



European
Commission

ESCO Strategic framework

European Skills, Competences,
Qualifications and Occupations

ESCO



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Qualifications
and Occupations

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ESCO strategic framework

Vision, mission, position statement,
added value and guiding principles

This document is based on the strategic framework that was jointly developed by the [ESCO Board](#) and the Commission services in 2016.

Background

While 23.9 million people in Europe are unemployed¹, skills gaps have emerged in some regions and economic sectors. Employers in healthcare, ICT, engineering and the green economy are finding it increasingly difficult to identify suitable candidates for vacant jobs.

Greater mobility of workers within the EU can help to address the imbalances. As highlighted by President Juncker², the Commission believes in the economic opportunities created by such labour mobility, especially in fields with persistent job vacancies and skills mismatches. At the same time, rapid shifts in newly available and defunct job roles and job destruction require flexible and responsive labour markets and the continuous up-skilling and re-skilling of the workforce.

Having integrated labour markets across Europe, with conditions that encourage mobility, will help the EU to better adapt to these structural and sectoral changes. The *New Skills Agenda for Europe*³ identifies two key steps to help reduce barriers preventing mobility: a better understanding of qualifications and the validation of non-formal and informal learning. This can only be achieved if information about skills and qualifications is transparent and can be freely exchanged between all involved.

At the same time, effective services and smart e-recruitment tools are essential to match people with jobs across Europe. The internet and social media are changing the way that people search for and exchange information. Nowadays, people use their computers, mobiles or tablets to look for training opportunities, employees and jobs.

While the amount of information available about people, jobs and education has grown exponentially, it has also become more challenging to decide what information is relevant and trustworthy. Public and private employment services have an important role to play in overcoming this by helping to coordinate labour market transitions and effective job-matching solutions. This requires the systematic provision of information on new job openings and opportunities. Without sharing and understanding information relating to qualifications, occupational experiences and skills acquired abroad, matching people to vacant jobs across borders can be very challenging.

As outlined by President Juncker⁴, the Commission recognises the need to align the skills that workers possess with industry needs. The goal is to promote productivity and employability through the supply of knowledge and skills that match the current and future demands of the labour market. This goal will be pursued by encouraging

¹ Eurostat, February 2015.

² Juncker, Jean-Claude: *A New Start for Europe: My Agenda for Jobs, Growth, Fairness and Democratic Change; Political Guidelines for the next European Commission; Opening Statement in the European Parliament Plenary Session; Strasbourg, 15 July 2014.*

³ <http://ec.europa.eu/social/BlobServlet?docId=15621&langId=en>

lifelong learning and the acquisition of transversal skills, better anticipating skill needs, and building new bridges between the labour market and the education and training sector.

Vision

ESCO is a multilingual classification system for European skills, competences, qualifications and occupations. By providing a common reference terminology, ESCO can enhance the way the labour market functions, help to build an integrated labour market across Europe and help to bridge the communication gap between the world of work and the world of education and training.

With ESCO, everyone involved in the European labour market, and education and training systems, can develop a shared understanding of occupations, skills, competences and qualifications. This common understanding should allow them to communicate more effectively with each other.

ESCO has been developed as part of an emerging Semantic Web⁵ in the labour market and the education and training sector. The Semantic Web aims to transform the internet from a collection of documents, such as job vacancies, CVs and training courses, into a web of interlinked, standardised and reusable data. This data can then be fed into tools such as job matching platforms, HR systems, career guidance tools or statistical applications, making ESCO a building block for practical tools, applications and services.

ESCO benefits those in the labour market and in the education and training sector in a variety of ways.

ESCO can help **employers**:

- to understand the knowledge, skills and competences that people have obtained through education, training or "on the job" experience;
- to express which knowledge, skills, competences and qualifications they expect from their employees;
- to find the right person for a job.

ESCO can help **individuals**:

⁴ Juncker, Jean-Claude: *A New Start for Europe: My Agenda for Jobs, Growth, Fairness and Democratic Change; Political Guidelines for the next European Commission; Opening Statement in the European Parliament Plenary Session; Strasbourg, 15 July 2014.*

⁵ "The Semantic Web is a vision for a richer version of the World Wide Web, where content carries information about itself to make searching, navigation and commercial transactions easier." Cf. *CORDIS: Enhancing tools for the semantic Web.*

- to understand what employers need;
- to understand how they can develop their career through lifelong learning;
- to document and describe their knowledge, skills and competences in order to find the right job.

ESCO can help **education and training providers:**

- to undertake surveys and analyse data in order to obtain valuable information on current and future labour market needs, which can then be used as a basis for the further development of curricula;
- to make the contents of their education and training offers more understandable for learners;
- to increase the transparency and visibility of the qualifications they award.

ESCO can help **employment services** and **guidance counselors:**

- to provide better e-services to their customers;
- to serve customers in several languages;
- to build partnerships with other service providers and exchange data with them, in particular to strengthen cooperation between public and private employment services, as well as with education and training providers.

Mission

ESCO has established a common language to help bridge the communication gaps between different countries and between the domains of employment, education and training. It increases the transparency of occupations, qualifications, skills, competences and learning outcomes. This transparency and common reference points will help people to exchange information with unambiguous and shared meaning, independent of the language or electronic systems used. This is often referred to as *semantic interoperability*.

The publication of ESCO in **July 2017** established a multilingual reference terminology that reflects realities in both the labour market and the education and training sector. ESCO aims to make the following factors clear:

- what knowledge, skills and competences are usually required when working in a specific occupation;

- what knowledge, skills and competence people gain as a result of a specific qualification;
- what qualifications are required or often requested when seeking work in a specific occupation.

In order to develop the reference terminology, ESCO was built using existing sources – in particular, results from other European projects in the field of qualifications. The ESCO terminology has been published according to linked open data standards so that interested parties can access it easily and free of charge, and can link other data sources to ESCO as a reference. ESCO also supports users by providing technical information, guidelines for the use of ESCO and training.

In order to increase the acceptance and use of the common language, ESCO aims to accomplish the following.

By the end of 2017, establish a system that:

- allows the ESCO classification to be continuously updated;
- supports national developments in the journey to close the gap between the classifications of occupations, skills and qualifications;
- supports Member States that create machine-readable translation tables (mappings) between ESCO and their national classification, or that implement ESCO on a national level.

By 2018:

- provide a system to translate between national occupational or skills classifications and similar de facto standards, helping to strengthen the interconnectivity of national systems and enable cooperation between Member State authorities;
- provide a common reference point to make it possible to communicate using different classifications and languages.

Position statement

The Commission developed ESCO to complement pre-existing European- and national-level initiatives and instruments designed to enhance interoperability in the labour market and in education and training. These include:

- **Classification systems, controlled vocabularies and frameworks** such as national occupational classifications, the International Standard Classification of

Occupations (ISCO)⁶, the European Qualifications Framework (EQF)⁷ and the e-Competence Framework⁸;

- **Databases** with complementary information such as national qualification databases or the Commission Database on Regulated Professions⁹;
- **Technical or syntactical standards** such as Europass¹⁰, skills passports¹¹, HR-XML¹² or schema.org¹³;
- **Legislation** such as the Directive 2005/36/EC on the recognition of professional qualifications¹⁴;
- **Tools and services** that help people to develop their careers, such as EURES¹⁵, national job portals and career guidance tools.

ESCO will be used within the **EURES** network of employment services in order to exchange job vacancies and CVs between Member States and with the Commission. The new EURES Regulation¹⁶ describes the role of a “European classification” and an interoperability system between employment services. Additionally, it provides for two implementing acts due to be adopted that formalise, for the purpose of EURES, the use of ESCO's list of occupations, skills and competences (Article 19(2)) and the mapping between national classifications and ESCO (Article 19(6)).

The release of ESCO v1 does not automatically mean that it will be immediately used as the European classification for the purpose of EURES. Procedures and methods to accommodate new versions of ESCO will be specified in the implementing act under Article 19(6).

The Commission developed ESCO as a complementary tool to the **EQF**¹⁷. Within the framework of the EQF, Member States relate their national qualification frameworks (NQF) to the EQF to allow qualification levels to be compared more effectively in Europe. Most Member States also developed/are developing databases of national qualifications with European support, in which they assign a NQF level to each qualification and describe the expected outcomes of the learning process (the learning outcomes). These national databases will remain the main source of information for the qualifications part of ESCO.

⁶ International Labour Organization: ISCO website.

⁷ Learning Opportunities and Qualifications in Europe: EQF.

⁸ European e-Competence Framework.

⁹ European Commission: Regulated professions database.

¹⁰ Cedefop: Europass.

¹¹ ESCOpedia: Skills passport.

¹² HR Open Standards.

¹³ Schema.org.

¹⁴ Directive 2005/36/EC of the European Parliament and of the Council of 7 September 2005 on the recognition of professional qualifications.

¹⁵ European Commission: EURES – The European jobs network.

¹⁶ http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2016.107.01.0001.01.ENG

ESCO, on the other hand, offers a standardised terminology to make these learning outcome descriptions comparable across borders. Transparency is best achieved by combining the two:

- The EQF makes national qualification systems and the level of qualifications comparable,
- ESCO can be used to annotate¹⁸ learning outcome descriptions, so that they are understandable across Europe.

To this end, organisations in charge of developing learning outcome descriptions, such as awarding bodies or Member State authorities, can select the relevant ESCO knowledge, skills and competence concepts. This will allow them to provide standard information on learning outcomes in 26 languages and to use it in automatic tools, without replacing or translating the full learning outcome description. ESCO therefore builds on the EQF. It relies on the EQF as an instrument to make qualification levels comparable and on the national databases of qualifications as the main source for data on qualifications.

Member State and Commission activities in the field of regulated professions are also reflected in ESCO. As ESCO is based on labour market realities, it makes use of the information in the Commission Database of Regulated Professions on access to professions or their scope of practice in Member States. However, ESCO links to information on the regulatory aspect of occupations only and does not aim to regulate access or define their scope.

By connecting transparency instruments, ESCO provides a clearer and more complete picture of labour market and education-related information. The use of a linked open data approach ensures that the resulting product can be used by the vast majority of owners of practical tools and labour market systems, **enabling better services** (see Fig. 1).

¹⁷ <http://data.consilium.europa.eu/doc/document/ST-9620-2017-INIT/en/pdf>

¹⁸ "An annotation is metadata (e.g. a comment, explanation, presentational mark-up) attached to text, image, or other data." In text documents annotations can be used to "add information about the desired visual presentation, or machine-readable semantic information" "in a way that is syntactically distinguishable from that text". Cf. Wikipedia: Annotation.

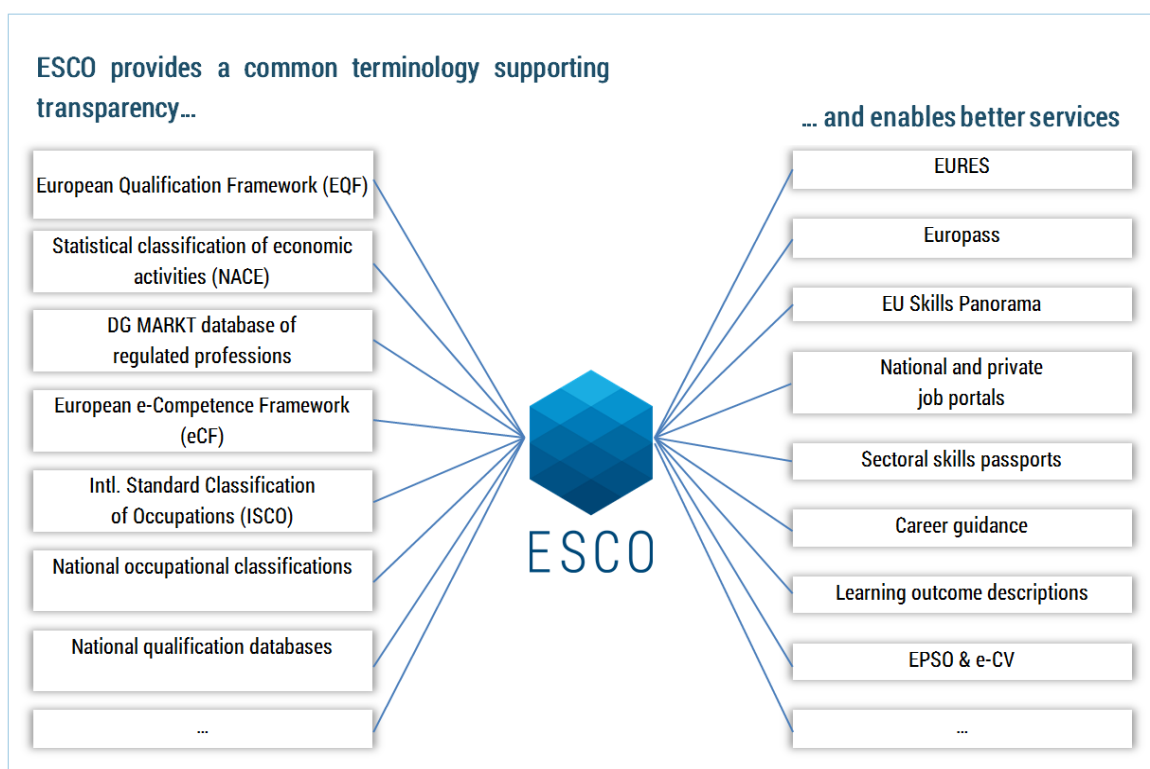


Fig. 1: ESCO provides a common terminology supporting transparency and enables better services

Added value

ESCO allows information about job vacancies, candidate profiles, CVs, skills passports, training opportunities and career pathways to be exchanged. By facilitating these exchanges, ESCO can help to improve the matching of people to jobs, skills development and labour market intelligence.

Better matching of people to jobs by employment services or electronic tools:

- Help employers to define the set of skills, competences and qualifications required for a vacant job.
- Help job seekers to build professional profiles that list the knowledge, skills and competences they have acquired through formal, non-formal or informal learning or work experience.
- Provide standard terminology to convey the information in job vacancies, CVs and other relevant documents, making the descriptions language independent.
- Help workers and learners to identify skills gaps within their target occupations.
- Allow public and private employment services to effectively exchange information (on job vacancies or job seeker applications).

- Help employment services to create self-service systems so that they can focus their resources on clients that need assistance.
- Provide a rich terminology that enables state-of-the-art search mechanisms, such as semantic search¹⁹ and natural language processing²⁰.
- Facilitate job design by employers so that they make better use of available skills and improve human resource management.

Enabling mobility through an enhanced EURES service:

- Enable EURES partners to exchange job vacancies and CVs while maintaining the information that is needed for high quality, competence-based job matching²¹ at European level.
- Provide job seekers with access to more job offers, and employers with access to more job seeker applications, across borders.

Supporting education and training systems in the shift to learning outcomes that better meet labour market needs:

- Support the provision of information to education and training institutions that can help them to develop curricula by taking into account emerging skills needs.
- Help learning institutions to express their learning outcomes in a way that improves the understanding of their qualifications abroad and attracts students from across Europe.
- Help to provide more transparent information to students on learning outcomes and the relevance of qualifications to the labour market before they commence education or training.
- Help career counsellors to enhance career planning, including with the use of new e-tools.

¹⁹ "Semantic search seeks to improve search accuracy by understanding searcher intent and the contextual meaning of terms as they appear in the searchable dataspace, whether on the Web or within a closed system, to generate more relevant results." Wikipedia: Semantic search.

²⁰ "Natural language processing (NLP) is a field of computer science, artificial intelligence, and linguistics concerned with the interactions between computers and human (natural) languages. [...] Many challenges in NLP involve natural language understanding, that is, enabling computers to derive meaning from human or natural language input". Cf. Wikipedia: Natural language processing.

²¹ "Competence-based job matching is a method to find the best match between jobseekers and vacant jobs by comparing knowledge, skills and competences of the candidate with the requirements of the employer." Cf. ESCOpedia: Competence-based job matching.

Supporting evidence-based policy making:

- Enhance the collection, comparison and dissemination of data through tools that capture skills intelligence and statistics such as, among others, the European Skills Panorama.
- Enable a better analysis of skills supply and demand in real-time, based on big data.

Guiding principles

The following principles guided the development of ESCO:

- **Useful.** ESCO aims to become the de facto standard for the identification and communication of occupations, skills, competences and qualifications. It therefore needs to be fit for purpose, practical and useful for all interested parties, in particular public and private employment services, education and training institutions, and online service providers.
- **Accepted.** The Commission wants ESCO to become the backbone of the interoperability system in EURES, making it the European classification advocated in the new EURES regulation. In addition to that, ESCO aims to be voluntarily adopted by key stakeholders by demonstrating its added value, ease of use and responsiveness to users' needs.
- **User-led.** The Commission developed ESCO with the needs of users as the guiding principle.
- **Updated.** ESCO has to be continuously updated and adapted in order to reflect changing realities and to maintain its usefulness and added value.
- **Flexible.** ESCO does not aim to standardise the scope of occupations or the learning outcomes of qualifications. Instead, it aims to provide standard terminology that can be used to describe the details of a job, the professional profile of a job seeker or the content of a learning outcome.
- **High-quality.** The Commission, together with stakeholders and external contractors, carefully ensured the quality of the research undertaken and the conclusions drawn before ESCO was published, ensuring that it corresponds accurately and meaningfully with realities in the labour market, education and training.
- **Involvement at national level.** The Commission involved Member States in order to increase ownership of ESCO and support its use at national level.

- **Involvement of stakeholders.** The Commission involved stakeholders, in particular social partners, in the development of ESCO and the definition of its standard terms, and will continue to do so going forward.
- **Inter-sectoral approach.** When possible, ESCO paid particular attention to horizontal, transversal and transferable skills, inter-sectoral occupations and overarching qualifications.
- **Multilingual.** ESCO is multilingual, providing terms for the same concept in 26 European languages.
- **Reflects realities.** ESCO reflects realities in the European labour market and the education and training sector.
- **Transparent and open development.** The development of ESCO was transparent. Work results were shared with interested parties and it was open to all stakeholders.
- **Reusable.** ESCO results are published under a license that makes it easy for stakeholders to use ESCO for commercial and non-commercial purposes, free of charge.
- **Machine readable.** The Commission recognises the need for machine-readable and semantically enriched information that can be easily found, shared and reused – and ESCO was developed for this purpose. Additionally, correspondence tables (mapping) to national, regional and sectoral classifications are being developed. The Commission is therefore committed to publishing and maintaining ESCO according to linked open data standards.
- **Compatible.** ESCO was developed to ensure maximum compatibility with existing IT systems and standards.
- **Dynamic.** Over time, ESCO will adapt to changing user needs, new developments in the labour market and the education and training sector, and new technological possibilities.