

Bridging

Innovation and

Learning in TVET

Implemented by



with support of



and sponsored by





New Qualifications and Competencies

The Three I's process

How can they be put into practice, ensuring future-oriented, attractive TVET career paths?

- **Identification** in an accurate and timely manner;
- **Integration** into appealing and flexible curricula and training regulations; and
- **Implementation** through innovative teaching and training approaches.

BILT project – Lines of Work

Bridging line

Events to promote peer learning exchange

- Regional conferences: European Conference, Asia-Europe Conference, Africa-Europe Conference
- Global conference: BILT Learning Forum

Innovation line

Joint development of knowledge products

- Development of publications, research analysis and scoping surveys;
- Document 'Innovation and Learning Practices'

Learning line

Support to institutions in implementing the innovation

- Capacity-building tools (frameworks, guides, etc.)
- Sharing and learning events: Learning Labs



Asia and the Pacific

'Innovation and Learning Practices'

Criteria

- Innovation
- Transferability
- Relevance

Work done and expected

- 50 ILP
- 2022-2025: 9 more practices every year
- pdf, video, NEW! Podcast coming in 2023



Advanced Manufacturing 4.0 Lab – From Examhub to LCAMP



Adaptation of learning spaces and labs required by Industry 4.0 training

- acquisition of technical and transversal skills
- strongly motivating and enriching for students
- smoother transition to the workplace
- model for TVET smart workshop can be transferred - creation of Advanced Manufacturing HUB for VET in Europe



TÍTULO DE LA PRESENTACIÓN

Technological innovation is one of the key drivers of economic growth (Solow 2014).

We should invest in R&I to promote technological innovation.

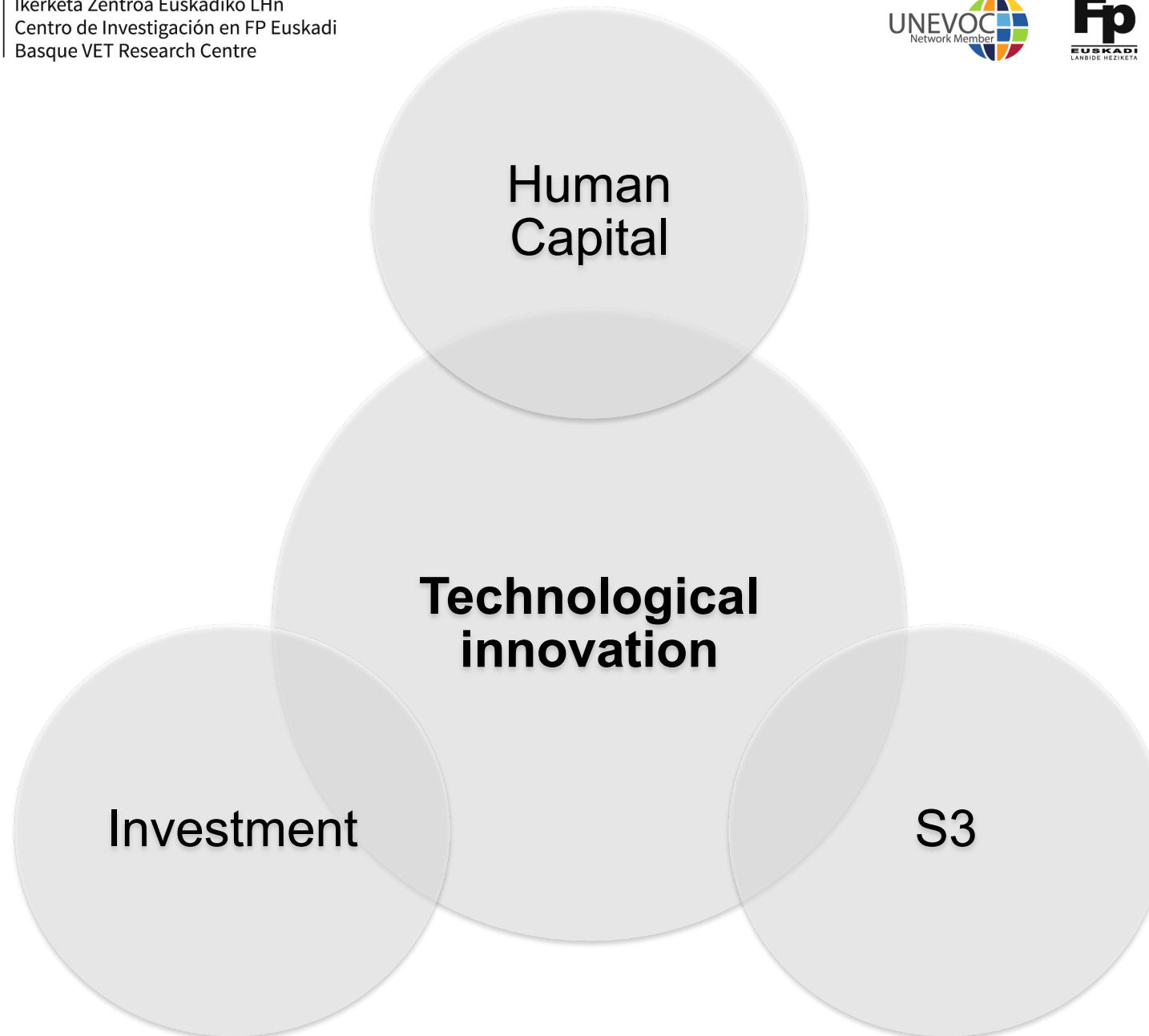
Two key factors for an innovation system to work: investment in R&I and human capital working in R&I. (Romer 1990).

Europe invests around 2,19% of its GDP in
R&I (Eurostat 2019)





A third factor: a place based approach
involving all stakeholders and prioritising
investment.

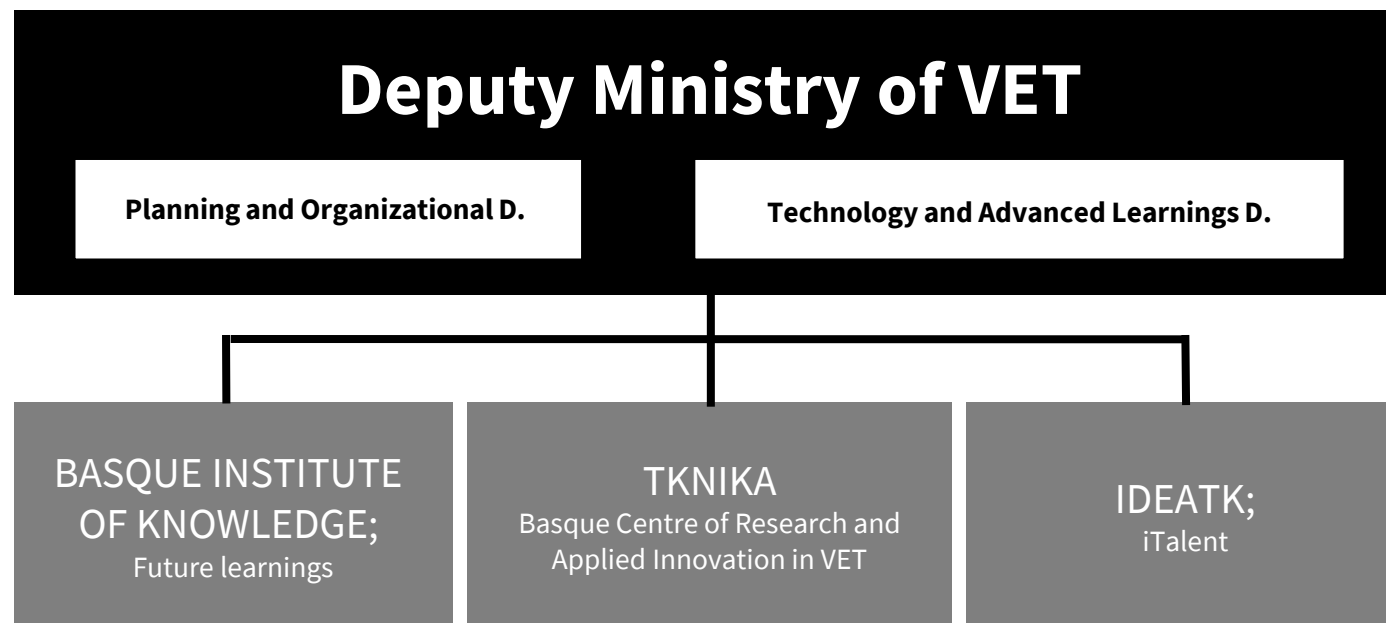






Tknika

LH-RI APLIKATUTAKO IKERKETA ETA BERRIKUNTZAKO EAE-KO ZENTROA
CENTRO DE INVESTIGACIÓN E INNOVACIÓN APLICADA DE LA FP DEL PAÍS VASCO
BASQUE CENTRE OF RESEARCH AND APPLIED INNOVATION IN VET



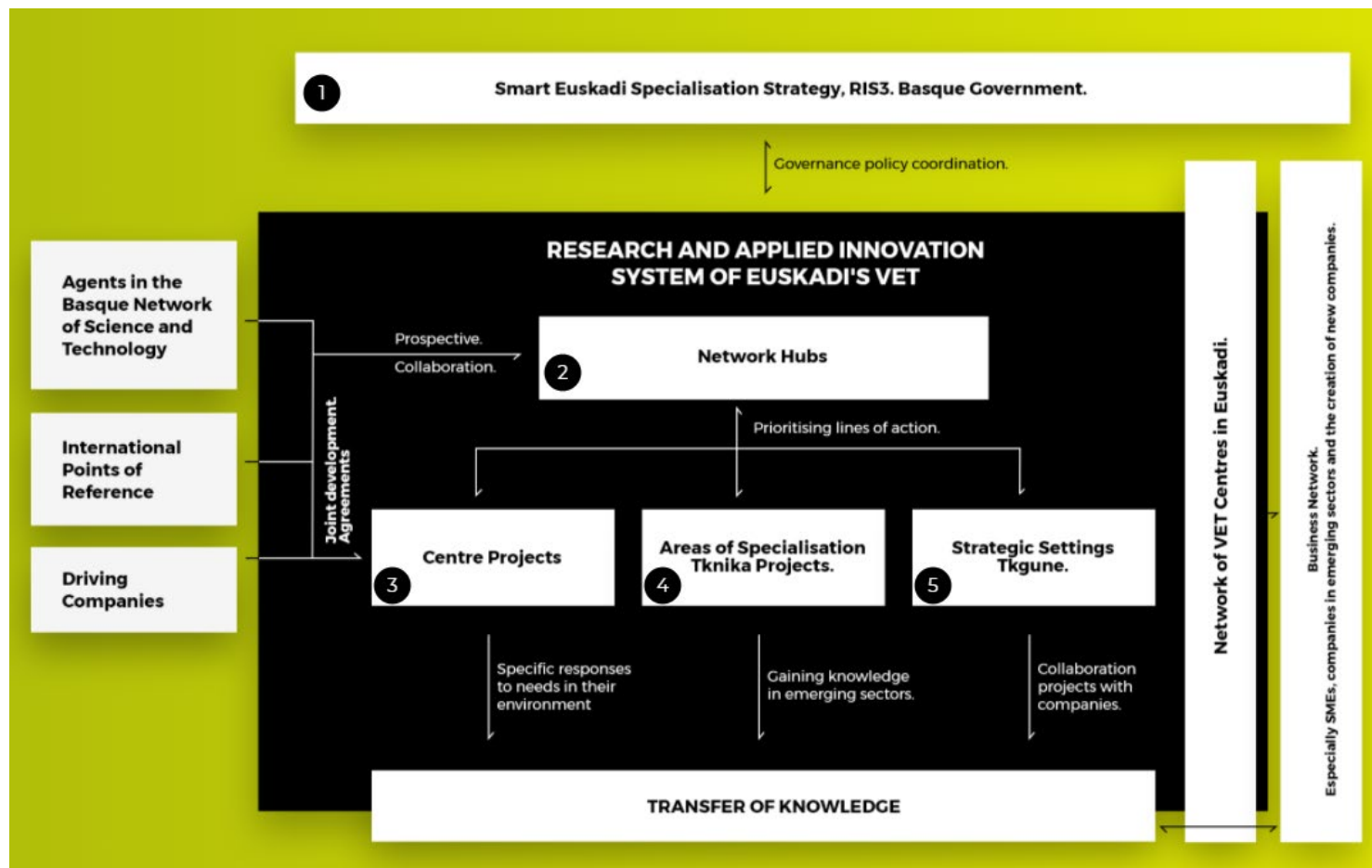
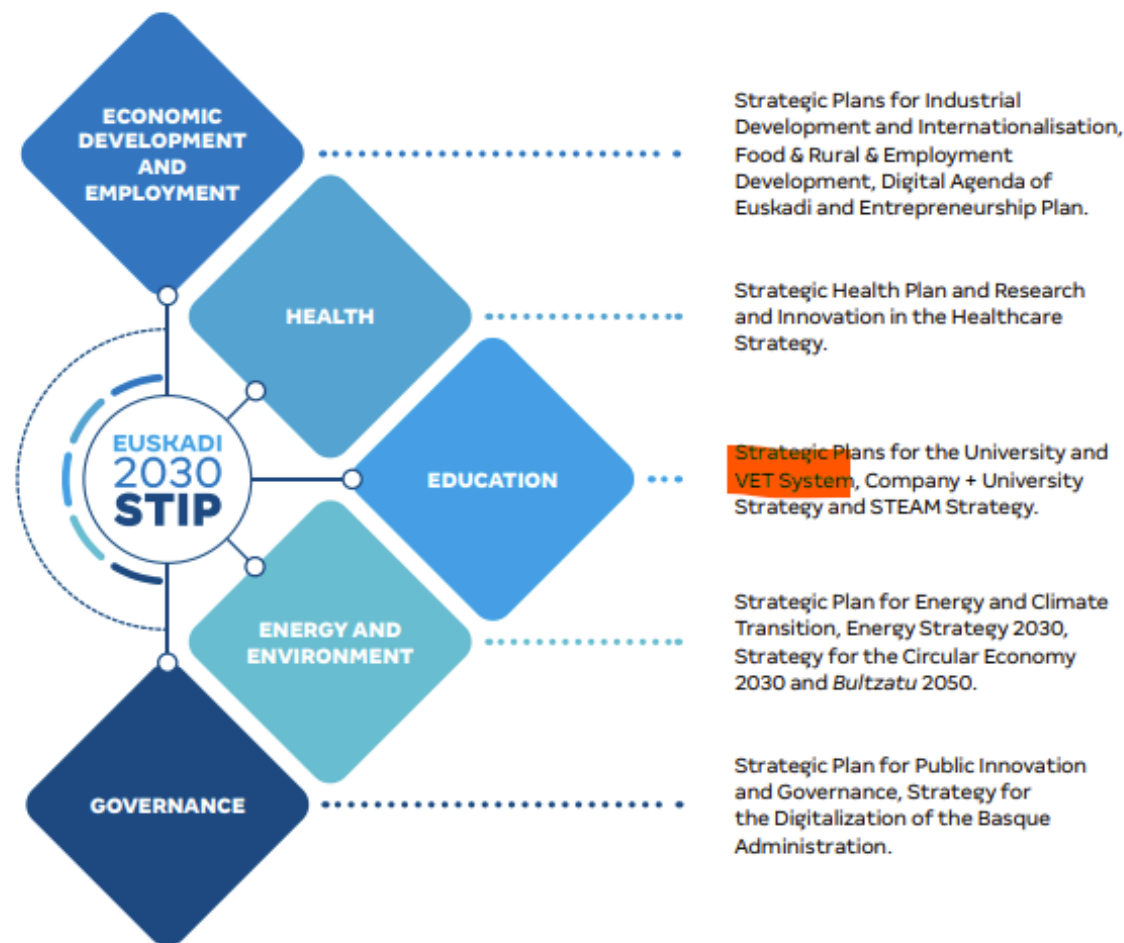


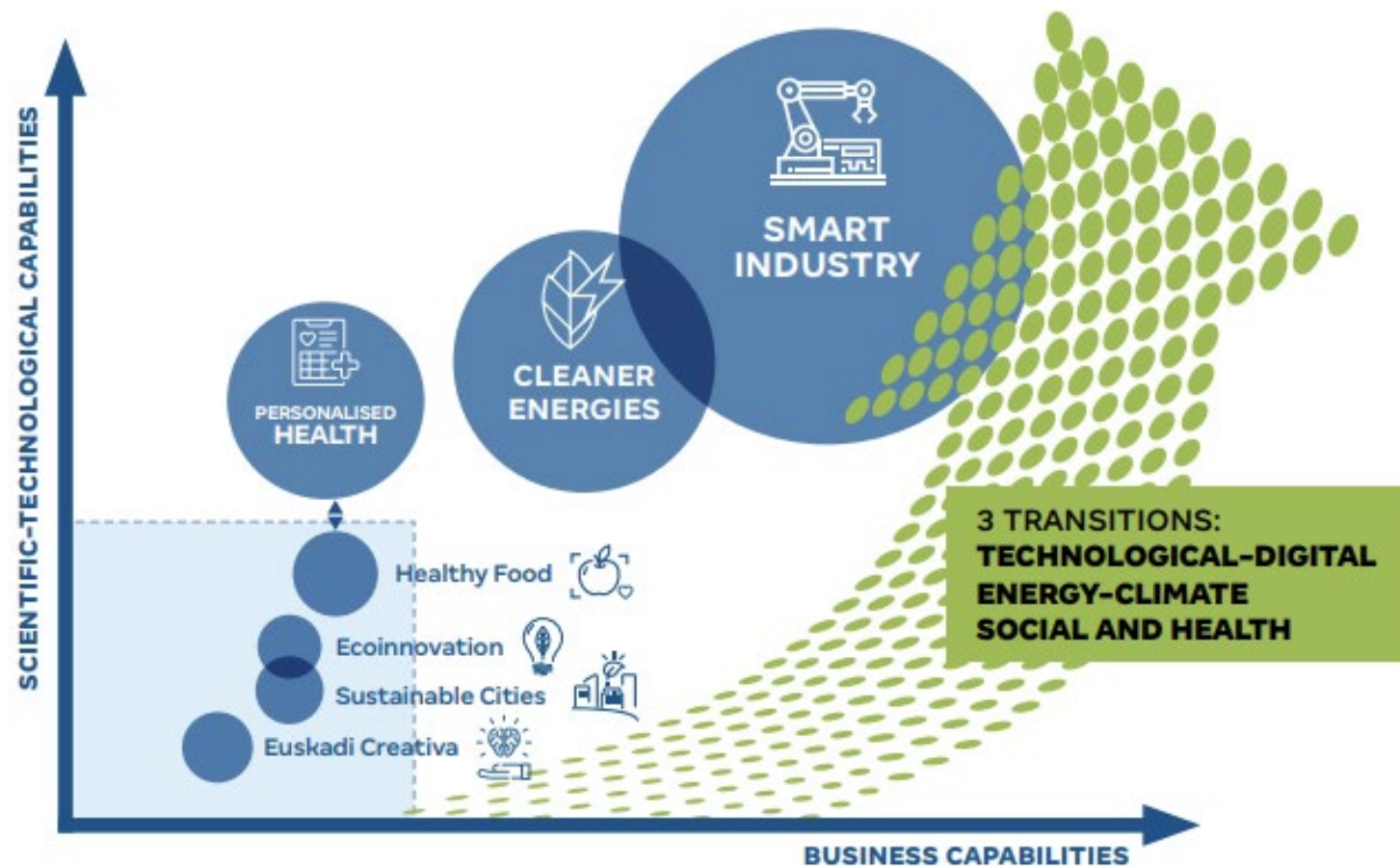


Figure 17: Policies linked to the 2030 STIP



Source: Basque Government, PSTI, 43.

Figure 19: RIS3 Euskadi 2030



Source: Basque Government, PSTI, 59.

Why does the EU support research and innovation for advanced manufacturing?

The manufacturing industry is an important driver of employment and prosperity. Research institutes and companies in Europe, in particular small and medium sized companies, are key players in research and innovation.

Manufacturing companies represent 64% of private sector research development expenditure and 49% of innovation expenditure in Europe.

The sector accounts for:

- 28.5 million people employed in almost 2 million enterprises, out of which 99.2% are SMEs
- the EU27 has 22% of the world's manufacturing output, yielding a trade surplus in manufactured goods of €421 billion annually

Advanced manufacturing represents a Key Enabling Technology. It uses new knowledge and innovative and cutting-edge technologies such as robotics, 3D printing, artificial intelligence, high-performance computing and modelling, to produce complex products like aeroplanes and medical devices. It also optimises processes towards products having no defects, avoiding any waste, reducing industrial pollution, material consumption and energy use.

Europe is strong in advanced manufacturing technologies, with the highest share of world patent applications and the highest number of venture capitalist backed firms.

Source: European Commission:
[Advanced manufacturing](https://ec.europa.eu/advanced-manufacturing/)
[\(europa.eu\)](https://ec.europa.eu/advanced-manufacturing/)

Challenge 1: I4.0 technologies implementation in VET.




ThistoEngineering/Pexels

Advanced Manufacturing 4.0 Lab

Submitted by Miguel Altuna, Spain

BILT Innovation and Learning Practice

Digitalization in TVET

4.0

The introduction and teaching of new technological, social and environmental trends is not possible without the adaptation of learning spaces and labs required by Industry 4.0 training. To make this a reality, new technologies must be included in training programmes and specific equipment procured. Moreover, mature processes and technologies, for example the Industrial Internet of Things, communications, data management, and automation, must be adapted for use in training. In Basque Country, Spain, Miguel Altuna's Advanced Manufacturing 4.0 Lab/Workshop addresses these challenges with the creation of a Learning Cyber Physical Space.

- Start date: 11/2019
- Type of implementing institution: Governmental Organization or affiliated
- Target group: TVET centres, industry and stakeholders in Advanced Manufacturing sector

Source: BILT Innovative and Promising Practices in TVET, Advanced Manufacturing 4.0 Lab: [Innovative and Promising Practices \(unesco.org\)](https://unesco.org)

Some features of the Basque VET system:

1. Learner centric approach.
2. Anchored in the regional strategy.
3. Provision of several services.
4. Collaboration with other agents.

Challenge 2: Internationalisation



European Commission

CENTRES OF VOCATIONAL EXCELLENCE (CoVEs)

A key initiative of European Vocational Education and Training (VET) policy

Source: European Commission: [Centres of Vocational Excellence - Employment, Social Affairs & Inclusion - European Commission \(europa.eu\)](#)

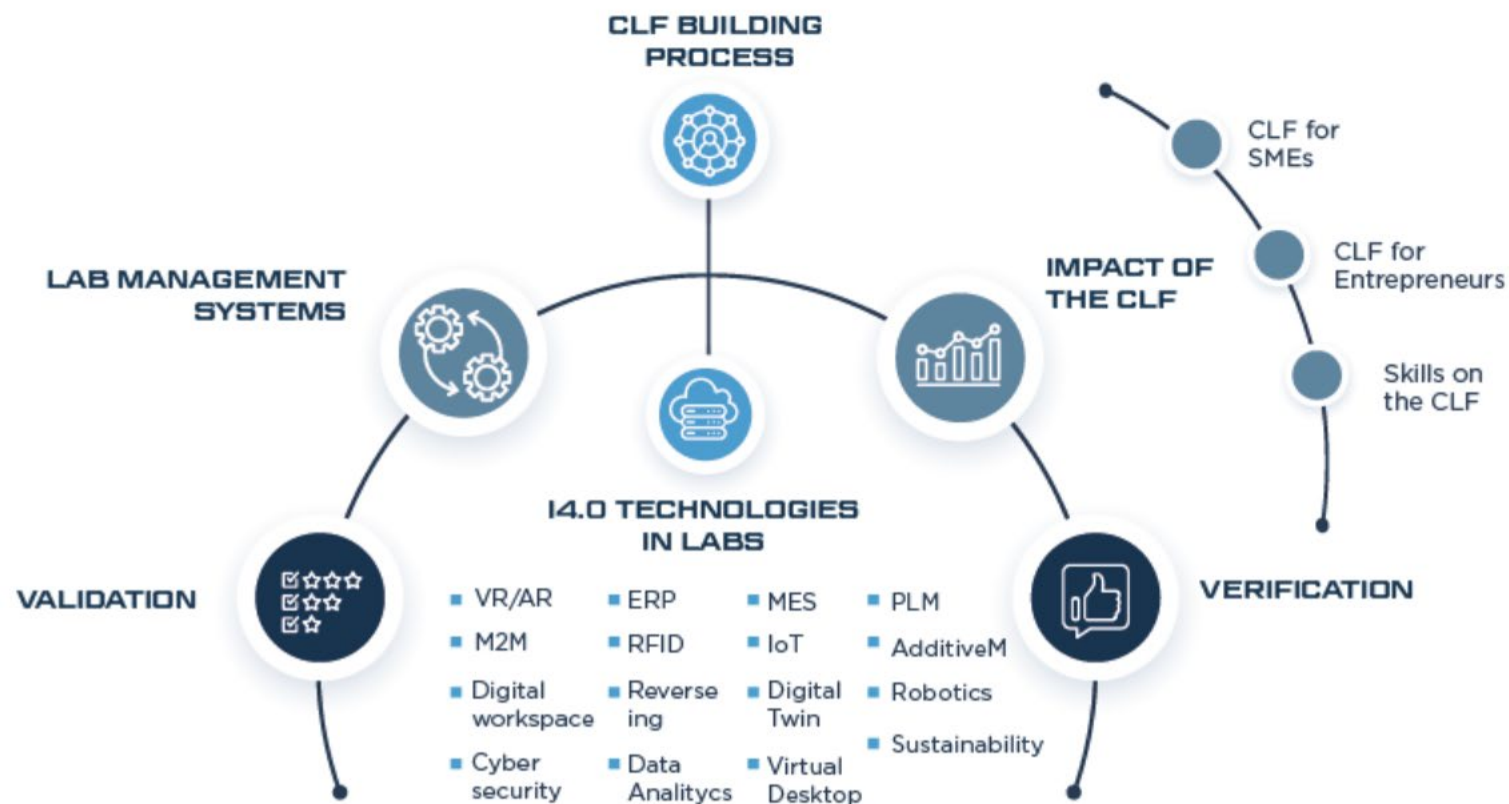
Approach:

1. Continue with the implementation of I4.0 technologies.
2. Adopt a Learning Factory model.
3. Add an international dimension.

Collaborative Learning Factory

1. Our VET centre labs should come as close as possible to the Smart Factories
2. We should implement cutting edge technology in our VET centre labs
3. We should cooperate at regional but also at international level.
4. Our teachers and students should become used to work on digitalised environments.

Labs for Advanced Manufacturing-CLF



Source: EXAM 4.0 Project: [Proposals for Advanced Manufacturing 4.0 labs - Exam 4.0 \(examhub.eu\)](https://examhub.eu)






Photo by The Engineering from Pixels

EXAM 4.0 HUB

Submitted by Tknika, Spain

4.0

Digitalization in TVET

In view of emerging technological trends such as Advanced Manufacturing, this Erasmus+ project seeks to establish five 'European regional Skills Ecosystems' that bring together Technical and Vocational Education and Training (TVET) and Higher Vocational Education and Training (H-VET) centres, companies, policy makers, job seekers and TVET students. The aim is to create a web-based Excellent Advanced Manufacturing (EXAM) 4.0 HUB in order to identify and define future skills needs in the AM sector and to propose a model of a TVET/H-VET centre 4.0 in terms of its infrastructure, Information and Communications Technology (ICT) applications, tools, skills needed and working processes.

- Start date: 11/2019
End date: 06/2021
- Type of implementing institution:
Private - Public
- Target groups:
Advanced Manufacturing TVET centres, industry and other related stakeholders

Education
2030



BILT Innovative and Promising Practices in TVET, EXAM 4.0 HUB: [Innovative and Promising Practices \(unesco.org\)](https://unesco.org)

LCAAMP

Learner Centric Advanced Manufacturing Platform

Approach:

1. Continue with the implementation of I4.0 technologies.
2. Adopt a Learning Factory model.
3. Add an international dimension.
4. Add virtualisation.
5. Maturity model.



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ETA IKERKETA SAILA

European
Commission

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Register to attend the evento online!

THANK YOU!

laraiztegui@tknika.eus
www.tknika.eus