ENGINEERS' EUROPE Engineering Skills Strategy

A Conversation with Mr. Dirk Bochar, Secretary General of ENGINEERS EUROPE

The world is entering a decade where engineering skills will determine if major goals in climate, infrastructure, and digitalization can be achieved. In the European Union, demand for researchers and engineers is expected to grow significantly through 2035, driven by ongoing green and digital changes and demographic shifts. In response, ENGINEERS EUROPE has led the "Engineers for Europe" (E4E) project to create a practical European Engineering Skills Strategy, aiming to connect universities, continuing education providers, professional organizations, and employers around a shared skills agenda.

Why a European skills strategy now?

In our discussion, Mr. Dirk Bochar, Secretary General of ENGINEERS EUROPE, explained how the project started with a clear observation: a structural gap between what engineering employers expect and what universities provide. To understand this gap, the E4E consortium analyzed labor-market data, reviewed curriculum and competence frameworks, and held extensive consultations with employers, universities, and professional organizations.

This work aligns closely with the European Centre for the Development of Vocational Training or CEDEFOP's 2035 skills forecasts, which show significant employment growth and high projected job openings for science and engineering professionals across Europe, largely due to the replacement of retiring staff and new roles arising from green and digital investments. Together, these analyses confirm that Europe does not only face a short-term shortage, but a long-term structural challenge in engineering competence.

Four pillars of the E4E project

The E4E project was structured around four interlocking objectives:

1. **A European Engineering Skills Strategy**
   The project produced a 120-page strategy document, based on 161 recent bibliographic sources (none predating 2020), outlining current and emerging competence needs and providing recommendations for four stakeholder "families": policymakers, employers, institutions of higher (tertiary) education, and professional/professional development organizations.[6][8][5]

2. **Four online micro-credential courses**
   The consortium created concise, fully online courses across four cross-cutting areas: digital skills, green/sustainability skills, entrepreneurial skills, and transversal "life" skills. These courses were co-developed with the universities of Porto, Leuven and Dublin, as well as with a VET provider in Slovakia, and attracted significantly more than the targeted 750 participants. Each course provides a certificate of attendance rather than ECTS credits, positioning it as accessible CPD or short-course learning, rather than as part of a degree program.

3. **An Engineering Skills Council under the "Engineers for Europe" banner**. To sustain dialogue beyond the project's funding period, ENGINEERS EUROPE convened a council representing the four

stakeholder groups to monitor new competence needs and coordinate responses. Dirk notes that branding this group as "Engineers for Europe" rather than a "Skills Council" will help to engage industry leaders who may not respond to traditional skills-policy language.

4. **Pan-European dissemination and adaptation**
   The project organized 41 dissemination events in eight countries, reaching more than 1,200 stakeholders—well above the original target—while also stimulating interest in adapting the model beyond Europe, including an invitation from the Peruvian engineering association.

Competence domains and the role of micro-credentials

Across its research and consultations, the project converged on four competence domains that must be integrated into engineering education and continuing development:

- **Digital competence**, aligned with the European Digital Competence Framework but tailored to engineering, including data handling, system integration, cybersecurity, and digital collaboration.[13][1][2][6]

- **Sustainability competence**, incorporating life-cycle thinking, energy efficiency, circular economy concepts, and regulatory awareness—especially pressing in high-impact sectors such as construction.[14][1][6]

- **Entrepreneurial competence**, covering opportunity recognition, resource mobilization, risk assessment, and value creation in engineering contexts.[2][6][13]

- **Transversal or "life" skills**, such as cross-cultural communication, interdisciplinary collaboration, ethics, and a continuous-learning mindset.[1][6][2]

Dirk Bochar and Hans-Ulrich Heiss both emphasize the contested nature of "micro-credentials": definitions range from short online modules to extensive programs, and quality assurance varies across Europe. European policy efforts recognize this diversity and aim to establish common principles—such as clear outcomes, quality assurance, transparency, and stackability — while acknowledging that institutions have adopted different models. The E4E courses find a pragmatic middle ground: about 14 hours of structured learning, designed for European Qualifications Framework (EQF) levels 5–7, aimed at supporting immediate upskilling and reskilling for both students and practicing professionals.

Recognition, mobility, and the EEED

For both universities and employers, the comparability and recognition of engineering qualifications remain key challenges. Dirk describes the European Engineering Education Database (EEED) as a shared resource of Engineers Europe–ENAEE (the European Network for Accreditation of Engineering Education) listing recognized engineering programs. This database is widely used by prospective students (including Erasmus+ participants), institutions seeking visibility, and employers trying to interpret foreign degrees. Public information confirms that EEED (the EUR-ACE database) is the main reference repository for accredited engineering programs across Europe, maintained jointly by ENGINEERS EUROPE and ENAEE.

Alongside EEED, ENGINEERS EUROPE's EUR ING certificate offers a competence-based, privately issued recognition that now extends beyond the European Higher Education Area, supporting mobility for

engineers from regions such as Latin America, Africa and Asia who want to work in Europe. In a job market where engineers are scarce in nearly all EU countries, this combination of transparent program information and portfolio-style competence recognition can help employers make informed hiring decisions.[6][7][8][9][1]

Implications for universities and employers

For university leaders and continuing education units, the E4E work suggests three practical directions:

- **Embed the four competence domains** throughout curricula and CE portfolios rather than isolating them in elective "add-ons."

- **Develop short, high-quality micro-credentials** that address clearly defined skills gaps and sit coherently alongside degree programs and CPD pathways.

- **Actively use European infrastructures** like the EEED and the EUR ING to make programs visible and support graduates' mobility.

For corporate L&D leaders, especially in engineering-intensive sectors, E4E points to the value of co-designing micro-credentials with universities and professional bodies, recognizing them in internal career frameworks, and contributing systematically to European skills dialogues rather than treating training as a purely internal matter.

Additional References (all accessed on December 1, 2025)

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