European Commission

ESCO

Recent developments & results of skills-qualifications mapping

Peer learning seminar
Warsaw, 13 December 2019

Trends in society lead to skill gaps in European labour market(s)

Technological progress   Greening economy   Demographic ageing

Key facts: EU28

243 232 000
Employment in 2030

6%
Increase from 2016

0.4%
Growth per year

FASTEST GROWING SECTORS
Growth per year 2016-30

| Business & other services | 1% |

| Distribution & transport | 0.6% |

HIGHEST DEMAND OCCUPATIONS
Total job openings 2016-30

11 984 600	Business & administration associate professionals
9 276 600	Sales workers
8 710 160	Cleaners & helpers

151 337 000
Total job openings, 2016-30

9%
will be created from new job openings

91%
will be created due to replacement needs

About **4** in **5** new job openings
will relate to high-skilled occupations

By 2030, 43% of the job openings will require high qualifications

In the near future, **90% of jobs** will require some level of digital skills

44% of EU citizens have low or no digital skills

Closing the skills gap

- Encourage intra-European mobility

  ➡ *Common language for information exchange*

- Align people's skills with industry needs

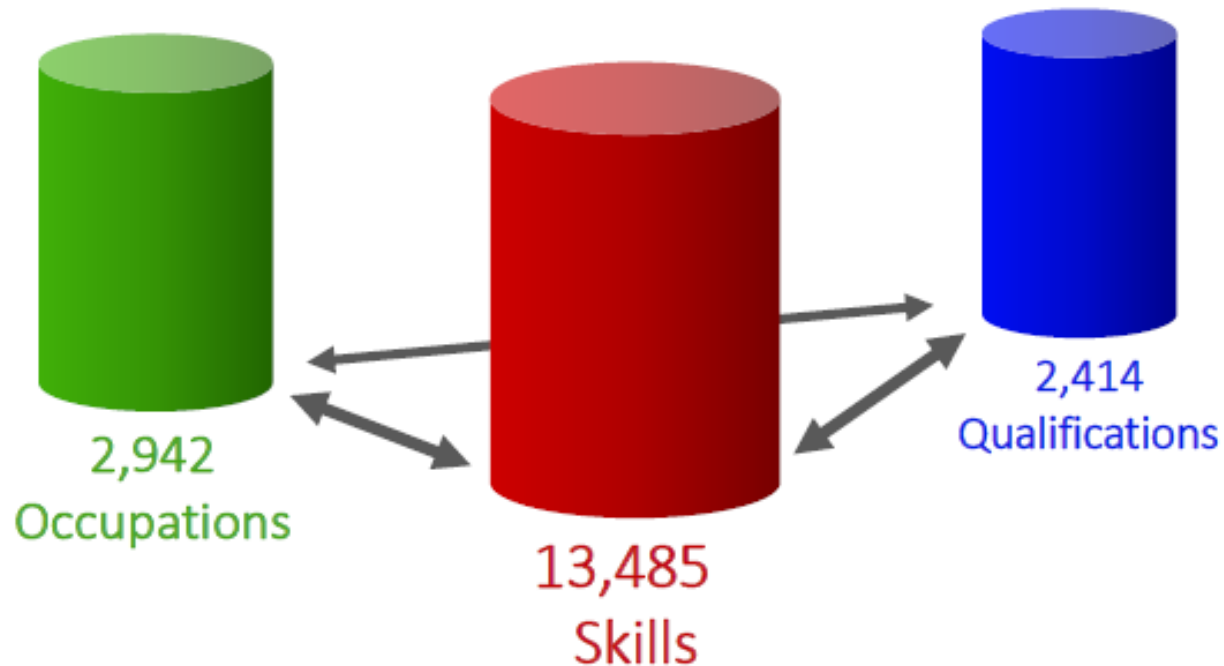 ➡ *Bridge the world of education and employment*

- Skills-based jobmatching

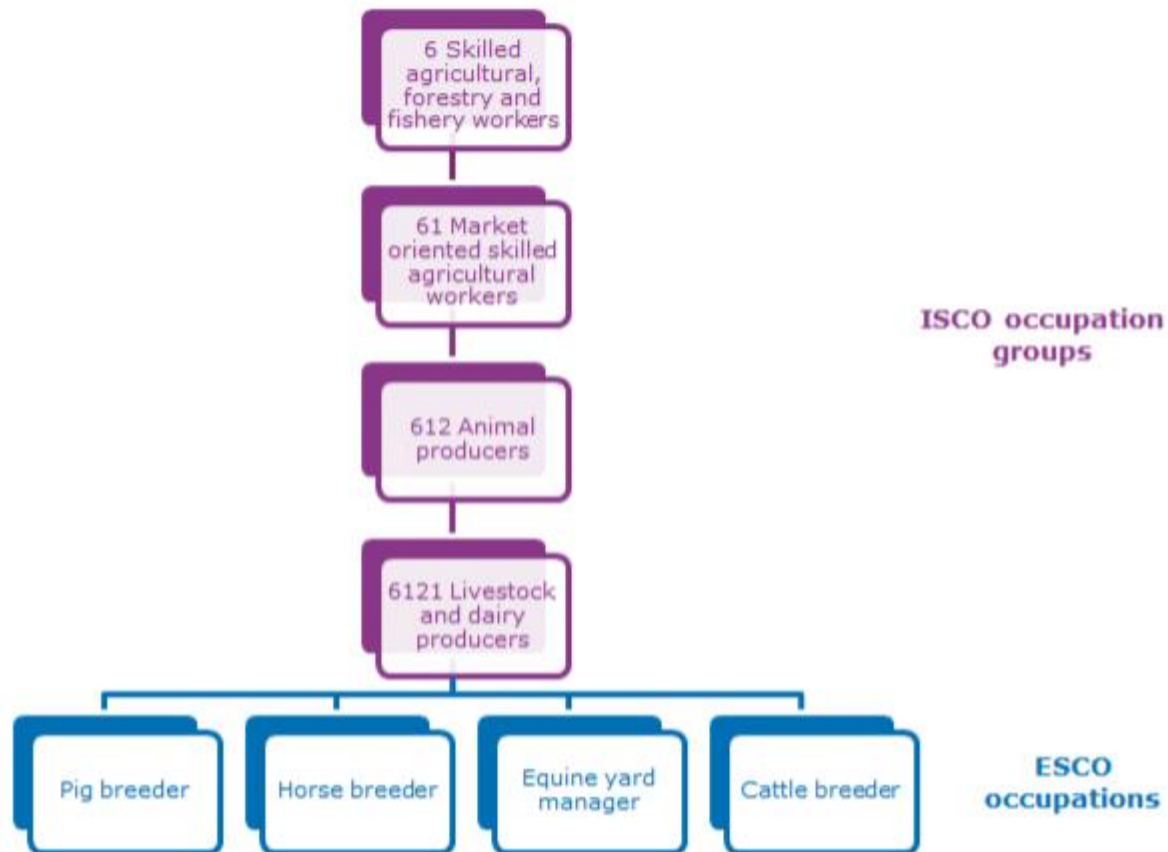 ➡ *Need for a common skills-language*

ESCO

European Classification of Skills, Occupations and Qualifications (ESCO)

Structure of ESCO: three pillars

2,942
Occupations

13,485
Skills

2,414
Qualifications

Structure of the occupations pillar

Occupational profiles

- **Occupation hierarchy**
  - *Built on ISCO 08*
  - *Can have further specialisations*

- **Essential and optional skills and knowledge**

- **Machine readable**
  - *One URI*
  - *Based on SKOS*

English (en) ⊜

bartender

Discuss this topic in the Online Forum 💬

Description

Bartenders serve alcoholic or non-alcoholic drinks as requested by clients in a hospitality service bar outlet.

Alternative label

barman

bar keeper

bar woman

bar staff

Regulatory aspect

To see if and how this occupation is regulated in EU Member States, EEA countries or Switzerland please consult the Regulated Professions Database of the Commission. Regulated Professions Database: http://ec.europa.eu/growth/single-market/services/free-movement-professionals/qualifications-recognition_en ⧉

Hierarchy

⌄ 5 Service and sales workers
  ⌄ 51 Personal service workers
    ⌄ 513 Waiters and bartenders
      ⌄ 5132 Bartenders
          bartender

Narrower occupations

cocktail bartender

barista

Structure of the skills pillar

Skills hierarchy

Four distinct sub-classifications targeting different types of concepts

Each of the 13,485 concepts to be classified to only one group

Knowledge: 2 837 concepts grouped to ISCED-F's 80 fields

Attitudes & values: current structure as starting point

Language skills & knowledge: current structure as starting point

Skills: proprietary classification, inspired by the Canadian Skills & Knowledge hierarchy and O*NET
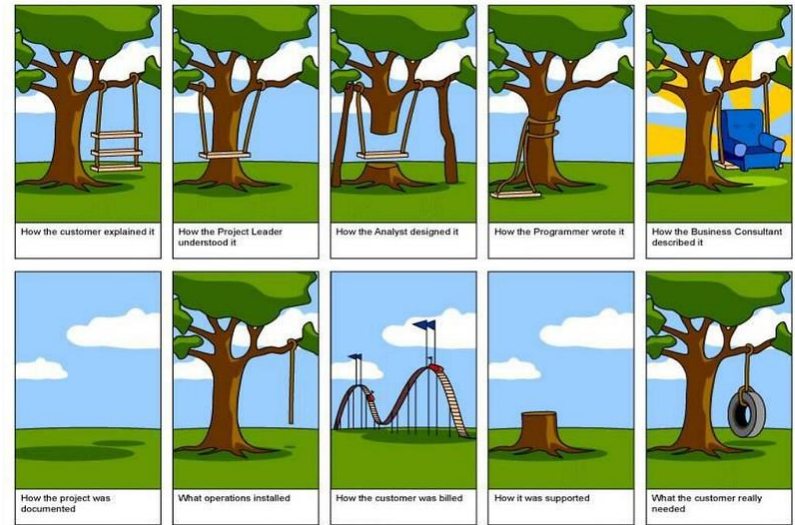
Skills profile

- **Skills hierarchy**
  - *Flat list*
  - *Broader / narrower relations*
  - *Skills hierarchy in progress*

- **Contextualisation**
  - *Broader / narrower relations*
  - *Skills reuse level*

- **Machine readable**
  - *One URI*
  - *Based on SKOS*

🔍 drinks

drinks service operations
compile drinks menu
present decorative drink displays
compile drinks price lists
present drinks menu
prepare garnish for drinks
evaluate coffee characteristics
laws regulating serving alcoholic drinks
prepare mixed beverages
maintain equipment for non-alcoholic d...
prepare hot drinks
serve beverages
provide food and beverages
food and beverages on the menu
sell snacks
prepare alcoholic beverages
prepare orders
upsell products
prepare premises
supervise camp operations
prepare service trolleys
attend to detail regarding food and bev...
think creatively about food and bevera...
prepare meals for flights
beverages production process
establish gaming policies
prepare fruit ingredients for use in bev...
take drive-through orders
swimming pool safety guidelines
administer chemicals for beverage clari...

Show more

English (en) ⊖

serve beverages

Description
Provide a variety of alcoholic and non-alcoholic beverages such as soft drinks, mineral waters, wine and bottled beer over a counter or using a tray.

Scope notes
Does not include drinks which take a more involved preparation, such as specialised coffee, other hot drinks, mixed drinks, and beers served in a glass.

Alternative label
serve alcoholic drinks
serve non-alcoholic beverages
serve alcoholic beverages
serving beverages
served beverages
serve drinks

Skill type
skill

Skill reusability level
sector specific skills and competences

Narrower skills/competences
present drinks menu
select glassware for serving

Optional Knowledge
alcoholic beverage products
beverage products
drinks service operations

Essential skill/competence of
cocktail bartender
domestic butler
waiter/waitress
bartender

Optional skill/competence of
hospitality vocational teacher
club host/club hostess
hotel butler
office clerk
amusement and recreation attendant
domestic housekeeper

Status
released

Concept URI
http://data.europa.eu/esco/skill/beeaddc7-fe69-4b97-a286-0bd595432eb9

ESCO stakeholders

- **Social partners**
  - *Blueprint*
  - *Social dialogue*

- **Implementers**
  - *Provide feedback*
  - *Reason for existence*

- **EU Member states**
  - *Political support*

- **Commission services**
  - *Niche classifications*
  - *Prepare regulation*

- **End-users**

- **Ontology owners**

ESCO in an AI world

Linking learning outcomes & skills

Linking learning outcomes & skills

Identify skills → Translate to English → Vectorize → Show similarities based on proximity

Feedback loop

Preliminary thoughts

- First practical application to explore possibilities of AI / NLP

- Shows potential of NLP in many applications
  - *Jobmatching*
  - *Ontology mapping*
  - *Skills extraction*
  - *…*

- Quality of data seems crucial
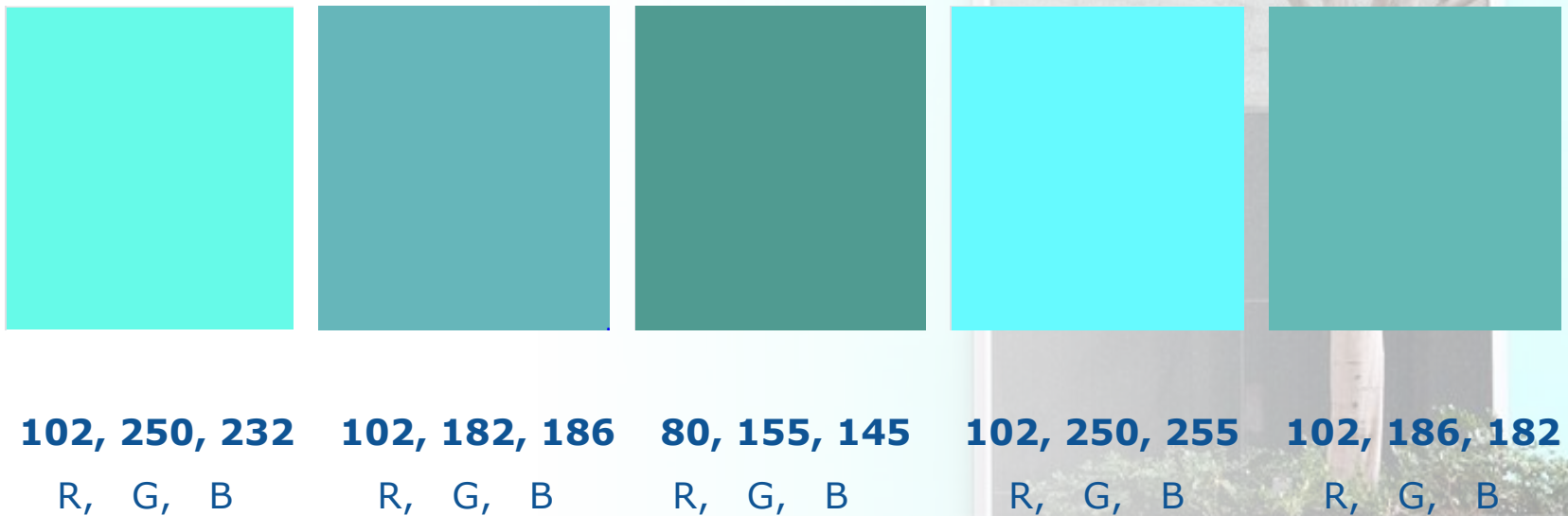 - *Quality and structure of ESCO*
  - *Quality of input text*

Will managed classifications still be relevant? **?**

? **Can AI help managing classifications?**

Will managed classifications still be relevant?

102, 250, 232
R, G, B

102, 182, 186
R, G, B

80, 155, 145
R, G, B

102, 250, 255
R, G, B

102, 186, 182
R, G, B

Will managed classifications still be relevant?

➡ **Improved translations & natural language understanding**

➡ **Better understanding of semantic meaning of occupations by using link between skills & occupations**

➡ **Understand & visualize link between skills, occupations, and training or education**

➡ **... Jobareas? Growthpaths? Language adapted to target groups?**

➡ **Make the AI black box 'decisions' transparant**
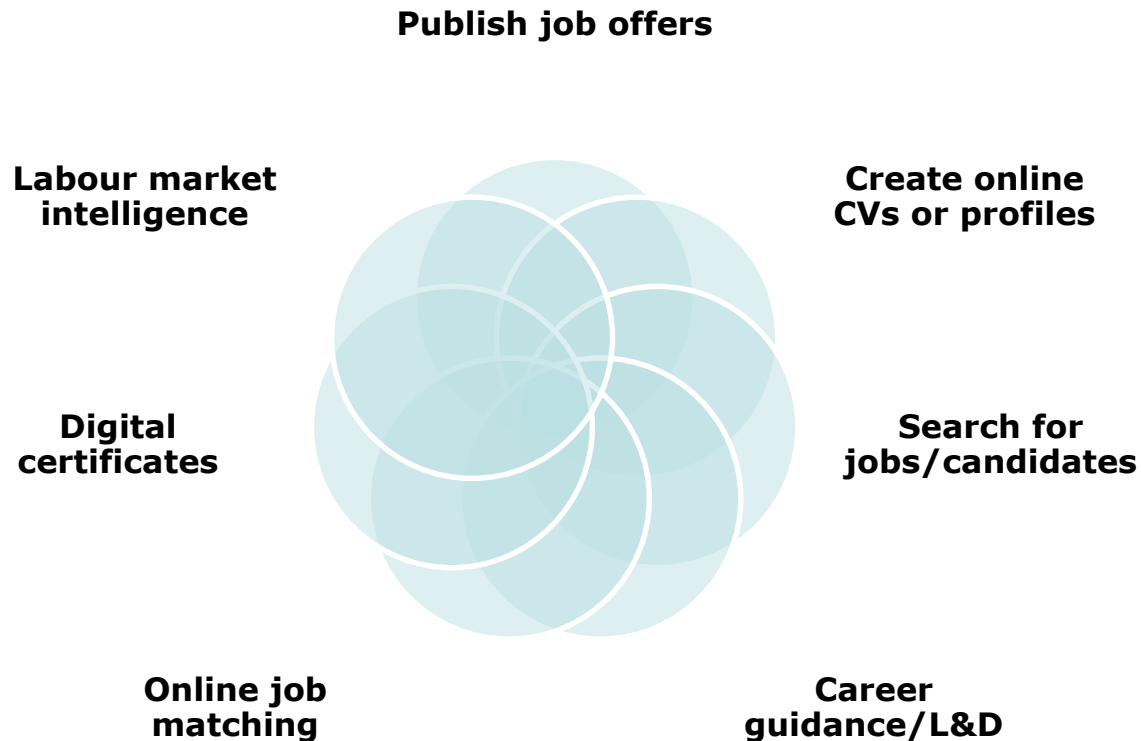
How can AI help managing ESCO?

➡ **Solve inconsistencies (doubles, similarities, etc.)**

➡ **Find new / emerging skills**

➡ **Automated ontology mapping**

➡ **Reformulating skills according to sentiment**

➡ **…**
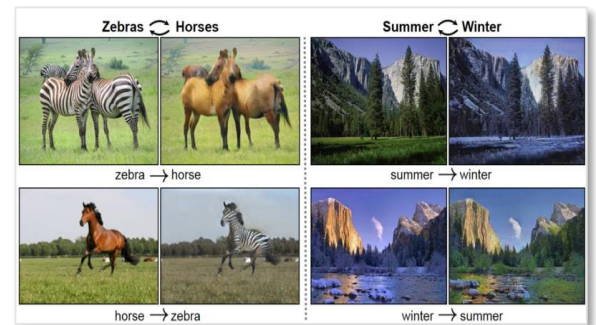
How can ESCO be used?

ESCO in digital applications

Publish job offers

Labour market
intelligence

Create online
CVs or profiles

Digital
certificates

Search for
jobs/candidates

Online job
matching

Career
guidance/L&D

ESCO in digital applications

In employment services

By job boards

In HR software

By career guidance professionals

By data scientists, taxonomists, statisticians

Use of ESCO in EURES

What is EURES?

EU framework for cooperation among employment services

Objective:

*provide **information**, **advice** and **job-matching services** for the benefit of workers and employers as well as any citizen wishing to benefit from the principle of the **free movement of workers***

Key statistics on EURES

1,6 mln
job vacancies advertised on the EURES Portal daily

1000
EURES Staff available for support

12,000
registered employers on the EURES Portal

32
EU/EEA countries
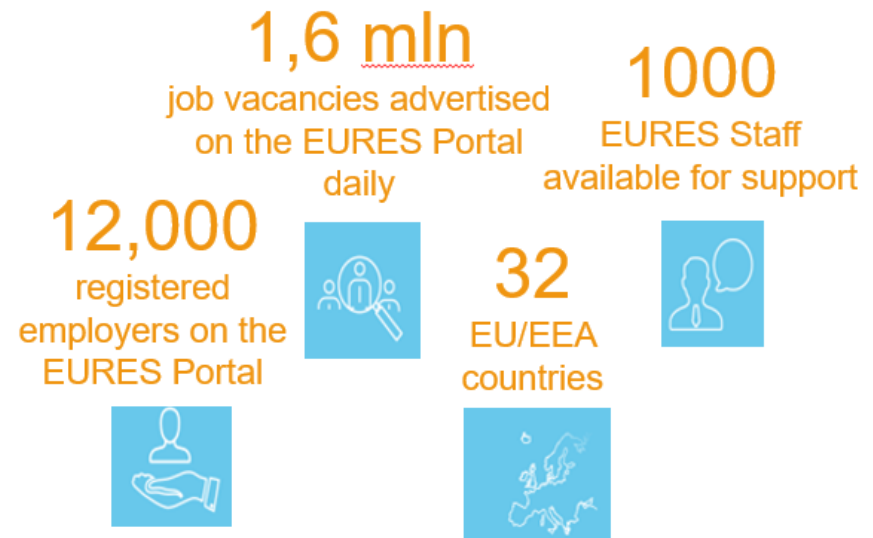
Use of ESCO in The New Europass

Main components of the Europass platform
Overview

EUROPASS PLATFORM

e-portfolio
Support individuals to document and describe their skills, qualifications and experience and to manage their career from a lifelong learning perspective

Information provision
Provide (links to) available information or links to available information on different topics

Interoperability mechanism
Enable the exchange of information on skills and qualifications amongst different actors

Use of ESCO in EU skills panorama
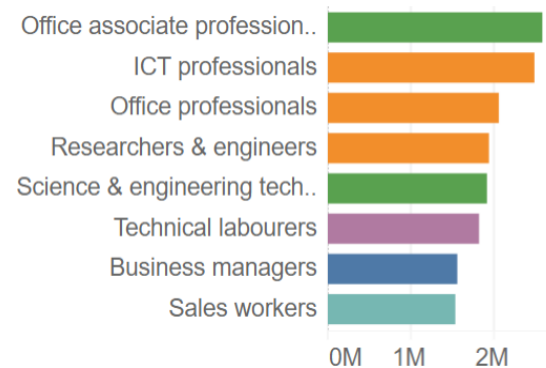

Skills and occupations

Please select a country:

(All)

Online job vacancies by occupation (1 digit ISCO)

Associate · Clerks · Professionals

Online job vacancies by occupation (2 digit ISCO)

- Office associate profession..
- ICT professionals
- Office professionals
- Researchers & engineers
- Science & engineering tech..
- Technical labourers
- Business managers
- Sales workers

0M 1M 2M

Online job vacancies by occupation (4-digit ISCO)

- Software developers
- Shop sales assistants
- Freight handlers
- Systems analysts
- Engineering professionals n..
- Manufacturing labourers no..
- Administrative and executiv..
- Advertising and marketing p..

0K 500K 1000K

Most requested skills (ESCO version 1)

○ Treemap
◉ Word cloud

Minimum share of vacancies where skill is mentioned

22.00% 100.00%

Demand for skills in online job vacancies

How can you get ESCO?

Visit our portal to download or use the API:
https://ec.europa.eu/esco/portal/home

Acknowledge its use & get in touch once you use it

Join the ESCO online community forum
https://ec.europa.eu/esco/forum/

THANK YOU!

✉ Contact:

Koenraad.polley@esco-support.eu
EMPL-ESCO-SECRETARIAT@ec.europa.eu