskilling, VET systems should be able to offer and acknowledge short-duration training that can meet upskilling and reskilling needs. This is what we can refer to as micro-credentials, a topic that has been gaining relevance in the last few years.

2.1.6 VET centres facing the digital and the twin transitions

VET centres should also adapt to the twin transitions. They will need to implement new technology and develop new skills to handle it. They should also modify their working cultures to become greener and more digital.

If done well, the twin transitions will involve at least:

- Implementing new technologies in VET centres.
- Implementing new organisational cultures and new work cultures.
- Modifying existing management systems.
- Implementing green practices (energy efficiency, waste reduction, recycling, etc.)
- Training teachers and management staff in digitalisation and greening.
- Modifying the curricula to include new transversal aspects that will affect every field of VET.

We could name more implications, but the list above is enough for us to realise that profound changes must be done to drive the twin transitions. It shows as well that these changes should be cooperative work between policymakers, teachers, managers, companies, researchers, and students. If VET centres are left alone, they will fail.

And even more importantly, if different agents are to work together, it also shows the need to create a shared vision and share leadership. In this sense, someone needs to act as a platform that can gather and open discussion and cooperation among the relevant stakeholders.

2.1.7 **The relevance of soft and hard skills**

In addition to technical skills, soft skills are becoming more and more important for VET centres and companies. There is a trend to use project-based, challenge-based, problem-based, collaborative and other similar methodologies that are supposed to help students in developing their soft skills.

One of the ways to develop soft and technical skills at the same time is the Learning Factory approach. Learning Factories are complex learning environments that enable the development of independent and high-quality competences, which are linked to training, education, and research, including Industry 4.0 (Mora & Guarin, 2017). This goes hand in hand with the need for new approaches (Abele, 2015):

- Allow training in realistic manufacturing environments
- Modernise the learning process and bring it closer to the industrial practice
- Leverage industrial practice through the adoption of new manufacturing knowledge and technology
- Boost innovation in manufacturing by improving capabilities of young engineers, e.g. problem-solving capability, creativity or systems thinking capability

The learning factory concept is implementable in different ways (Abele, 2015). To achieve effective competency development, the core of the learning factory concept is a high degree of contextualisation (close to real factory environments) and a hands-on experience for the trainees.

The main aspects of Learning Factories (Abele, 2015) (Mora & Guarin, 2017) are:

- Training in real manufacturing settings;
- Contextual learning that is close to industrial practice;
- Integration of new knowledge and technologies being developed in industry, specifically in I4.0;
- Innovation and reinforcement of broad competences: problem-solving, creativity, systemic thinking, etc.;
- Working on real industrial “products”; Emphasis on the concept of added value and value chain;
- Organisation and production processes (time, cost, quality, etc.);
- Tools and technologies (CAD, CAM, additive manufacturing, simulators, etc.);
- Real-time data management and processing;
- Process automation and industrial robotics;

As mentioned before, the LCAMP project is an up-scale of the EXAM4.0, where we developed a Collaborative Learning Factory. In LCAMP, we will continue to develop it because it will allow VET centres to:

- Improve the training of their students mixing in the same process hard and soft skills.
- Implement I4.0 technologies in VET centre labs.

- Improve the technological knowledge of VET teachers ad students.
- Close the distance between real factories and VET centre labs.

2.1.8 The importance of apprenticeships

LCAMP will understand apprenticeships as follows (Cedefop. Terminology of European Education and Training Policy. Glossary):

> *Formal vocational education and training schemes that: a) combine learning in education or training institutions with substantial work-based learning in companies and other workplaces, b) lead to nationally recognised qualifications, c) are based on an agreement defining the rights and obligations of the apprentice, the employer and, where appropriate, the vocational education and training institution, and d) with the apprentice being paid or otherwise compensated for the work-based component*

European Member States have been strengthening this type of training in the last years as a valuable form of:

- Training students.
- Entrance in the labour market.
- Reducing skills mismatches.

Under the term “apprenticeship” we can find that there are very different systems of organising it. The German-speaking countries, Germany, Switzerland or Austria, have the so-called “dual system”. Other countries, such as Spain or France for example, have a completely different way of approaching apprenticeships. The recognition of the differences among a variety of contexts and institutional settings and the acknowledgement of the fact that there is no such thing as one size fits all are important elements to promote apprenticeships in a good manner.

2.1.9 The Centres of Vocational Excellence and the Platforms

Since the launch of the first pilot call under the Sector Skills Alliance action of the Erasmus+ programme of the European Commission in 2018, the initiative on centres of vocational excellence, CoVEs, has become very popular. In 2023, it has become the most famous VET initiative in Europe. It is an initiative in which we can differentiate three levels of action and an intention to connect them. The three levels are:

- Centres of vocational excellence that are working at the local level, everywhere in Europe, including the ETF countries[7] are defined as VET centres which follow learner-centric approaches, are anchored in regional strategies, provide more services apart from training (they are multifunctional), and collaborate with other stakeholders at the regional level (companies, clusters, authorities, research centres, etc.).

[7] Albania, Algeria, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Egypt, Georgia, Israel, Jordan, Kazakhstan, Kosovo, Kyrgystan, Lebanon, Libya, Moldova, Montenegro, Morocco, North Macedonia, Palestine, Serbia, Syria, Tajikistan, Tunisia, Türkiye, Turkmenistan, Ukraine, Uzbekistan.

- Platforms of centres of vocational excellence funded by Erasmus+. They are projects aimed at creating platforms where different CoVEs operating at local level connect at European and international levels.
- The ETFs Network of Excellence. A network of Centres of Vocational Excellence, and other organisations.

LCAMP is one of the thirteen project proposal approved for funding under the 2021 Erasmus+ call of centres of vocational excellence and as such our alliance aims to connect CoVEs working at regional and local level from Turkey, Slovenia, Italy, Germany, Sweden, the Netherlands, France, Canada and Spain in a European Platform of centres of vocational excellence for advanced manufacturing.

The formal creation of the Alliance (Deliverable 2.1 of the LCAMP project) and its first Strategic Plan (this document) are two key steps in this direction.

The European Commission has allocated a budget of four hundred million Euros to continue supporting the initiative between 2021 and 2027.

2.2 Advanced Manufacturing, Industry 4.0, and Industry 5.0

We will use the terms Advanced Manufacturing and Industry 4.0[8] as synonyms. We know that I4.0 can be used in a broad sense and refer to the implementation of certain technologies in several fields apart from manufacturing, but for the LCAMP alliance, as our focus is on manufacturing, we will not make any distinction.

We will understand I4.0 and Advanced Manufacturing as the application of digitalisation (Artificial Intelligence, Big Data, Internet of Things, Internet of Machines, etc.) and cutting-edge manufacturing developments (3D printing, Additive Manufacturing, High precision Machining, etc.) to manufacturing processes with the aim of increasing flexibility, productivity, and efficiency.

I4.0 took technology as the starting point and, in the last years, the European Commission is showing a concern with that the realisation of I4.0 is progressing slowly. To overcome this problem, they propose a new paradigm: Industry 5.0[9]. Industry 5.0 adds preoccupations such as social fairness or sustainability to the technological approach of Industry 4.0.

The table below shows the changes from I4.0 to I5.0

From…	To…

[8] "Industry 4.0" is a term coined in Germany in 2011.
[9] It might be relevant to clarify that "Industry 5.0" and the Japanese "Society 5.0" are different things. The Japanese numbering is not related to industrial revolutions but to different stages of social evolution. Society 1.0 hunting gathering economy, Society 2.0 agricultural economy, Society 3.0 industrial society (corresponds to our first, second and part of the third industrial revolutions), Society 4.0 characterised by the dominance of information and the relevance of digitalisation, Society 5.0 balance economic development with societal and environmental problems. It is not manufacturing focused and it aims to resolve several problems by integrating physical and virtual spaces. The use of technology in the Japanese 5.0 Society is not related only to economic competitivity, but to every sphere of human live, for the benefit of every citizen.

Taking emergent technology as a starting point and examining its potential for increasing efficiency	Putting core human needs and interests at the heart of the production process.
Asking what we can do with new technology	Asking what technology can do for us.
Asking the industry worker to adapt his/her skills to technology	Using technology to adapt the production process to the needs of the worker.

I5.0 can be defined as follows (European Commission 2021a):

> I5.0 recognises the power of industry to achieve societal goals beyond jobs and growth to become a resilient provider of prosperity, by making production respect the boundaries of our planet and placing the wellbeing of the industry worker at the centre of the production process.

And it is characterised by:

- Sustainability, understood as reducing energy consumption, reducing greenhouse emissions, and avoiding the depletion and degradation of natural resources.
- Resilience.
- Human-centric approach. Technology serves people and the well-being of workers is important. Workers are empowered and workplaces become more inclusive and safer with the implementation of technologies.

The key challenge arising from the new industrial paradigm is related to jobs and the need for reskilling and upskilling workers. VET can play a key role in that.

It is important to point out that I5.0 is not a new industrial revolution but an evolution of I4.0 and that many of the things being included in I5.0, such as human centricity or sustainability, were already there. In this sense, we can talk about a paradigm change in how we approach digitalisation and the implementation of a few cutting-edge technologies in the industry.

2.3 The role of VET in the regional innovation ecosystem

The main EU policy regional research policy is the Smart Specialisation Strategy (S3). Europe has fostered territorial strategies since the 1990s (Navarro and Magro 2013), such as the:

- Regional Innovation Strategies
- Regional Information Society Initiatives.

The main approach of the 1990s and the early 2000s can be summarised in two policy trends:

- The support for innovation and development of the poorer regions.
- The support of scientific excellence with the framework programmes, the predecessor of the *Horizon 2020* and the *Horizon Europe* programmes.

At the beginning of the 21st century, the Commission started to realise that, on the one hand, the support to poorer regions was generating inefficiencies (too many regions investing in the same things, duplication of efforts without differentiation, etc.), and, on the other hand, the support to scientific excellence was generating an elitist system, with most resources being invested in the most advanced European universities and research centres, usually located in the richest regions.

A period of austerity and policy reflection began after the economic crisis of 2008 and 2009. The main challenge was that it seemed impossible to support territorial cohesion (support to poorer regions) and scientific excellence at the same time. S3 was a way of overcoming this paradox.

The concept emerged in the "knowledge for Growth" high-level expert group and became a condition[10] for any region or state to receive the structural funds. The *Guide to Research and Innovation Strategies for Smart Specialisation* of the European Commission defines S3 as follows:

> *National/regional research and innovation strategies for smart specialisation are integrated, place-based economic transformation agendas that do five important things:*
> *1) They focus policy support and investments on key national/regional priorities, challenges and needs for knowledge-based development, including ICT-related measures.*
> *2) They build on each country's/region's strengths, competitive advantages and potential for excellence.*
> *3) They support technological as well as practice-based innovation and aim to stimulate private sector investment.*
> *4) They get stakeholders fully involved and encourage innovation and experimentation.*
> *5) They are evidence-based and include sound monitoring and evaluation systems.*

But there are still gaps in the approach to regional innovation systems (Navarro and Retegi 2018):

- They have put an emphasis on the generation of knowledge over its diffusion and exploitation.
- They have prioritised an STI[11] innovation model over a DUI[12] model and, consequently some types of activities have been prioritised over others. With this they also emphasise disruptive, big bang type of innovation, over the much more common incremental innovation.
- They have focused more on cutting edge technologies and big companies, than in traditional sectors and Small and Medium Sized Enterprises (SMEs).
- They have concentrated on universities, financial and capital markets over the labour force and the labour market.
- They have focused on a minority of persons with high qualifications (researchers, scientists, engineers, PhDs, etc.) ignoring middle level technicians.
- The lowest measure of analysis has usually been the regional level, which ignores the variety of local contexts and local ecosystems that exist within a region.

[10] It is an ex-ante conditionality. Every Member State and every region need to have a S3 strategy before they can receive the Structural Fund support.
[11] Technological innovation that happens following this path (or other similar models): Basic research - Applied Research – Development – Production – Commercialisation.
[12] Technological innovation that happens as a result of different agents who do, use and interact in a system.

The problem with the above-mentioned approach is that they have been ignoring some fields in which VET can be an important agent within the regional innovation ecosystem:

- VET can be an excellent disseminator and exploitation of knowledge.
- VET focuses on a type of innovation based on DUI.
- VET can work on incremental innovation, but hardly on the other type and is very unlikely to produce disruptive innovation.
- VET focuses on more traditional technological sectors, and it is usual for VET centres to work with SMEs.
- VET trains middle-level and lower-level technicians.
- VET works at the local level.

This means that VET centres can be key stakeholders in overcoming the gaps in regional innovation. VET can drive regional innovation by filling gaps and complementing existing activities.

2.4 Potential members, target audience, and stakeholders of the LCAMP Alliance

In this section, we analyse who will we like to join the Alliance as members, which stakeholders will find our activities of interest and who are the most relevant stakeholders of our Alliance. The aim is to identify the needs of these groups and to take them into account when defining our competitive advantage and the strategy of the LCAMP Alliance.

2.4.1 Potential LCAMP Alliance Members

The LCAMP Alliance is focused on knowledge related to advanced manufacturing:

- knowledge about technology implementation or use
- knowledge about the skills and competences to be acquired by students or workers
- knowledge about relevant trends in the field,
- knowledge generation in relevant fields through a community-based approach where different stakeholders interact
- knowledge diffusion, transfer and flow between VET, industry and policymakers.

In this sense, different agents can become LCAMP Alliance members. The most relevant are:

- Education providing agents: VET centres, Universities of Applied Sciences, Academic Universities, Chambers, Intercompany institutions and colleges.
- Research, innovation and development agents: VET centres, Companies with R&D labs, Universities of Applied Sciences, Academic Universities, Technological Centres and Scientific labs.
- Policymakers of local, regional, national or international levels.
- International organisations related to AM and VET.

The procedure to become a member, the rights and obligations of members and many other relevant aspects are addressed in deliverable 2.1. of the project.

2.4.2 Stakeholders of the LCAMP Alliance

We will consider as stakeholders the organisations and persons who can affect and be affected, and who have an interest, positive or negative, in the activities of the LCAMP Alliance.

In this sense, the main stakeholders of our project are:

- Education providing agents: VET centres, Universities of Applied Sciences, Academic Universities, Chambers, Intercompany institutions and Colleges,
- Research, innovation and development agents: VET centres, Companies with R&D labs, Universities of Applied Sciences, Academic Universities, Technological Centres and Scientific labs.
- Policymakers of local, regional, national or international levels.
- International organisations related to AM and VET.
- Students, student unitions.
- Workers, unemployed persons, worker unions.
- Employers, entrepreneurs.
- Researchers, engineers, technologists.
- Policymakers, politicians, authorities at various levels.

2.4.3 Target Audience

The target audience of the LCAMP Alliance activities are VET centres and SMEs, mainly students of initial and continuing VET, teachers of VET, SME workers, unemployed persons, and job seekers.

2.5 The challenges

The context analysis shows that we must overcome several challenges if we want to achieve a green, digital, and fair Europe. VET will only be one of the subsystems, part of a big ecosystem composed of several additional subsystems.

2.5.1 Challenge 1: Narrow conception of VET

Lack of a wide-enough understanding of VET outside of academic circles. VET encompasses low-level secondary education, upper-level secondary education and higher education. Identifying VET with only one of them goes against the definitions of the most relevant international bodies, like UNESCO or the European Commission.

2.5.2 Challenge 2: Ignorance about VET innovation capacity beyond the EU

Absence of a clear understanding of what VET innovation and capacity look like beyond the EU. There has been very little effort made to capitalize on lessons learned and steps taken by AM VET centres in Canada, Australia, and beyond.

2.5.3 Challenge 3: Divergence of European VET systems

Difficulties in comparing VET systems in Europe. This affects seriously the capacity of VET centres to cooperate. It makes mobility of students more difficult and it makes hard to compare study programmes. There is a need for cooperation among European initiatives related to AM and VET. While many digital platforms & networks for learning and career management exist, they often do not know each or see themselves as competitors. AM VET providers ignore the latest developments of labour market trends, technologies, and skills. It is paradoxical because there is plenty of good quality information such as, Cedefop's' work on skills intelligence, ESCO databases, and many others produced by the EITs, EU projects, and big consultancy firms. There is a need to make labour market, skills, and technology trends information available and useful for VET/HVET providers and for regional authorities. When a student, a teacher, A VET centre, a worker, a policy maker or any other person wants to find information on skill needs, technology trends, existing training courses, and many other very relevant issues, they need to expend several hours surfing the internet. There is a need for a user-friendly tool that informs any user about available courses, jobs, technology trends, labour market changes, and that connects them to a support system that can address:

- student's mobility and recognition difficulties;
- VET providers not being in touch with latest labour market trends;
- Lack of one multi-functional platform to present various, up to date, useful and accurate information

2.5.4 Challenge 4: The role of VET in Regional Smart Specialisation Strategies

Lack of awareness of the fact that vocational training has, or can have, many other functions in addition to training. VET is especially well-positioned to work with stakeholders at the local level (one of the levels most ignored by regional innovation strategies). The local level is key to reaching small companies, which are the backbone of the European economy. Exchanging knowledge on how to work with smaller companies helping them to innovate in processes, and products, and implementing new technologies. As highlighted by the JRC (Hazelkorn and Edwards 2019), there is a need to clarify the role of VET in R&D activities and its contribution to Regional Smart Specialisation Strategies.

2.5.5 Challenge 5: Making the VET training offer more flexible

The need to upskill and reskill thousands, probably millions, of workers in Europe. To make lifelong learning a the reality in Europe, we need adaptability, permeable and modular approaches to training. An AM company worker cannot commit to a long course.

They need smaller units that is recognised and more flexible. The upcoming Council Communication on micro-credentials supports this approach. To this end, there is a need to develop a micro-credentials system to integrate training courses into upskilling programs, also in AM. To this end there is a need to develop a micro-credentials system to integrate training courses into upskilling programs, also in AM. For those systems to become a reality, we need to (Camilleri et. al. 2022):

- accelerate the issuing of verifiable credentials at scale
- and importantly credentials need to be enhanced with additional data about individual courses/modules a person has studied, together with the learning outcomes (skills/knowledge) obtained in each of those modules and other documentation of ability.

2.5.6 Challenge 6: VET and the Twin transitions

The need for VET systems themselves to adapt to the twin transitions. No one in VET or SMEs has a specific roadmap or model to guide their digital and green transitions for AM. In the case of SMEs, the ADMA assistance framework provides this support. For VET providers nothing similar exists yet. In any case, both VET providers and SMEs need support frameworks for the twin transitions. In AM, when we talk about digitalisation, we are thinking about industry 4.0 technologies implemented in AM labs and students who are used to working in 4.0 environments. However, everyone seems to be speaking about digital skills, without any concrete implementation of technology in mind. There is a need to create appropriate learning courses about the most relevant industry 4.0 technologies linked to advanced manufacturing to update current study programs.

2.5.7 Challenge 7: Soft and hard skills

Work refers to a mental or physical effort carried out to achieve something and it can be paid or unpaid work. Work is comprised of tasks. Employers put a group of tasks together and call them a job. When an employee accepts a job, they become employed and the relationship existing between employer and employee is called “employment” and formalised through a contract that specifies rights and obligations for both parties. Employment is regulated by laws. These laws govern the contracts signed between employers and employees. To be able to perform the tasks defined in the composition of a job, a worker needs to have a specific set of skills[13]. Each task will be related to one or more skills.

[13] Distinctions can be drawn among skills, competences, knowledge, attitudes, and other categories analytically. According to Cedefop glossary: Competence is “demonstrated ability to use knowledge, know-how, experience, and – job-related, personal, social or methodological – skills, in work or study situations and in professional and personal development (…) Competence is not

Even if skills can be classified in various forms, we can agree on a very broad classification between:

- Technical or hard skills, specifically related to the tasks that comprise the job. Regardless of all the recent hype on the importance of emotional intelligence, creativity, communication and similar things, technical skills are the more important type of skill to get employed[14].
- Soft skills, not specifically related to the tasks that comprise the job but very highly valued by employers.

VET systems should continue to focus on the hard, technical, skills but try to include, without harming their development, the other type of skills.

2.5.8 Challenge 8: Support to apprenticeships and work-based learning

Apprenticeships are understood as a training scheme in which students alternate between training periods in the school and in the company is training scheme which can lead students to acquire the skills needed to perform a specific job in a very efficient way. They are also an excellent way to acquire soft and hard skills at the same time.

2.5.9 Challenge 9: Connecting CoVEs

The need to connect national, regional and local centres of vocational excellence at European level in platforms of vocational excellence. There is a need for Europe reference good practices in AM VET if we are to meet the policy goal of making Europe a worldwide reference for VET learners. Otherwise, any third country national interested in getting to know more about EU AM and VET/HVET will get confused given the number of countries, regions, languages, and different education systems. There is no Europe-wide AM VET community. Practices from related fields, such as the EIT Manufacturing KIC, show the value of CoPs for mutual support and knowledge generation. No specific VET Advanced Manufacturing network or community, focused on technology, exists. It makes a lot of sense to have one such community. No platform exists to promote VET excellence in AM at regional level by cooperating among different agents at EU level. There is a need for a European platform of AM in VET where different agents will cooperate. Such, collaboration among research, education and industry agents is not easy. They have different work cultures and different interests, such as, increasing productivity, publishing papers, training students, etc.

limited to cognitive elements (involving the use of theory, concepts or tacit knowledge); it also encompasses functional aspects – including technical skills – as well as interpersonal attributes (e.g. social or organisational skills) and ethical values".

- Knowledge is "outcome of assimilation of information through learning. Knowledge is the body of facts, principles, theories and practices related to a field of study or work. (…) There are numerous definitions of knowledge".
- Skill is the "ability to apply knowledge and use know-how to complete tasks and solve problems".

But apart from analytical distinctions these categories are very difficult, in some cases impossible, to distinguish in practice. This is the reason why we are using the term "skills" to refer to all of them.

[14] The relevance of soft skills is also being emphasised by some "futurist" style of thinkers who predict the substitution of most of the tasks by machines but think that humans will be valued by their human attributes, the ones that machines do not have, like empathy, communication, feelings, etc. As attractive as it might sound, we do not see it is happening.

2.5.10 Challenge 10: Industry 5.0

The need to approach advanced manufacturing and industry 4.0 in a new way under the new Industry 5.0 paradigm of the European Commission. In order to meet the demands of Industry 5.0 there is a need to explore new teaching/learning methods such as Learning Factories approaches which bring together learning-conducive workplaces and supported by state-of-the-art and accessible infrastructure, equipment and technology, and versatile pedagogies and tools (simulators, Virtual Reality, etc). VET providers face many issues in implementing new technologies. It is not always clear what 4.0 Industry technologies are, what they are good for, and how to implement them. Holistic approaches and interoperability are needed. It is also difficult to know how to expose students to them and how they could be used to promote digital and green skills. There is a lot of theory but few, if any, real examples exist. There is a need for a framework that could support VET/HVET providers in the implementation of state-of-the-art infrastructure. Industry 4.0 technologies tend to be very expensive. Many regions struggle to get the necessary funding to purchase them for VET purposes. Because of that, students from some countries have less opportunities than other students. There is a need to ensure that, regardless of where someone is born, they have access to a good quality education. AM SMEs need to be guided to concrete actions they can undertake to adapt to the twin transitions, and workers need to be upskilled.

2.5.11 Challenge 11: VET as a motor of innovation for SMEs

The need for regional innovation systems to understand the potential relevance of VET in the regional innovation ecosystem (not only as a provider of training). There is a need for a community that promotes cooperation in Applied Research and Development to promote innovation in VET such as cluster and business incubators for start-ups and technology innovation for SMEs.

These challenges has two angles, internal and external:

- External: Awareness among regional innovation strategies including SMEs, education communities, universities, etc.
- Internal: Awareness among VET providers and policy makers about the "other" functions of VET. This requires a change of mindset.

3 VISION, MISSION, VALUES, AND STRATEGIC OBJECTIVES OF THE LCAMP ALLIANCE

In this section, we state our vision and mission statements, as well as the core ethical values of the LCAMP Alliance. The definition of these elements is the result of a series of discussions and collaboration between the partners of the LCAMP project. For the definition of the strategic objectives, we have used the challenges identified in the previous section.

VISION

The LCAMP Alliance aims at becoming the European reference platform for knowledge generation and exchange, collaboration and service provision for VET and companies working in the Advanced Manufacturing field.

MISSION

Collaboration and networking between VET, companies, research institutions and the policy level working in the Advanced Manufacturing field to reduce skills mismatches in the industry and to transfer knowledge between VET and companies.

VALUES

Agility

Cooperation

Defence of the European project

Quality

Transparency

Trust

3.1STRATEGIC OBJECTIVES

The strategic objectives of the LCAMP Alliance are more specific, and measurable, objectives that will help us become the European reference platform for knowledge generation and exchange, collaboration and service provision for VET and companies working in the Advanced Manufacturing field.

To do that, we have main working fields:

- Field one: The LCAMP Alliance.
- Field two: The observatory of trends.
- Field three: The open innovation community.
- Field four: skills intelligence[15].
- Field five: The Collaborative Learning Factory.
- Field six: The approach to collaborate with SMEs.
- Field seven: The online platform.

Each of those fields has at least one Strategic Objective that will then become part of the subsequent annual plans.

3.1.1 Field one: The LCAMP Alliance

This field of activity corresponds to the second work package of the project, and it is aimed at creating a large Alliance with several institutions representing different agents of the skills and innovation ecosystem as its members[16].

These are the strategic objectives related to field one, the LCAMP Alliance:

- Strategic objective 1: Define legal statues and functioning rules for the Alliance (SO1).
- Strategic objective 2: Inform and attract stakeholders to join LCAMP Alliance.
- Strategic objective 3: Share our concerns and advice with policymakers through policy briefs.
- Strategic objective 4: Plan the next steps of the Alliance after the end of the project funding.

[15] Cedefop defines “skills intelligence” as:

Process of identifying, collecting, analysing, synthesising and presenting quantitative or qualitative information on skills and labour market to:

- identify key trends and demands in the labour market;
- assess, anticipate and forecast skill needs;
- address skill gaps and mismatches;
- adapt provision of education and training accordingly;
- provide relevant educational and career guidance and counselling.

[16] The type of members we are envisioning are described in section in section 2.4 of this document.

3.1.2 Field two: The observatory of trends

The second field of activity corresponds to the third work package of the project, and it is aimed at creating an observatory of trends in advanced manufacturing to inform VET centres, workers, unemployed persons, SMEs, and policymakers about technological trends, developments in employment, technological skill needs, and the evolution of the field in general. The observatory aims to offer a reliable information source to support the strategic decisions of VET centres as well as to support stakeholders in their individual decisions.

To achieve this goal, it is important LCAMP defined its methodology of observation in deliverable 3.1 of the third work package of the project. The deliverable answers the following questions: What will we pay attention to and why? What will our sources be? How are we going to collect the information? How are we going to present it to the target audience? How often are we going to share new results?

It is important as well to have a benchmark. Even if the project partnership consists of a varied type of institutions which includes, VET centres (ranging from EQF 3 to 8), international networks, companies, clusters, and regional and local authorities, we would like to have a panel of external experts who could approve what we have prepared to share with our target audience. As we are an international Alliance, we need to have an international panel of experts composed of different local, regional or national panels. The opinion of the panel of experts, together with the quality of the sources defined in the methodology of observation, will be a means of ensuring that we are distributing quality information.

It is important as well how we share this information with the target audience. We should aim for a more user-friendly way and for time efficiency on the user side.

The strategic objectives related to field two, the observatory of trends, are:

- Strategic objective 5: Define the different working methods and tools of the Observatory.
- Strategic objective 6: Create the panel of experts of the Observatory.
- Strategic objective 7: Perform observatory analyses.

3.1.3 Field three: The open innovation community

The third field of activity corresponds to the fourth work package of the project and is aimed at creating an open innovation community inside the LCAMP Alliance. It is important to consider how this will look inside the Alliance and to reflect how it will affect the statutes or constitution of the Alliance.

The LCAMP open innovation community will define a model to work on technological innovation projects[17] between the main stakeholders of the quadruple helix but with the intention of improving technological innovation related to advanced manufacturing in VET centres[18] and SMEs.

The knowledge type and application level of these projects will vary from more “research style” projects which are still not directly implementable to very applied projects with very concrete applications and easy to measure impact in SMEs or in VET centres.

[17] As we said in the principles section, we understand technology in a broad sense which encompasses artifacts, the knowledge related to these artifacts, and the reflection about the whole thing.
[18] As we said the context analysis section, we follow the definition of VET of the 2020 *Council Recommendation on VET* and this includes VET studies in all EQF levels.

We will also work in highlighting the role that VET plays in different innovation ecosystems, its relevance for the success of S3, for the competitiveness of the European advanced manufacturing industry, and for the wellbeing and competitiveness of the European society in general. Although it has been changing in the last few years, VET tends to be a forgotten agent in innovation ecosystems, and this can be hindering our technological innovation potential.

The strategic objectives related to field three, the open innovation community, are:

- Strategic objective 8: Establish an Open Innovation Community to promote the development of applied research and development projects, mainly between CoVEs and SMEs.
- Strategic objective 9: Clarify the role of VET/HVET in AM R&D activities and its contribution to Regional Smart Specialisation Strategies.

3.1.4 Field four: skills intelligence

Being a platform of centres of vocational excellence, skills are part of our DNA. The fifth work package of the project deals with that. The adoption of new technologies and technological innovation are both closely related to skills, competences, and knowledge available in an ecosystem. Skills mismatches, skills gaps, upskilling, reskilling, curricula updates and creation, design and provision of new initial or continuing VET courses, are all part of our focus.

But we are also very concerned with guidance and with achieving an efficient flow of information towards users. With this goal in mind, we will develop a skills profiler that will offer guidance to students, workers, and unemployed persons, and a clearinghouse for micro credentials[19] (as a means of re- and up-skilling). We will provide all this through a virtual platform.

The strategic objectives related to field four, skills intelligence, are:

- Strategic objective 10: Provide a sector-specific overview of Industry 4.0 qualifications at EQF 3-6 correlated to the I4.0 technology and skills framework.
- Strategic objective 11: Develop a skills assessment toolkit.
- Strategic objective 12: Provide sector-specific datasets of trainings, courses, and micro credentials for different career pathways.
- Strategic objective 13: Establish clearing house for micro credentials and trainings based on Micro-Credential EU Standards.
- Strategic objective 14 Develop and provide micro- credentials for new and existing Industry 4.0 specific qualifications in AM.

3.1.5 Field five: The Collaborative Learning Factory

The fifth field of activity of the LCAMP Alliance is addressed by the sixth work package of the LCAMP project and is aimed at designing, building, and piloting a Collaborative Learning Factory. As mentioned in section two, the LCAMP Alliance believes that Learning Factories are an interesting approach to VET student training.

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We want to identify the technological elements VET centres need to implement a Collaborative Learning Factory. Our aim is that VET centres introduce I4.0 technologies in their labs and we will also create an assistance framework for VET centres.

The strategic objectives related to field five, the Collaborative Learning Factory, are:

- Strategic objective 15: Develop morphology of a Collaborative Learning Factory (CLF) and the needed elements for its implementation.
- Strategic objective 16: Implement Industry4.0 related technologies in VET centre's labs.
- Strategic objective 17: Develop an assistance framework to help VET/HVET centres in implementing industry 4.0 technologies in their labs.

3.1.6 Field six: The approach to collaborate with SMEs

The LCAMP Alliance is very engaged regarding collaboration with SMEs and this is why one of our fields of activity is oriented at companies. The LCAMP project addresses the field in the seventh work package, co-led by AFIL and AFM.

Within the seventh work package of the project, we want to make use of the ADMA assistance framework to support European SMEs to embrace the uptake of advanced manufacturing technologies. The methodology was first developed within the European Advanced Manufacturing Support Centre (ADMA), between 2018 and 2021, and later entered a scale-up phase under ADMA TranS4MErs, a Horizon 2020 project funded by the European Commission. It is important for us to build strong synergies between ADMA TranS4MErs and LCAMP. The effective cooperation between the two initiatives began in mid-2022 when ADMA TranS4MErs was already implementing its activities and LCAMP was kicking off.

In light of that, the LCAMP project coordinator, Tknika (Basque Centre for Applied Research and Innovation in VET), signed a Memorandum of Understanding with the ADMA TranS4MErs coordinator, Irish Manufacturing Research (IMR). We aim at re-signing a similar agreement between the LCAMP Alliance and ADMA TranS4MErs, once the LCAMP Alliance is formally registered under Belgian law.

We aim at training the project partners in the ADMA methodology and at developing a catalogue of training which can be related to different levels of the various transformations of ADMA.

The strategic objectives of field six, the approach to collaborate with SMEs, are:

- Strategic objective 19: Create a catalogue of trainings and offer them at SMEs in all partner countries related to the ADMA framework and transition model
- Strategic objective 20: Develop a support framework from the scans to the implementation of solution through the Open Innovation Community

3.1.7 Field seven: The online platform

The seventh field of activity corresponds to the eighth work package of the LCAMP project and is aimed at creating an online platform.

The goal is to develop a one-stop service for our users where they will be able to find all our offers, from information about technological trends in advanced manufacturing to a skilled

profiler, a connection with an open innovation community, information about events, access to training courses, etc.

The strategic objectives related to field seven, the online platform, are:

- Strategic objective 21: Provide an online one-stop-shop service for accessing all services, data and information generated by the project.
- Strategic objective 22: Localise content appropriately for different languages and stakeholders.
- Strategic objective 23: Maintain a technical service infrastructure, ensuring high level maintenance and service continuity, across a variety of platforms.
- Strategic objective 24: Ensure a sustainable usage of the tools, services provided within the six suites of LCAMP and the continuation of the Alliance after the end of the project funding

3.1.8 Summary of fields of activity and strategic objectives of the LCAMP Alliance

Field of activity of the LCAMP Alliance	Strategic Objective
1: The LCAMP Alliance.	1: Define legal statues and functioning rules for the Alliance.
	2: Inform and attract stakeholders to join LCAMP Alliance.
	3: Share our concerns and advice with policymakers through policy briefs.
	4: Plan the next steps of the Alliance after the end of the project funding.
2: The observatory of trends.	5: Define the different working methods and tools of the Observatory.
	6: Create the panel of experts of the Observatory.
	7: Perform observatory analyses.
3: The innovation community.	8: Establish an Open Innovation Community to promote the development of applied research and development projects, mainly between CoVEs and SMEs.
	9: Clarify the role of VET/HVET in AM R&D activities and its contribution to Regional Smart Specialisation Strategies.
4: Skills intelligence.	10: Provide a sector-specific overview of Industry 4.0 qualifications at EQF 3-6 correlated to the I4.0 technology and skills framework.

	11: Develop skills assessment toolkit.
	12: Provide sector-specific datasets of trainings, courses, and micro credentials for different career pathways.
	13: Establish clearing house for micro credentials and trainings based on Micro-Credential EU Standards.
	14 Develop and provide micro-credentials for new and existing Industry 4.0 specific qualifications in AM.
5: The Collaborative Learning Factory.	15: Develop morphology of a Collaborative Learning Factory (CLF) and the needed elements for its implementation.
	16: Implement Industry4.0 related technologies in VET centre's labs.
	17: Develop an assistance framework to help VET/HVET centres in implementing industry 4.0 technologies in their labs.
6: The approach to collaborate with SMEs.	18: Create a catalogue of trainings and offer them at SMEs in all partner countries related to the ADMA framework and transition model.
	19: Create a catalogue of trainings and offer them at SMEs in all partner countries related to the ADMA framework and transition model.
	20: Develop a support framework from the scans to the implementation of solution through the Open Innovation Community.
7: The online platform	21: Provide an online one-stop-shop service for accessing all services, data and information generated by the project.
	22: Localise Content appropriately for different languages and stakeholders.
	23: Maintain a technical service infrastructure, ensuring high level maintenance and service continuity, across a variety of platforms.
	24: Ensure a sustainable usage of the tools, services provided within the six suites of LCAMP and the continuation of the Alliance after the end of the project funding.

3.2 TYPE OF ACTIVITIES

The LCAMP Alliance supports activities aimed at generating, disseminating, sharing, and connecting knowledge related to advanced manufacturing and VET centres from a technological perspective. It seeks to:

- Promote joint cooperation initiatives between the association and its members and international organisations in the field of Advanced Manufacturing, VET and education and training.
- Organise of training courses and/or introductory presentations on the association's work and functioning to new members' staff.
- Propose and establish working groups dealing with Advanced Manufacturing, VET, education and training related topics of interest for the members.
- Provide its members with relevant information related to their area of interest and activity.
- Promote dialogue with EU institutions and other international organisations in order to ensure that the objectives of the Alliance and the interest in the work carried out by its members are taken into account.
- Oversee the promotion of good practices identified in each member organisation.
- Engage in advisory activities and policy influencing in order to convey the viewpoints of its members on all subjects related to Advanced Manufacturing, education and training to organisations, institutions and associations.
- Promote and boost collaborative EU funded projects, including participation in EU funded projects with own funding (co-funding) as requested by the EU rules.

4 NEXT STEPS

Regarding the next steps of the LCAMP Alliance Strategy, we must elaborate on:

- The annual plans
- The review of the strategy and the continuity of the Alliance after 2026.

The specific activities to achieve the strategic objectives above will be defined in the three subsequent annual plans of the LCAMP Alliance due by months 12, 24 and 36 of the project, June 2023, June 2024, and June 2025 respectively.

The first annual plan will be ready for month 12 of the project, June 15, 2023, but it will only enter into force after the formal registration, creation and publication of the LCAMP Alliance, deliverable 2.1 of the LCAMP project in month 17 of the project, November 15 2023.

As agreed by the partnership, the Alliance will be registered in Belgium as an AISBL and registered by a notary on month 17 of the project, November 15 2023. The first annual plan will be the first concretisation of the LCAMP Strategy with concrete actions, timelines, indicators and monitoring mechanisms, and it shall come into force after the formal establishment of the Alliance. It will be in force for 12 months and then the second plan will follow.

The overall aim of the three plans is to ensure that we achieve the goals outlined in this LCAMP Strategic Plan. The following table offers an overview of the three plans and their dates:

Plan number	Due date	Date of entry into force	End date
1	M12, June 15 2023	M17, November 15 2023	M29, November 2024
2	M24, June 15 2024	M29, November 15 2024	M41, November 2025
3	M36, June 15 2025	M41, November 15 2025	M53, November 2026, after the end of the project

As we can see in the table above, the period of the last plan extends longer than the end of the project (M48, June 2026). This plan ensures that our activities will be sustained for some months after the project and, therefore, the Strategic Plan outlined in this document will be relevant after the end of the project funding, which brings us to the next point: the review of the Strategy and the continuity of the Alliance after 2026.

Once the Alliance is formally created in November 2023, we will start inviting potential members (see section 2.4 of this document) to join us. We are expecting to have around 200 members by the end of the project.

The project description also describes the creation of an advisory board, composed by members of the Alliances who are not project partners. Together with them, and following the rules of our constitution agreed by the project partners and registered by a notary, deliverable 2.1, we will modify the current strategy and prepare the 2026-2030 strategy of the LCAMP Alliance. The third annual plan will act as a bridge between two periods in the history of the Alliance: the period as an Erasmus+ project and the next period as an independent Alliance.

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6 ANNEXES

6.1 Annex I: Composition of the LCAMP Alliance in 2023

LCAMP brings together organisations with the expertise and competences needed to achieve the goals of the Alliance as laid out in this strategy. We have applied the following partner selection criteria to ensure that the best possible partnership is drawn:

- In-depth knowledge and expertise in the field of VET training design and delivery, skills intelligence, AM business understanding, development and use of training validation and recognition tools and EU-level training, education and employment policies,
- Complementarities with other partners: companies, VET/HVET providers, European networks, regional associations, governments, industrial associations and R&D centres.
- Accessibility to users (students and adult learners),
- Well established company partnerships,
- Organisational and financial capabilities, culture of innovation,
- Motivation, commitment and skills of staff involved,
- Experience of EU-level cooperation,
- Location and geographic coverage. LCAMP involves south European, Central European, North European and Eastern countries. It also involves Turkish partners and a Canadian partner. This ensures the geographical coverage of the partnership,
- Upward convergence by involving more developed and less developed regions.,
- Previous experience of working together at EU and national levels.

Under this light, LCAMP involves 18 partners from 8 EU member states, 2 partners from non-EU Member States, 1 Affiliate Partner, and 60 Associated Partners from all around the world.

In terms of complementarities, LCAMP brings together all the key stakeholders:

VET/HVET centres

- Curt Nicolin Gymnasiet (Sweden)
- DHBW (Germany)
- CMQ (France)
- Miguel Altuna (Spain)
- Da Vinci College (Netherlands)
- MADE competence center (Italy)
- TSCMB (Slovenia)
- GEBKIM (Turkey)
- Camosun College (Canada)

The institutions provide work-based learning and dual studies to about 50.000 students. Together they are partnering with more than 20.000 companies in their region.

Regional education bodies:

- Skupnost VSS (Slovenia)
- KPDoNE (Turkey)

The network will be engaged in the testing and development of new collaborations learning factories (CLF), how to implement the CLF model, and how to improve training provision of I4.0 technologies.

Companies:

- Simumatik (Sweden)
- KIC (Malta)
- FORCAM (Germany)

Together with other associated partners they build the network of IT experts and provide the IT solutions. KIC and his network is responsible for the platform development (WP8), the data

management and building the six suites, the home-base of all services, data and tools for the different stakeholder groups.

Associations of companies:

- Mecanic Vallée (France)
- AFM (Spain)
- AFIL (Italy)
- GEBKIM Organized Industrial Zone (Turkey)

The associations represent 1000 Advanced Manufacturing companies in their regions. They will support the consortium in the surveys and provide sector-specific information and benchmarks in Industry 4.0.

European networks:

- EARLALL (based in Belgium)

EARLALL is comprised of 12 regional authorities which represent thousands of VET/HVET students in Europe and, in general, project partners are connected to large networks. This European-wide, even world-wide, connection brings high potential for impact in a great number of countries and various multiplier tools as far as dissemination is concerned.

R&D centres:

- TKNIKA (Spain)
- INVEMA (Spain)

TKNIKA carries out support services for Basque VET centres and coordinates entrepreneurial programmes, and company consultancy programmes in the Basque Country. TKNIKA is carrying out projects in fields related to Industry 4.0.

The variety of the partnership covers the whole Strategic Triangle of AM and VET/HVET.

Associate Partners

are partners that do not receive funding under the project but will still form part of the LCAMP Alliance. These partners are clustered in three main clusters:

- Teaching and learning: VET/HVET centres,
- Cooperation and partnerships: Companies, Associations of companies, R&D centres., and
- Governance and funding: Regional education bodies, Associations of companies, European networks

Descriptions

TKNIKA

TKNIKA is organically attached to the Vice ministry of VET. Department of Education of the Basque Government. Its nature is to provide applied research and innovation services and support to the VET centres and companies. To fulfil its functions, TKNIKA is structured in six areas: 1) technological innovation and innovation systems, 2) complexity management, 3) learning and high performance, 4) internationalisation, 5) applied innovation in strategic settings, 6) biosciences and sustainability.

CIFP Miguel Altuna

Public Vet centre created in 1928 whose activities involve IVET, CVET and applied innovation. Currently there are around 550 students and 84 staff members. Training activities are carried out in collaboration with industrial partners with more than 150 agreements related to WBL and

internships, innovation, collaborative projects, technical services, validation of trainings, and continuous training of workers.

AFM

The Spanish Advanced Manufacturing Cluster comprises: the Association of Manufacturers of Machine Tools (representing 90% of machine tool and advanced manufacturing technology companies in Spain), the association for industrial 3D printing and Additive Manufacturing, the association for metal cutting, forming and machining companies and the association for start-ups and new technology-based companies supporting the Advanced Manufacturing Industry. AFM comprises more than 450 companies plus 70 partners, represents more than 16.500 direct employees and a turnover more than 3.000 million €. AFM provides different services: International Promotion (Trade Shows, Missions, and Events), Technology, Industrial Safety, Environmental Issues, Quality Management, Fostering Cooperation, Institutional Relations, Training and Education, Studies and Statistics, Advice, Marketing and Communication.

INVEMA (technological unit of AFM cluster)

An active player in the European R&D&I ecosystem, INVEMA has participated in FP7 and Horizon programmes, has collaborated with major R&D centres (Fraunhofer, IMR, Polimi, Sirris, RISE, Profactor , SVUM, etc.). INVEMA belongs to CECIMO, the European Committee for Cooperation in the Machine Tool Industry. INVEMA promotes cooperation between international technology companies and networks through the organization of “Technical Missions”. Besides, INVEMA organizes various events related to technology transfer: congresses, seminars on BIEMH congresses, technical seminars and Webinars along the year. INVEMA has a deep knowledge of the main manufacturing actors.

DUALLE HOCHSCHULE BADEN WÜRTTEMBERG

Duale Hochschule Baden-Württemberg – DHBW (Baden-Wuerttemberg Cooperative State University) is the first higher education institution in Germany to integrate academic studies with workplace training within the curriculum. With around 34,000 enrolled students, over 9,000 partner companies and more than 145,000 graduates, DHBW is one of the largest HE institutions in the German Federal State of Baden-Württemberg. The success of the DHBW started with elevating Vocational Education and Training to the Higher Education level. All three schools of DHBW (Business, Engineering and Social Work) offer a broad range of accredited undergraduate and postgraduate programmes. With an increasingly international curriculum, DHBW promotes cooperation with companies, social institutions and universities all over the world.

FORCAM

FORCAM is one of the world's leading solution providers in the field of manufacturing control and optimization. More than 15 years ago, FORCAM brought the first Manufacturing Execution System (MES) to market maturity and has consistently developed since then. The MES is used by many companies. With the further development of the MES into an IIoT platform, a wide range of industries can now benefit from flexible machine connectivity and data analysis. FORCAM has developed initial principles and solution modules within research projects: "Innovations Allianz Green Car body Technologies" with the topic "Development of an energy management portal and components of an energy-sensitive production control system", "DaTeProMes" with the topic "MES Energy Dashboard for energy-optimized production controlling", In SmARPro - SmARt Assistance for Humans in Production Systems, basic components for process optimization were developed.

Association campus des métiers et des qualifications industrie du futur CMQE

CMQE brings together a network of secondary and higher education establishments, initial training centres (schools and apprenticeships) and continuing vocational training centres in the Lot and Aveyron for the fields of activity linked to Industry 4.0. The mission of the Campus is to provide solutions to the recruitment problems faced by the mechanical industries in the area, in terms of human resources and skills. The actions of the Campus are based on the following areas of work: a) Developing the attractiveness of training and the sector; b) Supporting companies in the digital transition, c) Adapting the training offer to the needs of companies, d) Training for the professions of tomorrow. CMQE aims to adapt training courses and create new training courses in line with the development of skills required by companies. It is involved in the creation of new professional licences, particularly in the field of the maintenance 4.0 and in the development of training courses for employees or job seekers. The setting up of complementary local initiative training, linked to new technologies, is also an important activity of the CMQ.

Mecanic Vallée

Is a cluster of manufacturers and federates an interregional network of prime manufacturers and subcontractors in the mechanical sector, on 3 major topics: aeronautics, spare parts for automotive, and machines tools. Founded and recognized as Cluster since 1998, once again One of the Best among French Clusters in 2010, "Mecanic Vallée" counted in 2021, 200 members, namely 160 companies and 40 organisms working on economic development or training (technological institutes, professional high school).

ROC DaVinci College

ROC Zuid - Holland - Zuid / Da Vinci College offers IVET and CVET programmes in Economics, Engineering and Technology, Information Technology, Health Care and Social Services. Trying to respond to the needs of society & the labour market DVC supports international activities, like mobility for students and staff, to help them to get prepared for / work at the international labour market and to be a responsible and contributing citizen. DVC has been cooperating with companies and institutions all over Europa for a long period. DVC received the ‘Innovative VET provider Award’ during the VET skills week 2018.

KIC

The Knowledge Innovation Centre (KIC) is a niche research and consultancy organisation with a mission to transform the ways we learn and work to give the opportunity to every person to reach their full potential. We take a systemic approach to change, focusing on improving education & skills policies and practices globally, via cooperation with governments, international organisations, universities and civil society. KIC is a global leader in the field of digital and micro-credentialing. The company was instrumental in the formulation of the European Union (EU) Approach to micro-credentials and designed the European Digital Credentials Infrastructure. We are active in the Europass and EQF Advisory Groups, the W3C Verifiable Credentials User Group and the European Blockchain Partnership. We have researched issues around unbundling and digital credentialing for well over ten years and assist clients with implementing business processes for micro-credentialing, as well as implementing technologies for digital credentialing across a variety of standards.

MADE

MADE is one of the Italian Competence Centers, acknowledged by Industria 4.0 National Plan. It aims at providing test and demonstration environment for Industry 4.0 in Italy. The MADE mission is to lead digital and sustainable transformation of companies applying oriented research and transfer of Industry 4.0 as well as to create an ecosystem. MADE provides a set of knowledge, methods, technical and managerial skills on digital technologies to support

companies in their digital transformation towards Industry 4.0. Int the large demo-center of over 2000 m2, it provides an I4.0 – based pilot production facility for pioneering test, demonstration and development project realization. MADE is deploying Teaching Factory providers a real-life environment for students and research engineers to develop their skills and comprehend the challenges involved in everyday industrial practical methodologies to support reskilling of existing forces and upskilling of new jobs.

Associazione Fabbrica Intelligente Lombardia AFIL

AFIL is an Italian private non-profit association, recognized by Lombardy Region as the regional technological cluster for Advanced Manufacturing. AFIL is the outcome of a Lombardy-Region-led, process aiming to set-up a network of clusters interested in carrying out, at national and at international level, an integrated and sustainable system of infrastructures, competences and methodologies supporting research and innovation. It represents a network of companies, universities, public or private research institutions and entities (including financial ones) operating in the field of the intelligent factory (Advanced Manufacturing). AFIL operates as the private part of a public-private network with Regione Lombardia dedicated to advanced manufacturing and its members are located in different territorial areas and focused on specific application fields. The cluster aims at promoting and facilitating research and innovation as regards to best practices and enabling technologies for the manufacturing sector in order to support and develop the Lombard production system's leadership and competitiveness.

EARLALL

An international non-profit association registered in Belgium and established in 2001 under the initiative of regional authorities willing to build a solid cooperation in the field of lifelong learning. EARLALL counts on 12 full member regions, as well as on a group of observers (integrated by universities, public institutions, and sector-related entities), which represent over 100 million people across Europe. EARLALL's goals are cooperation and attention to raising the role and visibility of regional and local authorities in the field of lifelong learning at European and international level. EARLALL, with regional and local authorities from all around Europe as engaged and committed members, makes a natural dissemination partner and a one-of-a-kind platform for searching and sharing best practices. Given the associative nature of the organisation, the most sought activities among its members and other regional authorities are dissemination of project results, the share of best practices, and the update on policy measures.

Kocaeli Provincial Directorate of National Education

A public body supervising educational institutions and schools on behalf of Ministry of National Education in charge of all activities related to education and 72 VET centres. It supports principals, teachers and other staff with variety of in-service courses. It collaborates and co-operates with the other directorates and institutions in Kocaeli, in many National and International projects. In Kocaeli, being one of the industrial cities, VET is crucial. Kocaeli Provincial Directorate of National Education attaches special importance for planning and undertaking internstional activities. As an important transition corridor between Europe and Asia, Kocaeli is among the leading provinces contributing to the Turkish manufacturing industry's production capacity. The city, which has a 13 percent share of the manufacturing industry, is also home to approximately 2,300 major industrial investments.

Gebkim VET

Established under the name of GEBKİM Chemistry Specialized Vocational and Technical Anatolian High School it is a leading VET centre in raising the qualified workforce needed in the field of Traditional Chemistry, Process and Petro-Chemistry and various chemical-related industries in Turkey and has been included in the Schools Implementing Special Projects by the decision of the Ministry of National Education of the Republic of Turkey. Gebkim VET has a pilot production area of 1170 m2. In May 2021, Call: ERASMUS-EDU-2021-PEX-COVE EU Grants: Application form (ERASMUS BB and LS Type II): V1.0 – 25.02.2021 38 Gebkim VET accredited by Erasmus alongside with Gebkim NGO and Koruma Klor Alkali. The 2021 accreditation plan includes Gebkim VET's participation in Industry 4.0 projects in collaboration with Europe's leading industrial and academic actors, and study visits to Chemical focused companies.

GEBKIM Organized Industrial Zone

Based on the principles that industrialization should be harmonized in the context of ''city-human environment'' and ''livable environment and sustainable development'" it provides services in production and social areas. OIZ gives importance to the human factor within scope of the ''city-human environment'' principle within the framework of industrialization. To develop and improve the human factor, the Occupational Health and Safety Improvement Grant Program is implemented under the ''Employment, Education, Social Policies'' component of the Instrument for Pre-Accessions" developed within the scope of financial cooperation between Turkey and European Union. With the rapid spread and development of industry 4.0 and digitalization, a ''Technology Development Center'' is being established to adapt to the requirements of the time and not to fall behind.

Curt Nicolin High school

CNG is a non-profit, so-called free school situated in Finspång, Sweden. The school is owned by the industrial companies in Finspång (51%) and the Municipality of Finspång (49%). Curt Nicolin High school is a part of the Teknik College in Östergötland, which is an Association of Industrial and Technical Centres in the region.

Simumatik

Simumatik AB was born in 2018, and since then has been developing innovative software solutions that release the full potential of the cloud. To date, the company has grown to over 8 employees, made up of Programmers, Product Developers, Engineers and Marketing professionals. The team has deep knowledge and experience in core automation technologies and robotic applications. As a company, Simumatik has over 20 years of experience in developing virtual commissioning tools for industry and education. The headquarters are in the Science Park of Skövde, Sweden.

Technical School Center Maribor

Technical School Center Maribor has over 10 years of experience in cooperation with national and international projects. Our specific is that 40% of curricula is provided as in-company WBL and the teaching staff requirements demand up to date professional experience and knowledge from the field of work as well as pedagogical and andragogical competencies. In doing so we ensure up to date theoretical training at the institution facility and then monitored and guided in-company placements with certified and qualified mentors. The result is that our graduates are 99% employed and cherished by the employers as ready to work and act in contrast to their peer graduates from HE that are experiencing a growing number of young unemployment with the bachelor, master and even PhD. EQF level 5 is provided in our member institutions in various institutional synergies, some of them providing only EQF level

5, others also EQF levels 3 and 4 and then again some providing upgrades to EQF levels 6 and 7 and all that in public and private institutions.

Skupnost-vss Slovenia

A professional association of higher vocational colleges (HVCs) holds under its umbrella 47 members (94% of HVC institutions) all providing EQF level 5. They offer their programs (32) in 28 locations across Slovenia to 99% of the national EQF level 5 student population. HVC's mission is to promote the HVET in Slovenia and beyond its borders and to contribute to the progressive development of professional HVET research area. Our members provide HVET, contribute to the field of applied research and professional studies, and the development of local communities and regions. HVC is primarily focused on the development of policy and strategies in the field of EQF level 5. It organizes conferences, thematic seminars, roundtables and training programs and other events for its members and all stakeholders to collect and share relevant new knowledge and information and is focused on continuous development of leadership within our member institutions. It operates as a joint body for research and analytical work with focus to EQF level 5 and acts as its representative and voice on national and international level. It is a link between its members, the world of work, students, authorities, national quality assurance agency etc.

Camosun College

A recognized leader in applied research, Indigenous education, trades and technology training, Camosun brings almost fifty years of experience to the partnership. In the area of trades and technology, Camosun has served its community through an ever-changing, ever-responsive series of offerings ranging from automotive service and carpentry to welding and virtual reality, with a clear dedication to sustainable building practices, ecologically responsible manufacturing, and equitable hiring and training practices for women, racial minorities, new immigrants, and Indigenous workers. Camosun brings expertise in the integration of active pedagogies, applied research, capstone experiences, design thinking, student-centred learning, just-in-time teaching, micro-credentials, and work integrated instruction. Camosun Innovates, the applied research unit for the college, provides access to Canada's network of Technology Access Centres, specializing in knowledge transfer from business and industry to the college sector, as well as the classroom and lab to the shop floor. Likewise, Camosun Innovates provides students with a venue for knowledge creation as they solve real-world research and development problems for local, regional, national, and international clients. The college serves as a conduit for understanding between the world of learning and the world of work, allowing for the constant sharing of ideas and innovations in support of vocational education and workplace excellence.

6.2 Annex II STATUTES OF THE PLATFORM OF ADVANCED MANUFACTURING COMMUNITY (EXAM 4.0 project)

Preliminary Title:

- Article 1: Name
- Article 2 Nature
- Article 3: Aim
- Article 4: Activities
- Article 5: Current members
- Article 6: Potential members
- Article 7: Seat
- Article 8: Official Logotype
- Article 9: Official language

Title I: Concerning the membership

- Article 10: Status of member
- Article 11: Procedure to become a member
- Article 12: Rights and obligations of members

Tile II: Concerning the structure and the competences

- Article 13: Structure of the community
- Article 14: Structure of the Steering Committee
- Article 15: Competences of the Steering Committee
- Article 16: Structure of the Teams
- Article 17: Nature of the teams
- Article 18: Competences of the teams
- Article 19: Iterative nature of the definition of the teams

Title III: Concerning the control of powers

- Article 20: Power control over the president
- Article 21: Power control over the Steering Committee
- Article 22: Power control over teams leaders

Title IV: Concerning the finances

- Article 23: Treasury
- Article 24: Sources of funding
- Article 25: Revenue
- Article 26: Budget

Title V:

- Article 27: Election of Steering Committee members
- Article 28: Election of the president
- Article 29: Election of team leaders

Title VI: Concerning collaborations with other organisations

- Article 30: Signature of agreements with other organisations.

Title VII: Concerning the amendment of the Statute

- Article 31: Procedure for amendments

Annexes

- Annex I: Members
- Annex II: Requirements to become a member
- Annex III: Teams

STATUTES OF THE PLATFORM OF ADVANCED MANUFACTURING COMMUNITY

We, the EXAM 4.0 partnership, with the vision of:

> becoming the European reference platform for knowledge generation and exchange, collaboration and service provision for VET/HVET centres and companies working in the Advanced Manufacturing sector,

will support:

> collaboration and networking between VET/HVET centres and companies/company associations working in the Advanced Manufacturing sector to reduce skills gaps in the industry and to transfer knowledge between VET centres and companies.

This statutory document regulates internal organisational aspects to ensure we will be able to reach our goals.

PRELIMINARY TITLE

Article 1. Name
The name of the association is: Platform of Advanced Manufacturing Community, or PAMC in its abbreviated form.

Article 2. Nature
The Platform of Advanced Manufacturing Community is an international non-for-profit community.

Article 3. Aim
The Platform of Advanced Manufacturing Community has been established with the aim of boosting international cooperation to enrich regional Vocational Education and Training/Higher Vocational Education and Training skills ecosystems in the Advanced Manufacturing sector.

Article 4. Activities
The Platform of Advanced Manufacturing Community supports these types of activities:

- Collaboration projects between different centres: networking area in the platform; peer review area.
- Information/ knowledge/ data services: knowledge repository; latest trends and research information in AM and in the field of expertise of each group, implementing 4.0 in education, use cases from leading industry describing I4.0 technology implementation, the challenges they faced and the qualification most suitable for working skills; information of study labs, new training programmes, curricula changes, new forms of education, microcredentials, OER; Data exchange between private users of the platform (data coming from the labs); good practice exchanges; peer review area; staff training opportunities; technological project development; transfer company needs to education system;
- Guidance services to help institutions provide a better training in AM: skills assessment tool/ I4.0 technological framework, I4.0 skills framework; I4.0 qualifications; virtual tours through institutions and labs; augmented reality and learning environments; labs, costs, equipment, specifications, etc.; peer review area; contact point for expert support; staff training opportunities.

Article 5. Current members of the Platform of Advanced Manufacturing Community
The organisations listed in Annex I constitute a community under the name of Platform of Advanced Manufacturing Community", in accordance with these Statutes, which lays down its basic institutional rules.

Article 6. Potential members of the Platform of Advanced Manufacturing Community
1. VET and Higher VET providers, Universities of Applied Sciences, Universities, Technology Centres, R&D centres, Innovation Centres, social partners, regional and local governments, associations of regional and/or local governments, businesses and business associations, are entitled to form part of the Platform of Advanced Manufacturing Community provided that they comply with the requirements of Annex II.
2. Mobility providers, intermediary organisations, consultancy firms making their living from different types of projects and different from VET and Higher VET providers, Universities of Applied Sciences, Universities, Technology Centres, R&D centres, Innovation Centres, social partners, regional and local governments, associations of regional and/or local governments, businesses and business associations, should not be accepted as Platform of Advanced Manufacturing Community members. They will have access to the materials and to the platform, but they will not be accepted as members and they will not have the right to create material or to interfere with the discussions.

Article 7. Seat of the Platform of Advanced Manufacturing Community
1. The seat of the Platform of Advanced Manufacturing Community shall lie within the facilities of the member organisation to which the president of the Steering Committee belongs.

Article 8. Official logotype of the Platform of Advanced Manufacturing Community

1. The logotype of the Platform of Advanced Manufacturing Community is the same as the logo of the project Excellent Advanced manufacturing, EXAM 4.0.
2. Only members of the community are allowed to use their logos and banners together with the official logo of the Platform of Advanced Manufacturing Community.

Article 9. Official language of the Platform of Advanced Manufacturing Community
The official language of the community is English. All members are requested to communicate in English.

TITLE I
Concerning the membership of the Platform of Advanced Manufacturing Community

Article 10. Status of Platform of Advanced Manufacturing Community member.
The official status of "community member" is awarded only to those who are listed in Annex I. The Annex will be updated every 6 months.

Article 11. Procedure to become a member of the Platform of Advanced Manufacturing Community
VET and Higher VET providers, Universities of Applied Sciences, Universities, Technology Centres, R&D centres, Innovation Centres, social partners, regional and local governments, associations of regional and/or local governments, businesses and business associations not listed in Annex I, may be added to it, and become community members, by fulfilling the following requirements:

1. The legal representative of the organisation should request the steering committee to be allowed to become a member of the Platform of Advanced Manufacturing Community.
2. The steering committee of the Platform of Advanced Manufacturing Community must verify that the applicant organisation fulfils the requirements outlined in Annex II.
3. It must be approved by the steering committee of the Platform of Advanced Manufacturing Community and inserted in the list of Annex I.

Article 12. Rights and duties of Platform of Advanced Manufacturing Community members.
1. The fundamental rights and duties of all members are:

1. Every member has the right to attend all the activities organised by the Platform of Advanced Manufacturing Community.
2. Every member has the right to resign from membership.
3. Every member should contribute to the Platform of Advanced Manufacturing Community as agreed and planned by the community in their Strategic Plans.
4. Every member should contribute to the Platform of Advanced Manufacturing Community by being working in a Team, leading a Team or being part of the Steering Committee.
5. Every member should make its contributions in English.
6. Every member has the right to be elected as a Steering Committee member.

2. The Steering Committee of the Platform of Advanced Manufacturing Community shall:

1. Watch over and guarantee the proper exercise of the members' fundamental rights and duties.
2. Lay particular emphasis on Strategic Plans aimed at improving Vocational Education and Training and Higher Vocational Education and Training excellence in Advanced Manufacturing.
3. Adopt measures that will help to promote Vocational Education and Training and Higher Vocational Education and Training excellence in Advanced Manufacturing.
4. Create working teams divided in different topics.
5. Make possible the participation of all members in the activities of the Platform of Advanced Manufacturing Community.

TITLE II
Concerning the structure of the Platform of Advanced Manufacturing Community and the competences of each group

Article 13. Structure of the community

The Platform of Advanced Manufacturing Community is composed by:

1. A Steering committee.
2. Teams.
3. Members.
4. Advisory board.

Article 14. Structure of the Steering Committee

The Steering Committee is composed by:

1. A president.
2. A board composed by:
    1. a Vocational Education and Training or Higher Vocational Education and Training representative.
    2. a university or University of Applied Sciences representative;
    3. a technology centre, Research and Development centre, innovation centre representative.
    4. a business or business association representative.
    5. all the Team Leaders.
    6. a secretary.
    7. a treasurer.

Article 15. Competences of the Steering Committee.

The Steering Committee of the Platform of Advanced Manufacturing Community has the following competences:

1. Organisation, regime and functioning of its institutions of self-government in accordance with the rules of these Statutes.
2. Definition of the list of member organisations with the right to exclude existing members and accept new members following the requirements and procedures defined in Annex II.
3. Organisation and functioning of the Platform of Advanced Manufacturing Community in accordance with the rules of these Statutes.
4. Internal electoral rules affecting the Steering Committee and other bodies of the Platform of Advanced Manufacturing Community, in the terms laid down in this Statute in accordance with the provisions of Title V herein.
5. Definition of the number, nature, competences and goals of the Teams.
6. Preservation, modification and development of these Statutes.
7. Procedural rules and rules concerning administrative and economic administrative procedure.
8. Strategic Plans of the Platform of Advanced Manufacturing Community.
9. Management of the webpage.
10. Internal and external Communication Management.
11. Creation and subsequent management of the digital platform for Advanced Manufacturing in Vocational Education and Training and Higher Vocational Education and Training.

Article 16. Structure of the Teams.

The Teams are composed by:

1. A Team leader.
2. Representatives of partner organisations working in the Team.

Article 17. Nature of the Teams.
The different working Teams of the Platform of Advanced Manufacturing Community have the goal of generating knowledge in different fields which are relevant to excellent Advanced Manufacturing in Vocational Education and Training and Higher Vocational Education and Training.

Article 18. Competences of the Teams.
The Teams have the following competences:

1. To lead research work in the name of the Platform of Advanced Manufacturing Community in their specific field.
2. To present to all the other members their developments.
3. To transfer knowledge through the digital platform (once the platform is created) and through the EXAM 4.0 project webpage (until the platform is created).

Article 19. Iterative nature of the Definition of the Teams.
Due to the changing nature of technology, the Steering Committee will regularly reflect on the Teams of the Platform of Advanced Manufacturing Community to:

1. Create new Teams.
2. To dissolve/merge existing Teams.

The Teams will be described in Annex III of these Statutes.

TITLE III
Concerning the control of powers in the Platform of Advanced Manufacturing Community

Article 20. Power control over the president.
The president will need to agree all his/her decisions with the Steering Committee members and, in cases where unanimity is not achieved, he/she will need to have at least 60% of the votes of the Steering Committee to move forward.

Article 21. Power control over the steering committee.
The Steering Committee is obliged to present all the decisions they plan to take to the rest of the members of the Platform of Advanced Manufacturing Community. They will need to have, at least, 60% of the votes to go on with a decision.

Article 22. Power control over Team leaders.
The members taking part in each team are responsible for the control of the work of the team. Team leaders will need to agree all the decisions with team members reaching an agreement of, at least, 60% of the votes, before making a decision.

TITLE IV
Concerning the finances of the Platform of Advanced Manufacturing Community

Article 23. Treasury.
For the proper exercise and financing of its powers the NAME OF THE COMMUNITY shall have its own Treasury.

Article 24. Sources of funding.
1. The Platform of Advanced Manufacturing Community will make use of all the resources available for the achievement of Vocational Education and Training and Higher Vocational Education and Training excellence in Advanced Manufacturing.
2. Members will pay an annual membership fee. The quantity of the fee will be proposed by the Steering Committee to all the members of the Platform of Advanced Manufacturing Community and agreed with, at least, 60% of the votes.

Article 25. The revenue of the Platform of Advanced Manufacturing Community shall consist of:
1. The sum of the membership fees.
2. The funding coming from other sources.

Article 26. Budget.
The General Budgets of the Platform of Advanced Manufacturing Community shall contain the revenue and expenditure of Platform of Advanced Manufacturing Community activities and shall be drawn up by the Steering Committee and approved by the Platform of Advanced Manufacturing Community members with, at least, 60% of the votes.

TITLE V
Concerning the internal electoral rules

Article 27. Election of Steering Committee members.

1. Steering Committee members are appointed by the rest of the members following the principle of having a representative from each type of organisation.
2. Steering Committee members can be re-elected for another term.
3. Steering Committee members can be revoked if the members decide to do so with at least 60% of votes.

Article 28. Election of the President

1. The Steering Committee will elect a President and a Vice-president.
2. The President can be re-elected by the Steering Committee.
3. The President can be revoked by the Steering Committee with at least 60% of the votes.

Article 29. Election of Team Leaders

1. Members of the Platform of Advanced Manufacturing Community will be part of different working teams, they will be responsible for electing a team leader with at least 60% of the votes.
2. Team leaders can be re-elected by their teams.
3. Team leaders can be revoked by their Teams with at least 60% of the votes.

TITLE VI
Concerning collaborations between the Platform of Advanced Manufacturing Community and other organisations

Article 30. Signature of agreements with other organisations

The Platform of Advanced Manufacturing Community may want to sign Memorandums of Understanding or other type of partnership agreements with other organisations in these cases:

1. An agreement will not be signed with a member organisation.
2. The signature of the agreement should be approved by the Steering Committee by unanimity.

TITLE VII
Concerning the amendments of the Statutes

Article 31. Procedure for amendments.

Amendments of the Statute shall be affected according to the following procedure:

1. The right to initiate amendments shall lie with the Steering Committee, at the proposal of one third of its members.
2. The proposal must be approved by the Steering Committee of the Platform of Advanced Manufacturing Community by an absolute majority.
3. It shall require in any case the approval of all the members of the Platform of Advanced Manufacturing Community by an absolute majority.
4. The approval of the members of the Platform of Advanced Manufacturing Community through a referendum shall be required.

ANNEXES

ANNEX I. Members of the community.

Name	TKNIKA, Basque VET Applied Research Centre
Logo	
Type of organisation	Technology centres, Research and Development Centres, Innovation centres
Region and Country	Basque Country, Spain
Interests	LISTA

Name	CIFP Miguel Altuna LHII
Logo	
Type of organisation	Vocational Education and Training and Higher Vocational Education and Training Centres
Region and Country	Basque Country, Spain
Interests	LISTA

Name	CIFP Bidasoa LHII
Logo	
Type of organisation	Vocational Education and Training and Higher Vocational Education and Training Centres
Region and Country	Basque Country, Spain
Interests	LISTA

Name	CIFP Usurbil LHII
Logo	
Type of organisation	Vocational Education and Training and Higher Vocational Education and Training Centres
Region and Country	Basque Country, Spain
Interests	LISTA

Name	CIFP Instituto Máquina Herramienta LHII
Logo	
Type of organisation	Vocational Education and Training and Higher Vocational Education and Training Centres
Region and Country	Basque Country, Spain
Interests	LISTA

Name	AFM, Advanced Manufacturing Technologies, Asociación Española de Fabricantes de Máquinas-herramienta, Accesorios, Componentes y Herramientas,
Logo	
Type of organisation	Business associations
Region and Country	Basque Country, Spain
Interests	

Name	Duale Hochschule Baden Württemberg

Logo	
Type of organisation	Universities and Universities of Applied Sciences
Region and Country	Baden Württemberg, Germany
Interests	LISTA

Name	Curt Nicolin Gymnasiet
Logo	
Type of organisation	Vocational Education and Training and Higher Vocational Education and Training Centres
Region and Country	Östergötland, Sweden
Interests	LISTA

Name	Da Vinci College
Logo	
Type of organisation	Vocational Education and Training and Higher Vocational Education and Training Centres
Region and Country	Region, Netherlands
Interests	LISTA

Name	EARLALL, European Association of Regional and Local Authorities for Lifelong Learning
Logo	
Type of organisation	Regional and local governments, associations of regional and/or local governments
Region and Country	Brussels, Belgium
Interests	

ANNEX II. Requirements to become a member of the Platform of Advanced Manufacturing Community.

1. Requirements for a VET/HVET provider to become a member of the Platform of Advanced Manufacturing Community

The applicant:

1. Is not in bankruptcy, subject to insolvency or winding up procedures, its assets are not being administered by a liquidator or by a court, it is in an arrangement with creditors, its business activities are not suspended or it is in any analogous situation arising from a similar procedure provided for under national legislation or regulations;
2. It has not been established by a final judgement or a final administrative decision that the VET/HVET provider is in breach of its obligations relating to the payment of taxes or social security contributions in accordance with the law of the country in which it is established, with those of the country in which the authorising officer is located or those of the country of the performance of the contract;
3. It has not been established by a final judgement or a final administrative decision that the VET/HVET provider is guilty of grave professional misconduct by having violated applicable laws or regulations or ethical standards of the profession, or by having engaged in any wrongful conduct which has an impact on its professional credibility where such conduct denotes wrongful intent or gross negligence, including, in particular, any of the following:
    1. fraudulently or negligently misrepresenting information required for the verification of the absence of grounds for exclusion or the fulfilment of selection criteria or in the performance of a contract, a grant agreement or a grant decision;
    2. entering into agreement with other persons with the aim of distorting competition;
    3. violating intellectual property rights.
    4. attempting to influence the decision-making process of the Platform of Advanced Manufacturing Community during the requirement evaluation procedure;
    5. attempting to obtain confidential information that may confer upon it undue advantages in the award procedure;
4. The VET/HVET provider is not guilty of any of the following:
    1. fraud, within the meaning of Article 1 of the Convention on the protection of the European Communities and financial interests, drawn up by the Council Act of 26 July 1995;
    2. corruption, as defined in Article 3 of the Convention on the fight against corruption involving officials of the European Communities or officials of EU Member States, drawn up by the Council Act of 26 May 1997, and in Article 2(1) of Council Framework Decision 2003/568/JHA, as well as corruption as defined in the legal provisions of the country where the authorising officer is located, the country in which the applicant [or the affiliated entity] is established or the country of the performance of the contract;
    3. participation in a criminal organisation, as defined in Article 2 of Council Framework Decision 2008/841/JHA.
    4. Money laundering or terrorist financing, as defined in Article 1 of Directive 2005/60/EC of the European Parliament and of the Council;
    5. terrorist-related offences or offences linked to terrorist activities, as defined in Articles 1 and 3 of Council Framework Decision 2002/475/JHA, respectively, or inciting, aiding, abetting or attempting to commit such offences, as referred to in Article 4 of that Decision;
    6. child labour or other forms of trafficking in human beings as defined in Article 2 of Directive 2011/36/EU of the European Parliament and of the Council;
5. Is recognized as a VET/HVET provider, regardless of the EQF levels, by the country/region where it is located. It is providing official (recognized by a competent authority) VET training in fields that are directly related to the Advanced Manufacturing sector.
6. Has access to cutting edge technologies and labs.
7. Uses a hands on/ active learning methodology.
8. Is helping students to acquire soft/transversal skills/competences and technical skills/competences.
9. Is anchored in the regional strategies for Smart Specialisation, RIS3 strategies. In this specific case, a centre will only be accepted as a CoVE in AM if and only if the centre is located in an area

where AM is considered as a strategic priority or an area of opportunity. Otherwise, the centre will not be considered as being anchored in the regional strategy.

10. Is a VET/HVET provider, with the ability to **adapt or create** specialized programmes, without necessarily having to change the official curricula, to give quick answers to the AM sector's technological demands.
11. Part of the staff is devoted to research activities, specially focused in activities with industrial partners.
12. Is providing at least one of the following services: entrepreneurship services, guidance services, collaboration with SMEs on innovation, trends observatory, social integration services, validating informal learning, upskilling and reskilling programmes, etc.
13. Is working with at least two of the following types of agents of the strategic triangle: Universities, Research and Development Centres, Businesses, local authorities, regional authorities, national authorities.
14. Takes part as a member in national and international networks in the AM ecosystem, both academic and industrial.

2. Requirements for Universities and Universities of Applied Sciences to become a member of the Platform of Advanced Manufacturing Community.

1. Is not in bankrupt, subject to insolvency or winding up procedures, its assets are not being administered by a liquidator or by a court, it is in an arrangement with creditors, its business activities are not suspended or it is in any analogous situation arising from a similar procedure provided for under national legislation or regulations;
2. It has not been established by a final judgement or a final administrative decision that the University/University of Applied Sciences is in breach of its obligations relating to the payment of taxes or social security contributions in accordance with the law of the country in which it is established, with those of the country in which the authorising officer is located or those of the country of the performance of the contract;
3. It has not been established by a final judgement or a final administrative decision that the University/University of Applied Sciences is guilty of grave professional misconduct by having violated applicable laws or regulations or ethical standards of the profession, or by having engaged in any wrongful conduct which has an impact on its professional credibility where such conduct denotes wrongful intent or gross negligence, including, in particular, any of the following:
    1. fraudulently or negligently misrepresenting information required for the verification of the absence of grounds for exclusion or the fulfilment of selection criteria or in the performance of a contract, a grant agreement or a grant decision;
    2. entering into agreement with other persons with the aim of distorting competition;
    3. violating intellectual property rights.
    4. attempting to influence the decision-making process of the Platform of Advanced Manufacturing Community during the requirement evaluation procedure;
    5. attempting to obtain confidential information that may confer upon it undue advantages in the award procedure;
4. The University/University of APplied Sciences is not guilty of any of the following:
    1. fraud, within the meaning of Article 1 of the Convention on the protection of the European Communities and financial interests, drawn up by the Council Act of 26 July 1995;
    2. corruption, as defined in Article 3 of the Convention on the fight against corruption involving officials of the European Communities or officials of EU Member States, drawn up by the Council Act of 26 May 1997, and in Article 2(1) of Council Framework Decision 2003/568/JHA, as well as corruption as defined in the legal provisions of the country where the authorising officer is located, the country in which the applicant [or the affiliated entity] is established or the country of the performance of the contract;
    3. participation in a criminal organisation, as defined in Article 2 of Council Framework Decision 2008/841/JHA.
    4. Money laundering or terrorist financing, as defined in Article 1 of Directive 2005/60/EC of the European Parliament and of the Council.
    5. terrorist-related offences or offences linked to terrorist activities, as defined in Articles 1 and 3 of Council Framework Decision 2002/475/JHA, respectively, or inciting, aiding, abetting or attempting to commit such offences, as referred to in Article 4 of that Decision.

6. child labour or other forms of trafficking in human beings as defined in Article 2 of Directive 2011/36/EU of the European Parliament and of the Council.

5. Is recognized as a University/ University of Applied Sciences, regardless of the EQF levels, by the country/region where it is located.
6. Is providing official (recognized by a competent authority) education in fields that are directly related to the Advanced Manufacturing sector.
7. Has access to cutting edge technologies and labs.
8. Uses a hands on/ active learning methodology.
9. Is helping students to acquire soft/transversal skills/competences and technical skills/competences.
10. Is anchored in the Strategies for Smart Specialisation.
11. Is a University/ University of Applied Sciences with the ability to **adapt or create** specialized programmes, without necessarily having to change the official curricula, to give quick answers to the AM sector's technological demands.
12. Part of the staff is devoted to research activities, specially focused in activities with industrial partners
13. Is providing at least one of the following services: entrepreneurship services, guidance services, collaboration with SMEs on innovation, trends observatory, social integration services, validating informal learning, upskilling and reskilling programmes, etc.
14. Is working with at least two of the following type of agents of the strategic triangle: VET centres, Research and Development Centres, Businesses, local authorities, regional authorities, national authorities.
15. Takes part as a member in national and international networks in the AM ecosystem, both academic and industrial.

3. Requirements for Technology centres, R&D centres, Innovation centres to become a member of the Platform of Advanced Manufacturing Community.

1. Is not in bankrupt, subject to insolvency or winding up procedures, its assets are not being administered by a liquidator or by a court, it is in an arrangement with creditors, its business activities are not suspended or it is in any analogous situation arising from a similar procedure provided for under national legislation or regulations;
2. It has not been established by a final judgement or a final administrative decision that the Technology centres/R&D centre/Innovation centr**e** is in breach of its obligations relating to the payment of taxes or social security contributions in accordance with the law of the country in which it is established, with those of the country in which the authorising officer is located or those of the country of the performance of the contract;
3. It has not been established by a final judgement or a final administrative decision that the Technology centres/R&D centre/Innovation centre is guilty of grave professional misconduct by having violated applicable laws or regulations or ethical standards of the profession, or by having engaged in any wrongful conduct which has an impact on its professional credibility where such conduct denotes wrongful intent or gross negligence, including, in particular, any of the following:
    1. fraudulently or negligently misrepresenting information required for the verification of the absence of grounds for exclusion or the fulfilment of selection criteria or in the performance of a contract, a grant agreement or a grant decision;
    2. entering into agreement with other persons with the aim of distorting competition;
    3. violating intellectual property rights.
    4. attempting to influence the decision-making process of the Platform of Advanced Manufacturing Community during the requirement evaluation procedure;
    5. attempting to obtain confidential information that may confer upon it undue advantages in the award procedure;
4. The Technology centres/R&D centre/Innovation centre is not guilty of any of the following:
    1. fraud, within the meaning of Article 1 of the Convention on the protection of the European Communities and financial interests, drawn up by the Council Act of 26 July 1995;
    2. corruption, as defined in Article 3 of the Convention on the fight against corruption involving officials of the European Communities or officials of EU Member States, drawn up by the Council Act of 26 May 1997, and in Article 2(1) of Council Framework Decision 2003/568/JHA, as well as corruption as defined in the legal provisions of the country

where the authorising officer is located, the country in which the applicant [or the affiliated entity] is established or the country of the performance of the contract;
    3. participation in a criminal organisation, as defined in Article 2 of Council Framework Decision 2008/841/JHA.
    4. Money laundering or terrorist financing, as defined in Article 1 of Directive 2005/60/EC of the European Parliament and of the Council.
    5. terrorist-related offences or offences linked to terrorist activities, as defined in Articles 1 and 3 of Council Framework Decision 2002/475/JHA, respectively, or inciting, aiding, abetting or attempting to commit such offences, as referred to in Article 4 of that Decision;
    6. child labour or other forms of trafficking in human beings as defined in Article 2 of Directive 2011/36/EU of the European Parliament and of the Council;
5. Is equipped with cutting edge technologies and labs.
6. Is anchored in the Strategies for Smart Specialisation.
7. Part of the staff is devoted to research activities, specially focused in activities with industrial partners.
8. Is providing at least one of the following services: entrepreneurship services, guidance services, collaboration with SMEs on innovation, trends observatory, social integration services, validating informal learning, upskilling and reskilling programmes, etc.
9. Is working with at least two of the following type of agents of the strategic triangle: VET centres, Research and Development Centres, Businesses, local authorities, regional authorities, national authorities.
10. Takes part as a member in national and international networks in the AM ecosystem, both academic and industrial.

4. Requirements for businesses to become a member of the Platform of Advanced Manufacturing Community.

1. Is not in bankrupt, subject to insolvency or winding up procedures, its assets are not being administered by a liquidator or by a court, it is in an arrangement with creditors, its business activities are not suspended or it is in any analogous situation arising from a similar procedure provided for under national legislation or regulations;
2. It has not been established by a final judgement or a final administrative decision that the business is in breach of its obligations relating to the payment of taxes or social security contributions in accordance with the law of the country in which it is established, with those of the country in which the authorising officer is located or those of the country of the performance of the contract.
3. It has not been established by a final judgement or a final administrative decision that the **business** is guilty of grave professional misconduct by having violated applicable laws or regulations or ethical standards of the profession, or by having engaged in any wrongful conduct which has an impact on its professional credibility where such conduct denotes wrongful intent or gross negligence, including, in particular, any of the following:
    1. fraudulently or negligently misrepresenting information required for the verification of the absence of grounds for exclusion or the fulfilment of selection criteria or in the performance of a contract, a grant agreement or a grant decision;
    2. entering into agreement with other persons with the aim of distorting competition;
    3. violating intellectual property rights.
    4. attempting to influence the decision-making process of the Platform of Advanced Manufacturing Community during the requirement evaluation procedure;
    5. attempting to obtain confidential information that may confer upon it undue advantages in the award procedure;
4. The business is not guilty of any of the following:
    1. fraud, within the meaning of Article 1 of the Convention on the protection of the European Communities and financial interests, drawn up by the Council Act of 26 July 1995.
    2. corruption, as defined in Article 3 of the Convention on the fight against corruption involving officials of the European Communities or officials of EU Member States, drawn up by the Council Act of 26 May 1997, and in Article 2(1) of Council Framework Decision 2003/568/JHA, as well as corruption as defined in the legal provisions of the country where the authorising officer is located, the country in which the applicant [or the affiliated entity] is established or the country of the performance of the contract;

3. participation in a criminal organisation, as defined in Article 2 of Council Framework Decision 2008/841/JHA.
4. Money laundering or terrorist financing, as defined in Article 1 of Directive 2005/60/EC of the European Parliament and of the Council;
5. terrorist-related offences or offences linked to terrorist activities, as defined in Articles 1 and 3 of Council Framework Decision 2002/475/JHA, respectively, or inciting, aiding, abetting or attempting to commit such offences, as referred to in Article 4 of that Decision;
6. child labour or other forms of trafficking in human beings as defined in Article 2 of Directive 2011/36/EU of the European Parliament and of the Council;

5. Is legally recognised as a business.
6. Is working in the Advanced Manufacturing sector.
7. Is collaborating in training students with VET centres in the area.

5. Requirements of business associations to become a member of the Platform of Advanced Manufacturing Community.

1. Is not in bankrupt, subject to insolvency or winding up procedures, its assets are not being administered by a liquidator or by a court, it is in an arrangement with creditors, its business activities are not suspended, or it is in any analogous situation arising from a similar procedure provided for under national legislation or regulations;
2. It has not been established by a final judgement or a final administrative decision that the business association is in breach of its obligations relating to the payment of taxes or social security contributions in accordance with the law of the country in which it is established, with those of the country in which the authorising officer is located or those of the country of the performance of the contract;
3. It has not been established by a final judgement or a final administrative decision that the business association is guilty of grave professional misconduct by having violated applicable laws or regulations or ethical standards of the profession, or by having engaged in any wrongful conduct which has an impact on its professional credibility where such conduct denotes wrongful intent or gross negligence, including, in particular, any of the following:
    1. fraudulently or negligently misrepresenting information required for the verification of the absence of grounds for exclusion or the fulfilment of selection criteria or in the performance of a contract, a grant agreement or a grant decision;
    2. entering into agreement with other persons with the aim of distorting competition;
    3. violating intellectual property rights.
    4. attempting to influence the decision-making process of the Platform of Advanced Manufacturing Community during the requirement evaluation procedure;
    5. attempting to obtain confidential information that may confer upon it undue advantages in the award procedure;
4. The business association is not guilty of any of the following:
    1. fraud, within the meaning of Article 1 of the Convention on the protection of the European Communities and financial interests, drawn up by the Council Act of 26 July 1995;
    2. corruption, as defined in Article 3 of the Convention on the fight against corruption involving officials of the European Communities or officials of EU Member States, drawn up by the Council Act of 26 May 1997, and in Article 2(1) of Council Framework Decision 2003/568/JHA, as well as corruption as defined in the legal provisions of the country where the authorising officer is located, the country in which the applicant [or the affiliated entity] is established or the country of the performance of the contract;
    3. participation in a criminal organisation, as defined in Article 2 of Council Framework Decision 2008/841/JHA.
    4. Money laundering or terrorist financing, as defined in Article 1 of Directive 2005/60/EC of the European Parliament and of the Council.
    5. terrorist-related offences or offences linked to terrorist activities, as defined in Articles 1 and 3 of Council Framework Decision 2002/475/JHA, respectively, or inciting, aiding, abetting or attempting to commit such offences, as referred to in Article 4 of that Decision.
    6. child labour or other forms of trafficking in human beings as defined in Article 2 of Directive 2011/36/EU of the European Parliament and of the Council;
5. Is legally recognised as a business association.
6. Is anchored in the Strategies for Smart Specialisation.

7. Represents at least 10 companies from the Advanced Manufacturing Sector.
8. Is collaborating with the VET sector as the association in itself and through the companies they represent.
9. Takes part as a member in national and international networks related to Advanced Manufacturing, both academic and industrial.

6. Requirements of social partners to become a member of the Platform of Advanced Manufacturing Community

1. Is not in bankrupt, subject to insolvency or winding up procedures, its assets are not being administered by a liquidator or by a court, it is in an arrangement with creditors, its business activities are not suspended or it is in any analogous situation arising from a similar procedure provided for under national legislation or regulations;
2. It has not been established by a final judgement or a final administrative decision that the social partner is in breach of its obligations relating to the payment of taxes or social security contributions in accordance with the law of the country in which it is established, with those of the country in which the authorising officer is located or those of the country of the performance of the contract;
3. It has not been established by a final judgement or a final administrative decision that the social partner is guilty of grave professional misconduct by having violated applicable laws or regulations or ethical standards of the profession, or by having engaged in any wrongful conduct which has an impact on its professional credibility where such conduct denotes wrongful intent or gross negligence, including, in particular, any of the following:
    1. fraudulently or negligently misrepresenting information required for the verification of the absence of grounds for exclusion or the fulfilment of selection criteria or in the performance of a contract, a grant agreement or a grant decision;
    2. entering into agreement with other persons with the aim of distorting competition;
    3. violating intellectual property rights;
    4. attempting to influence the decision-making process of the Platform of Advanced Manufacturing Community during the requirement evaluation procedure;
    5. attempting to obtain confidential information that may confer upon it undue advantages in the award procedure;
4. The social partner is not guilty of any of the following:
    1. fraud, within the meaning of Article 1 of the Convention on the protection of the European Communities and financial interests, drawn up by the Council Act of 26 July 1995;
    2. corruption, as defined in Article 3 of the Convention on the fight against corruption involving officials of the European Communities or officials of EU Member States, drawn up by the Council Act of 26 May 1997, and in Article 2(1) of Council Framework Decision 2003/568/JHA, as well as corruption as defined in the legal provisions of the country where the authorising officer is located, the country in which the applicant [or the affiliated entity] is established or the country of the performance of the contract;
    3. participation in a criminal organisation, as defined in Article 2 of Council Framework Decision 2008/841/JHA;
    4. Money laundering or terrorist financing, as defined in Article 1 of Directive 2005/60/EC of the European Parliament and of the Council;
    5. terrorist-related offences or offences linked to terrorist activities, as defined in Articles 1 and 3 of Council Framework Decision 2002/475/JHA, respectively, or inciting, aiding, abetting or attempting to commit such offences, as referred to in Article 4 of that Decision;
    6. child labour or other forms of trafficking in human beings as defined in Article 2 of Directive 2011/36/EU of the European Parliament and of the Council;
5. Is legally recognised.
6. Represents workers from the Advanced Manufacturing sector.

ANNEX III. Teams.

1. Teams of the Platform of Advanced Manufacturing Community

1. Introduction

The Platform of Advanced Manufacturing Community is composed by Teams focused on different technological fields related to Advanced Manufacturing.
According to the European Commission,

> Advanced manufacturing is the use of knowledge and innovative technology to produce complex products such as aeroplanes and medical devices and improve processes to lower waste, pollution, material consumption and energy use.

And it faces two challenges:

- digitisation
- the shift towards more environmentally sustainable production

The Teams of the Platform of Advanced Manufacturing Community will focus on Advanced Manufacturing, especially in its relationship with VET/HVET, and in the two challenges it faces according to the European Commission.
With the aim of covering all the relevant technological topics in Advanced Manufacturing and the two challenges, the Platform of Advanced Manufacturing Community is composed by 9 Teams.
From these 9 Teams, 8 are aimed at researching and sharing knowledge in specific technologies while one of the Teams is focused in designing transversal projects in which the knowledge acquired or generated in the other groups should be applied. In these type of transversal projects, new knowledge will be generated as well.

2. Description of the 9 Teams

1. AM-I.40 framework

2. Smart and Connected Machines, Internet of Things Team, Industrial IoT, IoM

Name	Smart and connected machines Team
Description	The goal of this Team is to generate knowledge about the digitalisation of production processes. and the integration of several of the technologies in which the other Teams of the Platform of Advanced Manufacturing Community focus by means of the design of transversal projects in which several Teams will need to apply their knowledge.
Team leader	
Team members	
Topics covered by the Team	

3. Virtual Environments Team

Name	Virtual Environments
Description	The goal of this Team is to generate knowledge about the use of Virtual Environments in Advanced Manufacturing and in training.
Team leader	
Team members	
Topics covered by the Team	Augmented Reality, Virtual Reality, Digital Twins, Simulators.

4. Smart Maintenance

Name	Internet of Things
Description	The goal of this Team is to generate knowledge about the connection of different devices to a network (not necessarily in a Cloud).
Team leader	
Team members	
Topics covered by the Team	Connection, Cloud, Communication Protocols, RFID, Sensors, Processors, Platforms,

5. **Big data, cloud, data analytics, Artificial Intelligence, machine learning, DL (applied in AM education) Team**

Name	Artificial Intelligence
Description	The goal of this Team is to generate knowledge about the use of Artificial Intelligence in Advanced Manufacturing and in the VET/HVET sector.
Team leader	
Team members	
Topics covered by the Team	Data analytics, Deep Learning, Machine Learning,

6. Robotics Team

Name	Robotics Team
Description	The goal of this Team is to generate knowledge about the use of Robots in the Advanced Manufacturing sector.
Team leader	
Team members	
Topics covered by the Team	Flexible Robotics, Collaborative Robotics, Mobile Robotics.

7. Additive Manufacturing Team

Name	Additive Manufacturing Team
Description	The goal of this Team is to generate knowledge about the use of Additive Manufacturing in the Advanced Manufacturing sector.
Team leader	
Team members	
Topics covered by the Team	3D printing, Additive Manufacturing. (metals & plastics)

8. Methodologies applied to AM education: Learning Factories

Name	Cyber-physical Systems Team
Description	
Team leader	
Team members	
Topics covered by the Team	

9. Cybersecurity in AM Team

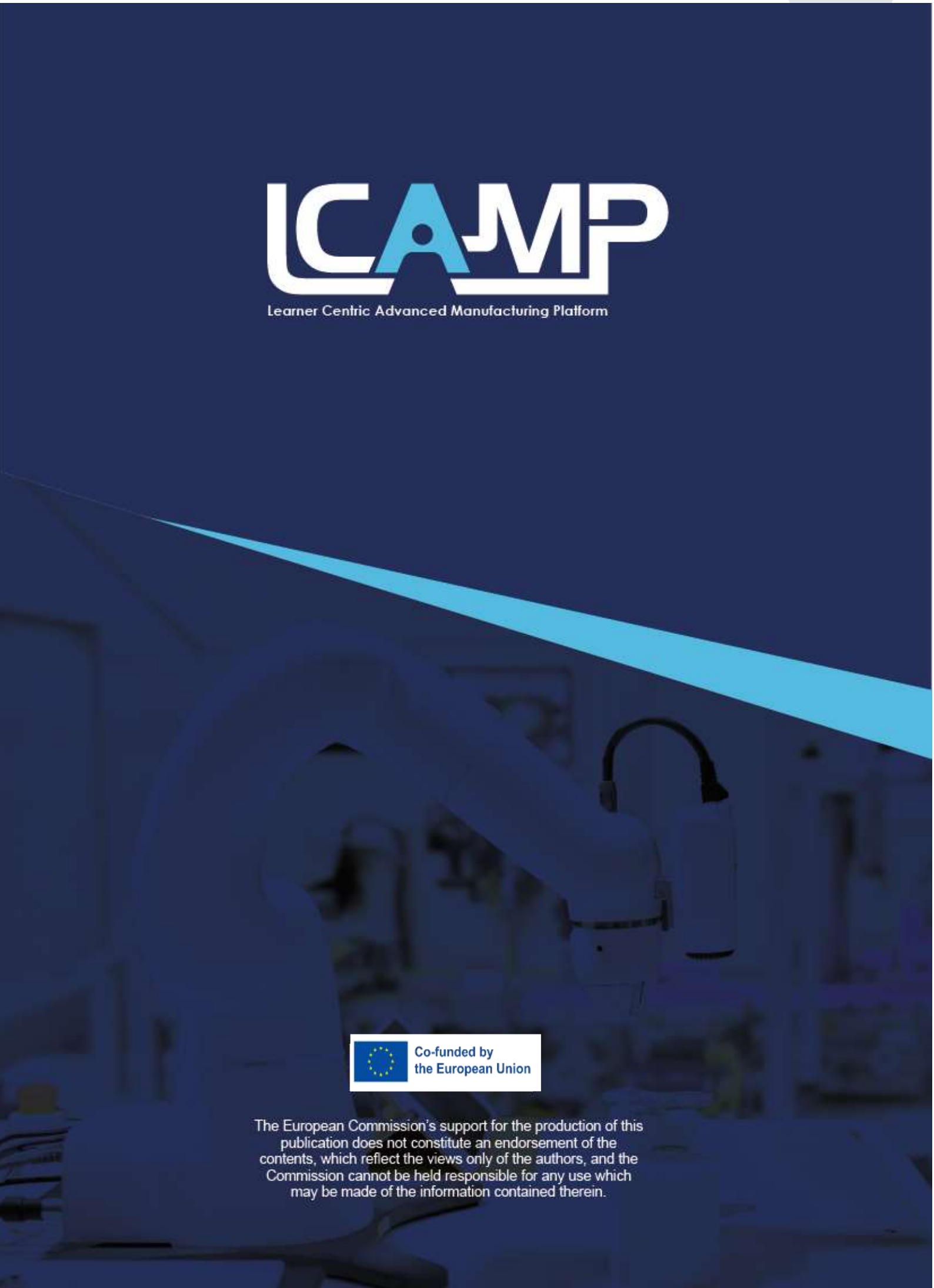
Name	Cybersecurity
Description	The goal of this Team is to generate knowledge about cybersecurity related to the Advanced Manufacturing sector. It is a transversal Team and the knowledge generated here will be applicable and relevant to the other Teams

10. Green Transition Team

Name	Green Transition Team
Description	The goal of this Team is to generate knowledge about the energy efficiency, reduction of emissions, the reduction of fossil energy consumption, the reduction of non-renewable energy consumption, the reduction of waste, and the reduction of freshwater consumption.

LCAMP

Learner Centric Advanced Manufacturing Platform



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