# ‘EU 2030 High-Tech Skills Vision’

## Introduction

This section outlines the core aspects of the **EU 2030 High-Tech Skills Vision for achieving Smart Industrial Specialisation and Digital Transformation**. The analysis of the **ongoing series of expert workshops, surveys and stakeholder consultations** suggest pursuing the Vision in a three-step approach:

**1**. Clearly **defined objectives towards Horizon 2030** and their **prioritisation** in the short (2 yrs), medium (5yrs) and long terms (10 yrs);

**2**. Development of **Recommendations and Roadmaps** with specific roles and responsibilities assigned to specific stakeholder groups;

**3**. Provision of a **functional** **toolbox with stakeholder-specific templates, tools and methodologies** to be used in designing and implementing their own territorial skill strategy to address the skill challenges brought by constantly evolving technological breakthroughs towards 4th Industrial Revolution and through socio-economic, climate and environmental changes and challenges.

This approach and its key components will be further detailed under continuous stakeholder consultations and validated in Expert Workshops throughout the course of this project for which this report is written.

## The EU 2030 High-Tech Skills Vision

The EU 2030 High-tech Skills Vision is about **mobilising all resources** at the local, regional, national and EU level collectively **to make it an opportunity for everyone.** It aims to **raise widespread momentum** **by** **inspiring all key players** to take part in **collectively designing and implementing** **powerful skill strategies** to **turn the potential challenges brought by digital transformation and industrial modernisation into opportunities.** It aims to foster the development of **skills for excellence, prosperity and personal development**.

The Vision will be accompanied by a Toolbox to guide different stakeholder groups on developing and implementing their own **skill strategies aligned with their own Industrial, RD&I and Education, and RIS3 Strategies** with proven methodology and tools. In its core, it will be **forward looking, dynamic, interactive, multi-stakeholder driven, agile** and will leverage on **real-time AI-based labour market assessment and foresight tools** for evidence based decision making. This goal will also be strongly supported by the first-ever **Digital Europe programme** , which the EU Commission proposed in June 2018.

In a nutshell, it aims to bring a **paradigm shift** on the whole ecosystem of workforce planning, education and training provision for skills development and the way education and trainings have been provided. One of the main goals to switch **from ‘Life Long Employment’ towards ‘Life Long Employability’** concept by making individuals responsible from their own skill development. It can only be achieved by constantly staying tuned to the transformative trends in the global labor markets, identifying barriers to employment and understanding new needs of both employers and employees as they arise.

**It calls for active involvement of** **each and every** **stakeholder group** including: policy makers responsible from Education, Training, Industry, Economy, Finance Digitalisation, RD&Innovation; Industry Players; Corporate Academies; Edtech Companies; Universities, Research & Excellence Centres; Vocational Education and Training (VET) Associations; KETs Associations; Cluster Organisations; Labour Unions; Industry Associations and Federations;Think Tanks; Existing EU/National/Regional level Skilling Initiatives/PPPs; Digital Innovation Hubs (DIH)s; and public private investors among others.

**Competencies for 2030** will cover all **three sets of skills**: sector-specific, technology & digital skills in addition to transversal skills conceptualised in this report as **high-tech T-shaped skills.** In addition, **‘Learn to Learn’** concept will be injected into all education and training programs of all ages. **It will drive a major shift from classrooms towards learning factories, experience centres, makerspaces** where participants will learn through solving issues in an open innovation ecosystem by doing and experiences with others coming from other disciplines.

The vision will require **‘Re-thinking Education and Training’** for all the individuals to benefit from **lifelong learning**, facilitated by trainings provided by **collaborative initiatives** **lead by private parties or PPPs** and benefit from agile and modern education methods using tech based tools and modern teaching methods.

In the light of the insights gained through the state-of-play analysis complemented by stakeholder consultations through workshops, interviews and survey, the **key features of the Vision** can be illustrated as below:



The Vision will be rolled-out at the **CITY Level** for **digital transformation** and at the **TERRITORIAL level** by the involvement of all relevant stakeholders for **smart industrial specialisation by pooling all existing resources** as well as establishing new ones such as **‘SKILLS FUND’.**

Since it is **based on success stories**, will be **realistic, feasible, participatory, inspiring, responsive, anticipatory and inclusive**. The overarching goal is to boost the emergence of **global champions** at the territorial level by intensifying the support measures for them being able to further advance their status so that EU can hold global competitive position at particular KET domains through champions. In addition to territorial champions on the world liege, **Skills Champions** -either at individual and/or institutional level, to lead and drive the territorial Vision and its implementation will also be chosen and supported within the territory.

***Proposed Toolbox***

The successful realization of the EU 2030 High-Tech Skills Vision is expected to be operationalised through the guiding recommendations and tools to be designed specific to different stakeholder groups under the **Toolbox** to be developed over the next phase of this project. Below we introduce each **nine module** of the toolbox briefly as a ‘food for thought’ regarding its particular objectives aiming to tackle key issues, with the involvement of key stakeholder groups in the light of identified good practices.

Particular **solutions under each module** including funding will be developed over the course of the study with a particular attention to be given to **SMEs to be main beneficiaries**. Additionally, **Clusters** **will be seen as a main policy instrument to leverage** so that particular roles and responsibilities will be assigned to Cluster Organisations.

1. Leadership and Governance
   * ***Key Objectives:*** Aims tosupport governments at different levels insetting up and running a ‘**Territorial Skill Council**’ to be responsible from the development and implementation of skills strategy at the territorial level. This module will provide detailed instructions regarding the set-up of and governance mechanism of this council, its composition, definition of roles and responsibilities, funding structure etc. with particular references to best practices.
   * ***Key issues:*** There is no single official **‘Skills Champion’** responsible from defining and implementing the territorial skills development vision and strategy based on particular needs and key priorities of the territory causing lots of in-between responsibility between different stakeholders and ministries. These unstructured efforts are mainly focusing on short-term solutions without actions planned for medium and long-term sustainable skill solutions making the skills gap and mismatch bigger and leaving the territory not ready to face with the challenges brought by digital transformation and industrial modernisation towards the fourth industrial revolution.
   * ***Key stakeholders:*** Local, Regional and National Governments, Industry and Universities
   * ***Good Practices:*** Singapore-Ministry of Manpower with SkillsFuture Program; UK Ministry of State for Apprenticeships; Ireland Ministry of Education and Skills; India Ministry of Skills Development and Entrepreneurship; JDC-Tevet in Israel responsible from implementing solutions for filling Israel’s high-tech gap.
2. Skills Strategy
   * ***Key Objectives:*** This module aims to support governments at different levels to design their own **Skills Strategy** that is linked to Industrial, RD&Innovation and Education, Economic Development Strategies to be implemented by the Territorial Skills Council. This skill strategy will align the objectives and corresponding skill needs of the companies with the regional priorities defined under RIS3 for preventing overlaps on funding and all other efforts to be taken in the short (3yrs) , medium (5 yrs) and long (10 yrs) terms.
   * ***Key Issues:*** Lack of leadership and understanding to define the skills vision and strategy at all levels; lack of data-driven AI tools for the assessment of labour market trends and needs for evidence based decision making; lack of foresight and understanding on the impact of disruptive technologies on business models, manufacturing, services across the whole value chain and the corresponding skill needs; lack of taxonomy etc..
   * ***Key stakeholders:*** Governments, Industry, Universities, Sectoral Associations & Trade Unions, Employment Agencies
   * ***Good Practices:* Singapore SkillsFuture[[1]](#footnote-1)** is a national movement to provide Singaporeans with the opportunities to develop their fullest potential throughout life, regardless of their starting points. Every worker in Singapore is able to continue to develop themselves throughout the course of their careers and through life.

**Baden-Wurttemberg** **Allianz Industrie 4.0 Program**; **Israel High-tech Skills Program** implemented by **JDC-Tevet[[2]](#footnote-2);** **German High Tech Strategy** including skills development module

1. Accelerated world-class curriculum
   * ***Key Objectives:*** This module aims to support governments for being able to develop an Education&Training Strategy aligned with the Skills Development Strategy so that the content of education and training curriculum can be continuously and quickly adapted according to the particular needs of the industry for being able to deploy key enabling and digital technologies. It will also guide Education and Training providers on accomplishing the provision of world-class content by use of modern teaching methods and technology based tools in addition to deliver globally recognised certifications for those trainings. This curriculum will ensure the delivery of broad set of skills (i.e. **cognitive skills**, such as literacy, numeracy, and creative and critical thinking or problem-solving; **socio-emotional skills and behavioral traits**, such as ability to finish a task and work well in teams; and **job- or occupation-specific technical skills**, such as in engineering that are all captured under our **T-shaped High-tech skills** concept) capabilities and attitudes including accelerated pedagogics and **training of trainers and educators.**
   * ***Key Issues:*** Lack of understanding on the taxonomy of T-shaped high-tech skillsdue to fast pace of technological breakthroughs; lack of alignment between existing curriculums to meet required skill needs; lack of content and curriculum to be provided for newly emerging skill needs; lack of speed to adjust existing curriculum with the fast pace of technological breakthrough to follow up.
   * ***Key stakeholders:*** Governments, Industry, Universities, VET Providers, Certification Bodies, EU/National/Regional level public and/or private Skilling Initiatives, Think Tanks, KETs Associations
   * ***Good Practices:*** EIT-KICs Academy; Germany dual-track education model; Curricula developed under Erasmus+ ‘Automotive Engineer’ Project, etc.
2. Industry-lead training infrastructures
   * ***Key Objectives:*** This module aims to support all relevant stakeholders in designing and implementing industry-lead learning and training infrastructures such as **Learning Factories, Corporate Academies, Makerspaces, Experience and/or Excellence Centres**,etc. and incorporation of these informal learning spaces into the formal education system. It will include guidance on establishing **partnership mechanisms** between the Industry and Education&Training providers,**funding and governance** of these infrastructures,**conditions** for all beneficiaries to use etc.
   * ***Key Issues:*** Traditional **classroom based teaching** and/or individual learning through **MooCs**, provision of solely technical knowledge and preparation for exams are among the practices that are no longer seen as efficient practices to educate and train the employees of the future. The **hybrid models combining the experience of the industry with the knowledge base of the academia, research institutions** and **excellence centres** seem to be the best practices. It allows students/trainees to learn by experiencing hands-on real life implementation and use of technology and by developing innovative solutions to societal challenges and industrial problems under new forms of learning. In addition, it is proven that social **network based group learning** is much effective compared to individual MooCs based learning with high drop-off rates. However, the critical success factors and proven mechanisms to establish such structures and partnerships are not well developed and known yet.
   * ***Key stakeholders:*** Government, Industry, Universities and Research Institutions, KETs Excellence Centres, Certification Bodies
   * ***Good Practices:*** Baden-Wurttemberg Learning Factories 4.0Initiative;Airbus Corporate Academy for Engineers of the Future; IBM Corporate Academy; CISCO , EIT-KICs as an industry lead initiative.
3. Funding (EU/National/Regional and Private funding)
   * ***Key Objectives:*** Main objective is to **mobilisemassive** amount of public and private funding under a special account, that can be named as **‘Skills Fund’** to develop new skills for the industry in the short, medium and long term. Additionally, aims toformulate solutions to make more effective use of EU funds (i.e. ESF, EFSI, ESIF, Cohesion Funds, Global Adjustment Funds, State Aid ) as well as Instruments under Erasmus+ and H2020 such as **Innosup Instrument** through **strategic cluster partnerships for industrial modernisation** to fuel the ‘**Skills Fund’** to be accomplished.

The fund should also earmark fund for setting-up and running modern learning infrastructures, running Territorial Skills Council, conducting communication activities, etc.

* + ***Key Issues:*** Lack of pre-financing;Lack of awareness on existing EU based funds and how to leverage on those for skilling; binding guidelines on the use of some EU funds limiting its use for innovative approaches; massive amounts of investment to cover the high-tech skilling expenses of employees; lack of willingness to invest on skilling which is an ‘**Intangible Asset’**.
  + ***Key stakeholders:*** Governments, Corporates, EU/National/Regional Funding Bodies , Cluster Organisations
  + ***Good Practices:*** In **France,** the government has launched an interesting reform to mobilize and align social partners, corporates and employees**.** An **individual training account[[3]](#footnote-3)** has been implemented which includes a part of the modules of the **Individual Skills plan** with an initial credit of EUR 500 per employee with a limit at EUR 5,000. Companies are allowed to make additional contributions in case the total available amount is not sufficient to finance the full training cost. For low skilled workforce, the amounts have raised to EUR 800 for the initial credit and EUR 8,000 for the ceiling. Individual assistance for the employee has been reinforced with individual skills assessment and professional advice.

**Ireland[[4]](#footnote-4)** has established a **National Training Fund** to support employers in financing education and training in order to avoid the loss of jobs because of lack of skills in a dynamically changing economy. **Poland** also launched Labour Fund including National Training Fund[[5]](#footnote-5) .

**SIM Professional Development (SIM PD)[[6]](#footnote-6) in Singapore** offers a choice of executive programmes and Business Insights events that is **supported by several funding schemes** – to make learning and staying relevant easier.

In **UK, Nesta**-as a think tank, established the **Rocket Fund**[[7]](#footnote-7) - crowdfunding platform designed to help schools try the latest technology, by raising money from businesses and their community.

At corporate level, **GoodYear** and **Airbus’** Skilling Initiatives for their own employees for up/reskilling.

1. Quality lead EU-wide VET
   * ***Key Objectives:*** This module aims to establish EU-wide recognised and harmonised VET provision on high-tech skills across EU.
   * ***Key Issues:*** No unified VET provision mechanism on high-tech skills across EU; Existing VETs mainly focusing on the provision of soft skills but not focusing on high-tech skills development; so many different players and no harmonisation; no mutual recognition of certifications received; no commonly accepted certification mechanism; no capacity to provide large scale VET provision.
   * ***Key stakeholders:*** VET Providers at EU, National, Regional and Local levels; Governments; Certification Bodies
   * ***Good Practices:*** SkillsBank Initiative[[8]](#footnote-8) in Sheffield UK managed by Acudemy & PwC.
2. Incentives
   * ***Key Objectives:*** It aims to define particular incentives for two main objectives: 1) boosting different stakeholder groups for the participation under all other modules and taking particular roles and responsibilities to implement an effective skilling strategy at the territorial level collectively; 2) To incentivise individuals to be responsible from their own skill development for lifelong employability as well as to incentivise the companies for up/reskilling their employees.
   * ***Key Issues:*** Lack of motivation and incentivesfor the individuals to invest on their lifelong employability through up/re-skilling as well as lack of understanding, awareness and funding to up/re-skill existing employees at the company level.
   * ***Key stakeholders:*** Governments, Employers, Trade Unions, Individuals
   * ***Good Practices:* Argentina**[[9]](#footnote-9) incentivising public servants to upskill themselves for digital transformation; The **Czech Ministry** **of Industry and Trade** introduced **Income Tax Act** in 2014 to incentivize employers' cooperation with high schools and universities; **Singapore** under its SkillsFuture Program, offers **Earn and Learn Module** [[10]](#footnote-10) specific **incentives are offered both to individuals** (i.e. newly graduated students from polytechnics and the Institute of Technical Education (ITE) ) and **employers** to hire them right after their graduation and defray the costs of developing and providing structured on-job-training to them.
3. Communication
   * ***Key Objectives:*** Main objective is to mobilise all key stakeholders through an effective communication to let them understand the ‘**Return-on-Engagement’** for their involvement and investment.  The communication module will also aim to share all identified **best practices** for roll-out purpose.At the national, regional and local levels, the vision, strategy and tools should also be communicated effectively to all industry and individuals to boost digital transformation and industrial modernisation by raising awareness on existing infrastructures, education and training offerings, benefits to individuals, employers and to the industry.
   * ***Key Issues:*** Lack of understanding on potential **return on skills investment** by the CEOs; Lack of awareness at the territorial level on the overarching territorial economic development strategy and its priority sectors under RIS3 and the corresponding skills needs so that there is no alignment between supply and demand side for skilling. In addition, lack of coordination and linkage between existing players and lack of certified schemes that is accepted globally. Furthermore, **lack of talent pools and labour mobility schemes** that should be communicated effectively for filling the skill shortages within a particular territory much effectively.
   * ***Key stakeholders:*** Governments,Sectoral and Industry Associations, Cluster Organisations, territorial level Communication Agencies,Universities,Employment Agencies, Think Tanks
   * ***Good Practices:* UK: Nesta** as a Think Tank is in support educational revolution in UK lead by the Department of Education where the Ed- tech industry is asked to launch an education revolution for schools, colleges and universities. In order to support these actions by raising awareness, Nesta aims to build a test centre in the form of a peer-review platform for the teachers to share their ideas and support each other to make the most of technology. This platform is also intended to bring tech providers and the teachers together for the teachers being able to try new tech solutions and the providers to test their solutions. Department for Education is also develop online training packages, establishing an online portal providing free software trials for schools, and bringing together industry and school leaders through a series of regional ‘demonstrator’ roadshows.

**EU-Watify[[11]](#footnote-11):** It is an awareness-raising campaign that stimulates the modernisation of European industry. The campaign focuses on the technological transformation of traditional SMEs, promotion of regional digitisation and uptake of advanced technologies – notably Key Enabling Technologies. WATIFY seeks to boost the rate of European industrial modernisation through increased productivity and efficiency, resulting in improved competitiveness and job creation.

**Skills Bridge[[12]](#footnote-12) Program in Luxembourg** have a strong communication module reaching out to employees, employers, trade associations, HR executives,Cluster Organisations.

1. *Early talent detection and nurturing system*
   * ***Key Objectives:*** It aims to propose implementation of a mechanism to detect and nurture high-tech potentials from early years on.
   * ***Key Issues:*** Existing education system mainly use one-size-fits-all concept meaning, all the pupils in a classroom or school following the same curricula regardless of their levels and capabilities. However, this system doesn’t allow to provide tailored and more intensive knowledge to the advanced talents from early years on.
   * ***Key stakeholders:*** Governments, Education and Training providers,Universities, Tertiary and Higher Education Players, Tech Players
   * ***Good Practices:*** Poland Education Policy[[13]](#footnote-13)

1. <http://www.skillsfuture.sg/> [↑](#footnote-ref-1)
2. <http://employment.jdc.org.il/en/how-we-work> [↑](#footnote-ref-2)
3. <https://www.moncompteactivite.gouv.fr/cpa-public/> [↑](#footnote-ref-3)
4. <https://www.education.ie/en/Press-Events/Press-Releases/2018-press-releases/indecon-review-of-national-training-fund.pdf> [↑](#footnote-ref-4)
5. <https://eacea.ec.europa.eu/national-policies/eurydice/content/adult-education-and-training-funding-56_en> [↑](#footnote-ref-5)
6. <https://pd.sim.edu.sg/funded-programmes?gclid=EAIaIQobChMI9evH_6a23QIVyb_tCh1pIwaxEAAYASAAEgIp2vD_BwE> [↑](#footnote-ref-6)
7. <https://rocket.fund/> [↑](#footnote-ref-7)
8. https://www.acudemy.com/acudemy-pwc-sheffield-skills-bank-initiative/ [↑](#footnote-ref-8)
9. <https://apolitical.co/solution_article/in-argentina-public-servants-get-promoted-for-learning-how-to-innovate/?utm_source=Weekly+Briefing&utm_campaign=6a31e43523-EMAIL_CAMPAIGN_2018_09_11_11_59&utm_medium=email&utm_term=0_66f83a82bb-6a31e43523-185456377> [↑](#footnote-ref-9)
10. <http://www.skillsfuture.sg/earnandlearn> [↑](#footnote-ref-10)
11. <https://ec.europa.eu/growth/tools-databases/dem/watify/> [↑](#footnote-ref-11)
12. <https://www.skillsbridge.lu/> [↑](#footnote-ref-12)
13. <http://www.worldbank.org/en/news/opinion/2016/01/22/polands-education-system-leading-in-europe>

    <https://ec.europa.eu/education/sites/education/files/monitor2016-pl_en.pdf> [↑](#footnote-ref-13)