



ESCO v1.1 launch event

The use of artificial intelligence in updating ESCO

10 February 2022

Using machine learning to continuously update ESCO

Work done for ESCO v1.1

Future versions of ESCO

Related data science activities

Synergies with other projects

Work done for ESCO v1.1

Detect potentially duplicate skills

- Avoid skills with identical meaning in ESCO

Identify relation between skills and occupations

- Avoid ESCO orphan skills, i.e. skills not linked to any ESCO occupation

Identify relationships between skills

- Link new transversal skills to non-transversal skills

Labelling green skills and knowledge concepts

- Develop a ML classifier to distinguish green and non-green concepts

Detect potentially duplicate skills

Goal: avoid skills with identical meaning in ESCO

Methodology: machine learning (ML) model to detect duplicate skills in the classification

1. Input: single ESCO skill
2. Output: ranked ESCO skills based on the **semantic similarity score**
3. Filter the highest scores and **manually validate** the result: one person validates, another person reviews. Further discussion and a third validator in case of disagreement.
4. Remove duplicates and consider the output skill as **obsolete**

Input Preferred Term	Input Description	ML Score	Output Preferred Term	Output Description
Accept criticism and guidance	Handle negative feedback from others and react openly to criticism, trying to identify in it potential areas for improvement.	0,97	Accept constructive criticism	React to valid and well-reasoned opinions about one's work in a positive manner.
		0,92	Demonstrate enthusiasm	Display great effort driven by an interest or enjoyment in work itself, in the absence of external pressures.
		0,92	Demonstrate consideration	Act in an understanding and supportive manner that is sensitive to others' needs and feelings.

Identify relations between skills and occupations

Goal: avoid orphan ESCO skills, i.e. skills not linked to any ESCO occupation

Methodology: analyse relation between ESCO skills and occupations in online vacancies, support by ML model

1. Dataset with **relations between skills and occupations** from the EURES platform (i.e. ESCO skills and ESCO occupation within the same job vacancy)
2. Set orphan skill as input and rank occupations based on their **frequency in the EURES vacancies & semantic similarity score**
3. Filter the highest frequencies and scores and **manually validate** the result: one person validates, one person reviews. Further discussion and a third validator in case of disagreement. Take in consideration other skills linked to the suggested occupations.
4. **Link the orphan skill** to the occupation

Input Preferred Term	Input Description	ML Score	Output Preferred Term	Frequency (#vacancies)
Implement a firewall	Download, install and update a network security system designed to prevent unauthorized access to a private network.	0,78	ICT network administrator	297
		0,73	ICT network architect	267
		0,61	Radio technician	1

Identify relations between skills

Goal: link new transversal skills to non-transversal skills

Methodology: analyse existing relations between ESCO skills and use ML model to detect appropriate matches with non-transversal skills

1. Build a **ML model trained on existing relationships** between ESCO skills
2. Set one new transversal skill as input, rank non-transversal skills based on the ML results and additional set of rules (e.g. existing relationships with other skills, etc.)
3. Filter the highest scores and **manually validate** the result: one person validates, one person reviews. Further discussion and a third validator in case of disagreement.
4. **Link the transversal skills** to non-transversal skills

Input Preferred Term	Input Description	ML Score	Output Preferred Term	Output Description
Participate actively in civic life	Actively engage in activities for the common or public interest such as civic, community or neighbourhood initiatives, volunteering opportunities and non-governmental organisations.	0,99	Raise awareness on local community's priorities	Intervene and implement programs or activities that raise awareness of issues relevant for the respective local community, such as social or economic inequality, gender issues, violence, and drug abuse.
		0,98	Promote inclusion in organisations	Promote diversity and equal treatment of genders, ethnicities and minority groups in organisations in order to prevent discrimination and ensure inclusion and a positive environment.
		0,98	Perform street interventions in social work	Conduct outreach activities by providing direct information or counselling services to individuals in their neighbourhood or in the streets, usually targeted at youth or homeless people.

Labelling green ESCO skills and knowledge concepts



STEP 1
Manual labelling



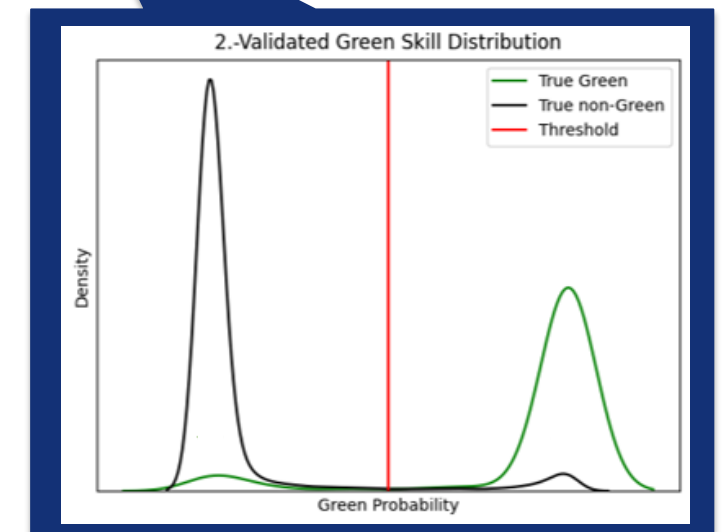
STEP 2
Machine learning classifier



STEP 3
Comparison and manual validation

The knowledge, abilities, values and attitudes needed to live in, develop and support a society which reduces the impact of human activity on the environment (Cedefop, 2012).

The training data is composed of text that describes activities considered as environmentally sustainable, polluting, or none of the two by official classifications, job vacancies, European or national legislation, and reports.



Work planned for future versions of ESCO

Identify potential NPTs for new occupations

- Enrich ESCO occupations with alternative labels that are used in the labour market

Improve the allocation of ESCO occupations in the hierarchy

- Quantify relations between occupations and compare with current ISCO mapping

Detect quality issues

- Conduct more advanced work to ensure correctness and representativeness of ESCO

Support experts comparing their suggestions to existing ESCO concepts

- Set up a collaborative environment to avoid the proposal of duplicates

Identify potential NPTs for new occupations

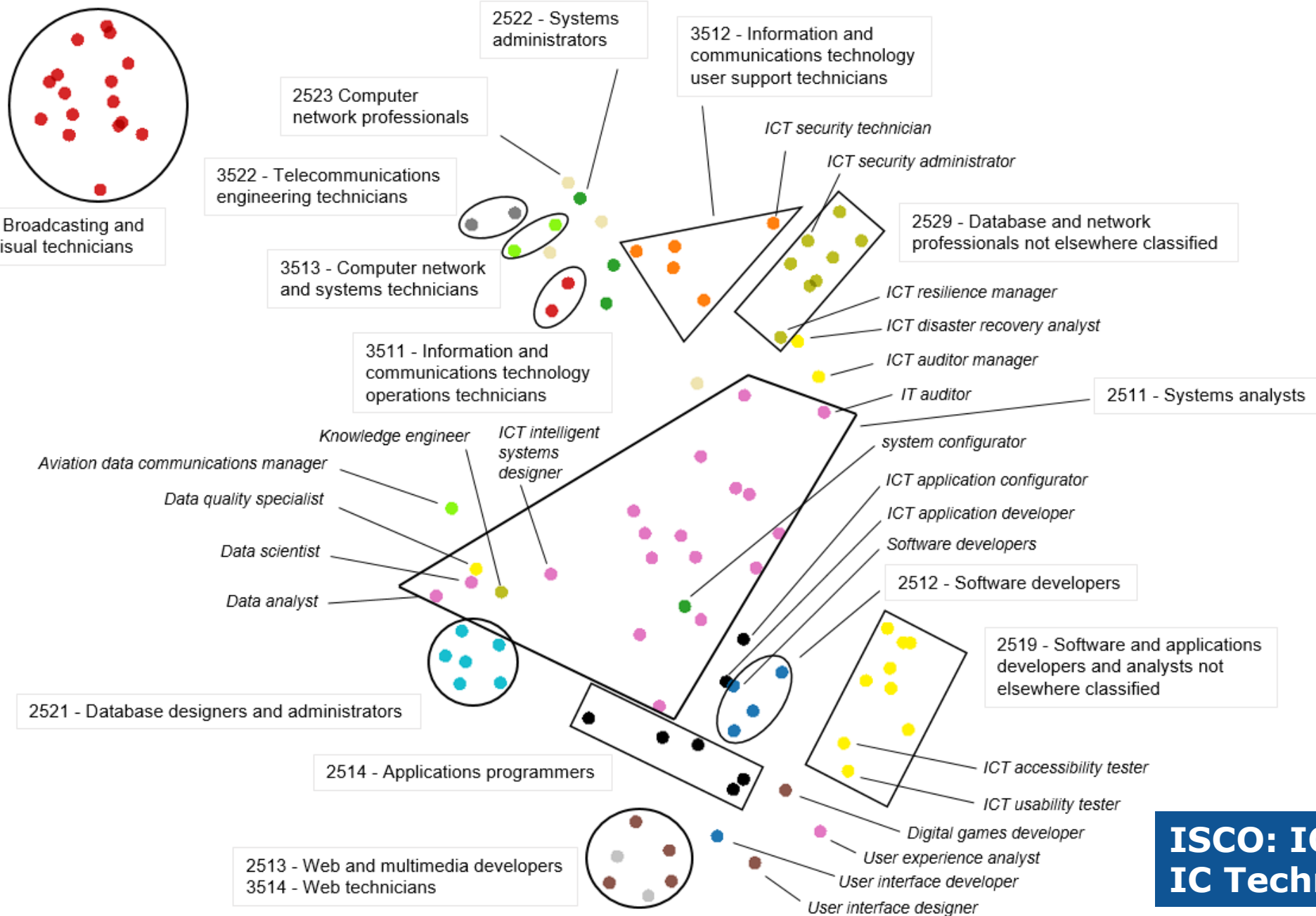
Goal: enrich ESCO occupations with alternative labels used in the labour market

Methodology: collect job titles from online vacancies and use ML model to detect similarities with ESCO occupations

1. Dataset of **job titles** from the EURES platform ([European cooperation network of employment services](#))
2. Set new occupation as input and rank EURES job titles based on **semantic similarity** score
3. Filter EURES job titles already suggested by experts
4. Filter the highest scores and **manually validate** the result: one person validates, one person reviews. Further discussion and a third validator in case of disagreement.
5. Include the job titles as **alternative labels** for the new ESCO occupation

Input Preferred Term	Input Description	ML Score	Output Preferred Term	Suggested by experts?
Mobility services manager	Mobility services managers are responsible for the strategic development and implementation of programs that promote sustainable and interconnected mobility options, reduce mobility costs and meet the transportation needs of customers, employees and the community as a whole such as bike sharing, e-scooter sharing, carsharing and ride hailing and parking management. [...]	0,95	Mobility manager	YES
		0,82	Mobility program coordinator	NO
		0,81	Campus mobility planning manager	NO

Improve the allocation of ESCO occupations in the hierarchy



Unit Group	Intra-cluster Dispersion	Inter-cluster Distance
2511	0.158	0.072
2512	0.043	0.159
2513	0.124	0.106
2514	0.114	0.110
2519	0.120	0.122
2521	0.025	0.199
2522	0.068	0.152
2523	0.081	0.153
2529	0.101	0.150
3511	0.016	0.216
3512	0.122	0.117
3513	0.138	0.101
3514	0.019	0.194
3521	0.116	0.213
3522	0.032	0.215

**ISCO: ICT Professionals/
IC Technicians Space**

Detect Quality Issues

Representativeness of job titles

- Ensure the inclusion of terms (e.g. job titles and alternative labels) that are used in the real world

ICT intelligent systems designer

[Discuss this topic in the Online Forum](#)

Code
2511.10
Description

ICT intelligent systems designers apply methods of artificial intelligence in engineering, robotics and computer science to design programs which simulate intelligence including thinking models, cognitive and knowledge-based systems, problem solving, and decision making. They also integrate structured knowledge into computer systems (ontologies, knowledge bases) in order to solve complex problems normally requiring a high level of human expertise or artificial intelligence methods.

Scope notes

Excludes people performing managerial activities.

Alternative label

AI system designer
linked data engineer, intelligent systems developer
semantic technologies engineer
designer of intelligent systems
machine learning systems designer
intelligent systems engineer
intelligent system designer
intelligent systems designers
artificial intelligence designer

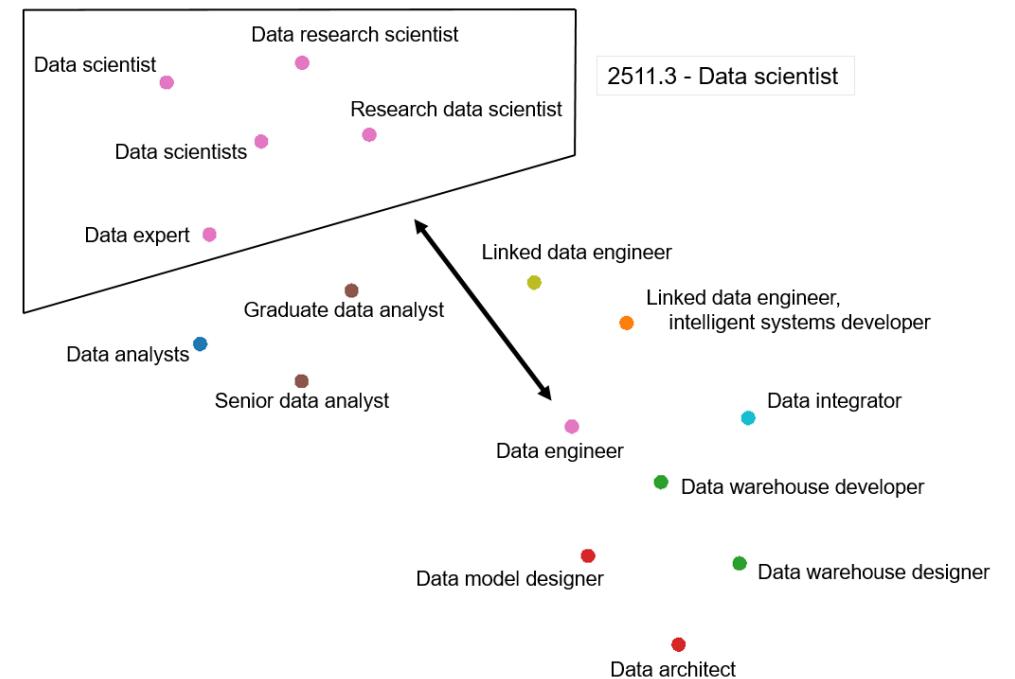
FREQUENCY IN ONLINE JOB VACANCIES

ICT intelligent systems designer	0
AI system designer	0
artificial intelligence designer	6

```
>>> _ = listClosestTerms(nearestGslTermPredictor, 50, 'AI system designer; artificial intelligence designer; machine learning systems designer; linked data engineer; semantic technologies engineer; intelligent systems engineer; intelligent system designer; intelligent systems designers; intelligent systems developer; designer of intelligent systems')
0.9841111157403566 machine learning researcher
0.9783286728602151 machine learning lead
0.9777773160659856 machine learning team lead
0.9773717894470939 data scientist - machine learning
0.9769597542242552 ai researcher - explainable ai (xai) - associate
0.962509922402417 artificial intelligence, manager - applied artif
0.9585450367401241 principal ai / ml strategist
```

Create or test clusters

- Identify similar occupations and investigate whether they are grouped properly



Support experts comparing external sources to existing ESCO concepts

Goal: assist experts providing tailored feedback to improve ESCO by comparing their suggestions with existing ESCO concepts

Methodology: use a ML model to match external sources such as descriptions of tasks in one occupation to the ESCO classification

1. Set one description as input and rank ESCO skills based on the **semantic similarity score**
2. Filter the highest scores and have experts or ESCO team **manually validate** result. Validations are reviewed and discussed.
3. Distinguish existing concepts from potentially new concepts
4. Potential starting point to create a new concept

Input Description	ML Score	Output Preferred Term
Determine energy saving potential regarding human behaviour	0,98	Analyse energy consumption
	0,97	Conduct energy audit
	0,96	Develop energy saving concepts

Related data science activities

Link learning outcomes to ESCO skills

- Map the description of learning outcomes from qualifications to ESCO

Build an ESCO-O*NET cross-walk

- Link the European and U.S. occupation classifications

Provide supporting materials and visual tools

- Offer additional insights and visualisations of ESCO

Link learning outcomes to ESCO skills

French qualifications → **Aptitudes ESCO**

Version: v1 | Version: 1.0.5

Filter...

- Attaché (e) commercial (e) Niv5
- Baccalaureat professionnel metiers de la coiffure Niv4
- Baccalaureat Technicien professionnel en prothèse dentaire Niv4
- Boulangier brevet de maîtrise Niv5
- brevet de technicien supérieur BTS opticien lunetier Niv5
- CAP conducteur d'ouvrage en béton armé niv3

Licence d'informatique

Concept identifier: 24514

Description: RNCP24514BC01 Identification d'un questionnement au sein d'un champ disciplinaire. Caractériser les techniques de gestion de l'aléatoire (probabilités dans le traitement de certaines données. Choisir, sur des critères objectifs, les structures de données et construire les algorithmes les mieux adaptés à la situation. RNCP24514BC02 Analyse d'un questionnement en mobilisant des concepts disciplinaires. -Analyser et interpréter les résultats produits par l'exécution des concepts fondamentaux de complexité, calculabilité, décidabilité, vérification ; -apprécier la complexité et les limites de validité d'une solution.

Learning Outcome Entities

- RNCP24514BC01 Identification d'un questionnement au sein d'un champ disciplinaire
- Situer son rôle et sa mission au sein d'une organisation pour s'adapter et prendre des initiatives
- Respecter les principes d'éthique, de déontologie et de responsabilité environnementale
- Travailler en équipe et en réseau ainsi qu'en autonomie et responsabilité au service d'un projet
- Analyser ses actions en situation professionnelle, s'autoévaluer pour améliorer sa pratique**

Map concept to French qualifications

Browse | API search | ML suggestions

mener une réflexion sur les pratiques

- + mener une réflexion sur les pratiques**
- A - attitudes et valeurs
- K - connaissances
- L - compétences et connaissances linguistiques

exercise self-reflection

English (en)

Description: Effectively, regularly and systematically reflect on own actions, performance, and attitudes, and make necessary adjustments, seeking professional development opportunities to plug knowledge and practice gaps in identified areas.

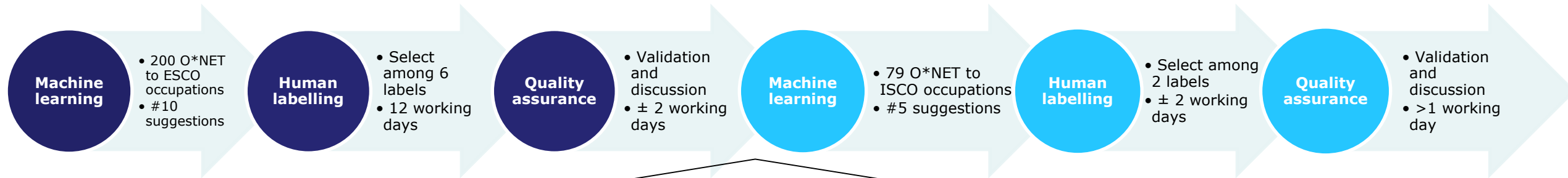
Alternative label: self-assess, self-evaluate, reflect on practice, conduct self-assessment, be able to engage in self-reflection, perform self assessment, perform self-evaluation, do self-assessment, perform self-assessment

Skill type: skill

Skill reusability level: transversal skills and competences

Broader skills/competences: T3.4 - demonstrating willingness to learn

Build an ESCO-O*NET cross-walk (Occupations)

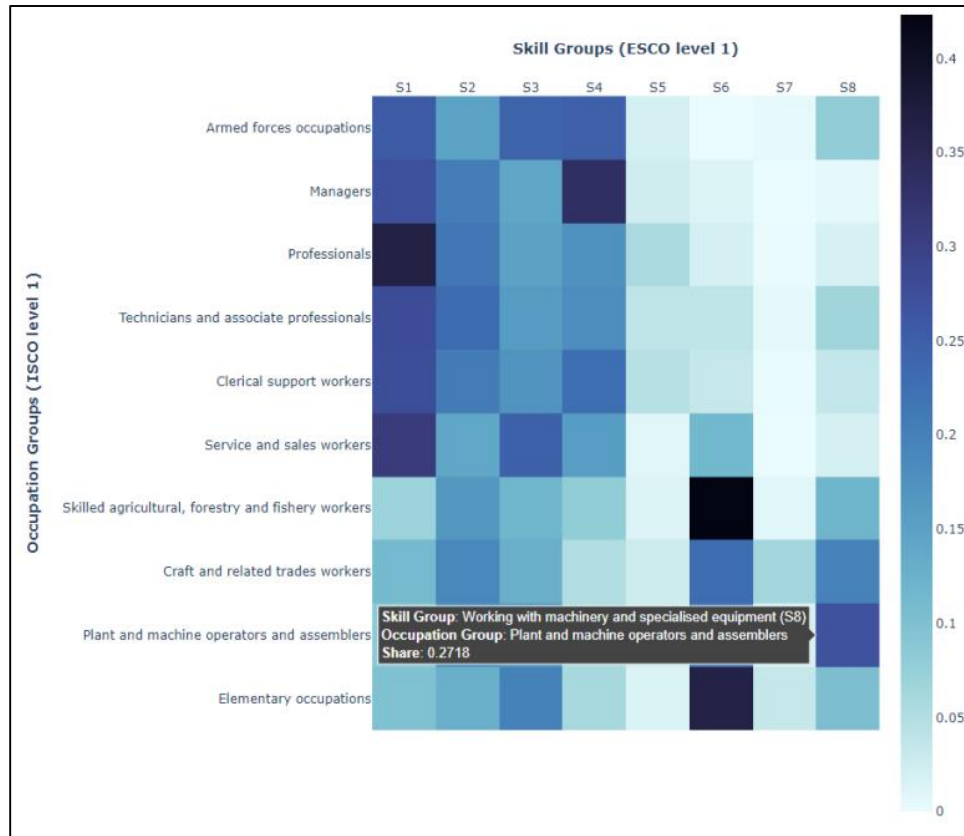


Foreign Language and Literature Teachers, Postsecondary

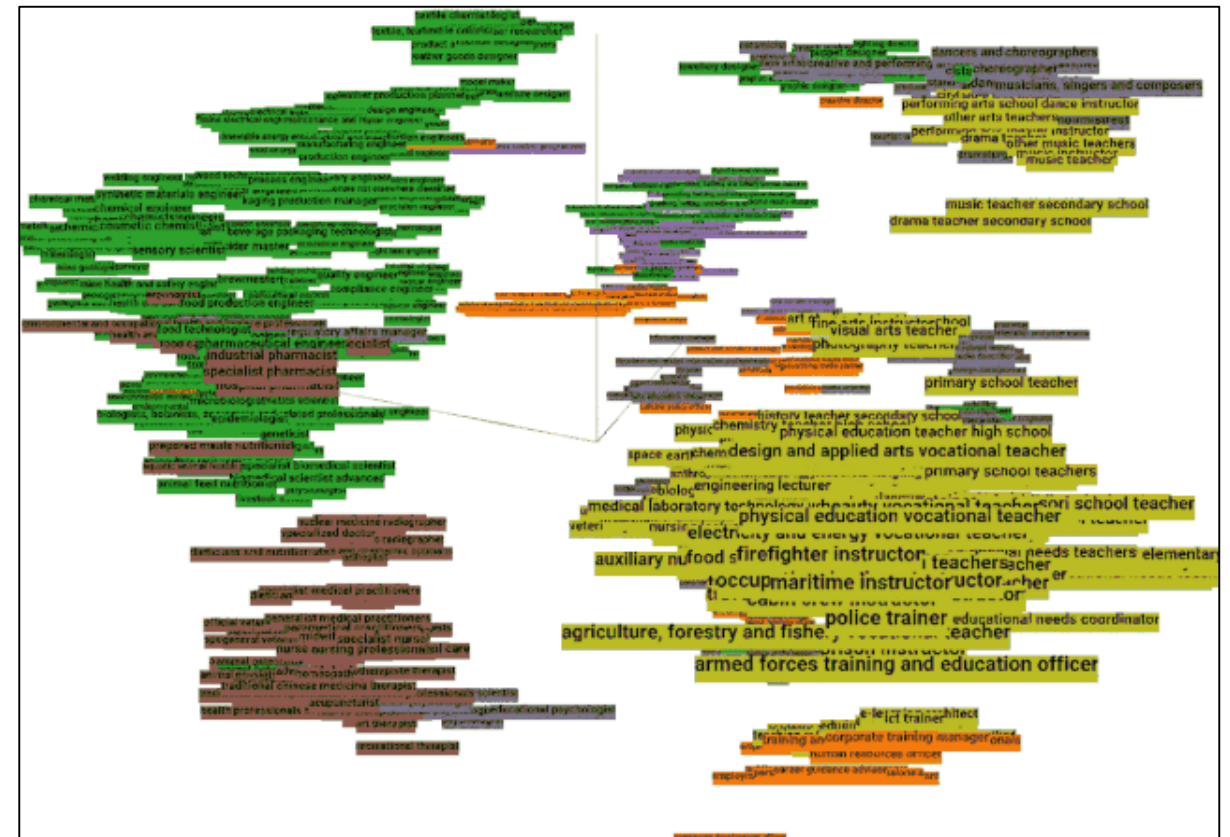
	A	B	C	D	E	F	G	H	I	J	K	L	M	N
	Id	ONET title	ONET description	ESCO concept match score	ESCO concept PT	ESCO concept ISCO	Past mapping	ESCO concept URI	Exact Match	Onet NARROWER than esco	Onet BROADER than esco	Close Match	Wrong Match	
52	19-403	Chemical Technicians	Conduct chemical and physical laboratory tests	0.9517837	chemistry technician	3111	[3111]	http://data.eur	x					
53	19-403	Chemical Technicians	to assist scientists in making qualitative and	0.9367534	chemical engineering technic	3116	[3111]	http://data.eur					x	
54	19-403	Chemical Technicians	quantitative analyses of solids, liquids, and	0.9364157	chemical tester	2113	[3111]	http://data.eur					x	
55	19-403	Chemical Technicians	gaseous materials for research and	0.9248056	analytical chemist	2113	[3111]	http://data.eur					x	
56	19-403	Chemical Technicians	development of new products or processes,	0.9146203	chemical application specialis	2113	[3111]	http://data.eur						x
57	19-403	Chemical Technicians	quality control, maintenance of environmental	0.9136518	chemist	2113	[3111]	http://data.eur					x	
58	19-403	Chemical Technicians	standards, and other work involving	0.9078607	scientific laboratory technicie	3141	[3111]	http://data.eur		x				
59	19-403	Chemical Technicians	experimental, theoretical, or practical	0.9051017	biochemistry technician	3141	[3111]	http://data.eur				x		
60	19-403	Chemical Technicians		0.8938918	chemical manufacturing qual	3116	[3111]	http://data.eur			x			

Provide supporting materials and visual tools

Skill – occupation matrix tables



Occupation embedding space



Synergies with other projects

EURES

- European cooperation network of employment services, designed to facilitate the free movement of workers

Member State mapping tables

- Creating a correspondence table between national classifications and ESCO

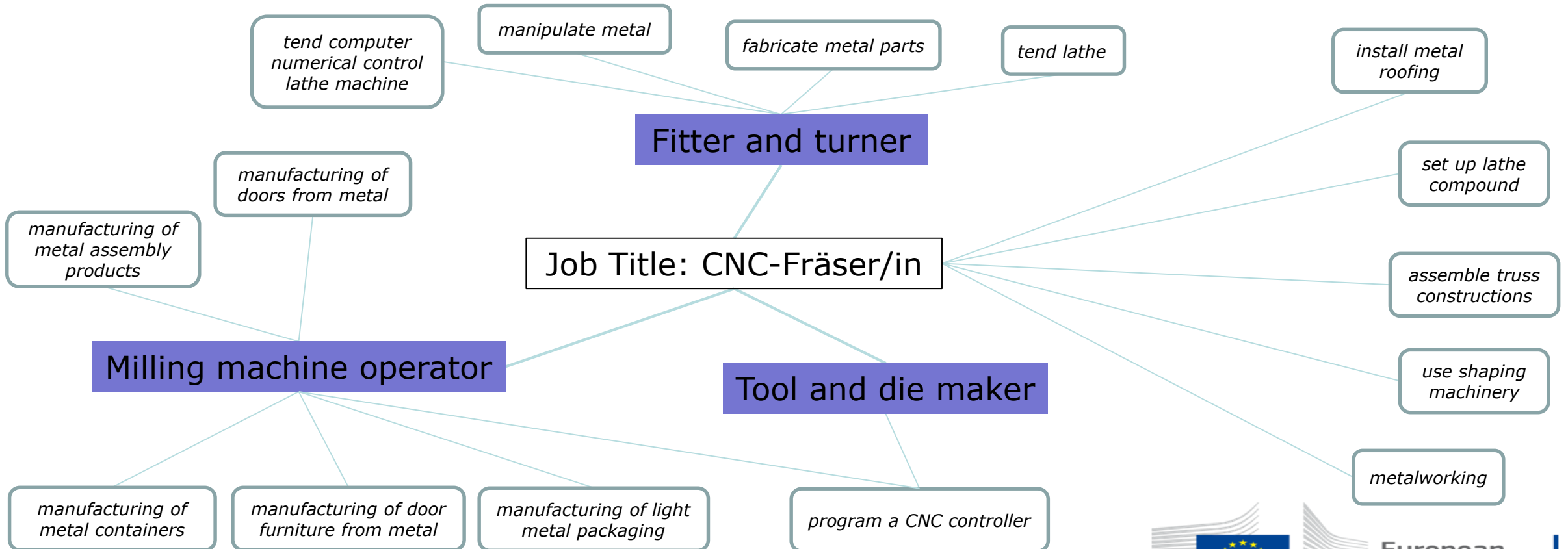
Europass

- Platform with free set of online tools and information that helps users to manage every step of their learning and career

EURES

Feedback on ESCO on a European scale from online job vacancies

We are a medium-sized metal construction company and **manufacture individual items, prototypes, tools and devices**. In July 2021 we will move into new company premises (easily accessible by public transport) and continue to expand our offer for our customers. To do this, we definitely need reinforcement in the team now. We are looking for you as a **CNC milling cutter**. Your task is to **manufacture individual pieces, prototypes, tools and devices using CNC milling**. The operation and **programming of our Heidenhain or Siemens controlled machines** is the focus of your **independent, responsible work**. The prerequisite is a completed vocational training in the **machining** sector or as a **tool mechanic** and thus initial basic experience in **programming CNC machines**. We are also happy to give career starters a chance. Basic knowledge: **metal construction, metalworking, turning**. Advanced knowledge: **CNC knowledge, CNC programming, milling**



Member State mapping tables

Connecting national classifications with ESCO

1	http://data.europa.eu/esco/occupation/bf89925d-00a1-4f94-ab3b-2148c887af33	detailhandelaar	Bedrijfsleider / ondernemer verkoop gedenkstenen	skos:narrowMatch
2	http://data.europa.eu/esco/occupation/d5eb6150-bbff-4a9c-9d0c-21eab4dbe2b6	restaurantmanager	Manager cateringbedrijf	skos:narrowMatch
3	http://data.europa.eu/esco/occupation/cb3b2662-774a-4e6f-841e-f120244d7031	sergeant	Onderofficier logistieke dienst verzorging (ldv) koninklijke marine	skos:broadMatch
4	http://data.europa.eu/esco/occupation/a79d9e58-36be-4e67-a4db-ea6c8ff445fc	afdelingsmanager detailhandel	Afdelingsmanager verkoop herenkleding	skos:narrowMatch
5	http://data.europa.eu/esco/occupation/8ec8df02-e9dd-43b7-b416-5846ae0414ab	vastgoedmakelaar	Verhuurmedewerker woondiensten	skos:narrowMatch
6	http://data.europa.eu/esco/occupation/664f7498-8e4b-48f8-9fe2-436a692f1204	manager detailhandel muur- en vloerbekleding	Afdelingsmanager verkoop woningtextiel en vloerbedekkingen	skos:narrowMatch
7	http://data.europa.eu/esco/occupation/810e5e67-acd5-499a-b307-cf5bea330859	ict information manager	Hoofd informatievoorziening en automatisering	skos:exactMatch
8	http://data.europa.eu/esco/occupation/d792974a-077b-44a7-9421-b3ab7fdc7c40	operator persmachine	CNC-forceur	skos:broadMatch
9	http://data.europa.eu/esco/occupation/9e81adde-9983-44fa-b74b-c548d0dbfbbd	winkelmanager	Bedrijfsleider / ondernemer verkoop parket en laminaat	skos:closeMatch
10	http://data.europa.eu/esco/occupation/544cd9cf-e2ee-4ac0-8a02-7147af6b97d7	manager bedrijfseenheid	Algemeen directeur	skos:broadMatch
11	http://data.europa.eu/esco/occupation/cb3b2662-774a-4e6f-841e-f120244d7031	sergeant	Marechaussee	skos:narrowMatch
12	http://data.europa.eu/esco/occupation/aa9c6416-6a17-4e2f-a7c4-6d47c205d480	verkoopspecialist zorgartikelen en -hulpmiddelen	Verkoopspecialist zorgartikelen en -hulpmiddelen	skos:exactMatch
13	http://data.europa.eu/esco/occupation/0a5356bc-7f81-4e40-971d-c1dc789c5fb4	nanny	Kinderoppas particulieren	skos:exactMatch
14	http://data.europa.eu/esco/occupation/731ecac4-06e8-4ec2-a559-101fecbd9183	medewerker huishoudelijke dienst	Huishoudelijk medewerker (hotel, instelling)	skos:broadMatch
15	http://data.europa.eu/esco/occupation/3cc87d40-f402-4f57-9353-4b36a031cfc5	verhuurmedewerker autoverhuurbedrijf	Verhuurmedewerker autoverhuurbedrijf	skos:exactMatch
16	http://data.europa.eu/esco/occupation/0368c4d4-94cf-4168-a84d-283a25880e0d	manager metaalproductie	Manager metaalbewerkingsbedrijf / constructiebedrijf	skos:narrowMatch
17	http://data.europa.eu/esco/occupation/771955d9-e988-47f3-b60f-207adb2cd571	manager recreatie-accommodatie	Manager recreatie-accommodatie	skos:narrowMatch
18	http://data.europa.eu/esco/occupation/a9068f84-cecd-4cbb-9acb-e20c714435ec	betonafwerker	Betonreparateur	skos:narrowMatch
19	http://data.europa.eu/esco/occupation/c6a26e11-bdf1-47a1-849d-fdcf819d458d	officier	Officier vlieger en loadmaster koninklijke luchtmacht	skos:broadMatch
20	http://data.europa.eu/esco/occupation/c6e5e0e7-fa99-4f71-9fc1-9889d85282a5	generaal	Marechaussee	skos:narrowMatch
21	http://data.europa.eu/esco/occupation/0ab64770-9fd7-4baf-8abf-b1ac0e1538ba	bediener hydraulische smeedpers	Metaalperser	skos:narrowMatch
22	http://data.europa.eu/esco/occupation/9ba74e8a-c40c-4228-9998-eb3c7a5c11df	verkoopmedewerker	Verkoopmedewerker boeken, tijdschriften en kantoorartikelen	skos:narrowMatch
23	http://data.europa.eu/esco/isco/C1323	Leidinggevende functies in de bouwnijverheid	Bedrijfsleider / ondernemer kabel- en leidinginfra	skos:narrowMatch
24	http://data.europa.eu/esco/occupation/e9cf8b24-6b8b-47cc-9dd3-b601aa135960	functionaris van een belangengroep	Bestuurder sportbond	skos:narrowMatch
25	http://data.europa.eu/esco/occupation/02d4f153-8e43-444d-8bd4-8171d49eab12	werktuigkundige aandrijvingen	CNC-draaier (inclusief programmeren)	skos:broadMatch
26	http://data.europa.eu/esco/occupation/bbd1fe06-1b55-4937-9317-fc162311ab38	brigadegeneraal	Marechaussee	skos:narrowMatch
27	http://data.europa.eu/esco/occupation/985400a7-362f-4f91-941a-2e149d94ac2a	biersommelier	Medewerker bediening horeca (luxe restaurant)	skos:broadMatch
28	http://data.europa.eu/esco/occupation/068c2787-58ff-468e-bbb6-c4e5dd6ee482	raadgevend actuaris	Actuaris	skos:exactMatch
29	http://data.europa.eu/esco/occupation/94e0bedd-e56e-42be-a5a4-b74a260f437c	afdelingsmanager	Afdelingsmanager verkoop elektrotechnische artikelen en apparaten	skos:narrowMatch
30	http://data.europa.eu/esco/occupation/6e8917c8-d883-4475-954c-ec241215ca18	manager fotowinkel	Bedrijfsleider / ondernemer verkoop fotografische artikelen	skos:exactMatch
31	http://data.europa.eu/esco/occupation/6426ada1-4d8c-4612-99e3-91bc569805ee	productiemanager	Chef textielindustrie	skos:narrowMatch
32	http://data.europa.eu/esco/occupation/5779aa3b-b32f-42f7-9581-ef5ce2092621	verkoopmanager vlees en vleeswaren	Bedrijfsleider / ondernemer verkoop vlees en vleeswaren	skos:exactMatch
33	http://data.europa.eu/esco/occupation/64e38ce7-3901-4261-bfee-77c7a77397f2	beleidsverantwoordelijke	Manager organisatieadviesbureau	skos:narrowMatch

Europass

Feedback on ESCO on a European scale from millions of 'experts'

Suggestions

think analytically work as a team develop strategy to solve problems use microsoft office

work in an international environmen... use online communication tools create solutions to problems

think creatively project management prioritise tasks use presentation software

My Skills

Edit mode View mode

Information skills

Analysing and evaluating information and data
apply statistical analysis techniqu...

Calculating and estimating
execute analytical mathematical cal...

Documenting and recording information
report analysis results

Processing information
process data

Working with computers

Accessing and analysing digital data
analyse big data | perform data analysis | perform data mining

Programming computer systems
utilise machine learning

Work experience

Describe all your work experiences. You can include paid work, volunteering, internships, apprenticeships, freelancing and other activities.

New work experience

Occupation or position held

Data

- Data scientist
- Data analyst
- Data centre operator
- Data entry supervisor
- Data entry clerk
- Data warehouse designer
- Data quality specialist

Ongoing

Main activities and responsibilities

Describe your tasks and responsibilities.

Digital skills

List your digital skills here and group them.

Digital skills

Q MXnet Add

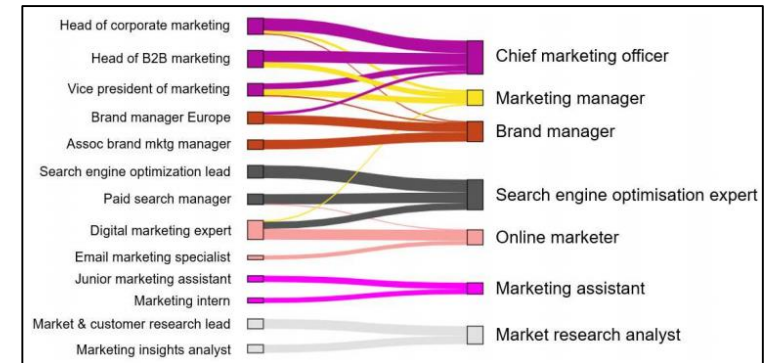
- Tensorflow,Keras,Pytorch,MXnet, Chainer, Theano
- Mxnet
- MXNet
- python pandas seaborn sklearn cvxpy mxnet
- PyTorch,Chainer,MXNet
- Pytorch, Tensorflow, Keras, Horovod, ONNX, TensorRt, MXNet.
- MxNet

Add to your digital skills from the list below. Click on the skill and drag it to the left.

- Microsoft Word
- Microsoft Excel
- Microsoft Office
- Microsoft Powerpoint
- Outlook
- Google Drive

Thank you!

The ESCO Secretariat is always available to support implementers. May you have any question, please contact us via email at EMPL-ESCO-SECRETARIAT@ec.europa.eu, use our hashtag #ESCO_EU and join our [online forum](#).



13.04.2021

ESCO Skill-Occupation Matrix Tables: linking occupation and skill groups

ESCO Skill-Occupation Matrix Tables
A new look into how ESCO skill groups can be connected to aggregated levels of occupations

As the number of ESCO implementers increases, the range of uses of the classification is widening. The European Commission aims to illustrate how ESCO concepts can be connected and used. With the new ESCO Skill-Occupation Matrix Tables, the Commission is showcasing potential interrelations based on the ESCO skills and occupations structures.

10.05.2021

Leveraging Artificial Intelligence to update the ESCO Occupations Pillar

Mission	Activity	Challenge	Response
ESCO needs to be up-to-date with current labour market dynamics	Continuous analysis, processing and comparison with external data	Data sources use different terms for similar meanings; the terminology needs to be aligned	Computational models that use semantic similarities to map external text to ESCO occupations

In the [previous news article](#), we showed the potential of using artificial intelligence (AI) to gain additional insights for existing occupations and occupation groups of the ESCO taxonomy. In this article, we will focus on the challenges related to the **update of ESCO**.

26.04.2021

Leveraging Artificial Intelligence to maintain the ESCO Occupations Pillar

Leveraging Artificial Intelligence

To maintain the ESCO Occupations Pillar

01 —

- COMPARE THE DISTRIBUTION OF OCCUPATIONS BETWEEN ISCO GROUPS
- COMPARE THE DISTRIBUTION OF OCCUPATIONS WITHIN ONE ISCO GROUP
- COMPARE THE DISTRIBUTION OF ALTERNATIVE LABELS

Today we release the first of a series of articles that outlines how artificial intelligence (AI) assists in the process of maintaining ESCO. The maintenance of an occupations and skills taxonomy like ESCO is a challenging and labour-intensive process. With this series of articles, the European Commission aims to provide more information on the ongoing work and practices adopted to ensure the consistency of the ESCO pillars and the accuracy of relations across occupations and skills.