

TRAILS

**Enabling Data Analytics for Actions
Tackling Skills Shortages & Mismatch**

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REVIEW II – Innovative initiatives for tackling skills shortages and mismatch in Europe

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Dr Anna Van Cauwenberge	IPSOS	July 25, 2024
Rihab, Guesmi	SKILLAB	July 26, 2024

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Executive Summary

Deliverable “D1.2 Innovative initiatives for tackling skills shortages and mismatch in Europe” is produced within the scope of the first working package in the Horizon Europe project “TRAILS - Enabling data analytics for actions tackling skills shortages & mismatch”. This deliverable lists 92 initiatives at the regional, national, EU, and international levels and discusses their relevance and possible links to TRAILS. The presented initiatives use digital applications (online platforms, digitalised aspects) to promote upskilling. In this way, the potential gaps in current regional, national and international initiatives to tackle skills shortages are outlined and TRAILS potential role is highlighted. It also reviews other related EU-funded projects and proposes avenues for cooperation.

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Glossary

Term	Explanation	Definition Link
Adult education and training/ adult learning	<p>Formal or non-formal learning – of a general or vocational nature – undertaken after initial education and training to:</p> <ul style="list-style-type: none"> - acquire general education in topics of particular interest (e. g. in open universities); - acquire core skills not acquired earlier during initial education or training, such as literacy, numeracy – this is called compensatory learning – and thus to; - gain access to qualifications not obtained, for various reasons, during initial education and training – this is called second chance education; - improve or update knowledge and skills (upskilling); - acquire new skills for a career move (retraining / reskilling); - ensure social integration (e.g. language courses for migrants). 	https://www.cedefop.europa.eu/en/tools/vet-glossary/glossary?letter=A
e-CF	<p>The European e-Competence Framework (e-CF) classifies 40 competences for the ICT professionals. Competences in the e-CF are organised according to five ICT business areas and related to the European Qualifications Framework (EQF).</p>	https://esco.ec.europa.eu/en/about-esco/escopedia/escopedia/european-e-competence-framework-e-cf
ELA	<p>European Labour Authority</p>	Home European Labour Authority (europa.eu)

<p>ESCO</p>	<p>ESCO (European Skills, Competences, Qualifications and Occupations) is the European multilingual classification of Skills, Competences and Occupations. ESCO works as a dictionary, describing, identifying and classifying professional occupations and skills relevant for the EU labour market and education and training. Those concepts and the relationships between them can be understood by electronic systems, which allows different online platforms to use ESCO for services like matching jobseekers to jobs on the basis of their skills, suggesting trainings to people who want to reskill or upskill etc. ESCO provides descriptions of 3008 occupations and 13.890 skills linked to these occupations, translated into 28 languages (all official EU languages plus Icelandic, Norwegian, Ukrainian, and Arabic). The aim of ESCO is to support job mobility across Europe and therefore a more integrated and efficient labour market, by offering a “common language” on occupations and skills that can be used by different stakeholders on employment and education and training topics. ESCO is a European Commission project, run by Directorate General Employment, Social Affairs and Inclusion (DG EMPL). It is available in an online portal and can be consulted free of charge. Its first full version (ESCO v1) was published on the 28th of July 2017.</p>	<p>https://esco.ec.europa.eu/en/classification/skill_main</p>
<p>EU Taxonomy</p>	<p>The EU Taxonomy is a classification system that helps companies and investors identify “environmentally sustainable” economic activities to make sustainable investment decisions. Environmentally sustainable economic activities are described as those which “make a substantial contribution to at least one of the EU’s climate and environmental objectives, while at the same time not significantly harming any of these objectives and meeting minimum safeguards.”</p>	<p>https://ec.europa.eu/sustainable-finance-taxonomy/</p>
<p>EURES</p>	<p>The European employment services (EURES)</p>	<p>https://eures.europa.eu/index_en</p>

O*NET	The Occupational Information Network, used as an acronym for the US national occupational taxonomy	https://www.onetcenter.org/overview.html
Retraining / reskilling	Training enabling individuals to acquire new skills giving access either to a new occupation or to new professional activities.	https://www.cedefop.europa.eu/en/tools/vet-glossary/glossary?letter=R#glossary-150299
RIASEC	The Holland Codes or the Holland Occupational Themes refers to a taxonomy of interests based on a theory of careers and vocational choice that was initially developed by American psychologist John L. Holland.	
ROT and RUT work	A person who hires you to do ROT (Repairs, Conversion, Extension) or RUT (Cleaning, Maintenance and Laundry) work may get a tax reduction – a ROT or RUT deduction for the labour cost. Material costs and travel expenses arising in connection with the work do not confer entitlement to ROT and RUT tax deductions. Work performed for a person you are related to does not entitle to ROT or RUT deduction.	The Swedish Tax Agency https://skatteverket.se/service/otherlanguages/inenglishengelska/businessesandemployers/startingandrunninggaswedishbusiness/declaringtaxesbusinesses/rotandrutwork.4.8dcbbe4142d38302d793f.html
Skills mismatch	Situation of imbalance between the skills – and qualifications – possessed by the workforce (supply) and those needed by the labour market (demand). Comment: Skills mismatch can take different forms: skill shortage: the demand for a particular type of skills exceeds the supply of the workforce with these skills; skill surplus: the supply of the workforce with a particular type of skills exceeds demand in the job market; skill gap: the type or level of skills of the workforce does not match demand in the job market; skills obsolescence: the skills of the workforce are outdated for performing a job adequately – or no longer needed; overskilling: the workforce has more skills than required to perform a job adequately; underskilling: the workforce has less skills than required to perform a job adequately; horizontal mismatch (inadequate qualification): the	https://www.cedefop.europa.eu/en/tools/vet-glossary/glossary?letter=U

	type or field of education of the workforce is inappropriate; vertical mismatch (overqualification or underqualification): the workforce holds a higher/lower qualification than required;	
Upskilling	Short-term targeted training typically provided following initial education or training, and aimed at supplementing, improving or updating knowledge, skills and competences.	https://www.cedefop.europa.eu/en/tools/vet-glossary/glossary?letter=U
Vocational Education and Training (VET)	<p>Learning which aims to acquire knowledge, know-how, information, values, skills and competences – either job-specific or transversal – required in specific occupations or more broadly on the labour market.</p> <p>VET covers initial vocational education and training, continuing vocational education and training at secondary, post-secondary and higher levels.</p>	https://www.cedefop.europa.eu/en/tools/vet-glossary/glossary?letter=U

1. Introduction

Throughout the EU, there are persistent labor shortages across various skill levels (European Commission, 2023). The 2023 Employment and Social Developments in Europe report (ESDE, 2023) indicates that these shortages are particularly prevalent in the fields of construction, healthcare, science, technology (especially ICT), engineering, and mathematics (STEM) across all skill levels. As we look to the future, shortages in both high-skill and low-skill occupations are expected to persist due to an aging population and the advancement of green and digital initiatives. These shortages are often attributed to inadequate numbers of workers with highly specialized skills, such as those in STEM occupations, including ICT. Additionally, in some fields, shortages may be worsened by shifting skill and job requirements.

In this context, TRAILS aims to present an overview in D1.2 "Initiatives to address skills shortages" to comprehend how global, national, and regional entities are addressing prevalent skills mismatches. This report presents a range of initiatives to address skills gaps, focusing on geographic scope: local, national, EU, and international projects (within and beyond the EU). Each chapter highlights initiatives, providing an analysis of their perceived strengths within the framework of the TRAILS project.

Purpose of the deliverable

Deliverable D1.2 is part of WP1, “State-of-the-art, research and tools requirements”. WP1 is dedicated to reviewing related literature and best practices regarding skills mismatch and the relevant labour economics field. It will also set the ground for exploring other initiatives and EU-funded projects to maximize the project's overall impact. Lessons learned, and best practices will contribute to effectively combining theoretical work with empirical applications and policy implications. It will also specify the framework of the analysis to be conducted in the TRAILS project.

Relation with other deliverables and tasks

D1.2 relates to T1.2, “TRAILS initiatives for tackling skills shortages and mismatch in Europe.” With data analytics and technological applications becoming widespread in recent years, this task will review important initiatives that use digital applications to promote upskilling and awareness for citizens’ active engagement. It will also review other related EU-funded projects and seek ways for active collaboration and knowledge exchange. The overall objective of this Task is to form ideas so that subsequent experimentations in the project are well-targeted and effectively contribute to new insights for policy making.

Methodology of the deliverable and key definitions

D1.2 is led by the European Association of Regional and Local Authorities for Lifelong Learning (EARLALL). They launched D1.2 in March 2024 with an online kick-off to present the proposed table of contents and data collection distribution. The following methodology and timeline were agreed upon during the online meeting:

1. Partners agreed on creating a shared Excel file where they could submit best practices selected
2. The deliverable's table of contents was decided upon based on the project application guidelines and included regional, national, EU, and international initiatives.
3. Partners agreed on the information to be gathered for each initiative: name, scope, target audience, input required from the user, why it was selected and potential for TRAILS to work with or build upon.
4. Partners were allocated a specific geographic scope (regional, national, EU or international) based on consultation with them and self-proposed areas of expertise.
5. Project-specific deadlines were set.

Each partner was tasked with proposing initiatives pertinent to their work in TRAILS or relevant to their partners and networks. Each proposed initiative in the shared file had to be accompanied by a justification from the partner proposing it, outlining its relevance to specific aspects of TRAILS. This approach was taken to promote a more comprehensive approach to data collection and to necessitate a thorough analysis of the choices made.

When putting the entries of initiatives into this current deliverable, the author complemented initiatives proposed with further initiatives that increased geographical spread (particularly at the national level) and reference to key EU documents and resources, including CEDEFOP, EU Talent Pool and Europass, and other international recruiting solutions such as Manpower. This ensures that the document also refers to the current European framework that strongly shapes the funding and outcomes of TRAILS. In practice, certain countries were overrepresented in the collected initiatives by partners alone. In some cases, some initiatives with similar elements in the same country were omitted, and the author added further initiatives from different countries.

Once gathered per geographic scope (National, regional, EU and international), the initiatives were further classified according to themes with the highest recurrence which are also relevant for the WPs of TRAILS. For example, from the 40 initiatives at the national level gathered, it was observed that the three main recurring themes in terms of frequency were initiatives that use AI, matching individuals and companies, and providing digital skills. In each chapter, the groupings of frequent themes are different, which helps to paint the landscape of initiatives available in these specific geographic fields. As this current deliverable aims to provide input to ensure TRAILS addresses the gaps in these initiatives, the frequency groupings allow readers to interpret these gaps more easily. Of course, the risk is that the overall sub-chapter groupings do not cover all themes. Still, explaining each example included and “relevance for TRAILS” should ensure that all initiatives and their potential value are properly justified.

Defining Initiatives for Skills Mismatch

The initiatives laid out in D1.2 focus on tackling 'skills mismatch,' where 'skills mismatch' refers to an imbalance between the skills and qualifications possessed by the workforce (supply) and those needed by the labour market (demand) (CEDEFOP, 2024). Skills mismatch can take different forms:

- **Skill Shortage:** The demand for a particular type of skill exceeds the supply of the workforce with these skills.
- **Skill Surplus:** The supply of the workforce with a particular type of skill exceeds demand in the job market.
- **Skills Obsolescence:** The workforce's skills are outdated for performing a job adequately or are no longer needed.
- **Overskilling:** The workforce has more skills than required to perform a job adequately.
- **Underskilling:** The workforce has fewer skills than required to perform a job adequately

Moreover, an initiative is defined as a new plan or process to better match skills and job requirements. Hence, the present deliverable presents plans, processes, and projects that aim to solve the imbalance between skills and job requirements within a given target group. D1.2 considers initiatives where users are asked to input data into the platform.

2. Initiatives at the National Level

Below, we list 40 European initiatives at the national level that tackle skills mismatch—where national implies initiatives that have an impact in various territories in a national country. We looked at the recurring themes among these initiatives and grouped them into three groups of national initiatives: 1) initiatives that use AI or skills forecasting methods and 2) initiatives that tackle digital skills gaps. These categories were selected as they are relevant to the potential research questions of TRAILS and its outcomes.

Initiatives that use AI or skills forecasting methods

The following initiatives use AI or other methodologies to measure or assess workers' skills in order to provide information on upskilling skills needs in national contexts. One of the challenges TRAILS seeks to overcome is to develop a comprehensive and integrated skill profiling toolkit for employees, harnessing AI technology. This real-time dataset powered by AI will help empower employees to successfully navigate the labour market and increase employee and employer awareness regarding VET and adult learning to meet skills needs.

From the selection of national practices, we can highlight Edu2Work Armenia for its relevance to the methodology and outcomes of TRAILS. UKAID developed the project, the British Embassy in Yerevan

as well as the United Nations. It is a platform designed in response to the rapidly changing labour market and the continuous mismatch between the demand and supply of the workforce in Armenia. The platform brings insights from the analysis of thousands of job postings. It helps understand the Armenian labour market so job searchers, researchers and VET students can make informed career choices.

Edu2Work has a wide range of target users, including students, policy-makers, researchers and EU institutions. Edu2Work results from a research project aiming at realizing the full potential of data and behavioural insights to ensure evidence-based policy-making for bridging the gap between education and the labour market. The project methodology included data scraping, professional analysis, skill analysis, industry and employer analysis, educational analysis, input from VET centers, and matching with the help of machine learning and a forecasting model. These elements are also areas of research that the TRAILS project aims to explore.

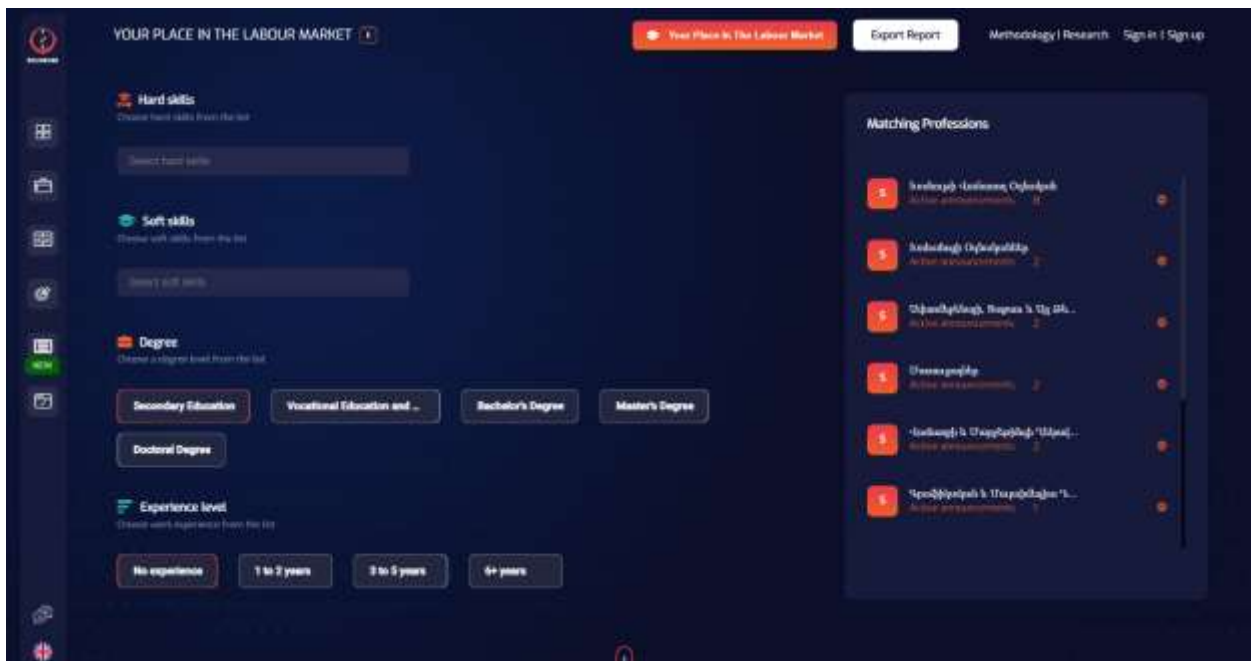


Figure 1 Edu2Work Dashboard (Edu2Work, 2024)

Name:	A1 Map of Jobs and Skills, Croatia
Website:	External Link
Description:	For the first time in Croatia, the site uses AI to build an interactive Skills Map for the jobs of the future. It was built by an expert team of 30 scientists, professors, managers, and experts from different industries. The map allows users to choose an industry and choose education options.

Target Group:	Citizens; job-seekers
Scope:	Croatia
Types of information collected:	Occupations of the future; Occupations in decline; technical skills; business skills; soft skills; additional skills
Public or private:	Private
Reason for selection & areas of success or improvement	<p>The site is user-friendly and provides a comprehensive skills breakdown per position per sector. It also uses AI.</p> <p>The site provides information for future occupations and occupations in decline. This is important for forecasting and could be an added benefit in TRAILS on a larger scale. Each profile is also split into 4 types of skills, which is a good way to break down users' learning goals.</p>

Name:	AUCyber Explorer, Australia
Website:	External Link
Description:	This interactive tool tracks the state of the Australian cyber security job market, providing data about job supply and demand and career pathways.
Target Group:	employees; citizens; students; employers; governments; researchers; education providers; career counsellors
Scope:	Australia
Types of information collected:	job openings; employment projections; geographic concentration of jobs; skills; workforce projections
Public or private:	Public
Reason for selection & areas of success or improvement	It is a data-driven tool that uses information from national and private organizations to provide a deep insight into the cyber security sector. The tool pulls all the information from national or private sources that collect data by surveying or scraping. The tool could also offer an option for users to create profiles and provide their data, which could also provide some additional information on the sector's supply and demand. However, it is limited to one sector only.

Name:	Edu2Work, Armenia
Website:	External Link
Description:	Edu2Work is a platform designed in response to the rapidly changing labour market and continuous mismatch between the demand and supply of the

	<p>workforce in Armenia. The platform provides insights from the analysis of thousands of job postings and helps to better understand the Armenian labour market so that everyone can make informed career choices.</p> <p>The platform combines innovative technologies, such as scraping online job postings from a wide variety of commercial websites and analysing them through machine learning technology, to bring you the best labour market data available.</p>
Target Group:	Students; job-seekers; policymakers and researchers; universities; educational institutions
Scope:	Armenia (116,000 job offers since the history of the platform)
Types of information collected:	Job posting scraping; professions; skills; professions requested in the industry; demanded education level for employers; Vocational and Educational Training skills; job offers; skills forecast; occupations in decline
Public or private:	Private
Reason for selection & areas of success or improvement	This project is easy to use, available in English and Armenian and explains the target users well. the skills forecasting is linked to VET and also uses machine learning. It could be very interesting to contact the creators regarding this platform, especially regarding their machine learning and scraping. It highlights needs and allows you to find "your place in the labour market", to assess your opportunities.

Name:	Headai, Finland
Website:	External Site
Description:	It is a company mapping skills needs and provision in Finland to benefit the public and private sectors.
Target Group:	jobseekers; employees; enterprises
Scope:	Finland
Types of information collected:	skills
Public or private:	Private
Reason for selection & areas of success or improvement	It uses artificial intelligence (AI) methods to match the labour market supply with labour market demand skill needs. It leverages artificial intelligence to analyse data on skills' supply and demand across different sectors, which is very interesting for TRAILS, which could develop a similar analysis within a broader context.

Name:	Jobindex, Denmark
Website:	External Site
Description:	Jobindex is a National/international digital platform for job seekers and employers It covers not only Denmark but also Bornholm, Greenland, the Faroe Islands, and Skåne in South Sweden- The cities Malmö in Sweden and Copenhagen in Denmark belong to the Øresund Region known as the Greater Copenhagen Region.
Target Group:	jobseekers; employers
Scope:	Denmark Sweden and other countries
Types of information collected:	Skills; employment; courses,
Public or private:	Public
Reason for selection & areas of success or improvement	Jobindex is Denmark's largest job site. It provides the most complete overview of job vacancies in Denmark. With over 30,000 job ads, more than 100,000 CVs and approx. 500,000 unique users every month, Jobindex is Denmark's biggest job market. At the same time, it is users' job market and companies' recruitment partners.

Name:	Mechanism for Labour Market Diagnosis, Greece
Website:	External Site
Description:	The mechanism's primary objective is to regularly provide accurate labour market data at sectoral, occupational, and regional levels to support the development of labour market policies and inform stakeholders. This includes offering reliable insights into employment trends, occupational dynamics, unemployment demographics, and entrepreneurial activities to aid in designing policies related to employment, economic development, and education and training. Furthermore, the mechanism facilitates ongoing skills anticipation exercises by establishing feedback loops between vocational education and training (VET) providers and evolving labour market needs. Its outputs mainly consist of datasets focusing on occupations and sectors at national and regional levels.
Target Group:	VET schools; PES; regional and local authorities; job-seekers
Scope:	Greece
Types of information collected:	skills; occupations; professions; jobs

Public or private:	Public
Reason for selection & areas of success or improvement	CEDEFOP has chosen this particular example for inclusion in its directory of national initiatives aimed at addressing skills shortages. It operates at the national level and focuses on skills forecasting. The mechanism provides access to data regarding the dynamic nature of different occupations at the national, regional, and sub-regional levels and information on skill levels based on the ISCO taxonomy. Stakeholders such as VET providers and policymakers can utilize this information to formulate plans for further upskilling or reskilling that align with the needs of the labor market. This could be of interest to TRAILS due to its strong connections to VET.

Name:	My World of Work, Scotland
Website:	External Link
Description:	National platform in Scotland, aimed particularly at developing career management skills
Target Group:	citizens; jobseekers; students
Scope:	Scotland (around 1,5 million users a year)
Types of information collected:	skills; work experience; interests; employment projections; working conditions; courses
Public or private:	Public
Reason for selection & areas of success or improvement	This is a career information and advice website developed by the Scottish national skills agency Skills Development Scotland. The platform provides labour market information, including current and future skills demand in the key sectors across Scotland, collected by Skills Development Scotland. However, it lacks personalized recommendations based on users' skills, as it doesn't have an AI-supported skills assessment.

Name:	Nordjobb (Nordic jobs), Åland islands, Denmark, Faroe Islands, Finland, Greenland, Iceland, Norway, Sweden
	External Site
Description:	A joint platform for Åland islands, Denmark, Faroe Islands, Finland, Greenland, Iceland, Norway, Sweden
Target Group:	students; job seekers; employers
Scope:	Åland islands, Denmark, Faroe Islands, Finland, Greenland, Iceland, Norway, Sweden

Types of information collected:	A list of available seasonal jobs in the different countries is presented.
Public or private:	Private
Reason for selection & areas of success or improvement	Since 1985 29.000 young students got a seasonal job

Name:	Øresunddirekt, Denmark and Sweden
Website:	External Site
Description:	Øresunddirekt Sweden and Øresunddirekt Denmark work in close partnership. Øresunddirekt is an information service that conveys public information from the authorities to the inhabitants and the business community in the Öresund region. Øresunddirekt consists of two sections - an information centre in Malmö and a web team/communications department in Copenhagen.
Target Group:	Job seekers
Scope:	Denmark and Sweden
Types of information collected:	The website has information for job seekers
Public or private:	Public
Reason for selection & areas of success or improvement	Øresunddirekt collaborates with EURES. It is supported by the Nordic Council of Ministers, Region Skåne, Greater Copenhagen Municipality, the Danish Tax Agency, the Swedish Tax Agency, Swedish Public Employment Service, the Swedish Social Insurance Agency, Skåne County Administrative Board, the Swedish Pensions Agency, Tårnby Municipality

Name:	OSKA - Oskuste arendamise koordinatsioonisüsteem, Estonia
Website:	External Site
Description:	The OSKA system creates a cooperation platform that enables the exchange of information between employers, training providers, and educational institutions to comprehensively analyse the growth potential of different economic sectors and their needs and to facilitate the planning of education

	provision at different levels of education and by types of school, as well as in the fields of retraining and in-service training.
Target Group:	job-seekers; graduates
Scope:	Estonia
Types of information collected:	quantitative and qualitative data; skills; future skills; sector-specific skills
Public or private:	Public
Reason for selection & areas of success or improvement	Once a year, OSKA prepares a forecast for the next 10 years. Continuous methodological improvements and actions are taken to improve the dissemination of OSKA results. For TRAILS, this shows continuous use and is a model to which one can aspire. The project is Estonia's national one and is included in CEDEFOP's directory of initiatives to tackle skills. It is a good national example that uses skills forecasting, so it could be worth looking into the methodology.

Name:	Pôle Emploi, France
Website:	External Link
Description:	National career guidance and job search platform in France
Target Group:	citizens; jobseekers; unemployed
Scope:	France (29 million monthly visits)
Types of information collected:	skills; work experience; labour market information; employment projections
Public or private:	Public
Reason for selection & areas of success or improvement	This platform serves as a national career development and job search platform in France. Users have the ability to create profiles and CVs, as well as search for and apply to jobs. The platform consolidates a wealth of information from the public employment service and other public bodies, and also links to external public websites providing information on skills and job forecasts. However, there is a need to integrate this information within the platform itself, and there is currently a lack of AI-supported skills assessment.

Name:	Regional Skills Platform, Sweden
Website:	External Site
Description:	The Regional Skills Platforms aims to strengthen collaboration for a better supply of competence between, for example, authorities, businesses, and education. Building structures for regional competence supply creates a

	readiness to handle changes and meet the business community's need for competencies.
Target Group:	citizens; jobseekers; employed; education providers; employers
Scope:	Sweden
Types of information collected:	Skills; employment; future skills
Public or private:	Public
Reason for selection & areas of success or improvement	Regional Skills Platforms utilize skill forecasts to gain a comprehensive understanding of the labor market and educational skills in order to address future challenges related to skill matching at the regional level. The objective of this initiative is to guarantee a steady regional supply of skills by providing relevant information to authorities, businesses, and educational institutions. For instance, the regional entities overseeing these platforms conduct analyses and projections that can be utilized by employment offices in developing plans for individuals seeking employment. As such, it aligns well with the concept of TRAILS and emphasizes the importance of maintaining a strong regional focus to continually inform the outcomes.

Name:	Utdanning, Norway
Website:	External Site
Description:	This is a national platform for education and career information. It leverages labour market information to support people in making informed career and education decisions.
Target Group:	citizens; jobseekers; students
Scope:	Norway (Approx 9 million visitors each year)
Types of information collected:	labour market information; skills; education and training; education system information; apprenticeships; employment projections; supply and demand; geographic concentration of jobs
Public or private:	Public
Reason for selection & areas of success or improvement	The site is well-developed and combines labour market knowledge and career guidance.

Matching individuals and companies

16 national initiatives are geared towards citizens, job-seekers, and unemployed people. Many public employment services in countries have such an online platform, and global platforms offer similar services, such as LinkedIn. Many of these initiatives ask users about their occupation, employment history, and education, often gained through CV submission. Skills are also collected, often based on self-assessment from the user.

Some services, such as the Skills Forward eLearning UK initiative, offer software and assessment solutions for functional skills, helping to validate skills acquisition through different methods. For the TRAILS project, it could be interesting to consider this approach for the end user, ensuring that individuals can assess their skills with easy-to-use tools or software. Moreover, Zaposlise, Croatia is a private platform that uses new technology to simplify the application and hiring process. The platform proposes that job-seekers submit their candidacy through short videos, prompting them to develop their skills orally and reducing drop-outs from long applications.

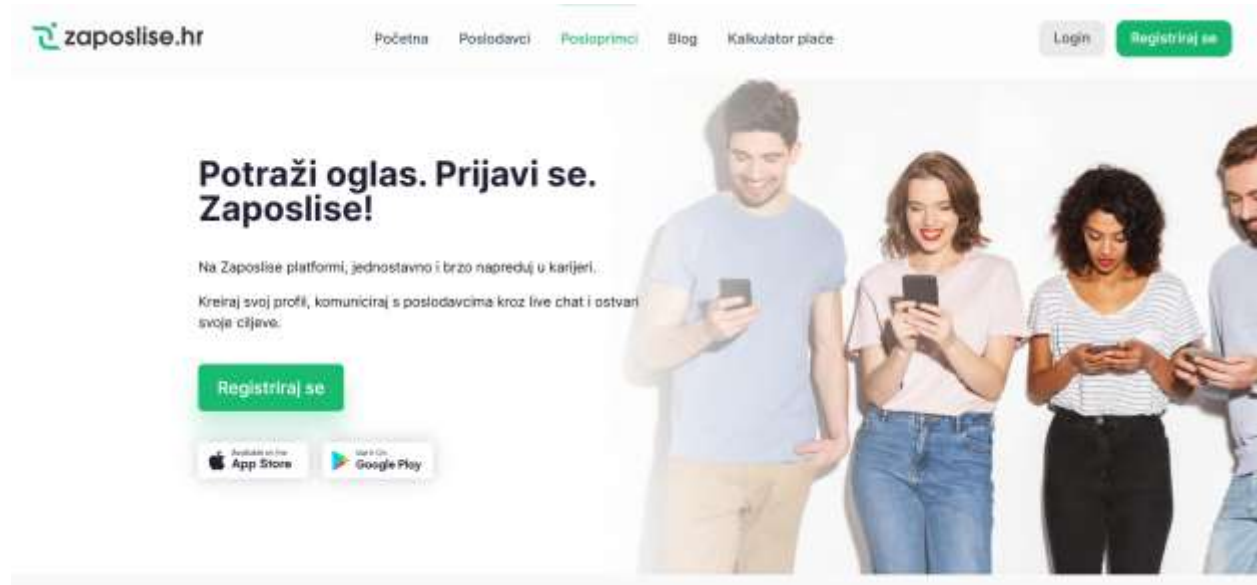


Figure 2 Screenshot from Zaposlise.hr (Zaposlise.hr, accessed 5 June 2024)

Name:	Alma Career, Czech Republic
Website:	External Link
Description:	The site links many national services from across the Czech Republic, and Europass is linked to it nationally. They operate in 11 countries.
Target Group:	Citizens; job-seekers;
Scope:	11 countries, including the Czech Republic (5 million users since 1996)

Types of information collected:	CV; work experience; skills; interests; working in certain companies experience; online e-courses
Public or private:	Private
Reason for selection & areas of success or improvement	The site compiles many national resources for job-searching in the Czech Republic but also has an international dimension. On professional. cz (one of the services), you can search per region for jobs, and it works specifically with the Europass format to make job-searching and skills matching easier.

Name:	Arbetsförmedlingen, the Swedish Public Employment Service's website, Sweden
Website:	External Link
Description:	The Swedish Public Employment Service's website is quite extensive and offers various services. Citizens can upload their CVs directly, and companies can also place their advertisements on the website. Both citizens and companies can access each other's profiles through the website.
Target Group:	Swedish Citizens; Unemployed; students; migrants
Scope:	Sweden
Types of information collected:	CV; work experience; skills; interests
Public or private:	Public
Reason for selection & areas of success or improvement	The national service is the primary platform for the Swedish population, offering a blend of job search capabilities and training opportunities, along with the evaluation of grades and certifications. It also provides practical information on working in Sweden. The website is accessible to Swedish citizens and provides links to the national ID card. Additionally, it offers "DIY career guidance" tools and online questionnaires to help individuals identify potential areas of interest. Moreover, occupational forecasts are available to all users on the site.

Name:	Atlas of work and qualifications Italy - Istat. It
Website:	External Link
Description:	The Job and Skills Atlas is a detailed map of jobs and qualifications. The proposed description of the work's contents is the result of intense collaboration and participation of different institutional subjects, including

	employers and trade union representatives, professional associations, sectoral experts, and stakeholders of the work-learning system. It is organized into three sections: Job Atlas, Atlas and Qualifications, and Atlas and Professions.
Target Group:	education workers; labour policymakers
Scope:	Italy
Types of information collected:	qualifications; professions
Public or private:	Public
Reason for selection & areas of success or improvement	This is Italy's national system for mapping qualifications, professions, and skills, as mentioned on the CEDEFOP site. The Atlas provides information on qualifications and professions that align with the NQF. This is something important that TRAILS could consider by linking skills to the EQF or NQF.

Name:	Career One Stop Shop, USA
Website:	External Link
Description:	National career guidance platform in the US
Target Group:	job-seekers; citizens; people over 55; students; veterans; businesses; career advisors
Scope:	USA (Approx. 16 million users)
Types of information collected:	interests; skills; work values; work experience; vacancies; courses; employment projections; salary projections
Public or private:	Public
Reason for selection & areas of success or improvement	This is the flagship career guidance and job search website in the USA. It contains various free online tools, labour market information, and job search resources. Users can use all the labour market information collected on a federal level in the US, including employment and salary projections.

Name:	Integrity, Finland
Website:	External Site
Description:	A programme that seeks to support the integration of immigrants into society by offering training in software development and coding.
Target Group:	migrants; jobseekers
Scope:	Finland

Types of information collected:	digital skills; technological skills
Public or private:	Private – non-profit organisation
Reason for selection & areas of success or improvement	It is about upskilling the workforce to match the skill needs of the labour market demand better. It focuses on a specific part of the population.

Name:	Irish Digital Skills & Jobs Coalition, Ireland
Website:	External Site
Description:	This association-led, multi-stakeholder initiative brings together 50 partners from academia and education, industry, the public, and not-for-profit sectors. The primary objectives of the Coalition are to strengthen the workforce and enhance the digital inclusion of all citizens, with a special focus on the digital skills of younger adults in the context of a modernised education system.
Target Group:	Businesses; job-seekers; employees
Scope:	Ireland
Types of information collected:	skills; education material
Public or private:	Public
Reason for selection & areas of success or improvement	An extensive plan for upskilling and life-long learning encourages many different learning methods. The initiative focuses on digital skills, something that TRAILS will also do. However, it fails to make any connection between digital skills and green transition, something that can be investigated in TRAILS

Name:	Livelearn, Netherlands
Website:	External Site
Description:	A platform where users can register, create a skills passport and explore different learning opportunities for career development.
Target Group:	citizens; jobseekers; employed; education providers; employers
Scope:	Norway (Approx 9 million visitors each year)
Types of information collected:	skills; education; courses; vacancies
Public or private:	Private

Reason for selection & areas of success or improvement	It's a platform that enables users to create their skills passports, which can be shared with education providers and employers.
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Name:	LMI for All, UK
Website:	NA
Description:	Portal that provides labour market information to help people make informed career decisions.
Target Group:	citizens; jobseekers; designers; developers
Scope:	UK
Types of information collected:	salary information; workforce projections; industries; tasks; skills
Public or private:	Public
Reason for selection & areas of success or improvement	This portal is open to users to explore labour market information and developers and designers, as it has publicly available APIs. It combines data from the UK and the American O*NET system. This portal also has the Skillsometer, which assesses users' interests based on RIASEC theory. The results are displayed but not saved anywhere, so users cannot revisit them.

Name:	My Future, Australia
Website:	External Link
Description:	My Future is a national student career guidance platform in Australia
Target Group:	students; teachers; career practitioners; parents; carers
Scope:	Australia (more than 900,000 users)
Types of information collected:	interests; skills; education and training; values; work conditions; salaries; employment projections; courses
Public or private:	Public
Reason for selection & areas of success or improvement	It's a nationwide career guidance platform for students in a country at the forefront of career development activities. It's also an example of good national practice because different actors unite effectively to support the target group. This platform provides career recommendations to students based on the results of the assessments. Users can also find abundant labour market information, including forecasts about specific industries and occupations.

Name:	National Careers Service, Skills Toolkit, UK
Website:	External Site
Description:	The Skills Toolkit is an online platform that offers free online courses, tools, and resources to help learners improve their digital and numeracy skills. The Department for Education has worked with some of the country's leading educational experts and employers to create a collection of high-quality resources catering to a wide range of interests and skill levels. These resources include free courses that can assist job seekers in learning new skills or switching careers. They cover general skills that apply to all sectors and more specialised skills.
Target Group:	jobseekers
Scope:	UK
Types of information collected:	skills
Public or private:	Public
Reason for selection & areas of success or improvement	It provides good practices for exploring a career path, assessing skills and finding courses.

Name:	Offentligajobb, Sweden
Website:	External Link
Description:	The site is for finding jobs in the Swedish public sector.
Target Group:	Swedish Citizens; Job-seekers
Scope:	Sweden
Types of information collected:	Occupational category; industry; county; form of employment
Public or private:	Public
Reason for selection & areas of success or improvement	Many private sites lead to the Swedish Employment Central site, while this one specialises in public functions. The site works with a local idea in mind, which could be important for skills matching. However, it does not specifically ask questions about users' skills or experience, only their desired jobs.
Website:	External Link

Description:	Veteranpoolen is a Swedish temporary employment agency for retired people
Target Group:	retired people; employers and private persons (ROT and RUT work)
Scope:	Sweden (211,000 retired jobseekers and also employers)
Types of information collected:	Professional skills in different areas
Public or private:	Private
Reason for selection & areas of success or improvement	The biggest Swedish platform for retired jobseekers. 211,000 people aged 65-74 were employed in 2023. Employment among older people has increased by almost 70 per cent over the past ten years. (According to https://www.ekonomifakta.se/en/)

Name:	Public Appointment Service, Ireland
Website:	External Site
Description:	Centralised recruitment, assessment, and selection services are provided across Ireland's civil and public service sectors. In addition, they provide e-learning tools to help job-seekers gain the skills required for jobs, as well as some of the skills required to obtain a job, such as interviewing and CV writing.
Target Group:	job-seekers; employers
Scope:	Ireland
Types of information collected:	education material
Public or private:	Public
Reason for selection & areas of success or improvement	This can provide the skills necessary to find a job that is often ignored, like interviewing and CV writing. It also provides e-learning resources tailored to employers' hiring processes, particularly relevant to HR staff, such as unconscious bias and shortlisting.

Name:	Skillnet Ireland
Website:	External Site
Description:	Skillnet Ireland is Ireland's national talent development agency and the government's business support agency. Its primary objective is to advance the competitiveness, productivity, and innovation of businesses operating in Ireland through enterprise-led workforce development. Skillnet Ireland supports businesses in becoming more competitive by providing their employees with the right upskilling and reskilling solutions. It also encourages

	people to develop the skills they need to thrive personally and in their chosen careers.
Target Group:	Businesses; employers; employees; jobseekers
Scope:	Ireland
Types of information collected:	skills; education material
Public or private:	Public
Reason for selection & areas of success or improvement	This allows workers and job seekers to access e-learning tools online. It can also connect job-seekers to enterprises by offering enterprise led job-placements.

Name:	Skills Forward eLearning, UK
Website:	External Site
Description:	Skills Forward is an eLearning software and assessment solution for Functional Skills, GCSEs, apprenticeships and employability skills. The Skills Forward eLearning, assessment and skills development platform software is used by colleges, training providers and employers who want accurate visibility of learner progress. The platform enables providers to digitally capture evidence of a learner’s skills, knowledge and occupational competency and supports their further skills development with high-quality resources.
Target Group:	skills; education material
Scope:	UK
Types of information collected:	skills
Public or private:	non-profit
Reason for selection & areas of success or improvement	This eLearning solution can be used for both functional skills and GCSE for English and math learners, as well as essential digital skills. TRAILS can learn valuable lessons for increasing job seekers' engagement in educational programs.

Name:	Zaposlise, Croatia
Website:	External Link
Description:	The platform seeks to use new technology and the hiring process to address the fact that 60% of candidates withdraw from the application process due to the length and complexity of the form. The site is for businesses to use to find interested candidates.

Target Group:	Businesses; employers; job-seekers
Scope:	Croatia
Types of information collected:	Business profiles; job requirements; salary expectations; conditions; interested areas; expectations; skills; experience
Public or private:	Private
Reason for selection & areas of success or improvement	The use of video advertisements and video candidacies, in addition to removing a motivational letter, is innovative. Using video profiles could create a platform of skills matching that harnesses new technology and creates a result that is much more accessible than papers.

Name:	55 plus, Sweden
Website:	External Link
Description:	55+ is a Swedish temporary employment agency for retired and people 55+ in Sweden
Target Group:	retired and people 55+, employers and private persons (ROT and RUT work)
Scope:	Sweden
Types of information collected:	Professional skills in different areas
Public or private:	Private
Reason for selection & areas of success or improvement	Demographic-specific skills matching.

Matching demand for digital skills

Of the various initiatives, 11 specifically focus on addressing the challenge of skills mismatch in digital skills at a national level. Given that digital skills are increasingly vital for the future, these initiatives offer valuable insights into how countries tackle upcoming skills-related issues and the strategies they employ. These efforts typically involve providing digital skills training and aligning them with the specific digital skill requirements of the national job market. This process includes consulting with and taking into account the needs of the national labor market and closely collaborating with training providers.

Name:	A solid ICT foundation – Strategy for ICT management in central government, Denmark
Website:	External Site
Description:	It is a strategy aiming to improve the central government's management of existing ICT solutions and enhance the digital skills of government staff.
Target Group:	public sector employees
Scope:	Denmark
Types of information collected:	ICT skills; digital skills; management skills
Public or private:	Public
Reason for selection & areas of success or improvement	It is about upskilling employees, focusing on digital and ICT skills. It is limited to public sector employees.

Name:	BeCentral, Belgium
Website:	External Site
Description:	It is a training centre that aims to make advancements in technology accessible for everyone by hosting a community of startups and digital initiatives such as coding schools.
Target Group:	adult population; start-ups; policymakers
Scope:	Belgium
Types of information collected:	technological skills; start-ups; NGOs
Public or private:	Private
Reason for selection & areas of success or improvement	The initiative focuses on reskilling and upskilling individuals, as well as supporting their startup endeavors if they choose to pursue them. It offers training and guidance sessions aimed at empowering digital skills across various age groups, genders, and backgrounds. This initiative contributes valuable insights to the TRAILS project concerning the development of Vocational and Adult Education Training.

Name:	BeCode, Belgium
Website:	External Site
Description:	It is a coding school that offers training in web and mobile development free of charge.

Target Group:	jobseekers
Scope:	Belgium
Types of information collected:	technological skills
Public or private:	Private non-profit organisation
Reason for selection & areas of success or improvement	It is about reskilling and upskilling jobseekers to find work in the tech industry. This initiative develops training to enhance the technological skills of job seekers and better match them with jobs in the tech industry. It provides useful information for the TRAILS project on the Vocational and Adult Education Training design.

Name:	Belgian Alliance for Digital Skills and Jobs, Belgium
Website:	External Site
Description:	The web platform aims to create an ecosystem of initiatives and training for all Belgian citizens who want to enter digital society. It is a policy initiative that seeks to narrow the digital skills gap at the national level by offering training and matching for digital jobs.
Target Group:	students; adult population; organisations
Scope:	Belgium
Types of information collected:	digital skills; technological skills
Public or private:	Public
Reason for selection & areas of success or improvement	It is about reskilling and upskilling individuals to bridge the skills gap in the digital job market. This initiative develops training and lifelong learning programs to enhance the digital skills of anyone looking to improve or upgrade their digital skills. This could inform TRAILS partners on how targeted VET programs are designed to address digital skills mismatch.

Name:	CHOOSE IT- SW Developers boot camp, Estonia
Website:	External Site
Description:	It is a training boot camp to increase the number of software developers in Estonia.
Target Group:	Estonian citizens who have completed higher education or vocational education in a technical field (level 5); companies
Scope:	Estonia

Types of information collected:	software skills; digital skills
Public or private:	Public
Reason for selection & areas of success or improvement	It is about reskilling and upskilling the workforce to better match with the labour market demand. It is limited to people with a completed higher education

Name:	COFTeN, Belgium
Website:	External Site
Description:	It is a training and orientation centre for digital technologies intending to train low-skilled jobseekers as computer technicians.
Target Group:	jobseekers
Scope:	Belgium
Types of information collected:	computer skills; digital skills
Public or private:	Private – non-profit organisation
Reason for selection & areas of success or improvement	It is about reskilling and upskilling individuals to bridge the skills gap in the digital job market. This initiative provides lifelong training and info sessions to individuals. This could inform TRAILS partners on how targeted VET programs to address digital skills mismatch are designed.

Name:	Digital Wallonia, Belgium
Website:	External Site
Description:	This strategy sets a framework for public and private initiatives to promote digital transformation in Wallonia.
Target Group:	Walloon citizens, policymakers
Scope:	Belgium
Types of information collected:	digital skills; technological skills;
Public or private:	Public
Reason for selection & areas of success or improvement	It is about upskilling and connecting employees and employers in the digital sector. It is limited to the digital sector of a specific region in Belgium.

Name:	Digital Hub Denmark, Denmark
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Website:	External Site
Description:	It aims to strengthen Danish digital growth and fill the growing gap among ICT specialists by improving access to talent and facilitating collaboration on digital business models between larger companies, start-ups and universities.
Target Group:	enterprises; jobseekers; public sector
Scope:	Denmark
Types of information collected:	ICT skills; digital skills
Public or private:	Public
Reason for selection & areas of success or improvement	It aims to connect employers with employees, fostering digital innovation in the public sector. It is limited to the government sector.

Name:	fit4internet, Austria
Website:	External Site
Description:	fit4internet focuses on the standardisation, evaluation, and certification of digital skills. The platform offers jobseekers the opportunity to acquaint themselves with the Digital Competence Framework for Austria - DigComp AT, assess their level of digital skills, and access valuable information on members and partners who actively promote digital literacy in Austria.
Target Group:	job-seekers; graduates
Scope:	Austria
Types of information collected:	skills
Public or private:	Public
Reason for selection & areas of success or improvement	This is an initiative aimed at evaluating and enhancing digital skills. It offers practical examples and helpful resources to help individuals improve their understanding and knowledge of digital skills. Valuable lessons can be used to evaluate digital skills.

Name:	ProgeTiger Programme, Estonia
Website:	External Site
Description:	The programme seeks to enhance students' and educators' technological literacy and digital competence through activities that integrate engineering sciences, design and technology, and ICT into teaching.
Target Group:	children; students; educators

Scope:	Estonia
Types of information collected:	technological skills; digital skills
Public or private:	Public
Reason for selection & areas of success or improvement	It is about upskilling children and youth with the technological skills they need to cope in the future labour market. It is limited to individuals currently in education

Name:	TechConnect, The Netherlands
Website:	External Site
Description:	This programme aims to bridge the mismatch between supply and demand in the tech sector in the Amsterdam Metropolitan Area.
Target Group:	underrepresented groups (women, people over 50, people from diverse cultural backgrounds)
Scope:	The Netherlands
Types of information collected:	technological skills; digital skills
Public or private:	Private-public partnership
Reason for selection & areas of success or improvement	This programme aimed to reduce IT labour market shortages, activate hidden talent and increase diversity and inclusion in the tech sector. It is linked to the TRAILS project as it aimed to address the labour market shortages. However, it is limited to the tech sector.

3. Initiatives at the local and regional level

The following section presents 20 examples of regional initiatives to tackle skill shortages. It has been divided according to two main trends observed in these examples: public-private partnerships and public initiatives.

One example that can be addressed is Skills. Wales, an initiative launched in April 2024. Skills. Wales is a new, independent collaboration and communications initiative designed to place industry leaders at the heart of a range of skills quandaries. According to skills. Wales (accessed 19 June 2024), Skills. Wales is designed to:

- Amplify the skills plans and strategies within key industries in Wales.
- Showcase and profile those organisations leading the skills agenda in Wales
- Highlighting the skills challenges and solutions within each sector.

- Provide user-friendly and non-intrusive networking and partnership facilitation opportunities.
- Offer free consultancy for organisations developing skills programmes.
- Enhance the quality and scope of future skills programmes.
- Develop a central resource of information, features and reports
- Collate a who’s who skills directory of organisations and individuals with a stake in developing skills in Wales.



Figure 3 Skills.wales homepage (skills.wales, accessed 19 June 2024)

The platform aims to facilitate communication between knowledge on skills, needs, and provisions and policy-makers. It aims to bring together different stakeholders, such as researchers, training professionals, government workers and NGOs, to plan future regional skills plans.

Regional initiatives with a public-private partnership

Compared to national-level and European-level initiatives also documented in this report, regional-level initiatives had the highest number of public-private partnerships. Local and regional authorities designed and ran many initiatives, working closely with regional industries and employers.

For example, Talent in de Regio is a regional cooperative project that collects labour market information about the Groningen region and leverages it to help job seekers and employers find better matches. The project gathers information on skills, vacancies, and education through partnerships with regional public actors, universities, and employers.

Name:	Active Feina, Catalonia
Website:	External Site
Description:	A portal that facilitates candidates' access to job offers and the search and selection of personnel in companies and the self-employed, in Catalonia
Target Group:	employers; job-seekers
Scope:	Catalonia
Types of information collected:	Interests; sectors
Public or private:	Public-private
Reason for selection & areas of success or improvement	This is an official portal of the government of Catalonia. It works in cooperation with private companies and allows them to register jobs on the secure site.

Name:	Be Basque Talent Network, Basque Country
Website:	External Site
Description:	Be Basque Talent Network is the largest network of highly qualified professionals who are or want to be linked to the Basque Country, regardless of their territorial origin. After registration as a user, either at the Be Basque Talent Network or at Bizkaia Talent, the website provides access to a specific user profile, with employment offers and varied information, as well as access to the main services, an information exchange forum on various topics related to economy, culture and work-related issues in the Basque Country, and the main search tool, the Basque Talent Map (emphasize).
Target Group:	Job-seekers with a university degree; employers looking for talent
Scope:	Basque Country
Types of information collected:	Interests; education; location
Public or private:	Public-private
Reason for selection & areas of success or improvement	This is an official portal of the Basque Country. It only focuses on already highly educated individuals and is linked with the Basque Talent map, an interesting tool that allows users to search in specific locations.

Name:	CompetentNL pilot project with Jobdigger BV, Netherlands
Website:	External Site

Description:	Jobdigger is a data company that scrapes vacancies online, turning them into data points and insights into the labour market. In the pilot, Jobdigger is developing its taxonomy for categorizing skills and professions. The aim is to enrich it with CompetentNL.
Target Group:	employers; taxonomy professionals; employment agencies; outplacement agencies; data analysts
Scope:	Various regions in the Netherlands
Types of information collected:	skills; occupations; vacancies
Public or private:	Public-private
Reason for selection & areas of success or improvement	This project focuses on enriching the taxonomy and labour market information data on a regional and national level. It uses job scraping to gather data.

Name:	Lavoro Toscana, Tuscany
Website:	External Site
Description:	The official job site and training catalogue in Tuscany. The site proposes an up-to-date training offer and helps companies, agencies, professionals, and citizens connect.
Target Group:	job seekers; companies; citizens; professionals
Scope:	Tuscany, Italy
Types of information collected:	Jobs; training offers; competences
Public or private:	Public-private
Reason for selection & areas of success or improvement	The site also includes a training catalogue, where not all regional job sites do this. It encourages users to consider upskilling to meet certain job demands in this way.

Name:	London Skills & Employment Observatory UK
Website:	External Site
Description:	The project is managed by the Centre for Economic & Social Inclusion. A Practice and Research Forum, open to the public, meets monthly to stimulate discussion on employment skills in London. The Observatory research delivers projects on specific areas related to the employment

	market: for example, one of the first two projects was on youth unemployment.
Target Group:	job seekers; researchers; analysts
Scope:	London, UK
Types of information collected:	skills
Public or private:	Public-private
Reason for selection & areas of success or improvement	The example is a project that aimed to track skills in the London area. Their methodology could be interesting.

Name:	Participe Amstelland, Amstelveen
Website:	NA
Description:	This local initiative focuses on supporting Ukrainian refugees in finding jobs in the Netherlands, particularly in the local areas of Amstelveen and Amsterdam.
Target Group:	job seekers; migrants; refugees; employers
Scope:	Amstelveen and Amsterdam, the Netherlands
Types of information collected:	skills; education; work experience; vacancies
Public or private:	Public-private
Reason for selection & areas of success or improvement	This exemplifies a best practice of employing a skill-based approach in career counseling to assist individuals transitioning into the workforce in a new country. This small-scale, localized project is tailored to serve a distinct target demographic.

Name:	Skills. Wales, Wales
Website:	External Site
Description:	Skills.Wales is a new, independent collaboration and communications initiative designed to place industry leaders at the heart of various skills quandaries. Developing a collaborative skills roadmap in Wales is a top priority for both industry and government. It is a critical component of the evolving demands of the modern economic and industrial landscape."
Target Group:	Businesses; SMEs; individuals; industry experts

Scope:	Wales, UK
Types of information collected:	programmes; study; courses
Public or private:	Public-private
Reason for selection & areas of success or improvement	In 2024, the Welsh government launched an innovative initiative to integrate various data related to skills and stakeholders. This initiative takes a personalized approach to skill development, leveraging the gathered insights to cater to individuals' specific needs and requirements. One of the key benefits of this approach is its ability to consolidate skills information and maintain a comprehensive directory of important stakeholders. This comprehensive database allows deeper insights into the skills landscape and fosters better engagement with small and medium-sized enterprises. This initiative presents an opportunity for TRAILS to consider integrating this approach, as it can significantly enhance skill development and engagement within the organization.

Name:	Start ID, South Moravian Region, Czech Republic
Website:	External Site
Description:	JCMM provides a web app, an online portfolio for pupils and students. It also connects with companies for temporary jobs and internships.
Target Group:	work experience; skills; education; business offers; job offers (temporary)
Scope:	South Moravian Region, Czech Republic
Types of information collected:	programmes; study; courses
Public or private:	Public-private
Reason for selection & areas of success or improvement	The application is designed as a contemporary tool that not only offers an online chatbot for answering queries and providing support but also provides a comprehensive range of features. These features include the ability to create a resume and an online portfolio, which can be seamlessly exported. In addition, the application offers online career counseling services as well as access to a wide array of job opportunities. Users can leverage the platform to build a robust online portfolio showcasing their skills and experience, while also connecting with potential employers. Furthermore, the application facilitates personalized career guidance, merging technological capabilities with a human-centered approach. This unique blend of cutting-edge

	technology and personalized support presents an intriguing potential for future development within TRAILS.
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Name:	Talent in de Regio, Groningen
Website:	External Site
Description:	This platform monitors the labour market in Groningen, Netherlands. It collects data on the workforce (Talent Monitor), and employment forecasts (Knowledge Themes), and has a tool that helps job seekers and employers match better (Matching & Career Tool).
Target Group:	job seekers; employers; labour market specialist; career counsellors
Scope:	Groningen, the Netherlands
Types of information collected:	skills; vacancies; employment forecast; workforce forecast; education
Public or private:	Public-private
Reason for selection & areas of success or improvement	This regional cooperative project collects labour market information about the Groningen region and leverages it to help job seekers and employers find better matches. It's an example of a good practice of a consortium of universities and public actors in the region. However, it only focuses on one region, so only people in the region can benefit from this.

Regional public initiatives

The public employment service of the region has established a range of innovative initiatives at the regional level aimed at meeting the employment needs of the area. One of the most prominent among these platforms is the Lisboa Employment Map, which was introduced in March 2024. This advanced platform utilizes data-driven techniques to offer comprehensive insights into the evolving skills and employment requirements within the region. Moreover, it also provides a comprehensive overview of vocational training and educational programs. The Lisboa Employment Map is designed

to support employers by facilitating their understanding of and response to the changing dynamic of the labor market.

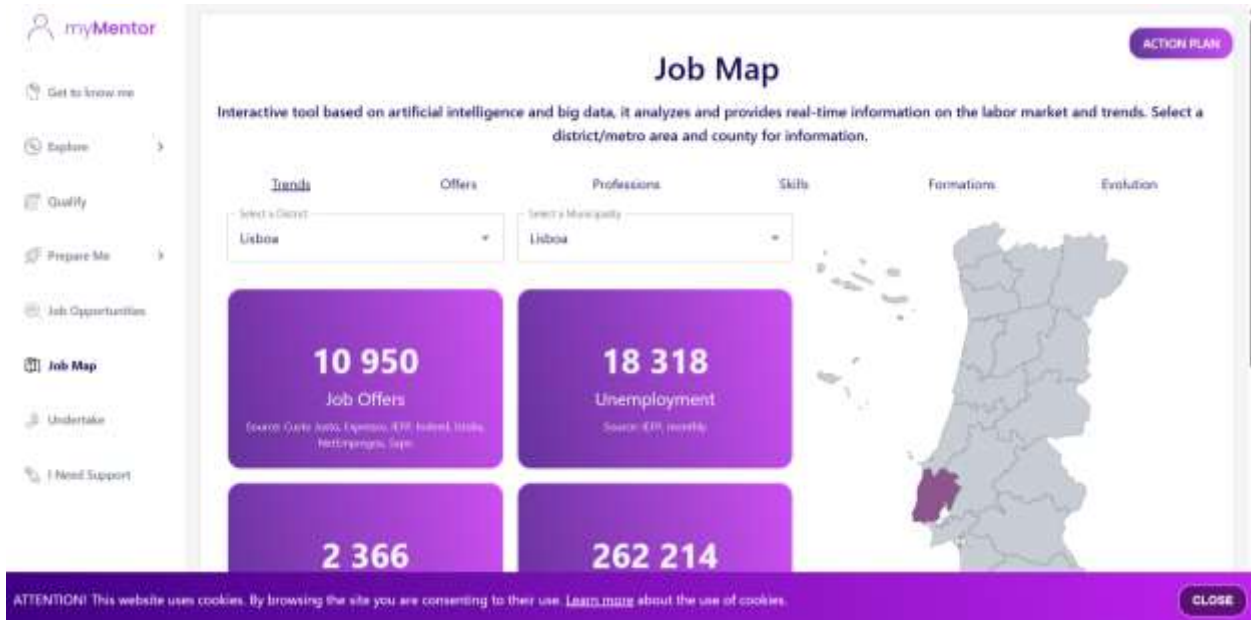


Figure 4 Screenshot from Lisboa Employment Map, accessed on mymentor.pt 19 June 2024

Name:	Actiris, Brussels
Website:	External Site
Description:	Brussels-based service for citizens and employers to provide job information and to search for jobs. The service works with Brussels Formation to provide training services.
Target Group:	Citizens; employers
Scope:	Brussels, Belgium
Types of information collected:	interest; jobs; qualifications; location of training; counselling information
Public or private:	Public
Reason for selection & areas of success or improvement	It is the leading information portal in Brussels for job-searching and training, including pragmatic information on visas, work requirements, etc. The searching feature remains basic and by domain only, but the relevant and reliable information about career guidance and training opportunities is extremely useful for users.

Name:	Adcore, Borås Sweden
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Website:	External Site
Description:	The database is used for employed people in some municipalities in Region Borås who want to reskill. A profile and a CV will be uploaded, and the employee will be invited to a dialogue with a staff member at Madarbetarcentrum
Target Group:	Employed in four municipalities of a total of eight in the Borås region who would like to reskill; employers
Scope:	Boras Sweden
Types of information collected:	Work experience
Public or private:	Public
Reason for selection & areas of success or improvement	It is a successful small-scale initiative. A useful tool for employees who would like to find another job in one of the four municipalities.

Name:	Career Start, Baden-Württemberg
Website:	External Site
Description:	It is a platform to help those looking for academic jobs to be matched to different PHD or professorships in the Baden-Württemberg region.
Target Group:	Young researchers and academics
Scope:	Baden-Württemberg, Germany
Types of information collected:	Expertise; employer; position
Public or private:	Public
Reason for selection & areas of success or improvement	The website is targeted only for academic professionals. Still, it is unique because it allows you to search by language and employer, which many other services do not necessarily do. It might be interesting to match this with key employers in a region.

Name:	Database of Further Education, South Moravian Region
Website:	External Site
Description:	Citizens can chat with career counsellors; they can find out which course they prefer and connect directly with the education provider.
Target Group:	Learners; unemployed; educational providers
Scope:	South Moravian Region, Czech Republic

Types of information collected:	Field of interest; job title; industry; location
Public or private:	Public
Reason for selection & areas of success or improvement	A specific training courses database in the region for local inhabitants is a useful tool for local inhabitants. You can book the course through the website, meaning users "trust" the site and information. However, there is no information on how these courses respond to skills needs and current job offers, only training, so this is important to keep in mind for TRAILS.

Name:	Employment Map, Lisboa
Website:	External Site
Description:	The “Lisboa Employment Map” was developed by the Municipal Directorate of Economy and Innovation of the Lisboa City Council. The Lisboa Employment Map – and its resulting strategic information – not only portrays the supply and demand of the labor market in the capital but also proves to be an important contribution to empowering organizations and individuals in facing emerging challenges. It supports employers with skills suited to the future of work and strengthens the focus on upskilling and reskilling, accelerating the response to the technological transformations in the labor market.
Target Group:	employers; taxonomy professionals; employment agencies; outplacement agencies; data analysts
Scope:	Lisboa
Types of information collected:	skills; occupations; vacancies; skills; future skills
Public or private:	Public
Reason for selection & areas of success or improvement	This initiative is data-driven and launched in March 2024. It has been recognised in the country for its ability to provide an employment landscape of the country's emerging labour markets. It also provides an overview of the technological and training opportunities available.

Name:	Forem, Wallonia
Website:	External Site
Description:	A public regional service for Wallonia, it allows job-searching and training course searching and is also responsible for continuous training in the region.
Target Group:	citizens; employers; migrants

Scope:	Wallonia, Belgium
Types of information collected:	interest; jobs; qualifications; location of training; counselling information
Public or private:	Public
Reason for selection & areas of success or improvement	It is the main information portal in Wallonia for job-searching and training, including pragmatic information on visas, work requirements, etc. The searching feature remains basic and by domain only, but the relevant and reliable information about career guidance and training opportunities is extremely useful for users.

Name:	IDEO, Brittany
Website:	External Site
Description:	IDEO is the platform of the Brittany Region that informs and advises citizens about employment opportunities, jobs, and training from middle school throughout their lives. Its platform focuses on skills matching and personalised career guidance.
Target Group:	Citizens in Brittany, from middle school throughout their lives.
Scope:	Brittany, France
Types of information collected:	Careers; jobs and training options; competences
Public or private:	Public
Reason for selection & areas of success or improvement	This website serves as the primary platform for individuals seeking employment and training opportunities in the Brittany region. In addition to maintaining an online presence, the platform facilitates in-person forums and collaborates with 22 associated and full members to offer its users a diverse range of options. By partnering with local stakeholders, the website ensures that it presents pertinent opportunities within the vicinity of its users. This local approach plays a crucial role in skill projection and could serve as an inspiration for TRAILS.

Name:	MyLeaves, Amsterdam
Website:	External Site
Description:	This is a platform connected to the internal student system of the Amsterdam University of Applied Sciences. It enables students to have a profile page to present themselves, include the skills they acquired in their lessons and learning modules, and further develop them.
Target Group:	students; employers

Scope:	Amsterdam, Netherlands
Types of information collected:	Skills; courses
Public or private:	Semi-Public
Reason for selection & areas of success or improvement	This platform is connected directly to a specific university, and students get their skills validated by the university as they complete the courses. It builds on ESCO, O*NET, CompetentNL, and e-CF. Only accessible to students of the AUAS.

Name:	Polis Lombardy and DataLab, Lombardy
Website:	External Site
Description:	PoliS - Lombardia is the Regional Institute Training, Research and Statistics, supporting the policy design and implementation of Lombardy's Regional Government.
Target Group:	Citizens; businesses
Scope:	Lombardy, Italy
Types of information collected:	Skills; competences
Public or private:	Public
Reason for selection & areas of success or improvement	The data lab is a joint effort to exploit data science, machine learning and AI tools to support change in the provision of public services and monitoring and planning regional policies. Data sources are official statistics, administration data and online job board data.

Name:	talent.brussels, Brussels
Website:	External Site
Description:	It is a platform called "My talent" which consists of different modules to meet the HR needs of Brussels public authority bodies.
Target Group:	Public sector workers
Scope:	Brussels, Belgium
Types of information collected:	Performance of workers; skills; recruitment processes; institution; level
Public or private:	Public

Reason for selection & areas of success or improvement	The site also offers follow-up once employed, ensuring that the HR needs of the regional partners are met, so it serves this well. No skills match, but there is a lot of transparency on job offers and opportunities, and this is important to find the right fit.
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Name:	VDAB, Flanders
Website:	External Site
Description:	A public regional service for Flanders, it allows job-searching and training course searching and is also responsible for continuous training in the region.
Target Group:	citizens; employers; migrants
Scope:	Flanders, Belgium
Types of information collected:	interest; jobs; qualifications; location of training; counselling information
Public or private:	Public
Reason for selection & areas of success or improvement	It is the main information portal in Flanders for job-searching and training, including pragmatic information on visas, work requirements, etc. The searching feature remains basic and by domain only, but the level of relevant and reliable information about career guidance and training opportunities is extremely useful for users.

4. Initiatives at the EU-wide and International Level

The following 31 initiatives are active across multiple EU/non-EU borders or are taken up internationally. The distribution of the different target groups for these initiatives is varied, with a slight emphasis on services for private companies. These initiatives include platforms and tools companies can use to find skilled workers in specific fields and, conversely, where individuals can upload details on their skills, competencies, and experiences to be matched with employers.

Many EU initiatives, such as EURES, Talent Pool Pilot, and Europass, were linked and created by the European Commission to address skills shortages. The European Employment Services (EURES) is a European cooperation network between the European Commission, the European Labour Authority (ELA), national public employment services and other Members and Partners in Europe. However, the tool only provides access to some training courses in Europe and only provides some types of education. Users cannot identify their skills needs or opportunities at the local level, only national, which may mean that such services provide broad trends of skills and employment

opportunities in EU countries, but not link or be known to local stakeholders and smaller businesses and employers.

Name:	Adecco
Website:	External Link
Description:	Adecco is part of The Adecco Group and is headquartered in Zurich, Switzerland. A team of 25,000 dedicated recruitment experts specialize in building dedicated workforce and recruitment solutions that impact the world of work, connecting people to jobs in 62 countries.
Target Group:	Job seekers; Employers
Scope:	International
Types of information collected:	Combining physical presence with digital platforms. Use of AI.
Public or private:	Private
Reason for selection & areas of success or improvement	Adecco helps Ukrainian refugees and refugees from other countries find work

Name:	Astride
Website:	External Link
Description:	Users can complete a self-assessment to determine their skills gap. Astride bases itself on the European e-Competence Framework (e-CF) and allows candidates to use questionnaires to map out which competencies someone has acquired based on their experience. These competencies are mapped and used for further reporting and advice. Advice focuses on providing specific training and certifications that help a candidate further develop competencies.
Target Group:	IT professionals
Scope:	International, 5,500 Assessments completed
Types of information collected:	skills; competencies; education; certificates
Public or private:	Private

Reason for selection & areas of success or improvement	<p>The platform uses self-assessments to determine people's skill sets and map their career development paths.</p> <p>It's only for IT professionals so it caters for a very narrow segment of the labour market. A similar tool could be accessible to a broader audience.</p>
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Name:	EU Digital Skills and Jobs Platform
Website:	External Link
Description:	<p>The Platform provides open access to a wide variety of high-quality information and resources for everyone interested in digital skills and jobs. Its smart search and filtering functions help you easily find what you need and connect with whom you need. With relevant, up-to-date content and dynamic, collaborative spaces, the platform caters to the needs of all users independently of their level of expertise. It also enables the Digital Skills and Jobs Community to grow and thrive together. You can also partake in upskilling and reskilling initiatives and test your digital skills to identify gaps.</p>
Target Group:	EU citizens; employers, public organisations
Scope:	All EU-27 countries
Types of information collected:	Digital skills; cybersecurity; digital literacy
Public or private:	Private
Reason for selection & areas of success or improvement	<p>The platform is a key initiative of the European Commission, open to all and links skills assessment to courses and, therefore, directly identifies mismatches and solutions for the user. The initiative focuses only on digital skills, but the mismatch is identified immediately and for citizens themselves.</p>

Name:	EURES, EU
Website:	External Link
Description:	<p>The European Employment Services (EURES) is a European cooperation network between the European Commission, the European Labour Authority (ELA), national public employment services and other Members and Partners in Europe.</p> <p>EURES available services:</p>

	<ul style="list-style-type: none"> • Matching job vacancies and CVs on the EURES portal • Information, guidance and other support services for workers and employers • Updated information about living and working conditions in EURES countries • Specific support services for frontier workers and employers in cross-border regions • Support seasonal workers and employers dealing with temporary job placements in another country • Support to specific groups using Targeted Mobility Schemes • The organisation of Job Days all over Europe, through the European (Online) Job Days platform • Language training and support with integration in the destination country • Information on and access to assistance after getting a job. European recruitment days are organised to get employers and job seekers together.
Target Group:	EU citizens; job seekers; employers
Scope:	3055 Companies, 3391 workplaces (as of 1.5.24)
Types of information collected:	If you use Europass, Hard and soft skills, language skills, qualifications, work experiences, education and training history, and digital skills. If you create a CV but not in EUROPASS there is no template provided by EURES
Public or private:	Public
Reason for selection & areas of success or improvement	EURES is connected to EUROPASS. EURES includes 31 countries. The jobs advertised on the EURES Portal come from EURES members and partners, in particular the European Public Employment Services.

Name:	Europass
Website:	External Link
Description:	<p>The new Europass platform offers the chance to create a free profile where you can record all your achievements, skills, and CVs. Europass is connected to EURES European Employment Services (EU Member States, Switzerland, Iceland, Liechtenstein, and Norway).</p> <p>The new Europass offers relevant information on jobs or learning opportunities across Europe. It also includes important national contact points and services to support job or learning opportunities.</p>

	The Europass Job & Skill Trends tool will support users in finding helpful information about the demand for specific occupations and skills across EU countries.
Target Group:	EU citizens; young people; potential learners
Scope:	5 million users since the launch
Types of information collected:	Hard and soft skills; language skills; qualifications; work experiences; education and training history; digital skills
Public or private:	Public
Reason for selection & areas of success or improvement	<p>Europass is a very well-known resource available to all European citizens. It is required for some jobs within the European Union and can match people with jobs and training all in one platform.</p> <p>The tool does not provide access to all training courses in Europe and does not provide all types of education. It is also not at the local level, so job offers are not specific to the local context, meaning mismatch can still occur.</p>

Name:	EU Talent Pool Pilot
Website:	External Link
Description:	<p>For persons fleeing the war in Ukraine and are allowed to work in the EU under temporary protection</p> <p>Through the EU Talent Pool Pilot, the persons can create a CV and show their skills to more than 5,000 carefully validated and registered employers and EURES Members and Partners.</p> <p>The EU Talent Pool Pilot belongs to The European Employment Services (EURES), a European cooperation network between the European Commission, the European Labour Authority (ELA), national public employment services and other Members and Partners in Europe.</p>
Target Group:	Job seekers;
Scope:	Croatia, Cyprus, Czechia, Finland, Lithuania, Poland, Slovakia and Spain
Types of information collected:	CV; experiences; preferences
Public or private:	Public
Reason for selection & areas of success or improvement	An urgent initiative because of people fleeing Russian aggression against Ukraine.

Name:	e-Skills match
Website:	External Link
Description:	An initiative funded by the EU, operating a learning technology demo platform spanning Europe. Its goal is to bolster digital competencies crucial for individuals and businesses to stay competitive in the ICT sector
Target Group:	Businesses; jobseekers; employees
Scope:	International
Types of information collected:	Labour market and business skills particularly related to the ICT sector
Public or private:	Public
Reason for selection & areas of success or improvement	Focuses on improving digital skills and matching skills to education. Also recommends specific training paths based on the career trajectory, skills and education that individuals have. TRAILS is also interested in skills related to digital transformation

Name:	EU Talent Pool Pilot, EU
Website:	External Link
Description:	The Talent Pool Pilot is a cooperation between EURES and ELA.
Target Group:	Refugees; migrants
Scope:	5,000 validated and registered employers and EURES Members and Partners
Types of information collected:	No special skills or work experiences are identified
Public or private:	Public
Reason for selection & areas of success or improvement	EURES is connected to EUROPASS. EURES includes 31 countries. The jobs advertised on the EURES Portal come from EURES members and partners, in particular the European Public Employment Services.

Name:	Heyu
Website:	External Link

Description:	Heyu is an innovative, data-driven recruitment platform that disrupts the traditional labour market by focusing on professionals based on soft skills instead of the old-fashioned CV.
Target Group:	sales; marketing; customer success; finance; consultancy; finance
Scope:	International, Netherlands, Belgium, Germany (more than 6.500 users)
Types of information collected:	cognitive skills; interests; motivations; vacancies; salaries
Public or private:	Private
Reason for selection & areas of success or improvement	<p>This is a recruitment platform that aims at bias-free hiring and recommends matches based on people's characteristics and cognitive skills.</p> <p>Cognitive assessments are inherently biased, so it doesn't serve the purpose. In addition, it's very unclear how the job requirements in terms of personal characteristics and cognitive abilities are determined - they probably come from employers but that can also lead to bias and therefore beats the purpose of bias-free hiring.</p>

Name:	LinkedIn
Website:	External Link
Description:	LinkedIn is a social media platform for networking but also a resource for professionals to find jobs and research companies. It is also for employers and recruiters to find the right labour force.
Target Group:	Professionals; job seekers; employers; recruiters
Scope:	International (1 billion users)
Types of information collected:	Hard skills; education level; level of employment; occupation; work experience; soft skills
Public or private:	Private
Reason for selection & areas of success or improvement	The large scale of use and source of data for job advertisements.

Name:	Manpower
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Website:	External Link
Description:	Manpower is a part of Manpower Group and a global leader in contingent staffing and permanent recruitment. Through expertise in talent resourcing and workforce management, Manpower provides rapid access to a highly qualified and productive pool of candidates. Focus on diversity and inclusion
Target Group:	Job seekers; employers
Scope:	International
Types of information collected:	Personal Info; Work Experience; Skills; Certifications; Education
Public or private:	Private
Reason for selection & areas of success or improvement	For example, is Manpower Sweden's leading staffing and recruitment company. Manpower.se is one of Sweden's largest job sites with more than 100,000 visitors a month. The candidate bank contains approximately 250,000 CVs and over 10,000 candidates choose to register their CV every month.

Name:	OECD Skills Profiling Tool
Website:	External Link
Description:	To define your skills profile, the tool needs information both on your hard skills (your technical knowledge and training) and on your soft skills (your personal habits and traits). The tool gets information on your hard skills from your education level, the occupation you identify the most with (if any), and how often you do certain activities. To evaluate your soft skills, you will complete personality tests validated by the academic literature.
Target Group:	citizens
Scope:	International
Types of information collected:	Hard skills; education level; level of employment; occupation
Public or private:	Private
Reason for selection & areas of success or improvement	OECD is a reputable organisation that works on skills mismatches. The tool is linked to ISCO classifications. This could serve as an inspiration, especially if linked with ISCO.

Name:	The female factor
Website:	External Link
Description:	Jobs on Europe's first job platform for inclusive companies. reach 65,000+ qualified female candidates by advertising on Europe's first job platform for female talents. Through the community and job platform, more than 10,000 digital-first female talents from 47 countries are reached. 1000+ companies who truly care about diversity, equity & inclusion and foster a thriving environment for female talent are registered.
Target Group:	female job seekers and companies
Scope:	International
Types of information collected:	It depends on the company listed in the portal.
Public or private:	Private
Reason for selection & areas of success or improvement	It is an interesting initiative and tool from the European Commission based on the Europass format and ESCO.

Name:	The Jobs Initiative / World Economic Forum / Global
Website:	External Link
Description:	The World Economic Forum's Jobs Initiative works towards good jobs for all in the context of ongoing labour market disruptions by engaging businesses, governments and civil society on a timely portfolio of action initiatives and insights products.
Target Group:	Governments; employers: businesses; citizens; CSOs
Scope:	International (170 companies, governments, and civil society organisations)
Types of information collected:	The Jobs Initiative engages stakeholders through the following Action Initiatives: (1) Jobs Accelerators are public-private collaboration platforms that harness collective action to accelerate progress towards a better future of work on a national level. (2) The Good Work Alliance is a cross-industry coalition of forward-looking companies looking to shape and advance a better future of work. (3) The Community of Human Resources Officers (CHROs) is a coalition of 140 CHROs across industries focused on shaping and deploying workforce strategies that lead to better people, business and societal outcomes. (4) The Network of Global Future Councils (GFC) is the world's premier future-oriented

	brain trust. It creates foresight in crucial areas, informs decision-makers and the public, and drives action. (5) The Refugee Employment Alliance aimed to accelerate multistakeholder support for the economic integration of refugees globally.
Public or private:	Public-private partnership
Reason for selection & areas of success or improvement	It is a global initiative stemming from a public-private partnership. TRAILS could benefit in its WP6 and 7 from observing the development and implementation of this public-private partnership.

Name:	Your Europe
Website:	External Link
Description:	One part of the platform is about work and retirement.
Target Group:	job seekers; learners
Scope:	EU member countries
Types of information collected:	Information about working abroad, professional qualifications, Unemployment and benefits, retiring abroad, taxes
Public or private:	Public
Reason for selection & areas of success or improvement	The Directorate General manages the site for Internal Market, Industry, Entrepreneurship and SMEs and is an official website of the European Union

EU-funded-projects and potential synergies with TRAILS

The final group of initiatives is EU-funded projects. The topic of skills mismatch is not new, and various projects have sought to respond to skills gaps through matching and forecasting. The following section lays out 20 EU-funded projects that seek to respond to skills mismatch with various target groups and outcomes.

Name:	C-Game
Website:	External Link
Description:	C-Game uses an online game format for the career education of pupils aged 12-15. It takes place in a virtual city where students are introduced to many occupations and, at the same time, find out their interest profile (based on RIASEC)

Target Group:	pupils between 12 and 15
Types of skills considered:	occupational skills; occupational tasks; interests
Type of funding	Erasmus+
Reason for selection & potential synergies with TRAILS	This is an example of a career guidance tool for the target group of pupils that is gamified. It offers a lot of labour market information through an interactive experience.

Name:	CLEAR
Website:	External Link
Description:	The CLEAR project aims to examine the various factors shaping learning outcomes, utilizing multi-level analyses across 8 EU countries (Austria, Bulgaria, Finland, Germany, Greece, Italy, Portugal, and Spain), and providing new insights into educational policies targeting learning outcomes of young people aged 18–29 and attaining secondary and post-secondary education and training. The project adopts dynamic and relational concepts like Life Course, Intersectionality and Spatial Justice.
Target Group:	education professionals; policymakers; young adults
Types of skills considered:	cognitive skills; communication skills; practical skills
Type of funding	Horizon Europe
Reason for selection & potential synergies with TRAILS	This project is related to the TRAILS project in providing information on skills adopted among young adults, who are part of the young workforce. The CLEAR project focuses on a specific demographic group: young people (18-29). It will give useful insights for analysing skill mismatch within this age group.

Name:	C-Passport for Work, Netherlands
Website:	External Link
Description:	A platform where users can create their skill passports and use them to apply for vacancies. It focuses on people in and around Eindhoven, Netherlands.
Target Group:	jobseekers; employers; labour market specialists;
Types of skills considered:	skills; experience; education; vacancies; courses

Type of funding	ERDF (through the Urban Innovative Actions Initiative)
Reason for selection & potential synergies with TRAILS	This platform uses skills as the connecting language between job seekers and employers so they can be matched more effectively. It's limited only to people living in the area.

Name:	CYANOTYPES
Website:	External Link
Description:	The project intends to support the co-creation and delivery of a training programme with concrete trans-national skills modules covering the spectrum of diverse qualifications involving VET levels (EQF levels 3 to 5) and tertiary levels (EQF levels 6 to 8), as well as providing inputs for workplace training and microlearning for existing and new occupational profiles. Organised by a triple-loop learning framework, this will include changes in how we “learn how to learn”.
Target Group:	Those working in the creative sectors
Types of skills considered:	Creative skills; VET skills
Type of funding	Alliances for Sectoral Cooperation on Skills - Erasmus+
Reason for selection & potential synergies with TRAILS	CYANOTYPES is a member of the Pact for Skills for the CCI ecosystem. The project seeks to address but also forecast skills in the creative industry, specifically through VET courses. It is a large consortium with many partners. The project's focus on using VET to address skills mismatch is an interesting similarity to the TRAILS project. The project focuses on developing validation for existing skills, specifically transversal ones. This approach, which includes the validation of existing skills and matching skills, could be interesting.

Name:	DiGiS - Building up a digital skills alliance for the enhancing of programming competencies.
Website:	External Link
Description:	The project aims to strengthen the representation of Continuing Vocational Education and Training and Vocational Education and Training. Strengthen the representation of continuing vocational education and training (EFC) and training in the context of vocational education and training (VET) in participating countries. Improve the link between education and initial vocational training (VET) by applying the methodologies of the different VET pathways, creating a new VET

	qualification for drone programmers and operators and virtual reality (VR) application developers.
Target Group:	VET providers for new programming competencies; VET providers; learners
Types of skills considered:	vocational skills; vocational knowledge; general skills; digital competences; soft skills
Type of funding	Erasmus+ KA2 COVES
Reason for selection & potential synergies with TRAILS	The project develops a specific vocational qualification profile for new programming pathways. The example of the qualification job description splits skills into more categories than usual job adverts, allowing users to understand more specifically where they can improve. Vocational skill is a good term for specific skills needed for a specific job, and digital competencies have an entire category. This could be important to consider when matching skills mismatch.

Name:	European Software Skills Alliance
Website:	External Link
Description:	The project website states, "We provide current and future software professionals, learning providers, and organisations with software needs with the educational and training instruments they need to meet the demand for software skills in Europe."
Target Group:	Software skills providers; learners; VET institutions
Types of skills considered:	Software skills; hard skills
Type of funding	Erasmus+ KA2 COVES
Reason for selection & potential synergies with TRAILS	The project will develop a European Software Skills Strategy, curricula, learning programmes (EQF 4-7) & materials. This is supposed to address skills mismatches and shortages by analysing the sector in depth and delivering future-proof curricula and mobility solutions; tailored to the European software sector's reality. The linking of the skills needed to EQF levels shows the importance also of education for providing for skills needed. This could be an aspect TRAILS considers

Name:	iRead4Skills
Website:	External Link

Description:	The iRead4Skills project aims to reduce the reading skills gaps in the adult population by developing an Intelligent Reading Improvement System that assesses text complexity and suggests appropriate reading materials, providing access to information and culture and contributing to the reduction of skills gaps. This project also aims to enhance the upskilling and reskilling of people and introduce new educational strategies related to formal education, boosting adults' motivation and participation.
Target Group:	adult learners; policymakers; VET providers
Types of skills considered:	reading skills; transversal skills
Type of funding	Horizon Europe
Reason for selection & potential synergies with TRAILS	Focusing on reading and transversal skills, this project will develop an ICT system to measure and promote the improvement of these skills, contributing to the development of new educational strategies in formal education. It is thus linked to the TRAILS project in terms of empowering Vocational and Adult Education training. The iRead4Skills project will provide new insights into skills gaps, but it is limited to reading and transversal skills. Combining its results with the TRAILS' findings would further inform policy recommendations and strengthen Vocational and Adult Education training.

Name:	LINK4SKILLS
Website:	External Link
Description:	Link4Skills addresses the global challenge of skill shortages and mismatches through innovative, sustainable solutions that foster fair skill utilization and exchange across continents.
Target Group:	EU decision-makers, intergovernmental institutions, national and subnational decision-makers, employers' organizations, employees' organizations, and civic society co-development institutions.
Types of skills considered:	Future skills; skill gaps
Type of funding	Horizon Europe
Reason for selection & potential synergies with TRAILS	This is a "sister project" of TRAILS. It is also closely linked because it will develop a skilled navigator and forecaster using AI. The Link4Skills Navigator leverages artificial intelligence to analyse data on skills supply and demand across different regions and sectors. It will provide insights into current and future skill gaps, recommend policies for skill development and migration, and facilitate connections between job

	seekers, educational institutions, and employers on a global scale. The focus is on migration and combatting migration skills gaps, which is very interesting for TRAILS, especially with an AI that was developed for a similar purpose.
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Name:	LCAMP - Learner-centric Advanced Manufacturing Platform
Website:	External Link
Description:	An international project working to build a sustainable future of Advanced Manufacturing, starting with the learner. WP3 has a skills observatory and WP5 skill finder correlation with ESCO for AM
Target Group:	Students; Learners; Teachers; Regional and Local Authorities
Types of skills considered:	Advanced Manufacturing; skills for the future
Type of funding	CoVE – Erasmus+
Reason for selection & potential synergies with TRAILS	The CoVEs project will develop the skills observatory with the perspective of foreseeing future skills, very much in line with TRAILS vision. The initiative foresees skills forecasting only for the Advanced Manufacturing sector, but the approach is grounded and could be interesting for all sectors.

Name:	MEGASKILLS
Website:	External Link
Description:	The MegaSkills project aims to bridge the gap between the educational offer and the labour market by researching and designing an innovative and affordable methodology for training and evaluating soft skills. It will employ AI and video game data to create training and assessment techniques.
Target Group:	students; managers; migrants; unemployed; policymakers
Types of skills considered:	soft skills
Type of funding	Horizon Europe
Reason for selection & potential synergies with TRAILS	This project is related to the TRAILS project in providing information on soft skills gaps in specific target groups. The MegaSkills project focuses only on specific skills and groups of people. However, its results could be useful for the TRAIL project.

Name:	Mind the Gap-från enhetsyn till helhetsperspektiv (from silos to a holistic perspective)
Website:	NA
Description:	The project seeks to strengthen and develop the organisational collaboration and organisation in the municipality through the creation of innovative methods and approaches that improve the structures around skills supply and knowledge development; a way of working for our municipal organisation, our entrepreneurs and the municipal residents who are currently outside the labour market to build a stronger Timrå.
Target Group:	Working adults
Types of skills considered:	Soft skills; hard skills
Type of funding	ESF+
Reason for selection & potential synergies with TRAILS	The project looked at skills from a holistic approach and in cooperation with local municipalities.

Name:	SKills2Capabilities
Website:	External Link
Description:	Skills2Capabilities is about understanding how skill systems need to develop to assist people in making labour market transitions—i.e., between jobs, employers, or sectors—and thereby reduce the level of skill mismatch that might otherwise arise. The study is about the capabilities individuals will increasingly need to acquire to manage labour market transitions effectively.
Target Group:	policymakers in government; decision-makers; VET providers
Types of skills considered:	skills policies; VET skills
Type of funding	Horizon Europe
Reason for selection & potential synergies with TRAILS	This is a sister project of TRAILS. It is focused on advising policymakers on methodologies to address skills mismatch. The project will look at how effective VET systems are at addressing skills mismatch. These results could be very interesting for TRAILS, which assumes they are effective and considers why the population would or would not follow such a course. Sharing these results between the projects could help to validate the findings of both.

Name:	SKILLAB
Website:	External Link
Description:	The SKILLAB project aims to develop a holistic skills management and shortage identification platform that will monitor the demand for and supply of specific skillsets by European organizations and entities.
Target Group:	EU decision-makers, intergovernmental institutions, national and subnational decision-makers, employers' organizations, employees' organizations, and civic society co-development institutions.
Types of skills considered:	Future skills; skill gaps
Type of funding	Horizon Europe
Reason for selection & potential synergies with TRAILS	This is a "sister project" of TRAILS. It will use AI to predict skills and has a similar focus because it also emphasizes the role of VET in addressing skills shortages. The project focuses on creating policy solutions from its findings, with an emphasis on VET. As TRAILS works with similar goals, especially in VET, it would be interesting to cooperate on the policy results and share the data on this issue.

Name:	SkillMeeT
Website:	External Link
Description:	SkiLMeeT is a Horizon-funded research project carried out by eight research institutions. It explores how the digital and green transformation of European economies is changing the demand for skills. We analyse the scope of skills shortages and mismatches, identify their drivers, and propose innovative ways to reduce skills gaps.
Target Group:	policymakers in government; decision-makers; VET providers
Types of skills considered:	skills policies; digital skills; green skills
Type of funding	Horizon Europe
Reason for selection & potential synergies with TRAILS	Some of its generic agenda has ties and links to the TRAILS project. There is ample space for engaging in joint knowledge exchange activities. The initiative also discusses the use of big data, but it lacks emphasis on modern methods, e.g. machine learning and AI. It also does not mention

	primary and experimental data generation or focus groups (e.g. platform workers).
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Name:	SKILLS4JUSTICE
Website:	External Link
Description:	This project aims to develop a systemic analysis of skills shortages in 5 EU countries and 6 non-EU countries in the context of global workforce migration by providing research-based evidence on the nature and development of skill shortages and on the potential of different skills partnerships to tackle these shortages in migrants' countries of origin and destination.
Target Group:	workforce in EU and non-E countries; migrants: policy-makers
Types of skills considered:	labour market skills; skills shortages
Type of funding	Horizon Europe
Reason for selection & potential synergies with TRAILS	This is a sister project of TRAILS. It focuses on analysing skills mismatches between jobs with workforce shortages and migrants. The project wants to look at the skills shortages in the EU and non-EU countries selected, then analyse the skills of migrants and learn to match through training. The goals are like those of TRAILS, so combining the policy recommendations or results could be very interesting in order to validate the findings.

Name:	YOUNG_ADULLLT
Website:	External Link
Description:	Young_Adulllt project examines the compatibility and impact of European Lifelong Learning (LLL) policies on young adults by assessing their orientations, objectives, and unintended effects.
Target Group:	policymakers; education authorities; education providers; young adults
Types of skills considered:	communication skills; basic technological skills; personal and social skills
Type of funding	Horizon Europe
Reason for selection & potential synergies with TRAILS	This project is related to the TRAILS project in providing information on skills gaps among young adults, who are part of the young workforce. The Young_Adulllt project focuses on a specific demographic group: young

	adults. It will give useful insights for analysing skill mismatch within this age group.
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5. Conclusion: what are the potential synergies with TRAILS?

There are several initiatives aimed at addressing skills mismatch, but they lack effective collaboration among them. Many of these projects are new and were funded at the same time as TRAILS, making it difficult to assess their relative effectiveness. Therefore, it's crucial for TRAILS to keep track of the progress of these projects and ensure that their results are shared and utilized. This will prevent a scenario where multiple projects are independently funded but have limited impact.

For example, TRAILS is closely linked with other projects, such as the Link4Skills project, which focuses on identifying current and future skill gaps, suggesting skill development and migration policies, and facilitating connections between job seekers, educational institutions, and employers globally. However, Link4Skills specifically addresses skills gaps in regions with high migrant populations and not for the general population.

Many EU-funded projects target specific skill sets in economic sectors or specific groups, such as migrants and young people. For example, LCAMP focuses on matching skills for those in the Advanced Manufacturing sector, while the SKILL4Justice Horizon Europe project targets migrants and policy-makers working in that area.

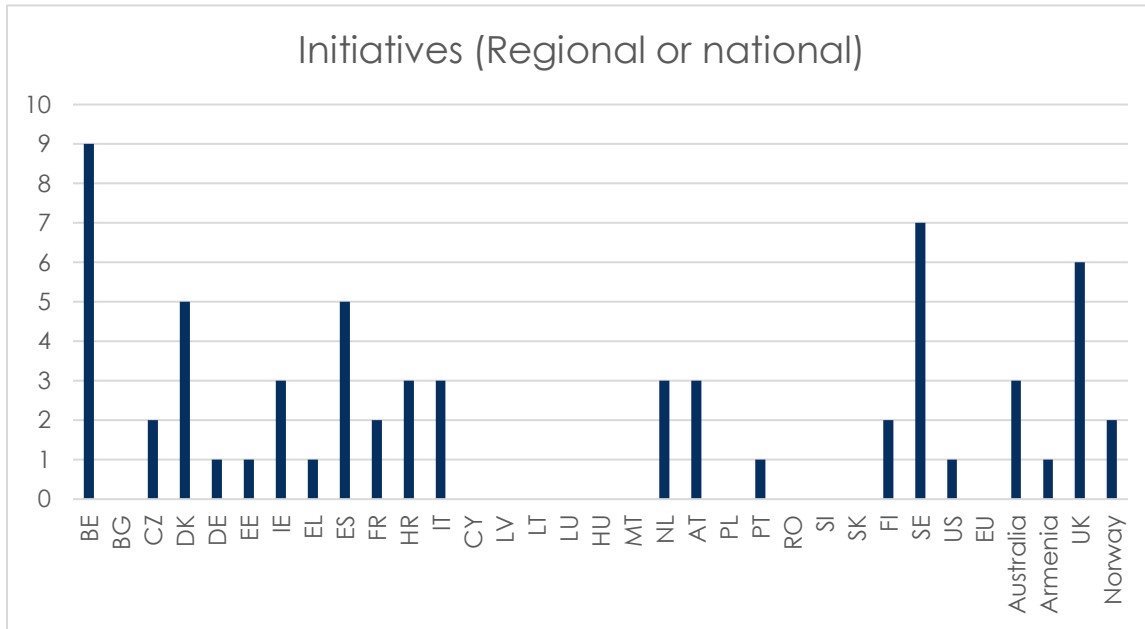
Despite this, projects funded under the same call for proposals as TRAILS are still in their early stages. TRAILS is in the process of establishing collaboration with these projects, including through a webinar on May 8, 2024. In addition, D6.1 will be produced within the Communication and Exploitation work package, outlining the methods for continued dissemination and connections with other projects. The progress and outcomes of these EU projects will be closely monitored, emphasising at the sharing of relevant results and methodologies.

Another observation is that many initiatives listed in the current D1.2 are platforms where users contribute to the dataset by entering information rather than using existing datasets. TRAILS aims to take an additional step by allowing users to input information about jobs and skills, among other things, and then generate measures of how well jobs and workers are matched based on existing administrative datasets containing observations of workers or firms. Therefore, if TRAILS intends to learn from other initiatives, it must explore projects with similar methodologies using machine learning and thoroughly investigate their methods.

Finally, the abundance and diversity of EU-funded projects addressing skills mismatch raises questions about measuring their effectiveness and ensuring that TRAILS fills the gaps in existing initiatives. The figure below illustrates the geographic distribution of initiatives at the regional or

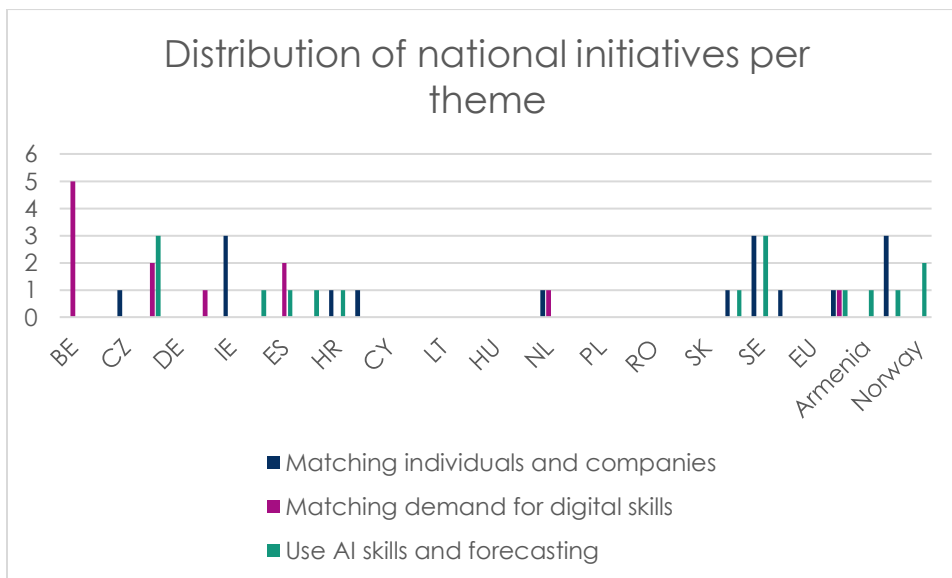
national

level.



The table presents the varied geographical distribution of initiatives across the EU 27 and countries outside the block. It reveals a gap in coverage for Cyprus, Lithuania, Latvia, Hungary, Malta, Romania, Slovakia, and Slovenia. TRAILS could certainly seek to fill the gap in these countries.

Moreover, the following table presents an overview of the national initiatives focused on three main areas:



The table shows the distribution of the initiatives at the national level reported in this deliverable by frequency theme. It is interesting to note that certain countries, like Belgium, may be active in initiatives to tackle skills mismatch in the digital skills field. However, they need to be present in the database for initiatives to use AI skills and forecasting.

The TRAILS partners will use the findings from this report to shape the project outcome T1.3, titled "Functional requirements for the TRAILS innovations." In the next report, the partners will delve deeper into the existing initiatives to address skills mismatch, identify gaps, and devise an action plan for how TRAILS can bridge these gaps and introduce innovative solutions. Specifically, the authors will research highlighted initiatives like Edu2Work, the Lisboa Employment Map, or Skills Wales to extract valuable insights on methodology, scope, and content that TRAILS can leverage and build upon. This effort is crucial given the multitude of existing initiatives addressing skills mismatch and the need for greater interconnectivity among them. By using this report as a comprehensive overview of solutions at various levels and then analyzing specific examples in alignment with the project's objectives, the TRAILS platform is poised to offer truly innovative solutions.

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