



ESCO v1.2: a global language for skills

Linking skills and qualifications

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Why is ESCO relevant for qualifications?

ESCO is a common reference language that supports:

- transparency
- comparison,
- identification and
- analysis of the content of a qualification.

**Describe & understand
Learning outcomes of
qualifications**

Skills & knowledge as
common factor

**Enhance personalised
career guidance services**

Recommend personalised
career paths & learning

**Support validation of
informal/non-formal
learning**

Digital badges/micro-
credentials

Why is ESCO relevant for qualifications?

Linking learning outcomes of qualifications to ESCO skills means that:

Employers, training providers and educational sector institutions can more easily grasp the labour market value of a qualification, in particular in a **cross-border context**

Individuals improve chances on labour market through **better skills-based job matching and richer qualifications information.**

How to use ESCO for qualifications/training?

- Use the occupational profiles as a starting point
- Get inspiration from the skills and competencies described in ESCO
- Make use of the IT tool (soon to be provided publicly) on referencing learning outcomes of qualifications to ESCO skills
- Use ESCO skills for developing skills intelligence (skills in high demand) & use the results to inform curricula reform

0 - Armed forces occupations	+
1 - Managers	+
2 - Professionals	+
3 - Technicians and associate professionals	-
31 - Science and engineering associate professionals	-
311 - Physical and engineering science technicians	+
312 - Mining, manufacturing and construction supervisors	-
3121 - Mining supervisors	+
3122 - Manufacturing supervisors	-
3122.1 - dairy processing technician	
3122.2 - food production planner	
3122.3 - industrial assembly supervisor	+
3122.4 - production supervisor	+
3122.5 - waste management supervisor	
3123 - Construction supervisors	+

industrial assembly supervisor

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Technicians and associate professionals >
 Science and engineering associate professionals > Mining, manufacturing and construction supervisors >
 Manufacturing supervisors > industrial assembly supervisor >

Description

Code

3122.3

Description

Industrial assembly supervisors are in charge of organizing, planning and coordinating assembly operations. They keep track of all the work activities and manage the process for efficient functioning in order to tackle problems such as production loss. They answer to the industrial production and the manufacturing manager.

Alternative Labels

- production assembly supervisor
- assembly forewoman
- assembly foreman
- assembly controller
- assembly line supervisor
- goods compliance supervisor
- assembly chargehand
- assembly co-ordinator
- quality control supervisor
- assembly planner
- assembly overseer
- goods production supervisor
- assembly team leader
- quality supervisor
- industrial assembly supervisor

Skills & Competences

Essential Skills and Competences

- manage budgets
- oversee assembly operations
- manage health and safety standards
- adjust production schedule
- create manufacturing guidelines
- provide department schedule for staff
- meet deadlines
- develop manufacturing policies
- create solutions to problems
- report on production results
- wear appropriate protective gear
- liaise with managers
- train employees
- plan shifts of employees
- follow production schedule
- manage resources
- read standard blueprints
- oversee quality control
- optimise production
- supervise work
- manage staff
- control production
- cope with manufacturing deadlines pressure
- analyse production processes for improvement
- define manufacturing quality criteria
- oversee production requirements
- keep records of work progress
- communicate production plan
- meet productivity targets

Essential Knowledge

- manufacturing processes
- industrial software
- industrial engineering
- quality standards
- industrial design
- production processes

Optional Skills and Competences

- perform data analysis
- follow manufacturing work schedule
- manage manufacturing documentation
- disaggregate the production plan
- arrange equipment repairs
- adapt production levels
- advise on machinery malfunctions
- evaluate employees work
- apply control process statistical methods
- monitor manufacturing quality standards
- ensure finished product meet requirements
- communicate problems to senior colleagues
- analyse the need for technical resources
- recruit personnel
- plan manufacturing processes
- check material resources
- liaise with quality assurance
- motivate employees
- use CAM software

Curricula reform use case

Australia's leading digital research network, CSIRO 61 uses [ESCO](#) to reskill and upskill the workforce

AIM:

Use ESCO to evaluate the currency of vocational education and training courses.

Compare content of training courses to understand relevance of skills vs ESCO.

HOW:

MACHINE LEARNING CLASSIFIER

Identify phrases in course descriptions that are similar to the ESCO skills descriptions

Train AI model for thousands of courses.

RESULTS:

GAPS & UPDATES

Flag skills gap in the courses provided for Australian occupations

Inform training providers of results to review their offerings and update curricula.

Curricula reform use case

Public administration of Emilia-Romagna region, Italy

AIM:

Use ESCO to assess the skills and occupations relevant for the big data sector in order to adapt the curricula on offer in the region

HOW:

Quantitative & qualitative analysis

Identify occupations & skills from the sector based on ESCO via analysis of job vacancies

Survey to employers, education providers and teachers (universities + VET)

Focus groups on most important skills

RESULTS:

Understand the regional skills landscape

Validate the occupations & skills required by the labour market & supplied by universities

Work towards public-private partnership on skills development

Provide digital badges



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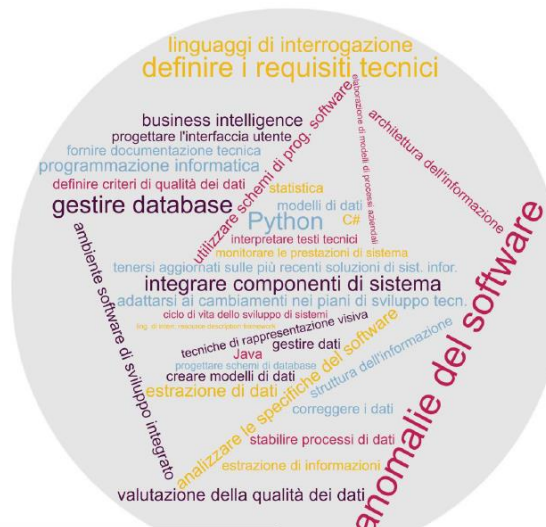
In practice:

Le Skills

Imprese



Docenti



Competenze chiave

Figura 3.5. Le 17 Abilità/Competenze chiave per lo sviluppo dei Big Data



- *Understand the skills demanded by employers and skills supplied by education providers and where the mismatch is*
- *Work with education providers to update their curricula accordingly in the big data sector*

Curricula reform use case

Politecnico di Milano, Italy
European credit clearinghouse for opening up
education ([ECCOE](#)) project

AIM:

Use ESCO to describe or tag learning outcomes of Massive online courses (MOOCs)

Compare content of training courses to ESCO skills

Make the link explicit

HOW:

Manual process by education staff

Use the ESCO portal to look at skills, use search & browsing function

RESULTS:

Annotation & new LO

Annotate MOOCs with ESCO skills to facilitate interoperability

Facilitate the work of training providers when creating Learning outcomes

In practice:

- *Tagging courses content with ESCO skills results in references to an EU common standard*
- *It facilitates interoperability of learning opportunities among stakeholders.*
- Supports the recognition of online learning opportunities



Ethics of Artificial Intelligence

INTENDED LEARNING OUTCOMES

By actively participating in this MOOC, you will achieve different intended learning outcomes (ILOs).

1. Week 1:

- Describe the reasons for an ethical analysis applied to AI.
- Recognize how the notion of responsibility is challenged when designing and using AI tools.

2. Week 2:

- Identify the ethical and social impacts and implications of AI.
- Recognize and analyze ethical and social issues inherent in AI by means of examples and case-studies analyzed with the use of the main ethical frameworks.

3. Week 3:

- Learn how to analyze problems through an ethical lens.
ESCO: address problems critically
- Use critical skills in clarifying and ethically analyzing AI in different domains of life.
ESCO: think analytically

4. Week 4:

- Critically analyze the current policies for AI.
- Use ethical and socially responsible principles in your professional life.
ESCO: follow ethical code of conduct ESCO: adhere to organisational code of ethics ESCO: values

https://www.pok.polimi.it/courses/course-v1:Polimi+AI102+2022_M3/about



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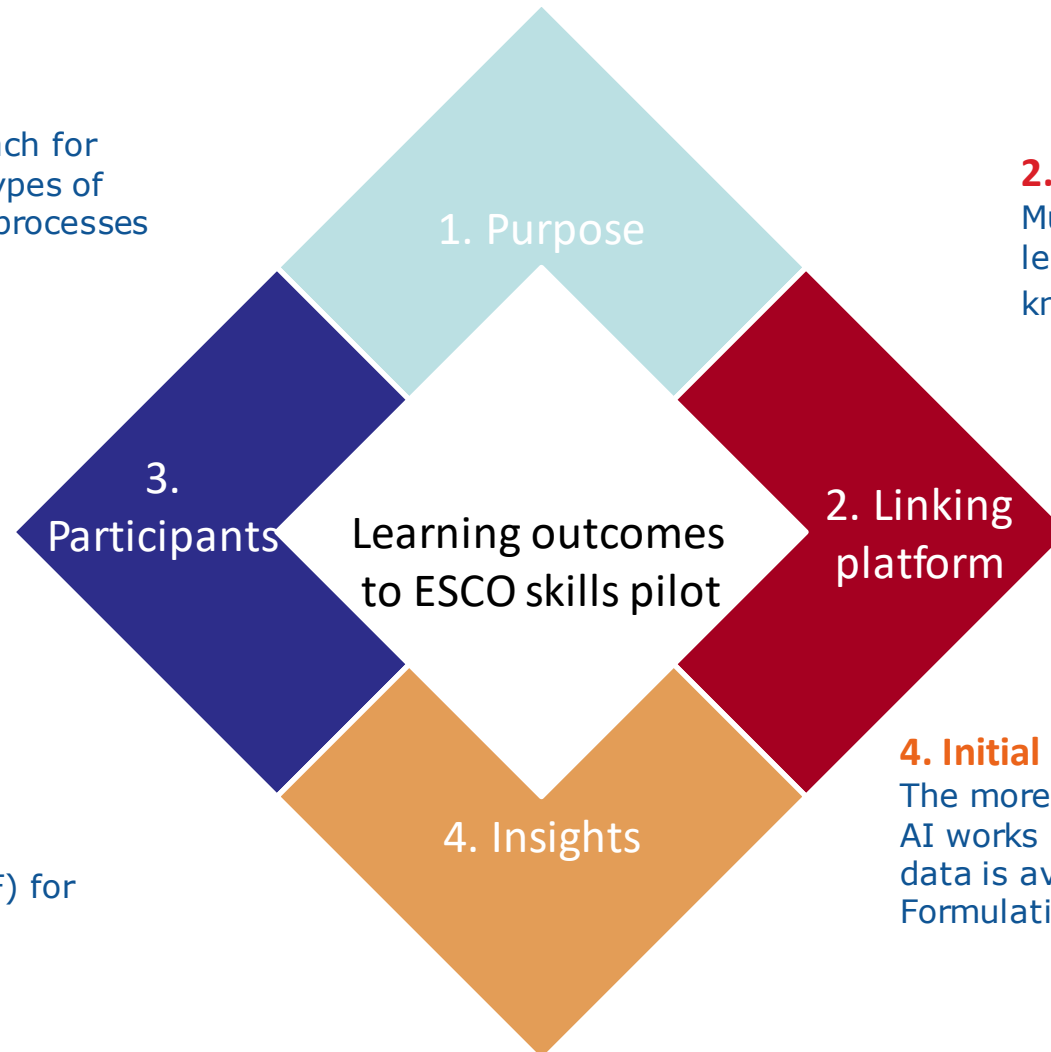
ESCO linking pilot using Artificial intelligence

1. Purpose

Test the suitability of the linking approach for different actors/institutions, different types of qualifications and different publication processes across Member States.

2. Linking platform service tool

Multilingual algorithm based on machine learning for suggesting relevant skills and knowledge concepts.



3. Participants

- EU Member States
- Social partners
- European Training Foundation (ETF) for African qualifications
- Private training providers

4. Initial insights

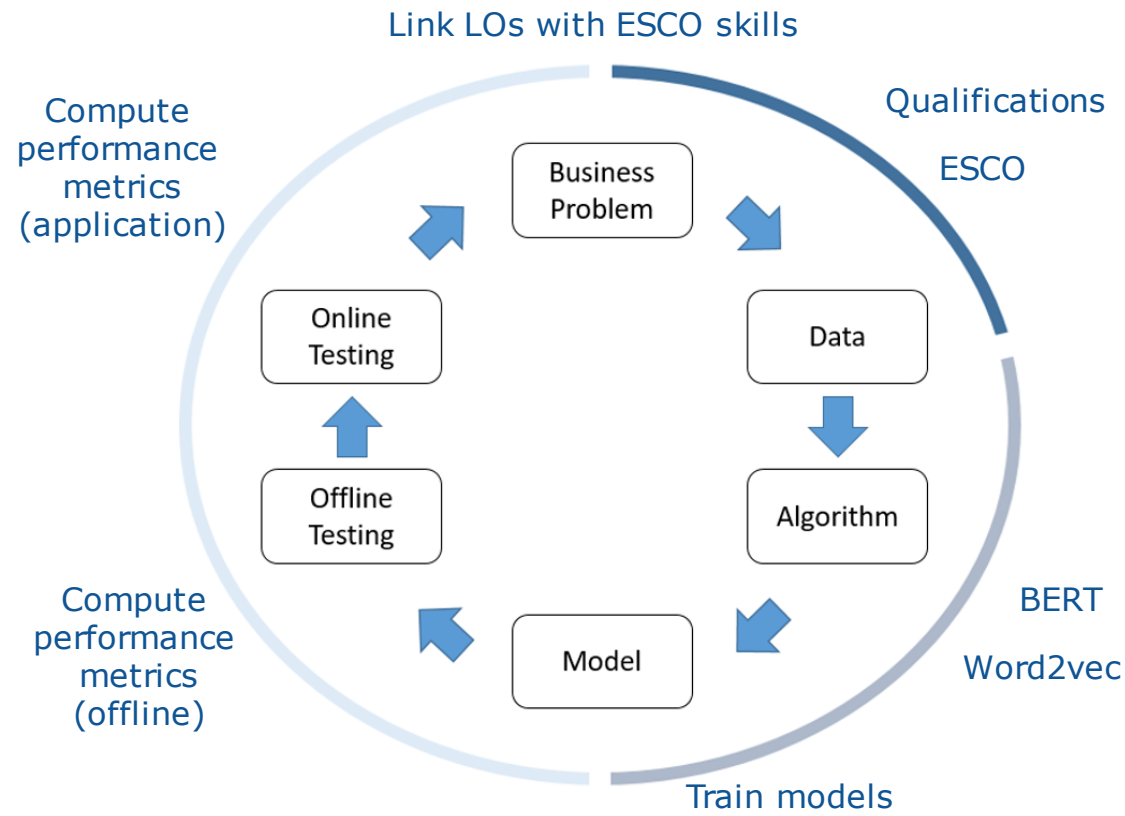
The more data, the better matching
AI works better in those languages where more data is available
Formulation of learning outcome is key

General methodology

- ESCO skill suggestion = data-driven application
- Inherent connection between data and methodology: methodology needs to be developed for the actual data it is going to suggest (i.e. ESCO skills) / use as input (i.e. learning outcomes)
- Development is experimental by nature

Successful data-driven process iterates between:

1. Analyse data
2. Adjust algorithm and build model
3. Test performance



ESCO qualifications pilot

Available on the [ESCO website](#) as an open tool by end of 2024

The screenshot displays the 'Learning Outcome - Linking' tool interface. At the top, it shows the European Commission logo and the title 'Learning Outcome - Linking'. The interface is divided into several sections:

- Navigation:** 'en ECCOEEN EN Qualifications' and 'en ESCO skills' with a filter dropdown.
- Version:** 'Version: v1' and 'Version: 1.1.0'.
- Learning Outcome List:** A list of learning outcomes, with 'Sustainable Urban Water Systems' selected and highlighted.
- Details for 'Sustainable Urban Water Systems':**
 - Concept identifier:** b687368a-bd9d-41f7-b961-5ecdc927a836
 - Description:** General description: - The MOOC "Sustainable Urban Water Systems" aims to provide knowledge about modern and sustainable solutions for urban water systems in water sensitive cities. Focus is on stormwater management and water supply strategies for the mitigation of effects on the water cycles due to human settlements. Sustainable strategies integrate Nature-based Solutions (NbS) and Green Infrastructures (GI) to make cities resilient in front of global challenges, adding benefits to both the environment and community.
 - Learning Outcome Entities:** 15
 - General description:** - The MOOC "Sustainable Urban Water Systems" aims to provide knowledge about modern and sustainable solutions for urban water systems in water sensitive cities.
 - Focus:** Focus is on stormwater management and water supply strategies for the mitigation of effects on the water cycles due to human settlements.
 - Sustainable strategies:** integrate Nature-based Solutions (NbS) and Green Infrastructures (GI) to make cities resilient in front of global challenges, adding benefits to both the environment and community.
- Search and Filter:** 'Browse', 'API search', 'ML suggestions', and 'Occupation browsing' tabs. A filter dropdown is present.
- Results:** A list of related terms with plus icons: 'manage water flows and catchments', 'water policies', 'conserve water resource', 'develop flood remediation strategies', and 'water consumption'.

Thank you!

The ESCO Secretariat is always available to support ESCO stakeholders.

May you have any question, please contact us via email at EMPL-ESCO-SECRETARIAT@ec.europa.eu and use our hashtag #ESCO_EU