

The Pact for Skills – Skills Partnership for Microelectronics

November 2020

The challenge

Europe is home to world-class electronics R&D hubs, semiconductor material and equipment companies, microchip designers and manufacturers. Electronic components and systems enable Europe's digital transformation; accelerate its green transition; and underpin its technological sovereignty.

Against this backdrop, Europe is facing an acute skills challenge in electronics. The number of open positions for engineers and technicians is growing at an alarming rateⁱ. The blistering pace of technology calls for rapidly evolving skills in R&D, design, manufacturing, specific applications, AI ethics, cybersecurity and energy-efficiencyⁱⁱ. The involvement of women in electronics education and employment is low. Learners often do not have access to state-of-the-art design and manufacturing equipment used by the industry, and they are not trained on real-life business problems. Workforce mobility across Europe's regional clusters and globally is limited. COVID-19 has been detrimental to on-site training, apprenticeship and traineeship programmes, and exacerbated the need to invest in new technologies and everything digital including online training, virtual teams and remote services.

The ambition

The ambition is to build the most powerful, cutting edge and sustainable microprocessors and advance Europe's leadership in key areas – quantum computing, Edge AI, 5G, connected, autonomous and electric mobility, smart energy and Industry 4.0 to name a few. Continuous investment in skills and ensuring that Europe has the right talent, both qualitatively and quantitatively, is not a choice, but a prerequisite to realize the ambition. The time needed to develop the talent pipeline with hands-on experience to build cutting edge electronic components and systems take considerable amount of time, calling for an urgent action.

The microelectronics ecosystem in Europe has already numerous bottom-up skills initiatives and good practices supporting lifelong learning; collaboration; skills intelligence; diversity, inclusion and equityⁱⁱⁱ. For instance, a large semiconductor company, in partnership with an association, runs a three-day program where learners aged 10 to 14 get informed about microelectronics and develop and use STEM skills at hands-on workshops led by industry volunteers. A semiconductor equipment company organizes on-campus "Girls Day" with over 100 participants who are informed about the necessity of microelectronics and enjoy learning how this fascinating technology is created. An electronics R&D hub has a dual degree agreement with different universities where students spend three years at a European university, while doing research in the industry, and one year at a foreign university. Last year, 20 microelectronics-related organizations in Europe joined the forces and kicked-off METIS, the Blueprint for sectoral cooperation on skills, to strengthen the relations between the industry and education partners and to improve the sector's skills intelligence.

Building on the momentum created over the past years in Europe's microelectronics ecosystem, the Pact will be instrumental in setting up new and upgrading existing teaching facilities, training equipment and digital education infrastructure; launching attractive image campaigns and awareness activities making "Europe's electronics brand" more attractive; improving skills intelligence and preparing for the future of work via pan-European partnerships; promoting best practices; and delivering training programmes at regional level via innovation hubs.

The Proposal

High-tech companies across the world are progressively investing in skills to remain competitive^{iv}. The cost of training and development in electronics is increasing aligned with the new skills required. For the afore-mentioned proposed initiatives underpinning the ambition of the initial members of the partnership (see the list annexed), it is estimated that an investment of €400m annually will be needed

under the Pact. Representing a new wave of €2b investment from public and private sides for the 2021-25 period in total, the proposal will significantly contribute to the current and future workforce in Europe. The activities foreseen under the Pact will reach out to at least 50,000 workers and students each year on average and provide new re/upskilling opportunities in the field of electronic components and systems for more than 250,000 people outside the sector in five years. The Pact will be implemented with a bottom-up approach with pilot projects in Europe's electronics clusters^v.

The Microelectronics LSP has also committed to actions that support the aim of 153.000 people in the microelectronics workforce participating in upskilling and reskilling each year by 2030. The aim is for 10% of these people to be from underrepresented groups such as women. For more information on this commitment, see Annex 2.

The Commitment and Key Performance Indicators

The initial participants are fully committed to mobilizing all stakeholders for a successful kick-off in November 2020. As to KPI categories, in the initial phase, the partnership will focus on promoting electronics-driven solutions addressing societal challenges and attracting new entrants in electronics studies and jobs. Special attention will be paid to increasing the participation of women and other underrepresented groups and promoting workforce mobility. This will be supported by collaborative actions to mobilize new investment in electronics teaching facilities, equipment and digital learning infrastructure. Connecting the industry, education partners and public authorities, the partnership will play a pivotal role in skills intelligence, curriculum design and workforce readiness with a view to 2030. A non-exhaustive list of KPI categories is provided in the annex^{vi}. Once the Pact is launched in November 2020, a dedicated task force will be created to define the partnership's various aspects.

Annex

Skills Partnership for Microelectronics initially endorsed by the following businesses, R&D hubs, education providers and NGOs



Endnotes

ⁱ Nearly 1.1 million job advertisements for electro-engineering workers were placed in the EU between mid-2018 and the end of 2019 (CEDEFOP, 2020).

ⁱⁱ Visit www.metis4skills.eu for METIS Erasmus+ Project Focus Groups findings.

ⁱⁱⁱ Numerous examples are available on corporate websites of Europe's leading microelectronics businesses.

^{iv} According to the EU Skills Agenda, the EU will need estimated additional public and private investments in skills of around €48b annually; the US manufacturing industry is set to spend \$26.2b on training initiatives for new and existing employees in 2020; Amazon announced a \$700m fund to reskill 100,000 workers; Orange announced an investment of €1.5b; since 2013, AT&T has invested \$250m on education & development; a paper from the WEF & BCG states that the cost of reskilling for displaced workforce is nearly \$25k per person.

^v Clusters include Belgium (Leuven), the Netherlands (Eindhoven), France (Grenoble and Crolles), Italy (Milan and Catania), Austria (Carinthia and Styria), Germany (Saxony and Bavaria), Spain (Basque Country), Ireland (Leixlip and Cork), Finland (Espoo and Tampere), Sweden (Stockholm Region) and Bulgaria (Sofia). Regions/hubs in Poland, Romania, Greece, Hungary and Malta, to name a few, where active organizations from the field of electronic components and systems are located will be included. Non-EU countries in close proximity with the EU where there are strong electronics-related activities will be considered.

^{vi} The following KPI categories will be used throughout the partnership's implementation and evaluation (non-exhaustive): organizations joining the partnership; students enrolled in electronics-related programs; teaching facilities and equipment upgraded across Europe; workers and learners trained in electronics; participation of women and people with challenged background in electronics studies and jobs; reskilled low-qualified, unemployed and displaced adults; learners participating in e-learning programmes; participation in courses on digital skills; apprenticeship and training programmes completed; students participating in image campaigns and awareness activities; electronics-related vacancies and skills monitoring tools; shared best practices; regional clusters joining the partnership; workers and learners moving cross-borders in electronics; highly skilled electronics engineers attracted to the EU; SME/startup-large company skills collaborative programmes; high-level political and industrial endorsement.



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UPGRADING THE VISIBILITY OF COMMITMENTS AND ACTIONS OF **PACT FOR SKILLS** LARGE- SCALE PARTNERSHIPS

Microelectronics LSP



Commitment for the Microelectronics ecosystem

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The Pact for Skills Large-Scale Partnerships commitment to supporting the upskilling and reskilling of their workforce.

In support of the objectives of the **European Year of Skills** and of the **European Pillar of Social Rights Action Plan**, the Microelectronics Large-Scale Partnership of the Pact for Skills supports the objective that by 2030 50% of the Microelectronics ecosystem's workforce will participate in upskilling or reskilling actions each year.

Headline commitment

50% of workers participating in upskilling or reskilling actions annually by 2030.

*This is estimated to mean approximately **153.000** workers each year by 2030.*

The estimations in this commitment and milestones in terms of the workforce share are based on estimated sector size of workforce at 306.000 workers, including projections of workforce growth and current levels of upskilling and reskilling actions calculated either in Erasmus+ Blueprint projects or existing external estimates. For this purpose, actions of the LSP and their members are expected to influence the share of the workforce participating in up- and reskilling at sector level, even if their actual remit of activity doesn't reach the whole ecosystem.

Additional commitments can be found in the LSP's Partnership Agreement hosted on the [Pact for Skills website](#).

Additional commitments

As part of their Pact for Skills commitments, the Microelectronics LSP aims to support the following specific commitments of relevance to the ecosystem:

- **10%** of workers participating in upskilling or reskilling actions to be from underrepresented groups such as women and people with challenged backgrounds by 2030.
- Reskilling or upskilling **50.000** workers from outside of the European semiconductor sector such as workers from other sectors or countries outside of Europe annually by 2030.

Additional commitments can be found in the LSP's Partnership Agreement hosted on the [Pact for Skills website](#).

The [European Pillar of Social Rights](#) sets out 20 key principles and rights essential for fair and well-functioning labour markets and social protection systems. The [European Pillar of Social Rights Action Plan](#) turns the principles into concrete actions to benefit citizens and create a more Social Europe. It also proposes three headline targets for the EU to reach by 2030. One of them is that at least 60% of all adults should be participating in training every year by 2030. Delivering the Pillar of Social Rights is a shared responsibility for the EU institutions, national, regional and local authorities, social partners and civil society.

Upskilling or reskilling actions may include any formal or non-formal education or training supported by employers or associated training organisations in line with the definition of the European Labour Force Survey. Further, underrepresented groups can be understood as groups that make up a lower proportion of the workforce than they do in the general population.