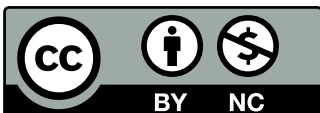


Declaration of the Platform on views and perspectives regarding the Advanced Manufacturing and the VET sector



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EXAM 4.0 partners:

TKNIKA – Basque VET Applied Research Centre, CIFP Miguel Altuna, DHBW Heilbronn – Duale Hochschule Baden-Württemberg, Curt Nicolin High School, Da Vinci College, AFM – Spanish Association of Machine Tool Industries, 10XL, and EARLALL – European Association of Regional & Local Authorities for Lifelong Learning.

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Acronyms and Abbreviations

AM	Advanced Manufacturing
AFM	Spanish Association of Machine Tool Manufacturers
DHBW	Duale Hochschule Baden Württemberg
EACEA	Education, Audiovisual and Culture Executive Agency
VET	Vocational Education and Training
VR	Virtual Reality
WP	Work Package

Collaboration between higher education institutions has become increasingly important for industrialised countries. To realize the maximized profits through such collaborations, it is important to have a fruitful and healthy collaboration and to understand how institutions of higher learning, industries, and businesses will work together to accomplish mutual goals, intended to help shape and inform up-to-date curriculum and course design for Industry 4.0. The overall aim of collaboration among the three stakeholder groups, the learner, institutions, and the industry is to improve mutual understanding and exchange of ideas between the Education and business sectors that can lead to producing professional work-ready graduates.

The word "platform" is a term often used in the internet world.

The OECD iLibrary defines it as:

The term "online platform" has been used to describe a range of services available on the Internet including marketplaces, search engines, social media, creative content outlets, app stores, communications services, payment systems, services comprising the so-called "collaborative" or "gig" economy, and much more., an online platform is defined as a digital service that facilitates interactions between two or more distinct but interdependent sets of users (whether firms or individuals) who interact through the service via the Internet. This chapter explains that definition and presents some economic characteristics that are common among online platforms.

See also:

https://www.oecd-ilibrary.org/science-and-technology/an-introduction-to-online-platforms-and-their-role-in-the-digital-transformation_19e6a0f0-en



Public Steering with Stakeholder Collaboration – An example from Germany

I40's policy levers include agenda-setting, visionary, and top-down steering role for the government through the BMBF and BMWI ministries and in the form of strategies and funding. However, the emphasis has been given to build up collaboration and partnerships. Idea development and practical implementation are largely carried out by industry, science, and social partners e.g. through the National Academy of Science and Engineering (acatech – Deutsche Akademie der Technikwissenschaften, 2016) and the I40 Platform, but in collaboration with policy-makers.

An I40 research agenda was initially prepared to seek to foster research and innovation and to transfer scientific results into technology development. The dynamic I40 platform was later developed in 2015 and is tasked to develop recommendations and advise policy-makers on I40 implementation, support the creation of knowledge, standards, and examples, mobilise businesses and SMEs, disseminate understanding, promote global networking and ensure the practical operation of I40. The platform initiates, funds, and supports research and company-led projects and test-beds and competence centres for the piloting of production systems. At the director-level, the platform is currently chaired by the Minister for Economic Affairs and Energy, Sigmar Gabriel, and the Minister for Education and Research, Johanna Wanka, and by industry, scientific, and trade union directors. An industry-driven Steering board has the responsibility for strategy development.

EXAM 4.0 Collaboration Platform

A general definition often found is: "An online **platform is defined as a digital service that facilitates interactions between two or more distinct but interdependent sets of users (whether firms or individuals) who interact through the service via the Internet.**"

In WP3 the consortium will define a working definition for the EXAM 4.0 platform and its initiatives. The focus then could be on the questions:

- **What kind of services will we offer on the EXAM 4.0 platform?**
- **What is the network we want to build or bring together (target group)?**

The EXAM 4.0 platform will bring together educators and students from HVET and VET institutions, Industry 4.0 companies.

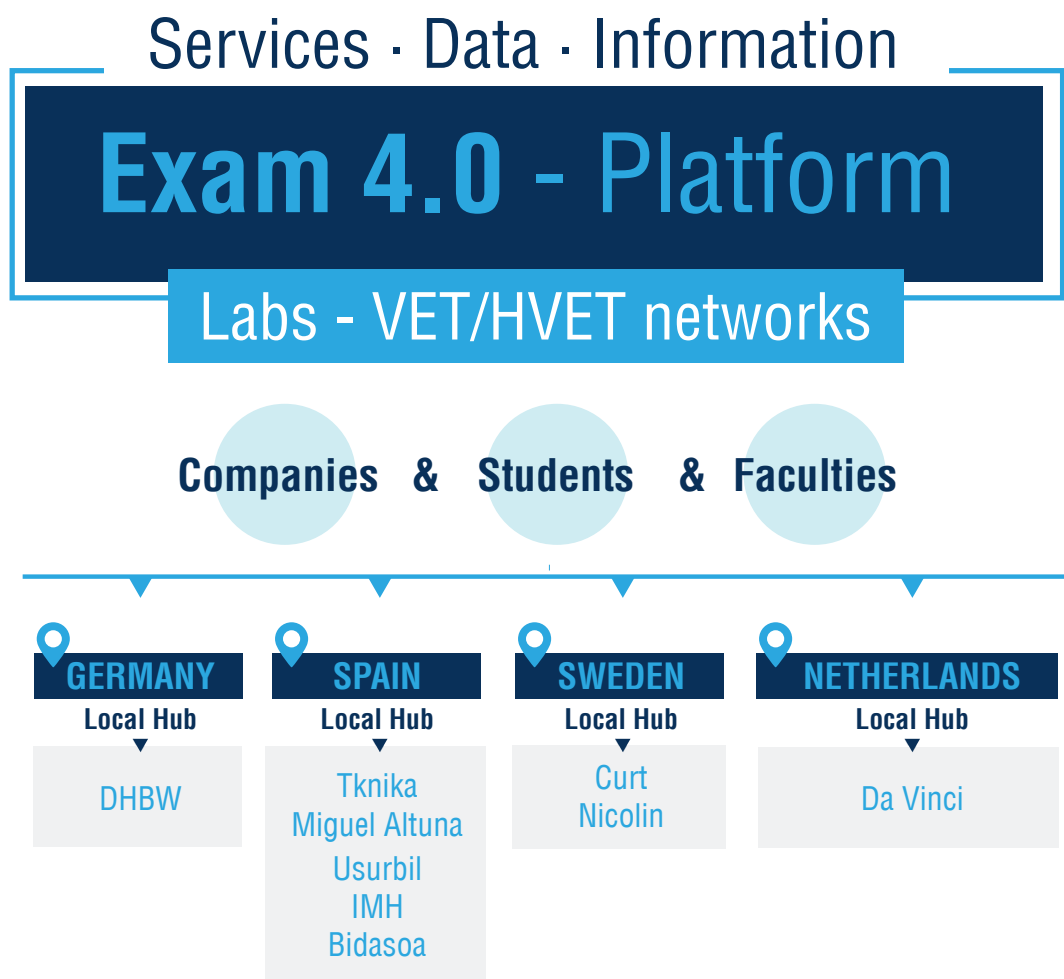


Figure1: Conceptual design of the EXAM 4.0 Platform

AIM AND OBJECTIVES

The EXAM 4.0 platform to be launched is a structured design of different roles and responsibilities, building bridges between institutions, science, industries, and policy-makers, facilitating coordination and cross-institutional exchange of know-how and technological innovation. The design involves a steering role for the EXAM 4.0 steering committee based on formulated strategies and funding and a vital role for institutional actors in driving the practical implementation.

The consortium recommends developing such a platform among European institutions in the VET and HVET sectors. An active role in developing such an interactive platform to what is outlined in this project now could be seen in the existing consortium and collaboration.

Having emphasised the advancement of concepts and standards of a collaboration platform in WP3, the consortium will need to engage in a follow-up project SMEs and the shop-floor level, where much of the actual transformation in education and training occurs, in terms of successfully integrating new digital and industry-specific training.

The main aim and objective to develop the EXAM 4.0 platform and model of collaboration with more participants are to give it a stronger political basis, to overcome collaboration barriers among European institutions and industry groups through collaboration on common norms and standards as well as the integration of institutional domains. In this respect, collaboration among different labs and learning factories and exchange of data, as well as augmented learning models will become a major driving force of Industry 4.0 education in the future.

VISION, MISSION AND STRATEGY

A general vision of collaboration was embraced by the European Commission, who produced the report ***Strengthening European Identity through Education and Culture*** presented to EU Leaders at their meeting in Gothenburg on the 17th November 2017. The report placed at the heart of this agenda a renewed emphasis on the creation of a European Education Area ***"based on trust, mutual recognition, cooperation and exchange of best practices, mobility and growth"***, which should be in place by 2025 and would foster "a sense of a European identity and culture".

The EXAM 4.0 interactive platform will be based on alliances to create a collaborative advantage for their members. These are:

- The alliance's strategic intent;
- The comparative status of member institutions and industry partners
- The opportunities created for mutual learning among members;
- The salience of the alliance inside member institutions; and
- The on-going relevance of the alliance and its capacity for change

(based on Gunn and Mintrom 2013)

By design EXAM 4.0 interactive platform, should show the potential to generate collaborative advantage for its members in a bilateral way. Institutions with a focus on work-based learning and education will work together to jointly create a new provision of education in labs or more advanced learning factories, i.e., they are about more than a mere immediate exchange of concepts, which is a criterion for success. The bilateral alliances collaborating through infrastructures and linkages are not tightly controlled by a formal system. A range of EU institutions in the area of work-based learning has found a place on the EXAM 4.0 platform, where they can find compatible partners and contribute to different initiatives for the benefit of the learners. The extent to which this manifests itself in practice depends on the profile of institutions funded after the second round.



The platform brings together the views of the main stakeholders of the platform trying to find a mutually beneficial solution. To do that, it is envisioned that in WP3 the viewpoint of different stakeholders represented in the project will be collected.

The project partnership is composed by:

- Universities of Applied Sciences (DHBW)
- VET and HVET centres (Da Vinci, Curt Nicolin, Miguel Altuna LHII, and the 3 Affiliate Partners)
- Company associations (AFM)
- Companies (10XL)
- European networks representing regional governments (EARLALL)

This varied composition allows the partnership to detect and take into account the needs of various platform stakeholders.

INSTITUTIONS

The main goal of institutions is to provide high-quality education to their students so that they can find a good quality job, acquire competences to be resilient, and be able to adapt to changing environments without much suffering. This means that Institutions need to be aware of the skill needs of the labour market, aware of the latest technologies, be able to equip students with technical and transversal competences. Successful partnership with the industry can generate mutual respect and trust among education institutions and employers and allow mutual problems to be solved and shared goals reached. These outcomes may help educational leaders increase access to and improve the quality and efficiency of education for employability programmes.

It will help curricula and lab designers to customize the institution to Industry 4.0 specific needs. This may include conducting a needs assessment, in addition to developing new materials which could be present in a variety of formats, such as short courses or new lab features.

The collaboration platform will provide other individuals and the institutions, opportunities to perceive another organizations point of view. It will expand the capabilities of participating institutions to deal with the challenges that each entity must meet in its line of operations and helping to build the kind of understanding that creates support. The platform will serve as a means of contributing to a quality education programme bringing increased access to and knowledge, access time human resources and assistance from other sectors in the community as well as reducing the cost and liability of work-based learning in labs for each participant.

To achieve this goal institutions need to carry out several tasks, such as:

- Working with companies, research bodies, and public authorities.
- Developing projects of research, innovation, and development at regional, national, or international levels.
- Carrying out mobility projects for students.
- Finding companies for work placements.
- Investing in and implementing cutting-edge labs to train their students.

The platform will help institutions to achieve their main objectives through services oriented at making some of their core activities easier. They will mainly be interested in:

- Skills intelligence
- Networking
- Joint project development
- Working in labs implementation

WORLD-OF-WORK

The interaction between institutions of higher learning and employers in Industries and related business organizations represents a means of contributing quality education training programmes. The challenge to business and industry to succeed in an increasingly competitive world market is contingent upon skilled personnel, who learn, grow and adapt to the changing markets and technologies.

Business/Industry has a greater role to play in facilitating the transition from higher education to the world of work, to expose graduate for the industrial experience, especially in handling equipment and machinery which they are likely to meet after their graduation. The platform will have an important section dedicated to the description of various labs and learning factories used for education and skills trained.

In our current partnership, the world of work is represented by companies (10XL) and associations of companies (AFM). The goal of a company is to make a profit and the goal of an association of companies is to help their companies to make a profit.

As simple as this goal might seem, it is very challenging for a company to be competitive nowadays. Companies need to:

- Work in Research, development, and innovation to continuously develop new products, new processes, new services, and to adapt to changing markets and environments efficiently.
- Collaborate with education institutions. European companies can only continue being competitive if they can have a highly qualified workforce. Repetitive tasks performed by poorly educated workers are an exception.
- They need to invest in the digital and green transitions. Digitalisation is a challenge for many companies and there is a shortage of digital competences.

Associations of companies, to assist their companies in being more competitive, need to perform similar activities, but at an association level.

The platform will help companies and associations of companies to achieve their main objectives through services oriented at making some of their core activities easier. They will mainly be interested in:

- Skills intelligence
- Networking
- Joint project development
- Working in labs implementation

STUDENTS AND LEARNERS

The basic aim to improve mutual understanding and the exchange of ideas between institutions, industry and the learners are among others to:

- Help students and learners obtain a clear picture of industrial life with opportunities and challenges.
- Enable students and learners to become more aware of the pattern and philosophy of educational programmes and skills educated in the various study programmes.
- Provide institutions (on request) with career advice.
- Assistance with projects and the development of thesis on industrial 4.0 topics.

The EXAM 4.0 platform will assist students to get information about the needed specific occupational training skills, knowledge, judgment, understanding, and attitudes in various occupational fields.

Students and learners are not directly involved in the project but, through institutions, they will gain benefits from the platform as well.

Students belonging to institutions belonging to the platform will have some benefits like:

- International mobility opportunities
- Opportunities to work in international projects
- Access to be trained in better labs
- Access to be trained in labs from other institutions
- Remote access to other labs via the internet
- Better prepared teachers
- Opportunities of high-quality work placements thanks to the good position of the institutions in which they study.

The key ingredient to a successful collaboration and partnership on an EXAM 4.0 platform between industry and education is a firm commitment to serving the business sector.

The WP2_A5 report has explained how the consortium conceptualizes a unique approach to alliance formation in VET/HVET education and industry described here as an 'EXAM 4.0 platform'. The conceptual design is congruent with the current climate in European higher education, making it appropriate for its time and place.

The dearth of a meaningful relationship between institutions and the world of work needs to be properly addressed if at all, such a platform is to bridge the skill gap mismatch between specialties studied in VET/HVET institutions and the employment market.

More details will be described in EXAM 4.0 Platform.

- ▶ Acatech – Deutsche Akademie der Technikwissenschaften. (2016). *acatech (Hrsg.) Kompetenzentwicklungsstudie Industrie 4.0 – Erste Ergebnisse und Schlussfolgerungen, München 2016*. actech.

