A Future-Proofed Telecom Workforce

EDUCATION AND SKILLS FOR A COMPETITIVE EUROPE

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Connect Europe

INTRODUCTION: THE URGENCY TO REFORM

Education and skills development are fundamental to economic growth, technological innovation, and social cohesion in Europe. As Europe navigates the twin transition, ensuring that the workforce can adapt to these transformations is increasingly seen as a key determinant of global competitiveness and pose significant challenges[1].

To address these challenges, the European Commission has set ambitious objectives under the Digital Decade Targets for Education and Skills, aiming to **equip at least 80% aged 16-74 with basic digital skills by 2030**, with at least 20 million ICT specialists employed while promoting access of women to this field and increasing the **number of ICT graduates.** While, Europe has seen **a steady increase in digital skills adoption with 70% Europeans equipped with basic digital skills in 2023**, the pace of digital skills adoption varies across the EU, and progress remains insufficient with 37% of European workers still lack sufficient digital skills, creating a widening gap between labor market needs and the available talent pool[2]. In response, the European Commission launched the **Union of Skills strategy[3]**, which focuses on addressing skills shortages, promoting continuous learning, and enhancing workforce adaptability across key sectors.

Despite the economic challenges and resulting job cuts over the past few years, telecom operators still employ over 1,3 million people in Europe. However, shifting demographics and changing skill demands in the telecoms industry due to automation, network and service evolution and cybersecurity are prompting a demand for employees with new skillsets. Telecom operators need to compete for IT skills against other industries in Europe which also grapple with a shortage of ICT specialists and STEM qualified workers. This scarcity poses obstacles to achieving the EU goal of employing 20 million ICT specialists by 2030. To address these challenges, several telecom operators are implementing innovative strategies.

In doing so, by upskilling and reskilling their workers and making jobs fit for the digital age, telecom operators are not only contributing to bridging the digital skills gap, but also to creating quality jobs and improving the lives of their employees. This dimension—skills for quality jobs and lives—is a key pillar of the Union of Skills and essential for achieving both social inclusion and economic resilience

The acceleration of technological change is expected to transform millions of jobs, making lifelong learning and workforce adaptation essential to align skills set needs. The telecommunications industry has a critical role in closing Europe's digital skills gap. For the telecom sector to thrive and invest in new areas and skills is critical for European economy and depends on its ability to secure a fair return on investments already made.

This policy paper explores how the EU can address these challenges by **leveraging public funding, fostering private sector innovation, and implementing actionable policy recommendations** to ensure Europe remains competitive in the global economy.

[1] Both Draghi and Letta reports emphasize the structural weaknesses in Europe's education and training systems and warn that unless the EU takes a unified and strategic approach to workforce reskilling, it risks falling behind global competitors in critical fields like artificial intelligence, quantum computing, and green technologies.

[2] Eurostat. (2024). Statistics on Digital Skills in the EU. https://ec.europa.eu/eurostat

[3] European Commission (2025a). Union of Skills: Building a Competitive and Skilled Europe. https://commission.europa.eu/topics/eu-competitiveness/union-skills_en

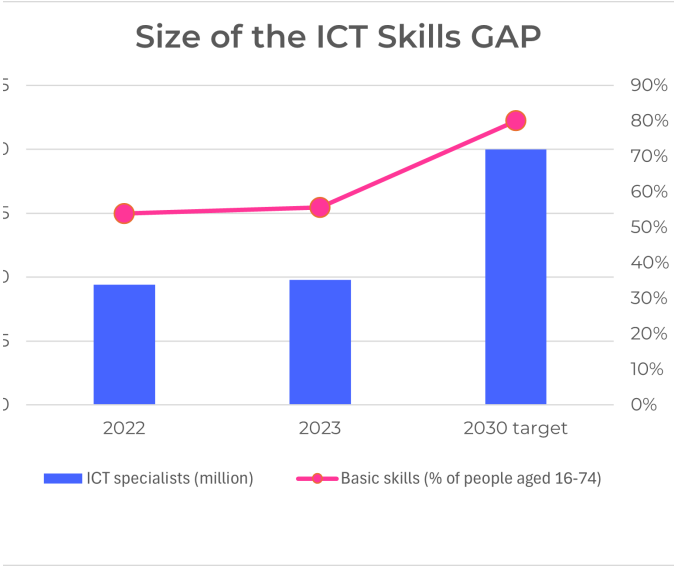
1. ADDRESSING CHALLENGES IN TELECOMS WORKFORCE

The **European Commission's Digital Education Action Plan** and **European Skills Agenda** define clear objectives for improving digital literacy, vocational training, and workforce adaptability. To support this ambition, the **European Union has allocated substantial financial resources** to strengthen education and workforce skills, with a strong emphasis on **ICT training and digital literacy**. These investments aim to **reduce skills mismatches**, prepare workers for **digital transformation**, and enhance the EU's global competitiveness in key sectors such as **artificial intelligence, cybersecurity, and high-performance computing**. Major funding programs include Erasmus+ (€26.2 billion for 2021-2027), Digital Europe Programme (€7.5 billion) and the European Social Fund Plus (ESF+) (€99.3 billion).

However, despite targeted policy efforts, the pace of digital skills adoption varies across the EU, and progress remains insufficient to meet the **80% target by 2030**. The percentage of adults with basic digital skills rose from approximately **55% in 2018 to 70% in 2023**, indicating substantial progress. However, this still leaves a **10-percentage-point gap** that must be addressed within the next seven years (figure below).

To meet labour market needs, one of EU's priorities is **the expansion of its ICT workforce**. While the number of **ICT specialists in the EU has doubled**, growing from **8 million in 2018 to 16 million in 2023, the EU is further away from its target of 20 million ICT specialists for 2030** to sustain economic growth and technological advancement.

Despite **significant progress in digital workforce development** also struggle with **a workforce mismatch**, as workers often **lack expertise in AI, cybersecurity, and cloud computing**, making it difficult to **fill high-demand positions**. Furthermore, the **aging workforce presents an additional concern**, with many employees over 45 struggling to **adapt to digital transformation**, reducing their employability in fast-evolving industries.



In the telecommunications sector, the number of vacancies for highly skilled ICT roles is increasing exponentially and companies struggle meeting this demand by recruiting from the traditional ICT talent pool alone. To bridge this skills gap and to promote inclusion and diversity, telecommunication companies are seeking to upskill their existing workforce and recruit new talent from a much broader diversity group. In parallel, the rapidly evolving range of services offered by telecom operators necessitates a shift in talent acquisition strategies—from focusing on specific job titles to identifying and developing a set of adaptable skills that align with increasingly deconstructed and dynamic roles. By embracing skills-based hiring and investing in upskilling and reskilling, telecom companies not only address immediate talent shortages but also enhance internal mobility and provide employees with greater opportunities for professional development and career progression.

[4] OECD. (2024). Skills Outlook Report. https://www.oecd.org/skills/
[5] WEF. (2025). Future of Jobs Report. https://www.weforum.org/reports

2. TELECOMS SECTOR STRATEGY AND INITIATIVES: LEADING THE WAY

The **telecommunications industry** has a **critical role** in closing Europe's **digital skills gap**, supplementing **EU public investments** with **large-scale workforce training programs**. With rapid advancements in **AI, cybersecurity, 5G, and cloud computing**, telecom providers have launched **reskilling initiatives** that ensure workers and businesses can adapt to the **digital economy**[6].

Among the main challenges the sector faces is **building and retaining talent**. Despite these difficulties, significant progress has been made in attracting, training, and upskilling professionals to keep pace with digital transformation. The sector has already launched multiple initiatives, including reskilling programs, career development pathways, and cross-sector mobility schemes to enhance workforce retention, in addition to digital literacy development programs.

One of the most extensive programs, **TIM's "Operazione Risorgimento Digitale"**, has trained **over 1 million citizens** in **Italy**, focusing on **digital literacy and ICT workforce development**. TIM collaborates with **universities and research institutions** to ensure that **training is tailored to real labour market demands**. Additionally, the company has expanded its focus to **corporate digital upskilling**, offering customized training courses to businesses adapting to **AI and automation-driven transformations** (TIM-CENSIS Report, 2024).

Deutsche Telekom is investing significantly in initiatives aimed at **equipping at least 30.000 employees in 2025** with critical tech and digital skills, with a strong focus on **artificial intelligence and data** as well as cloud, cybersecurity, network engineering, etc. Building on the momentum from 2024, when **over 30.000 employees were enabled in artificial intelligence**, Deutsche Telekom is continuing to scale our efforts. The company is rolling out **scalable learning and skills management platforms** that support personalized development opportunities, helping employees build capabilities in line with future business needs (Deutsche Telekom, 2024).

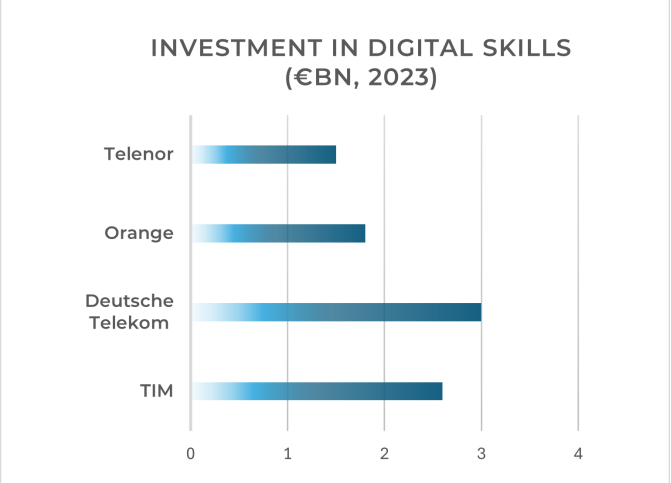
Similarly, **Orange's Digital Academy** provides **coding boot camps and ICT training**, targeting **200,000 young professionals annually**. The academy offers **placement programs, hands-on projects, and scholarships** to ensure that disadvantaged groups also benefit from digital skills training (Orange Digital Academy, 2024).

In line with this commitment, Telefónica's **Innovation and Talent Hub**, launched in 2021 at its Madrid headquarters, is a cutting-edge centre for digital excellence with the capacity to train 100,000 people annually in key digital skills. Bringing together technologies like 5G, IoT, edge computing, AI, VR/AR, video, and cybersecurity, among others, it provides a collaborative space for testing and developing innovation and talent. Additionally, Fundación Telefónica promotes digital skills development through initiatives such as **Campus 42**, a free, open-access programming school available to all 24/7; or **Conecta Empleo**, a fully digital and free program designed to enhance the digital skills and employability of job seekers and professionals.

In **the Nordic region**, **Telenor's AI Skills Initiative** is upskilling **75,000 employees** in **machine learning and automation**, working alongside **European universities** to offer mentorship programs that help professionals transition into AI-driven industries. Additionally, Telenor has launched **a 5G workforce reskilling initiative**, training **technical staff and engineers** in **network deployment, edge**

[6] Digital Upskilling for All! (DUFA) is a two-year social dialogue project that aims to develop best practices and create recommended pathways for digital upskilling, inclusion, and diversity within the workforce of the European Telecoms sector.

computing, and next-generation connectivity services (Telenor, 2024).



As shown in **Figure b**, major telecom providers have collectively invested **over €10 billion in workforce digital training in 2023**, demonstrating a strong commitment to closing the **EU's digital talent shortages**. While these investments have significantly improved **workforce readiness**, greater **collaboration between telecom-led training programs and national workforce strategies** is needed to **scale up initiatives and expand access across all EU Member States** [7].

Public-private partnerships have **proven effective** in closing **skills gaps**. Strengthening **public-private partnerships** between telecom providers, universities, and policymakers will be key to **widening access to high-quality digital education and ensuring Europe remains at the forefront of global technological innovation** (WEF, 2025). **Gaps remain in AI, data science, and cybersecurity talent**, highlighting the need for **increased investment in STEM education, vocational training, and digital skills development programs.**

Additionally, as the AI revolution is reshaping the job market, the telecom sector is actively engaged in an AI Declaration, which is currently being reviewed and updated. This initiative links directly with the AST project, reinforcing our commitment to responsible technology integration in workforce development [8].

[7] OECD. (2024). Skills Outlook Report. https://www.oecd.org/skills/
[8] AST Research. (2024). *Technology and Workforce Readiness in the Digital Age.* https://ast-research.com

3. POLICY RECOMMENDATIONS

Building on the **Union of Skills** strategy, Connect Europe proposes the following **policy actions** to enhance the EU's competitiveness through skills development:

1. Expand lifelong learning initiatives to upskill the telecom workforce

Telecom operators, regulatory bodies, and technology providers should collaborate with governments to establish **continuous training programs** that keep pace with **5G, fibre networks, AI, and cybersecurity** developments. Member States should ensure policies that support reskilling pathways for telecom professionals transitioning into emerging roles in **cloud computing, network automation, and IoT management**.

Additionally, facilitating the recognition and portability of skills across EU Member States will enable businesses to recruit talent more efficiently and support workers in accessing opportunities throughout the Union.

2. Enhance vocational education and training (VET) with a telecom focus

Technical and vocational education should align more closely with the **real-world needs** of telecom operators, including **network engineering, radio frequency (RF) optimization, and cybersecurity in telecommunications infrastructure**. Strengthening **industry-academic partnerships** will ensure that VET graduates possess the skills needed for next-generation network deployments.

Engagement with national and regional coalitions for digital skills and jobs can further support these efforts by bringing together stakeholders to develop targeted training programs that address local and sector-specific skill gaps.

3. Promote STEM and digital skills in telecom-related fields

Investments in **STEM education** should prioritize **telecoms-related fields** such as **telecommunications engineering, software-defined networking (SDN), cybersecurity, and AI-driven network management**. Encouraging more students—particularly women and underrepresented groups—to pursue **STEM careers in telecoms will help address the skills gap in network design, data transmission, and digital infrastructure.**

4. Strengthen basic digital skills for a connected society

Beyond technical expertise, **basic digital literacy programs** should be expanded to **train end-users and professionals** on fundamental telecom-related skills, including **secure internet usage, data privacy awareness, and digital communication best practices**. This will be critical to ensuring inclusive access to the benefits of **5G, fibre broadband,** across the EU.

5. Support cross-border collaboration through European Universities Alliances

Telecom research and education should benefit from enhanced **cross-border cooperation among European universities**, particularly in areas like **6G research, cybersecurity protocols, and AI-driven telecom applications**. Strengthening alliances between **universities, telecom firms, and EU regulatory bodies** will boost innovation and knowledge transfer.

6. Leverage EU funding to support telecom workforce development

The **European Social Fund Plus (ESF+)** and **Digital Europe Programme** should be optimized to **fund telecom training programs**, particularly in **rural broadband deployment, 5G infrastructure expansion, and cloud-based network operations**. Such funding can support **small and medium -sized telecom enterprises (SMEs)** in developing their workforce to remain competitive in the digital economy.

Moreover, EU funding instruments should be leveraged to support companies in promoting diversity and inclusion within the telecom workforce, ensuring equal opportunities for all demographic groups.

7. Encourage public-private partnerships for telecom training and upskilling

Telecom operators, regulators, and training institutions should work together to **co-develop certifications, micro-credentials, and apprenticeship programs** for key telecom disciplines, such as **network security, spectrum management, and fibre-optic installation**. These partnerships will bridge the gap between **education and industry demands**.

Furthermore, fostering skills-based hiring practices and facilitating the recognition and portability of skills across EU Member States will enhance workforce mobility and address talent shortages more effectively.

8. Monitor and evaluate telecom skills development progress

A **telecom workforce skills observatory** should be established to **track labour market trends, skill shortages, and training effectiveness** in the sector. Data-driven adjustments should be implemented to ensure that EU policies remain aligned with **technological advancements and labour market needs** in **next-generation networks and digital services**.

9. Empower young people through targeted initiatives

Initiatives should be implemented to allow students to acquire in-demand digital skills and facilitate their transition from education to the job market. This includes integrating practical digital competencies into curricula and providing internship opportunities within the telecom sector.

10. Engage with National and Regional Coalitions for Digital Skills and Jobs

National and regional coalitions for digital skills and jobs play a pivotal role in addressing local and sector-specific skill gaps. Telecom stakeholders should actively participate in these coalitions to align efforts, share best practices, and contribute to the development of comprehensive digital skills strategies at all levels.

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