

AI-based support tool for digital personal learning accounts

Baseline study



Funded by
the European Union



IMPRESSUM

Published by:

Governmental Agency for IT Development - president

Editor: Erzsébet Szlamka (HU)

Proof-reader: Emma Wyatt (SK)

Graphic Design: Teodóra Matisz (HU)

Authors: Zdeňka Šímová (CZ), Markéta Tučková (CZ), Filip Klicnar (CZ), Erzsébet Szlamka (HU), György Salomvári (HU), Horacy Dębowski (PL), Wojciech Stęchły (PL), Ľubica Gállová (SK), Zuzana Izáková (SK), Katarína Šmálová (SK)

Address: Governmental Agency for IT Development

1134 Budapest, Vaci str. 35.

www.kifu.gov.hu

Email: info@kifu.gov.hu

Contents

1.	Introduction	6
2.	Overview of methodology	7
2.1.	Overview of the EU concept of the Individual Learning Accounts (ILAs)	7
2.2.	Objectives	8
2.3.	Professional concept	8
2.3.1.	Basic principles of the project's professional concept	8
2.3.2.	Practical examples	8
2.4.	Content of the feasibility study	9
2.4.1.	Mapping the environment determining the possibilities of soft skill development	9
2.4.2.	Analysis of adult learning solutions and databases	10
2.4.3.	Collection of good practices	10
2.4.4.	Empirical research: conducting and evaluating interviews	10
2.4.5.	Exploring the application possibilities of Artificial Intelligence (AI)	11
2.4.6.	Create a list of potential users of the ILA data model	11
2.4.7.	Experiences and recommendations	11
2.4.8.	Attachments	11
2.5.	The process of building the ILA data model	11
3.	Mapping the environment for soft skill development opportunities	12
3.1.	Situation analysis of adult training funding systems	12
3.1.1.	Adult training funding systems in Czechia	12
3.1.2.	Adult training funding systems in Hungary	14
3.1.3.	Adult training funding systems in Poland	17
3.1.4.	Adult training funding systems in Slovakia	19
3.1.5.	Notable international examples	21
3.2.	Situation analysis of ILAs	26
3.2.1.	Situation analysis of ILAs in Czechia	26
3.2.2.	Situation analysis of ILAs in Hungary	28
3.2.3.	Situation analysis of ILAs in Poland	29
3.2.4.	Situation analysis of ILAs in Slovakia	31
3.2.5.	Notable international examples	33
3.3.	Situation analysis of micro-credentials	37
3.3.1.	Situation analysis of micro-credentials in Czechia	37
3.3.2.	Situation analysis of micro-credentials in Hungary	38
3.3.3.	Situation analysis of micro-credentials in Poland	39
3.3.4.	Situation analysis of micro-credentials in Slovakia	41
3.4.	Focus on soft skills - analytical framework	43
3.4.1.	Conceptual framework	43
3.4.2.	Procedure of the analysis	45
3.5.	Systemic solutions regarding soft skills	46
3.5.1.	European Qualifications Framework (EQF)	46
3.5.2.	Key competences for lifelong learning	47
3.5.3.	ESCO - Analysis of available databases and data sources in the field of soft skills	47
3.5.4.	European Skills Agenda	51

3.5.5.	PIAAC	52
3.5.6.	PISA: Programme for International Student Assessment	52
3.5.7.	DESI - Analysis of available quantitative databases in the field of soft skills	53
3.5.8.	Cedefop databases	54
3.5.9.	Eurofound: European database of tasks indices	56
3.5.10.	O*NET - Occupational Information Network	57
3.5.11.	OECD survey on social-emotional skills	58
3.6.	Labour market trends in soft skills	60
3.6.1.	Workplace Learning Trends Report - Udemy Business	60
3.6.2.	Europass	62
3.6.3.	Key skills projected by the World Economic Forum for 2025	63
3.6.4.	Short-term labour market forecast in Hungary	63
3.7.	Soft skills frameworks in the EU	64
3.7.1.	DigComp 2.2	64
3.7.2.	DigCompConsumers	66
3.7.3.	DigCompEdu	66
3.7.4.	DigCompOrg	66
3.7.5.	CEFR	66
3.7.6.	LifeComp	67
3.7.7.	GreenComp	68
3.7.8.	EntreComp	69
3.7.9.	FinComp	70
3.7.10.	Competences for Democratic Culture	72
3.8.	National solutions for soft skills management	72
3.8.1.	National solutions for soft skills - Czechia	72
3.8.2.	National solutions for soft skills - Hungary	76
3.8.3.	National solutions for soft skills - Poland	76
3.8.4.	National solutions for soft skills - Slovakia	81
3.9.	Conclusions on the design of the data model	85
3.9.1.	Conclusions on adult learning systems and their funding solutions	85
3.9.2.	Conclusions to be drawn from the presentation of soft skills solutions	86
3.9.3.	Conclusions to be drawn from the presentation of the frameworks	88
3.9.4.	Conclusions based on the presentation of national soft skills solutions	88
4.	Analysis of databases	89
4.1.	General findings	89
4.2.	ILA data model design recommendations	92
4.2.1.	Structure of the training data field structure	92
4.2.2.	Proposals for edited training data sets	95
4.2.3.	Structure of the data field structure of participants	96
4.2.4.	Proposals for edited data sets for training participants	98
5.	Good and unsuccessful examples	99
5.1.	Good and unsuccessful examples regarding ILAs	100
5.1.1.	SCOTLAND – ILAs and ITAs	100
5.1.2.	Voucher-based adult education scheme in Croatia	100
5.1.3.	ILAs (2000-2001) in the UK - an unsuccessful example	102

5.2.	Projects to learn from	103
5.2.1.	The SPOCC Project	103
5.2.2.	The TRANSVAL Project	104
5.2.3.	Data Space for Skills	105
5.3.	National good practices in adult learning	106
5.3.1.	National projects and initiatives	106
5.3.2.	Private solutions	108
5.3.3.	Notable international examples of micro-credentials	108
6.	Empirical Research Report	113
6.1.	Methodology	113
6.2.	Summary and recommendations	114
7.	Exploring the application possibilities of artificial intelligence	123
7.1.	Analysis of potential for application of AI	123
7.1.1.	What is AI?	123
7.1.2.	What is the scope of possible use of AI for ILAs?	125
7.2.	Proposed applications of AI for D-ILA V4 project	127
7.2.1.	Profiling	127
7.2.2.	Recommendations based on content matching	129
7.2.3.	Recommendations based on exploration and text prompt	131
7.2.4.	Recommendations based on collaborative filtering	131
7.3.	Limitations in AI use for ILAs	132
7.4.	Cost-benefit analysis of ILAs and the analysis of the benefits of the ILA data model	134
7.4.1.	General remarks on the cost-benefit of the project outputs	134
7.4.2.	Discussion on the subject of cost-benefit analysis	135
7.4.3.	General remarks on the cost-benefit of the project outputs	136
7.4.4.	Summary	137
8.	Experiences and recommendations	137
8.1.	Findings concerning the development of the ILA data model	137
8.1.1.	The action plan and the planned scope of activities indicated in the project proposal are feasible	138
8.1.2.	There are limitations to the introduction of ILAs	138
8.1.3.	Full implementation of ILAs leads to paradigm shift	139
8.1.4.	Differences between ILA data model and company trainings	140
8.1.5.	The importance of soft skills training is growing within adult education	140
8.1.6.	In the ILA data model, positive discrimination is recommended	141
8.1.7.	Desired data connections can be established along different EU frameworks	141
8.1.8.	The role of AI should be made transparent	142
8.2.	Recommendations for the applicability of the ILA data model	142
8.2.1.	Applicability in practice	142
8.2.2.	Application cases for the data model	143
8.2.3.	Supportive environment	143

1. Introduction

This feasibility study is a product of the project Digital Individual Learning Accounts in the Visegrad Countries. The project is funded by the European Union.

The project aims to support Member States in developing an enabling framework for Individual Learning Accounts (ILAs), thereby contributing to increasing the number of adult learners. The main objective of the project is to model and test a data model that would allow the use of AI technologies for personalised training recommendations and efficient spending through a delivery mode such as ILAs.

This feasibility study forms the basis of the project.

- To assess the viability and practicality of a proposed project or course of action.
- Before embarking on a major business initiative, to determine whether it is technically, economically, and operationally feasible.
- To identify potential obstacles, risks, and opportunities associated with the project.
- To provide decision-makers with the information they need to make informed choices.

In the methodological chapter of the feasibility study, we briefly review the EU concept of ILAs. This concept is one of the starting points of the feasibility study, as the whole project is based on ILAs. The methodology chapter also sets out the objectives of the feasibility study. The presentation of the principles and use cases, as well as the logical structure of the project, will help to make the methodology used understandable.

Chapter 3 discusses the funding systems for adult learning, including the situation of ILAs in different countries. This is followed by an analysis of micro-credential schemes, also by country. Information on soft skills at the EU level was then collected with a strong focus put on mapping the different frameworks. We also looked at soft skills development practices by country. At the end of the chapter there is a summary analysing the findings from the perspective of the project.

The partnership experts collected and processed information on the data system on adult learners at national, EU, and international levels. In Chapter 4, the conclusions drawn from this information are presented in a consensus format to inform the further planned activities of the project. Our conclusions no longer contain country-specific elements, but are valid for the whole ILAs data model, which is intended to be uniform at the EU level. This chapter is based on background studies prepared by the experts in the consortium, which also include country-specific elements.

The collection of good practices was initially focused on the countries of the organisations participating in the partnership. This was followed by an examination of good practices from European and non-European countries. In fact, by good practice we also included unsuccessful projects, as valuable lessons can be learnt from them. The case reports were evaluated for our project.

The empirical research report - based on 42 interviews in 4 countries - is Chapter 6 of the feasibility study. It aims to complement the analysis in the previous chapters with practical aspects. The guide for semi-structured interviews used in the empirical research (+ version for international experts) is included in the annexes of the feasibility study.

The project will use AI-based solutions as an analytical tool. For this reason, the feasibility study includes a specific chapter on the applicability of AI in adult education.

The final chapter of the feasibility study summarises the main findings of the previous chapters, which will help to inform the development of the ILA data model in the next phase of the project.

The study (carried out in the framework of WP2) is designed to map the learning accounts, micro-credentials, possible use of AI and other related environments to raise questions associated with the implementation of the ILAs; the design of the data fields and value sets, as well as the execution of the AI-based algorithm, is a type of test or experiment to answer the questions previously raised. Not only will the actual answers be provided in the Methodological Guide (to be written in WP5), but the remaining dilemmas and decision points will also be identified. Therefore, the feasibility study should not be treated as a finished document, but as the first element of a development project.

2. Overview of methodology

This chapter provides an overview of the methodological approaches used to prepare the feasibility study for the project. The chapter has been prepared to ensure clarity.

2.1. Overview of the EU concept of the ILAs

Based on the Council Recommendation of 16th June 2022 on ILAs 2022/C 243/03¹ document, the following situation analysis is given:

- Insufficient financial support for individuals is one of the main barriers influencing participation in learning.
- Many adults, especially among the low-skilled and those furthest from the labour market, are not motivated to participate in learning.
- One possible approach to addressing the problems outlined above is to provide people with direct support through training entitlements in ILAs.
- Member States could provide additional training entitlements for those most in need, depending on the national context and the changing labour market. For instance, Member States could top up ILAs in strategic sectors to support the green and digital transitions.
- ILAs should allow people to accumulate and use training entitlements over a set period, to be defined at a national level, so that they can undertake longer or more costly training or train during economic downturns, in response to emerging skills needs.
- Individuals should be able to preserve their individual training entitlements regardless of their employment or occupational status and across career changes.
- The possibility of preserving individual training entitlements during periods when the individuals live in another Member State.

¹ Source: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32022H0627%2803%29&qid=1686034162455>

- There is a need for up-to-date public registries of recognised training through dedicated single national digital portals, accessible to all, including people with disabilities, and preferably interconnected with the Europass platform.
- Adequate funding is a key feature of successful ILA schemes. A national scheme of ILAs could facilitate cost-sharing between various funding sources, such as public authorities, employers and social partner-managed funds, by allowing different funding sources to contribute to the ILAs.

It is important to note that the recommendations apply to adult education as a whole, however, our project focuses only and exclusively on soft skill development within adult education. For this purpose, we understand soft skills as a concept defined by UNESCO (see Annex 2 Glossary). Moreover, we also examined three other general skills groups that are of high importance in the current labour market and thus are reflected in the policies and frameworks promoted and/or developed by the EU: green skills, language skills, and ICT (digital skills). The reason for including these groups is that they are also transversal and highly relevant based on the comprehensive EU goals in skills development and LLL related strategies.

2.2. Objectives

Based on the above, the main objectives to be achieved in the chapter are:

1. To develop proposals for data fields describing the characteristics of adult learning participants in the ILA data model and to define possible values for the data fields.
2. To develop proposals for data fields describing the characteristics of training opportunities in adult learning or education in the ILA data model and to define possible values for the data fields.
3. To develop editorial recommendations for the design of data series on participants in adult education and adult learning.

2.3. Professional concept

In this chapter, we list/explain the principles of our professional concept and provide practical examples in order to make the principles easier to understand.

2.3.1. Basic principles of the project's professional concept

The project's professional concept is as follows:

The most important principle applied during the preparation of the professional concept is that we always used EU aspirations and recommendations as a basis. EU recommendations are already available to all stakeholders. During the preparation of the feasibility study, we took a brief look at the stage of implementation of EU recommendations in practice (see Chapter 3). As not all frameworks examined are fully implemented, we had to consider a future state of play: we are building an ILA data model in which all currently known EU recommendations are considered to be essentially implemented. The ILA data model thus reflects a future state to be achieved at the EU level.

As it is a future state, the ILA data model cannot include real data. Some of the data used is not currently available or integrated to the extent necessary to be used in the ILA data model. The data fields and data series used in the ILA data model are created by the project's expert team by editing,

analysing, and further reflecting on the information currently. One of the advantages of this solution is that the project does not fall under GDPR regulations.

The development of a matching algorithm and its implementation in the form of an information system which would be able to assign concrete, practical training to individuals would go far beyond the framework of the project. Furthermore, such algorithms are already being developed but their use in the public domain is limited because of the limitations of data models used to store information about training and individuals. The aim of the project is different and is to test the ILA adult education funding model at the data level and to publish the experiences from a methodological point of view. It follows that the ILA data model deliberately does not include data fields that would be relevant to the organisation of a particular training course. For example, training in the ILA data model has no start date or training organiser. Details on this matter will be provided later.

2.3.2. Practical examples

Two cases of practical applicability of the ILA data model are presented in this chapter. Note that these examples presume that an ILA system is already established, meaning that: individuals receive training entitlements and there are tools and interfaces for various actors to use the data structured using the ILA data model.

The person responsible for employee development plans in a SME prepares a training offer for employees. The ILA uses a data model to define training parameters and record training participants' data. In accordance with company policy and the inputs provided (e.g. training topics, skills needed) and with the help of a previously trained AI, SME employees are assigned to training courses, thus the amount of required SME-level participation in training costs is calculated. After that, the employee consults with the company management and they decide to limit the proposed training budget by 10%. They then run the AI again with a 90% budget, generating a new list of employees and training associations with a lower budget. Since the training courses defined using the ILA model are not specified, the SME employee contacts a training company. They submit the training request (training parameters and numbers) derived from the ILA model to the training organising company, for which the training company looks for specific courses.

A Member State receives EU funding for the development of digital literacy of its citizens, so the cost limit for training is known. The number of training participants is also known in the form of indicators. With the help of the ILA data model, the members of the target group can be parameterised and the training needs can be modelled, which increases the robustness of the training to be procured and/or developed and makes it easier to prepare its specification with the help of modelling.

2.4. Content of the feasibility study

In the feasibility study, the different content elements have been given a separate chapter.

It is important to note that due to the large amount of information available, the feasibility study was established in two steps. In the first step, several hundred pages of background studies were prepared, fully processing the available information. In the second step, the background studies were evaluated and summarised, taking into account both the limitations of the feasibility study and the immediate needs and criteria of the data model development.

Of course, the partnership also ensures public access to the background studies created within the framework of the project; however, full proofreading and additional analysis was only provided in the

case of this feasibility study, i.e. the background studies can be seen as raw data, some of which has not been used in the end because of various limitations or relevance.

2.4.1. Mapping the environment determining the possibilities of soft skill development

In this chapter, we describe adult education systems in V4 and several other countries which have a significant impact on the practical implementation of the ILA recommendations published by the Council of the EU. We then map what steps have been taken in each V4 country to make ILAs feasible. The topic of micro-credentials is closely related to the concept of ILAs and is therefore covered in detail in the background study prepared for this chapter.

The topic of soft skills training opportunities is explored along the following logic:

- First, we explore the state of play of international terminology on soft skills and define what we mean by soft skills in the context of this project.
- We then map the systemic approaches to soft skills in the EU, including European frameworks and classifications that provide a transparent picture of the qualifications or occupations acquired in each country, but also of the aptitudes, skills or competences required to exercise them.
- Analysis of the data contained in the frameworks and classifications can be key to the data model and influence the AI-based algorithm that recommends the level of training for each individual.
- An indispensable part of our analysis is the frameworks beyond the above, which include competences that can be acquired through formal, informal, or non-formal learning, that help employees (and entrepreneurs) to thrive in the 21st century labour market, and that are essential for their active participation in society.
- The framework overview briefly describes the main objective, structure, and usability of the framework.
- Taking all this into account, and responding to the demands of the labour market, we propose the soft skills that should be part of the data model and underpin the empirical research we will carry out in the project.

In the last part of the chapter, proposals for the creation of the D-ILA data model are developed.

2.4.2. Analysis of adult learning solutions and databases

As a first step, the partnership developed a set of criteria to analyse each country from the perspective of an ILA data model. The considerations are as follows:

- General information about the adult education system
- Overview of available sources of information
- Background relevant to the ILA data model
 - o Legislative framework
 - o Statistical system
- Analysis of the information content of available databases
- General conclusions

- Conclusion on data fields for training and participants
- Conclusion on the composition of the target group

It is important to note that we were not looking at the feasibility or possibility of implementing ILAs in a particular country. The focus was always on identifying potential data fields and the composition of data series from the perspective of the ILA data model.

The country-by-country analysis carried out in accordance with the developed criteria were compiled in a single document, the background study. The background study contains all the information, data, and analysis, as well as links, that have been used to inform the recommendations made in the relevant chapter of the WP2 Feasibility Study.

2.4.3. Collection of good practices

In collecting good practices, we first focused on the countries of the organisations participating in the partnership. This was followed by an examination of good practices from both European and non-European countries. In fact, by good practice we also mean unsuccessful projects, as valuable lessons can be learnt from them. The case reports have been evaluated for our project.

2.4.4. Empirical research: conducting and evaluating interviews.

Empirical research is an activity within WP2. The resulting empirical research report is included in the feasibility study as Chapter 6. It is not possible within the given scope and timeframe of the project to carry out a comprehensive “full-range” (representative) survey. Moreover, the extensive initial desk research and professional insights of participating partners covered policy approaches in adult education funding schemes and soft skills policies to a large extent, so it is not necessary to assess these areas with further empirical research. Therefore, the initial proposal for empirical research is to explore the broader motivations and opinions of policy makers, training providers, HR professionals, international experts, equity experts etc. in order to better shape the data model inputs. With this in mind, our research will take the form of a targeted inquiry using qualitative methods (semi-structured interviews).

2.4.5. Exploring the application possibilities of artificial intelligence

Our project to create and test the ILA data model does not aim to develop AI algorithms. The purpose of applying AI-based solutions is to test the data model with the help of some ready-made solution. As AI is not developed in the project, the AI chapter of the feasibility study looks at adult education in general and examines the application possibilities of AI in a broader context.

2.4.6. Create a list of potential users of the ILA data model.

In order to make the ILA data model widely applicable, we have collected a list of stakeholders for whom the ILA data model is relevant. Some of these stakeholders were personally interviewed during the empirical research phase of the feasibility study, while the other stakeholders on the list could be contacted during the dissemination phase. Due to data protection considerations, the list does not contain any personal data.

2.4.7. Experiences and recommendations

This is the summary chapter of the feasibility study, in which the data gathered, and lessons learnt in the previous chapters are summarised.

2.4.8. Attachments

A table linking the commitments contained in the approved project proposal and the different chapters of this feasibility study is provided in the Annex. This will allow interested parties to get an accurate picture of how the commitments in the tender will be implemented in practice. The following annex provides a glossary of terms used in this document and their definitions. The Annex also contains the methodological guide for empirical research and the guide for interviewers. Details of the stakeholder list in tabular form are also included in the Annex.

2.5. The process of building the ILA data model

An overview of the logical structure of the project explains/highlights the role of this study:

1. Developing the data field structure of the training-related data sheet
2. Designing the data field structure of the data sheet containing participant-related data
3. Structuring the data rows of the training data sheet (number of rows not yet defined)
4. Editing the data rows for the AI to be trained using data tables containing participant-related data (300 rows as committed in the proposal)
5. Linking the AI participant-related data and the training data sheet by assigning training to the 300 rows of person-data
6. Training AI on the basis of the 300 participant-related dataset + their assigned training
7. Populating the live data table with participant-related data with data rows (600 rows as committed in the application) that have no training assigned to them
8. Running a trained AI, as a result of which the AI assigns training to the 600 data rows based on the logs previously learned. The AI uses the same data table containing training as it used to train
9. Create a final result table (600 rows of data: participant-related data + associated training)

3. Mapping the environment for soft skill development opportunities

This chapter discusses the funding systems for adult learning, including the situation of ILAs in different countries. This is followed by an analysis of micro-credential schemes, also by country. Information on soft skills at EU level is then presented. Within this, a strong focus is put on mapping the different frameworks. We also looked at soft skills development practices by country. At the end of the chapter, a summary is provided which analyses the findings from the perspective of the project.

3.1. Situation analysis of adult training funding systems

The funding systems for adult learning are examined mainly in the partnership countries. Several notable examples from other EU countries are included.

3.1.1. Adult training funding systems in Czechia

In Czechia, there is no unified coherent system for CVET as such, nor for CVET funding. Adult education in Czechia is provided within a few independent frameworks. They are (a) regular schools (within the official school system), (b) employers, (c) public employment service, (d) the free market.

Adult education provided by schools²

The school's system consists of basic schools (comprising primary and lower secondary education³), secondary schools, tertiary professional (vocational) schools, and higher education institutions. In theory, adults can enrol in any school educational programme. In practice, adults most often attend part-time or distance learning programmes specifically designed for them. Schools are decisively funded from public budgets (especially from the budget of the Ministry of Education, Youth and Sports and from the budgets of regional authorities). Concrete financial flows and allocation systems differ slightly in different school levels/types. Most formal education (leading to a formal qualification level) in public schools is provided free of charge. Private schools and tertiary professional schools charge participants fees. Non-formal, part-time or distance courses are mostly provided for a fee.

Adult education provided by employers.

Employer-provided adult education is usually funded by the employer. There are various forms of incentives and grants that (mainly) employers can apply for. These schemes are often project-based initiatives co-funded by EU structural funds. Due to their temporary nature, conditions change according to the political priorities of the state administration (e.g. anti-crisis programmes, investment incentives in selected industries etc., see an example of the POVEZ programme below). Employers can also apply for a subsidy to retrain their employees within the framework of the Active Labour Market Policies (ALMP – see below).

Adult education provided within the Public Employment Service (PES)

The key part of the active labour market policies provided by PES is the so-called “re-training”. It is funded from the state budget (through the budget of the Ministry of Labour and Social Affairs), but a large part of the training is also provided through projects co-funded by the ESF and managed by the Labour Office (LO).

The funds are transferred to the Labour Office which then distributes them to its regional branches. The LO branches cover the course fees for the participants and may also contribute to other retraining related costs. The training programmes must be accredited (the accreditation is mainly provided by the Ministry of Education, Youth and Sports, but also by other ministries in case of specific programmes). The training provider submits an application with a description of the training content, forms, and methods used (including assessment of the learning outcomes). If approved, the accreditation is valid for three years, after which it must be renewed.

There are several schemes through which the LO funds training:

- Retraining of registered jobseekers (unemployed)

² A network of schools providing initial education for children and adolescents before they enter the labour market. They can be public or private but are subject to the rules and regulations of the state (Ministry of Education, Youth and Sports).

³ The names of education types and schools may vary from country to country. In the Czech Republic, compulsory schooling is currently 9 years. Lower secondary education corresponds to approximately 11-15 years of age and is usually provided in the second cycle of primary schools. Higher secondary education can be either general (grammar schools) or vocational and corresponds to approximately 15 - 19 years of age. For a diagram see, for example, <https://eurydice.eacea.ec.europa.eu/sites/default/files/inline-images/CZ.jpg>

- Retraining of people interested in changing jobs (may already be employed)
- Retraining of employees as requested by their employer (in order to prevent employees from losing their jobs)

The retraining of individual applicants (unemployed and those interested in changing jobs) has two forms:

1. **Retraining organised by the Labour Office.** Regional branches of the LO contract a pool of training courses according to the situation in their region (needs of the unemployed and of the labour market). The training courses are then recommended to registered individuals and the costs are covered, provided that the individual participates in the course.
2. **Choice-based retraining.** Individuals may also search for a course according to their own preferences (the course must be accredited by the Ministry of Education). If the LO approves the choice, it provides funding for the course. The total amount for one person is limited to 50,000 CZK (ca. 2,130 EUR) over a period of three consecutive years. The condition is that the individual attends the course and fulfils the course requirements (e.g. an exam). Should the LO decide to fund the training, it issues an endorsement to the applicant confirming that, after they have successfully completed the course, the costs will be paid to the training provider. A new initiative, based on the National Recovery and Resilience Plan, is being prepared in 2022-2023 with the aim of significantly expanding elective retraining opportunities and increasing participation. The scheme is to be developed into a pilot scheme for ILAs (see section 3.2.1).

Should an employer apply to retrain its employees, the LO covers the costs of the training, while the employer covers the wages of the participants during the course.

Free market training

Free-market training is unregulated and is based on the principles of supply and demand. Most of it is funded by participating individuals, but there are also various subsidised programmes provided by non-profit or public organisations for public benefit.

Example of a successful adult education programme funded from the ESF: Support of vocational training of employees (POVEZ)

Since 2009 a series of ESF co-funded programmes have been in place to provide financial support for employee training. In particular, there have been two successive projects entitled Support of Vocational Training of Employees I and II (POVEZ I and POVEZ II). The overall objective of the programme is to support the adaptability of the workforce in the situation of constantly changing labour market requirements. It addresses the mismatch between skills available to and skills required by employers as well as the low flexibility of the workforce.

The main target group of the project are employers, including the self-employed and non-profit organisations, with the exception of employers located in the capital city of Prague. The LO periodically announces calls for applications, which specify the conditions. Interested employers apply and, if the grant is awarded, they receive a significant contribution to the costs of the specified training of their employees and full reimbursement of their wages for the period of their training. The grant covers a certain percentage of the training costs based on the rules of the public financial support (e.g. de minimis condition).

For the current POVEZ II project (2015-2023), the specific conditions are as follows:

- Up to 85% of training costs are covered.
- Reimbursement of wages of employees undergoing training, up to 100%
- Training can be provided by an internal trainer or external training provider, in person or electronically.
- Employees on parental leave are also eligible.
- Czech language training for new foreign employees is also eligible.
- Both specific as well as general training (including soft skills) is eligible; courses need not be accredited by the Ministry of Education (see above)
- Participation of employees over the age of 54 is encouraged.
- Courses of any length are eligible, with a preference for courses of more than 40 hours per employee.
- Applications are evaluated by the Labour Office with a focus on improving the local/regional labour market situation and positive impacts for the company and the individual employee.

3.1.2. Adult training funding systems in Hungary

The following is an overview of the funding of adult education in Hungary, broken down into subsections according to the actors involved.

State - Supply-side funding: vocational education and training

Thanks to the legislative changes in 2019-2020, two pillars of the training structure have emerged: vocational education and training for the labour market, the former defined as vocational education and the latter as vocational training. Regardless of which one an adult participates in, they will be subject to an adult learning contract.⁴ In the reformed training system, the first and second apprenticeship and a vocational training course are also provided free of charge, with indirect funding from the state. State vocational training institutions can be subsidised through the school operator's own budget or through a cooperation agreement with another institution on the basis of its church, nationality, social support or public service of major importance.⁵

State – Tax relief for vocational education and dual training

The State may provide additional support for the provision of basic vocational training. Under the Vocational Training Act⁶, a dual training establishment is entitled to claim tax credit on the basis of the pro rata cost of the vocational training, as defined in the Social Contribution Tax Act.⁷

State – Training loan for participants

With the development and introduction of the training loan, a unique opportunity has been created in the Hungarian adult education support system. Training loans can be used for vocational training, part-time vocational training, vocational training for a recognised qualification or training of major

⁴ Source: <https://vmkik.hu/felnottek-szakmaszerzesi-lehetosegei>

⁵ Source: <https://net.iogtar.hu/jogszabaly?docid=a1900080.tv>

⁶ Act LXXX of 2019 on Vocational Education and Training

⁷ On 1st January 2022, the vocational training contribution, which enterprises and businesses were obliged to pay, ceased.

importance for the national economy.⁸ The State provides the opportunity for the participant to benefit from the training loan, as defined by law, in connection with an adult education provider, if the course is for a period of more than three months for vocational education or training and entered into with a vocational training institution that has a cooperation agreement with a state-owned company (Student Loan Centre) operating the training loan scheme.⁹ Under the current rules, the training loan is conditional on the trainee having completed secondary education.

State – Adult education grants for individuals undergoing training.

Adult education institutions may pay a bursary to individuals in training who are not eligible for or have not applied for a training loan. The condition is that it must be vocational training under the Vocational Training Act, or vocational training preparing for a part of a profession as a non-vocational institution, or education or training financed partially or entirely from public funds or EU funds (exceptions: internal training or education and training organised under the law), and the training must last at least 50 hours. A bursary can also be awarded for courses of major importance to the national economy. The maximum amount of the grant is 75%¹⁰ of the guaranteed minimum wage, but in the case of training of major economic importance, it may be granted at the rate of two months of the guaranteed minimum wage per month.¹¹

State – Dedicated State Fund: National Employment Fund

The purpose of establishing a separate State fund is to finance some of the State's tasks partly from sources outside the general government budget.¹² Chapter LXIII, National Employment Fund of the Finance Act¹³ includes subsidies for vocational training. The main purpose of the National Employment Fund is to provide, inter alia, the financial resources necessary for vocational training (adult education) subsidies.

Employers' involvement in the funding of adult education

The continuous availability of a skilled workforce has a significant impact on the performance and competitiveness of the economy. In the past, the burden on employers has been low, even by international standards: Hungarian employers' spending in this area was clearly among the lowest among OECD countries, according to a 2012 OECD publication.¹⁴

According to the Central Statistical Office's (CSO) Information Database, the share of enterprises supporting training with more than 10 employees¹⁵ was 38% in 2020, which shows a decreasing trend (2010: 49%, 2015: 44%).¹⁶ Training costs accounted for 0.7% of the total labour costs in 2020 (of which enterprises with 250 or more employees: 0.5%, medium-sized enterprises with 50-249 employees: 1.3%, and small enterprises with 10 to 49 employees: 0.9%). The average training cost per participant

⁸ Source: <https://diakhitel.hu/kh-intezmenyeknek/>

⁹ Source: <https://net.jogtar.hu/jogszabaly?docid=a1900080.tv>

¹⁰ Guaranteed minimum wage, in 2023: 296,400 HUF gross.

¹¹ Source: <https://net.jogtar.hu/jogszabaly?docid=a2000011.kor>

¹² Source: https://www.allamkincstar.gov.hu/hu/koltsegvetesi-informaciok/koltsegvetes_merleg_5

¹³ Act XXV of 2020 on the 2023 Central Budget of Hungary

¹⁴ Annual labour costs of employer-subsidised non-formal education as a percentage of GDP for employed individuals aged 25-64 in 2007: OECD average: 0.36%, Hungary: 0.11% (lowest value at the time, along with Greece).

Source: https://www.oecd-ilibrary.org/education/education-at-a-glance-2012_eag-2012-en;jsessionid=zoiW0X9QRRRrVw10ocYLxd91qhAd41pBuAv99SF6T.ip-10-240-5-84 [408 p.]

¹⁵ Percentage of enterprises as a proportion of all enterprises that supported (partly or wholly funded) the participation of their employees in some form of vocational training.

¹⁶ Source: <https://www.ksh.hu/oktatas>

was 243,400 HUF; with the highest training costs being incurred by medium-sized enterprises, with an average of 678,883 HUF (large enterprises: 114,278 HUF, small enterprises: 478,124 HUF).¹⁷

In the light of the above data, the funding of adult education in Hungary would require not only financial resources, but also a change of mindset, as many enterprises still base their production on cheap labour. At the same time, enterprises capable of producing higher added value require a highly skilled workforce, for which regular training of employees is essential.¹⁸ To achieve a positive change, the domestic SME sector in particular needs to be strengthened, as it often lacks resources. In the human resources policy of larger enterprises, training of employees has become a key element of market adaptation and a means of motivating employees, but their ability to attract and retain resources is much stronger than that of smaller, mainly domestically owned enterprises.

The role of NGOs in the funding of adult learning

The most important role of civil society organisations in their very diverse and varied activities is their active participation in social responsibility, but they also play a significant role in adult learning. They can secure the resources necessary for their operation and the implementation of their programmes from various sources (budget support, EU support, donations, etc.), they cannot accumulate profits, but they can use them to achieve their objectives – thus they participate in the funding of adult education in Hungary. In many cases, they provide training for specific target groups who are disadvantaged in the labour market and who have drifted to the margins of the labour market. According to CSO records, in 2021 there were 7,825 registered non-profit organisations whose main activity is education.¹⁹

EU funding in the adult education funding system

As set out in the Partnership Agreement for the current cycle, from 1st January 2021 to 31st December 2027, the programmes directly or indirectly related to the funding of adult education will be:

- GINOP Plus will support the improvement of the content of vocational education and training and higher education, the operation of continuous training and incentive systems, and the improvement of equal access to education and training.
- EFOP Plus will support lifelong learning for inclusion (not aimed at obtaining a vocational qualification, but at developing competences).
- DIMOP Plus supports the digital development of human services and the digital literacy of citizens.

Hungary Recovery and Resilience Plan - Recovery and Resilience Facility (RRF):

¹⁷ Source: <https://www.ksh.hu/oktatas>

¹⁸ It is necessary to mention when assessing the Hungarian situation that, according to the changes in the legislation on adult education, training courses of less than 6 hours, as well as occupational safety and fire protection training for employees, are no longer included in the internal training, and these do not have to be reported in the data related to training (and thus do not appear in the statistics).

¹⁹ NGOs are made up of associations, foundations, and civil societies. This definition became clear in 2011, according to the interpretation of Act CLXXV. Previously, and to date, the CSO reports on non-profit organisations, with associations and foundations being the classic NGOs. Source: <https://core.ac.uk/download/pdf/327111464.pdf> [p. 48]

The main objectives of the Hungarian Recovery and Resilience Plan (RRF) are to address the economic and social impact of the coronavirus epidemic and to increase the resilience, sustainability, and preparedness of the economy for the challenges and opportunities of the green and digital transition.²⁰

3.1.3. Adult training funding systems in Poland

The promotion of adult learning was not a priority during the first two decades of transition and there was no established agency to ensure quality, provide oversight in this area, or to promote adult learning. Private training enterprises have been operating on a laissez-faire basis. Public institutions and agencies, usually under ministerial supervision also organise training, and award qualifications in accordance with the relevant legislation governing such qualifications (e.g., heavy machinery operation in the construction sector, electrical work or aviation), but practices and quality assurance mechanisms have varied. Following Poland's accession to the EU, more emphasis was placed on adult education. The first policy instruments financed by the European Social Fund were designed to support the supply side of the adult education market, i.e., private and public training institutions and labour offices organising training for the unemployed, although these instruments proved to be largely ineffective. Dębowski et al. (2010) suggested that the distribution of public funds was not based on the expectations of learners or employers, and therefore the system was not able to motivate training institutions to adapt their offers to the needs of the labour market.

Efforts are currently being made to better coordinate adult education policy and funding. Poland introduced the Baza Usług Rozwojowych – a register of providers and services (education, training, coaching) and the Integrated Qualifications Register (IQR) which provides detailed information on all qualifications referenced in the National Qualifications Framework (NQF). It is expected that solutions within the IQS will be better linked to public employment and counselling services (Cedefop 2019b) and with the resources available through the National Training Fund, which was also established in 2015 (OECD 2019a, 106). However, the process of change is ongoing and not yet complete.

There is no coherent funding system for adult training in Poland. Funding mechanisms – similar to the overall adult learning landscape in Poland - are scattered and vary according to the particular sub-sector of the adult education system in Poland. Government, employer, and individual expenditure on adult learning is relatively low in Poland and could be better coordinated and shared.

Adult education and training in Poland is provided within a diverse range of public and private institutions. According to Poland's Human Capital Survey (Bilans Kapitału Ludzkiego, BKL), there were nearly 16 000 providers of adult education and training in Poland in 2014 (Szczycka, Turek and Worek, 2014). These include: a) education and training institutions operating under the jurisdiction of the Ministry of Education and Science, b) education and training institutions operating under the jurisdiction of other ministries or national agencies, c) private training providers offering courses for adults interested in expanding their competences, d) chambers of crafts and e) higher education institutions.

Funding mechanisms depend on the type of education offered and the type of provider. Adult learning funding in Poland is largely directed at institutions (supply-side funding), although some regions, for example the Małopolskie region, have experience with education vouchers targeted at adults and enterprises to finance investment in skills.

²⁰ Source: <https://www.palyazat.gov.hu/helyreallitasi-es-ellenallokepesege-eszkoz-rrf> RRP Summary

In principle, education and training offered by public institutions (schools, VET centres, higher education institutions) is free of charge for learners. This education is financed by subsidies from the state budget, which are mainly administered by local authorities. Schools or training providers receive subsidies based on the number and type of learners and based on whether the learners have passed the examination organised by the Central Examination Board. Therefore, the subsidy consists of two parts: per enrolment and per examination passed.

Unemployed learners and employers can receive subsidies from the National Training Fund. The NTF is a part (2%) of the Labour Fund, which in turn is funded from a levy on employers (2.3% of the basic salary per employee). The budget of the NTF is approximately 53 million EUR (2019). Any enterprise can apply to the NTF for a reimbursement of 80% of the training costs, while micro enterprises can apply for 100%, up to a maximum of 300% of the average Polish monthly salary per employee (equivalent to about 3 200 EUR, per employee in 2018). In 2017, over 18,000 enterprises received NTF funds, half of which were micro enterprises. The NTF is managed by different actors in order to achieve a wide range of priorities. The Minister of Family, Labour and Social Policy sets priorities for 80% of the NTF budget. In 2019, these priorities included supporting adult learning to fill occupations experiencing skills shortages and supporting adults with a low level of education, disadvantaged groups, VET teachers and trainers, and people over 45.

European Structural and Investment Funds (ESIF) have helped to increase overall investment in adult learning and encouraged cost sharing between governments, employers, and individuals. The State, the European Commission and enterprises co-fund several temporary adult learning programmes. Poland's 2014-2020 Partnership Agreement allocates 4 billion EUR from various ESIF funds – the ESF, the European Regional Development Fund (ERDF) and the European Agricultural Rural Development Fund (EARDF) – for “Investing in education, training and vocational training for skills, and lifelong learning”. ESF co-funding is targeted at employers and employees in micro, small, and medium-sized enterprises. The funding comes from national and local governments, and enterprises. This support can be between 50% and 80% of the course/service costs. The highest level of co-funding is prioritised for enterprises with a smaller number of employees (up to ten). For larger enterprises to receive the higher level of co-funding, they must meet other criteria, such as operating in industries with the largest development potential or regional strategic value, providing learning for older or low-skilled adults.

There are plans to link the public funding with the Integrated Qualification Register (Zintegrowany Rejestr Kwalifikacji) – meaning that State subsidies channelled to learners or employers could only be provided for courses leading to qualifications from the Integrated Qualifications Registry.

There are numerous initiatives aimed at providing funds directly to learners, mostly financed by European Social Funds, but they are fragmented and usually one-off initiatives without the necessary continuity. One good example is the Loans for Education project. “Loans for Education” (2017) targeted adults (employed, self-employed, and out of work) who wanted to develop their skills and competences. Adults could apply for a loan of up to 100 000 PLN to finance selected postgraduate studies, courses or training (excluding first, second, and third cycle studies) lasting no longer than 24 months. Loans were interest-free and could finance the full cost of training/study. The repayment period was up to three years. Completion of studies or training was the basis for repayment of 20% of the loan. For people who were unemployed and found a job during or after their training, or for people with an income below the national average, 25% of the loan could be repaid. As part of the first call,

which was opened in September 2017, almost 1,700 applications were submitted, and over 1,000 loans were granted. More than half of the borrowers (52%) were women, and almost one in ten loans were granted to unemployed people who wanted to improve their qualifications.

Given the number of actors involved in funding adult learning in Poland, and the limited data available on subnational, enterprise, and individual spending, effective coordination will be very important. Performance monitoring and performance-based funding are relatively more developed in Poland's VET and higher education systems and could potentially be adapted to publicly funded adult learning.

3.1.4. Adult training funding systems in Slovakia

Adult participation in education in Slovakia is one of the lowest compared to other EU countries (4.8% in 2021) and OECD countries (3.8% in 2021). In contrast to other European countries where participation is highest among the unemployed, in Slovakia it is among the employed. Participation in learning is critically low among the long-term unemployed. Adults' motivation to learn decreases with age. Education takes place mainly in enterprises and employment increases with the level of education.²¹ Despite these facts, there is no systematic and sustainable funding of adult education in Slovakia.

Education for the labour market is provided by the Ministry of Labour, Social Affairs and Family (MoLSAF SR) through Active Labour Market Policies (ALMP) that increase employability in the form of education and training for the labour market intended for jobseekers, financial contributions for retraining and competence courses (under the Employment Services Act), implementation of graduate practice and activation activities. Until 2021, ALMP was mainly funded from EU sources under the Operational Programme Human Resources (only in the Bratislava Self-Governing Region from the State budget).²²

According to the OECD, in Slovakia only 6.3% of the total active labour market policy funding was spent on education and training in 2016²³, making it one of the lowest allocations among OECD countries.

The key measures of the MoLSAF SR in the field of education and training for the labour market are the REPAS+ and KOMPAS+ programmes and some other smaller project-based schemes.

REPAS+ offers registered jobseekers the opportunity to acquire vocational knowledge and skills in a retraining course of their choice and under the conditions of the scheme. The costs of the course are covered by the Office of Labour, Social Affairs and Family, together with a travel and subsistence allowance. In 2021, the highest demand was for retraining courses in accounting, tax and finance (22.40%), nursing courses (15.88%), vocational courses related to the driving profession (13.67%), security guard courses (13.05%), as well as courses in beauty services (10.84%) and welding courses (6.02%). In 2021, training allowances in the form of a retraining course (REPAS+) amounted to a total of 2,457,013 EUR.

KOMPAS+ supports the development of selected key competences of jobseekers in the form of competence courses, in particular communication skills, personal development (including managerial and entrepreneurial competences), computer and language skills. As with REPAS+, the jobseeker can choose the course and the provider, and the Office of Labour, Social Affairs and Family reimburses the

²¹ <https://www.minedu.sk/data/att/22182.pdf>

²²

https://www.upsvr.gov.sk/buxus/docs/SSZ/OAOTP/Vyhodnotenie_AOTP/Vyhodnotenie_AOTP_za_rok_2021.pdf

²³ <https://www.oecd-ilibrary.org/sites/bb47eb91-en/index.html?itemId=/content/component/bb47eb91-en>

training costs, and the travel and subsistence allowance. In 2021, 606,478 EUR was spent on competence courses; the highest demand was for computer courses (78.70 %).

The Ministry of Education has no subsidy scheme to support adult education. In recent years, it has provided one-off financial support to the activities of the Association of Universities of the Third Age within the framework of the National Programme for Active Ageing and to the Association of Adult Education Institutions for the implementation of the Lifelong Learning Week. The last major support for adult education providers was the ESF-funded NedisKVALIFIKUJ sa!²⁴ in 2016 from the Human Resources Operational Programme, which was allocated 26 million EUR. 157 projects from both public and private sector organisations were implemented from the applications made.

Further education in the framework of accredited courses, the register of which is kept by the Ministry of Education, Science, Research and Sport of the Slovak Republic²⁵, is funded by the participants from their own resources, or from the employer's resources, or within the framework of implemented projects.

Similarly, funding is currently being provided for the validation of prior learning which, according to the current legislation, represents the process of obtaining a certificate for 'verifying professional competence' for the purpose of operating a trade as required by the Trade Licensing Act. Currently, the ESF pilot project The System of Qualifications Verification is being finalised, under which a sample of approximately 200 participants will have the opportunity to obtain a qualification based on the process of validation of the results of prior learning. After the pilot phase, a fee for validation services is envisaged, based on the technical difficulty of the qualification concerned.

Indirectly, adult education is supported through tax benefits under the Income Tax Act²⁶, which allows tax exemption of the amount spent by the employer on the education of an employee that is related to the employer's regular activity.

Changes in the funding of some measures for the development and support of adult education should be brought about by the forthcoming Act on Lifelong Learning (or the Act on Adult Education, for example in the form of ILAs, where support of 200 EUR per year and per individual is foreseen (in the pilot phase planned from the EU funds).

3.1.5. Notable international examples

For the international examples, countries with especially advanced and complex adult education funding systems were selected, with sufficient explanatory information available. These systems involve a high number of various partners/stakeholders and although decentralised in many ways, provide a consistent, reliable, nationwide system that enables sustainable funding of individual adult education, often through multiple channels.

France

²⁴ <https://www.minedu.sk/21112016-vyzva-na-predkladanie-ziadosti-o-nenavratny-financny-prispevok-na-podporu-celozivotneho-vzdelavania-oplz-po12016dop141-01-vyzva-uzavreta/>

²⁵ <http://isdv.iedu.sk/>

²⁶ <https://www.zakonypreludi.sk/zz/2003-595>, (Section 5(7))

Since 1971, adult training has been a right recognised by French law²⁷. The responsibility for adult education is shared by all the economic and social partners involved (each of which can act independently):

- The State, the regions, and the social partners define the framework and the provision of continuing training: the criteria and arrangements related to adult education provision are generally based on interprofessional agreements signed by the social partners of different sectors of activity and confirmed by the public authorities.
- The State, the regions and the social partners, (via the skills operators) and enterprises manage the funding of adult education.
- The provision of training as such is the responsibility of the State, the regions, enterprises and public or private training institutes.

As far as learners are concerned, adult education can be undertaken by all adults over 18 years of age. Admission procedures depend on the status of each learner: employees, jobseekers or people with special needs.

In 2018, the legislation²⁸ reformed the Compte personnel de formation (CPF), which lists the rights acquired by employees throughout their working lives and until retirement, as well as the training from which they can benefit. The law also created *France Compétences*, which is responsible for organising, leading, and regulating the vocational training sector.

The main source of funding for continuing vocational training in France are the enterprises. Enterprises are legally obliged to finance continuing training. Every company that employs people is affected by the contribution to vocational training, the amount of which depends on the number of employees in the company and the total payroll. Vocational training is funded by a single contribution collected by a single body, the skills operator (OPCO). Enterprises with fewer than 11 employees contribute 0.55% of the wage bill, enterprises with 11 or more employees contribute 1% of the wage bill. There is also an additional contribution above the statutory minimum that applies to enterprises belonging to a branch or professional sector that has concluded a training agreement. Enterprises are free to contribute more than the statutory minimum.

Regional authorities are the second largest funder and are mainly responsible for financing training for jobseekers. The State supports the training of the most disadvantaged groups (disabled people, prisoners, foreigners, illiterate people) in particular. Other public bodies involved in adult education funding include Agefiph (the association managing the fund for the professional integration of people with disabilities), Unédic (National Professional Union for employment in industry and trade managed by social partners) and Pôle Emploi (public employment service agency), local and regional authorities other than the regional authorities (departments, municipalities, etc.) and individual training purchases. In reality, the distribution of funding for continuing vocational training does not strictly correspond to that of the categories of public concern. A single scheme may involve several funders. The European Social Fund is also involved in funding programmes to promote employment and inclusion.

Training for jobseekers

²⁷ Law 71-575 of 16th July 1971

²⁸ Law 2018-771 of 5th September 2018

The registration fees paid by jobseekers differ according to their age. There is a scheme for young people to receive free training. Individuals of 16-25 years of age who are not in employment or training can conclude a contract under the Youth Guarantee with their local mission. Under this contract, the training can be paid for and the learner can receive an allowance. For individuals over 25, the educational and mobility costs (transport, accommodation, etc.) of the training can be fully or partially covered by Pôle Emploi. If the training is partially financed by the Pôle Emploi, the learner can utilise their personal training account (CPF) if they have one. The personal account accumulates the training rights acquired by the employee throughout their working life (in Euros) and the training courses for which it can be used. The individual can consult the balance of the account at any time on the My Training Account website.

Training for employees

If the individual is in employment, several mechanisms can finance their training. The company, which wishes to ensure that its employees adapt to their jobs and maintain their ability to keep their jobs (particularly in the light of technological developments), can finance the training of its employees within the framework of a skills development plan. This plan distinguishes between two types of training:

- Compulsory training (application of collective agreements or conventions)
- Other (non-compulsory) training

The plan may also detail other types of action, such as skills assessment, validation of acquired experience or plans to combat illiteracy. The training of individuals also can be funded through 11 Skills Operators (OPCO) that have been approved by the Ministry of Labour and are responsible for a specific sector of the economy. The OPCOs support enterprises with fewer than 50 employees in developing skills, analysing training needs, and changing vocational qualifications. Finally, employees can finance their own training by utilising their personal training account (CPF).

Austria

The main institutions responsible for adult education and training in Austria is the Federal Ministry of Education, Science and Research (BMBWF²⁹). The Austrian Public Employment Service also plays an important role in the allocation of funds for adult education (AMS³⁰). Non-governmental organisations – educators - are often supported by the Ministry (BMBWF) and are an important part of the adult education system in Austria. Since 2009, the federal government has been concluding service agreements of three-years in length each with the Austrian Conference of Adult Education Institutions (KEBÖ). KEBÖ brings together 10 important non-profit adult education associations. The agreements state goals linked to the public funding for these institutions.³¹

An important source of funding for adult education are ESF programmes, which focus on the sustainable integration of disadvantaged adults into society, education, and the labour market through

²⁹ <https://www.bmbwf.gv.at/Themen/eb.html>

³⁰ AMS – Arbeitsmarktservice Österreich, www.ams.at

³¹ In terms of legislation, the requirements and criteria for granting subsidies are laid down in the 'Federal Financing Act on the Funding of Adult Education and Public Libraries from Federal Funds' (Bundesgesetz über die Förderung der Erwachsenenbildung und des Volksbüchereiwesens aus Bundesmitteln, see on-line at <https://ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=10009356>)

the removal of barriers, creation of equal opportunities, as well as professionalisation and quality development. ESF projects are co-financed by the BMBWF. An important programme, co-funded by the ESF, is the Adult Education Initiative³². It provides an opportunity to catch up on basic education (basic skills) and to obtain the compulsory school leaving certificate for adults. The amount of money allocated under this programme is quite high: in the area of compulsory education, it is around 12.3 million EUR per year for the period 2018 to 2021. Such programmes significantly increase the number of educational activities completed and, in particular, reach the socially and educationally weaker segments of the population.

In general, there is a range of support measures and programmes that cover the costs of adult learners. This is organised and provided by local authorities, the Public Employment Service Austria (AMS, www.ams.at), interest groups (trade unions, Chambers of Labour and Commerce), associations or foundations.

The ESF co-funded website erwachsenenbildung.at provides a database of a total 124 different funding programmes in adult education sector, where the support is granted mainly on the basis of socio-economic criteria (age, education level, labour market status etc.) and a certificate of attendance on a course at a certified adult education institution. This portal serves as a reliable signpost for information on adult education in Austria, but does not offer a database of courses, only a geographically sorted list of links to them.

The certification of the educational institution in the national quality assurance system for further education (e.g. Ö-CERT³³) is often a condition for the funding of the course. Quality assurance is an important part of the adult education system; the Ö-CERT label is awarded by the state federal and state governments on the basis of a legal foundation³⁴ and is an example of good practice in monitoring and promoting the quality of adult learning. Quality assurance labels should be considered as a part of our course datasets.

Measures supporting financial availability of adult education.

Grants are usually used to support specific groups of adults, e.g. the unemployed, people with disabilities, people in need of social support. Grants usually cover part of the whole cost of course or exam, also travel or living expenses, for example, may be paid.

Loans can be obtained for initial and for further education; they are available from four private credit institutions (so-called 'building societies') with a maximum amount of 30,000 EUR per person for a maximum duration of 12 years.

Vouchers are another financing instrument used for further adult education in Austria; similar to grants, they usually cover education and exam costs. They are mainly used by the provincial departments of the Chamber of Labour. In this case, the beneficiaries must be members of the Chamber of Labour. An example would be "AK-Bildungsgutschein³⁵", where members of the Chamber receive 120 EUR for education in one of 4,000 courses provided by educators from the given list. In some cases, the amount is higher: parents on maternity leave receive 170 EUR and members attending

³² "Initiative Erwachsenenbildung", www.initiative-erwachsenenbildung.at. The initiative is based on an agreement pursuant to Art. 15a B-VG between the federal government and the provinces.

³³ [Ö-CERT \(oe-cert.at\)](http://oe-cert.at), quality assurance system for adult education in Austria.

³⁴ 15a Agreement on Ö-Cert, Federal Law Gazette II No. 269/2012

³⁵ https://wien.arbeiterkammer.at/service/broschueren/Bildung/Bildungsgutschein_2022.pdf

courses in digitalisation receive 120 EUR more (240 EUR in total). The flyer³⁶ with the training offer contains a list of training organisations, including the adult education institutions BFI Wien³⁷ and VHS Wien³⁸ (in German-speaking countries a well-established form of adult education centres “Volkshochschulen”).

Individual Learning Accounts (ILAs) are used in some provinces, with funding usually provided from provincial budgets. The requirements for using the accounts are similar to those for vouchers and grants (labour market status, certified educational institutions, educational level etc.).

These direct forms of adult education funding are used as incentives by governments, municipalities, and others to support specific groups of the adult population (the unemployed, parents on maternity leave, low-skilled, immigrants etc.) or to support the development of specific skills (e.g. digital skills).

There are also indirect funding instruments for further education in Austria: **tax incentives and educational leave**. Tax incentives are designed to lower the tax base (tax deductibility of costs). It is only available for training programmes relevant to the occupation (including languages and IT courses). Educational leave³⁹ can be agreed between employer and employee from the seventh month of employment for a minimum of 2 months and a maximum of 1 year. After 4 years, the educational leave can be repeated. During the educational leave, the employees can receive unemployment benefits from the national unemployment insurance if they meet the conditions. However, these indirect ways of funding adult education do not have a significant potential to influence the design of our learning account model, because the courses attended by people on educational leave are paid for in the same way as by those in other circumstances.

Denmark

Adult education programmes in Denmark are usually provided by state-funded self-governing institutions such as adult education centres (VUC), vocational education and training colleges, labour market training institutions (AMU-Centre) and higher education institutions. Non-formal education is provided by state-funded self-governing institutions such as folk high schools (Folkehøjskoler) and the municipal evening schools. There are also private providers.

All approved adult education and training programmes are publicly funded, but the public subsidy only covers part of the cost and the participant usually pays a fee. Providers receive ‘taximeter’ funding (taximeter grant per full-time equivalent participant, a fixed rate per programme) and must negotiate budgets and targets with the Ministry of Education annually. European funding also plays no role in the funding of adult education and training. The fee paid by participants on average is approximately 100 EUR per week and is generally paid by the employer.

Public financial support for adult education is provided by two funding schemes:

1. State support for adult education (SVU). It is mainly dedicated to supporting education in primary and secondary schools (general education) and at the tertiary level. To be eligible for SVU funding,

³⁶ https://wien.arbeiterkammer.at/service/broschueren/Bildung/AK_Kursbuch_Fruehling_2023.pdf

³⁷ www.bfi.wien

³⁸ www.vhs.at, Wiener Volkshochschulen GmbH.

³⁹

https://www.oesterreich.gv.at/en/themen/arbeit_und_pension/bildungskarenz_und_bildungsteilzeit.html

the participant must be studying full-time and be pre-approved or enrolled for an SVU-approved course. The participant can receive SVU for a maximum of 40 weeks. Education programmes approved for SVU are:

- Preparatory adult education (ISCED 2).
- Dyslexia programmes for adults (ISCED 2).
- General adult education (ISCED 2).
- Single subject courses at lower secondary level (ISCED 2).
- Special needs education (ISCED 2).
- Danish education for adult immigrants and others (ISCED 2).
- Higher preparatory single subject courses (ISCED 3).
- Upper secondary school (ISCED 3).
- Entrance examination for engineers (ISCED 3).
- Ship's mechanist (ISCED 4).

Higher education

- Higher education based on The Open Education Act.
- Special modules.
- Masters degree according to Danish University Law.
- Other types of ongoing adult education according to Danish University Law.
- Part-time single subject university courses according to Danish University Law.

2. State grant system (VEU). It is dedicated to supporting vocational education. Participants in vocational adult education are entitled to a fixed allowance financed by the state if they meet the eligibility criteria called 'VEU' allowance. The eligibility criteria are:

- Participating in the course.
- Suffering a loss of income.
- Being employed.
- Educational level no higher than a vocational education.
- Not receiving public benefits.
- Not having a training contract e.g. as an adult apprentice.

The amount of the allowance is the same as the current level of unemployment benefit. In 2018, the amount available was 4,300 DKK (578 EUR) per week. If the participant receives a regular wage from the employer during the course, the employer is entitled to receive the grant instead.

Expenditures for the allowances are covered by the Employers' Reimbursement Fund. It collects compulsory contributions from all employers. The fees are fixed amounts based on the number of employees (in full-time equivalent). In the case of employees who undergo training during their working hours and are entitled to their full wages, the employer receives the support as a partial reimbursement of their employees' wages. In addition, this amount can be increased by the contribution from the collective training fund established by private employers, up to 85% of the regular wage of the employee undergoing training. Other expenses, such as travel or accommodation, can be covered by other public sources.

If the participant is unemployed and meets the eligibility criteria of their unemployment insurance fund, the expenditures are covered by the job centres.

3.2. Situation analysis of ILAs

The situation analysis on ILAs covers 7 countries, including 4 countries participating in the partnership.

3.2.1. Situation analysis of ILAs in Czechia

Until recently, there was no scheme corresponding to the common EU understanding of ILAs⁴⁰ in Czechia. The only comparable scheme was the so-called “choice-based retraining” (see below). Significant progress has been made in the context of the European Council Recommendation on ILAs (June 2022) and the Czech National Recovery and Resilience Plan (2021). Since 2022, the Ministry of Labour and Social Affairs has been developing a new scheme to promote adult education via subsidies for individuals. The scheme will also serve as a pilot for the planned introduction of ILAs.

The programme is financed under the National Recovery and Resilience Plan and, as such, is aimed specifically at training in digital competences and Industry 4.0. This will support the development of the skills most needed for the digital transition and Industry 4.0. Both transferable and specific digital skills are taken into account. The expected duration of the programme is three years (2023-2025). During this period, citizens can apply for any training course of their choice from the provided database of courses, and receive an 82% subsidy of the course price, with a maximum amount of total subsidy for one person of 50,000 CZK (ca. 2,130 EUR) within three consecutive calendar years.

At the beginning of 2023, a database of training courses was opened on the website of the Ministry of Labour, called the Database of Re-qualification and Training Courses (the so-called “e-shop”).

The e-shop integrates three types of courses, the first two traditionally being offered by the Labour Office (a, b), and the third (c) being the new component of the system (the so-called Digirekvalifikace retraining):

- a) Traditional accredited retraining courses that have been mediated by the Public Employment Service (PES). These are mainly provided to the unemployed, but also to applicants who seek training for career advancement. Participation in these courses is paid for by the LO and the range of training subjects is not specifically limited, apart from the decision of the LO which organises tenders for the accredited training providers in the selected fields that are considered appropriate according to the labour market situation. The e-shop directs applicants for these courses to the LO.
- b) Elective retraining courses that differ from the above-mentioned in one important respect: it is the participant (the unemployed individual or an applicant seeking a change in their career) who selects the course and applies for funding from the LO. The applicant must be registered with the Labour Office and the course can be chosen from the list of retraining courses accredited by the Ministry of Education. If the LO approves the application, it covers the full cost of the course up to 50,000 CZK (subject to successful completion of the course is a condition).
- c) Training courses aimed at digital and Industry 4.0-related skills (Digirekvalifikace retraining), which are newly offered within the above-mentioned programme. It is assumed that digital education of any kind enhances the applicant’s employability, thus the suitability of the course for each individual does not need to be examined in detail by the LO. The courses can be inserted into the

⁴⁰ See e.g. Council Recommendation on ILAs to boost the training of working-age adults (<https://www.consilium.europa.eu/en/press/press-releases/2022/06/16/council-recommendation-on-individual-learning-accounts-to-boost-training-of-working-age-adults/>)

e-shop by their providers for free with only minimum requirements (see below). Providers do not have to comply with the usual legislative requirements for retraining providers within the PES (no accreditation or certification is required). Any citizen can apply for these courses and register directly for them through the e-shop. All the relevant information about the course is provided, such as the provider, duration, dates, venue (face-to-face as well as online courses are offered), number of participants per class, any prerequisites, etc. The cost of the course and the amount of funding available is also indicated. As stated above, the maximum subsidy is 82% of the cost up to 50,000 CZK (upon successful completion of the course).

The aim of the e-shop is to significantly increase the pool of training providers, the number of courses offered and the number of training participants. It is intended to be a communication platform for training providers, LO, and clients with everything being administered online. In the first stage, training providers are invited to add their training offers to the database. The Ministry of Labour has also launched a massive public information campaign to encourage citizens to apply for training.

3.2.2. Situation analysis of ILAs in Hungary

One of the ongoing challenges faced by Hungary is to increase the participation of its citizens in adult education. Although the proportion of people participating in adult education has increased, the overall participation rate in Hungary remains low in comparison with other EU Member States. While in some of the Baltic States the proportion of people participating in adult education is close to 20%, and the EU average fluctuates around 10%, in Hungary it is only around 6%.⁴¹ Moreover, the digital and green transitions and the disruption caused by COVID-19 have brought about significant structural changes in the labour market and have fundamentally altered the skill requirements of many jobs. The rapidly changing needs of the labour market point to the increasing role of both on-the-job training and adult education systems, as well as on their flexibility and responsiveness.

With this in mind, the Hungarian government has already launched a number of measures to increase the number of citizens participating in adult education such as: (i) the introduction of a training scholarship in vocational education (the first two basic qualifications ; "alapszakma" and one vocational qualification; "szakképesítés", are free of charge in vocational training centres); (ii) the introduction of a training loan scheme in adult education (low-interest loans for training costs); or (iii) the development of programmes supporting in-company training. Another important measure in line with European priorities⁴² is the introduction of ILAs. This is the provision of a personal account with a budget that can be spent on quality assured training.

Hungary had already submitted a tender for the Technical Support Instrument (TSI) for ILA developments before the Recommendation was accepted. The Hungarian government is strongly committed to using the TSI HUN-ILA project as the only preparatory measure for the higher-level national implementation and deployment project for ILAs, based on the results of the TSI HUN-ILA Project. This would further enable lifelong learning solutions to meet the EU 2030 headline targets for adult learning as defined⁴³ by the Porto Declaration of the European Pillar of Social Rights⁴³, 8th May 2021.

⁴¹ Participation rate in education and training (last 4 weeks), 2021. URL:

https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Adult_learning_statistics&oldid=568260

⁴² <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021DC0773>

⁴³ <https://www.consilium.europa.eu/en/press/press-releases/2021/05/08/the-porto-declaration/>

The EU technical support will be used for the development and implementation of ILAs and their enabling framework, consisting of the relevant list of legal acts and technical texts, procedures and references subject to change, the proposed direction and depth of the change, and the timing of the change that would be necessary for the successful introduction of ILAs in Hungary. This should take into account all elements of the enabling framework as defined in the approved Council Recommendation on Individual Learning Accounts (16th June 2022).⁴⁴ Their introduction is expected to make a significant contribution to enhancing the skills of adults by enabling and incentivising them to participate in training. It will therefore contribute to closing existing gaps in access to training, increasing participation in adult learning and helping adults to successfully manage labour market transitions in Hungary. The project will provide a fully functional proof of concept and an approved roadmap for the next-level deployment plan for ILAs in Hungary to support the introduction of an ILA system and will build on a recently completed SRSP project - "Technical Support to Improve the Quality and Relevance of the Adult Education System." and also on the European level evaluation results of the "Survey on the Effectiveness of Adult Learning in Europe."⁴⁵

ILAs will be developed and implemented on the basis of the results of the TSI project to increase the level of competence and training. The programme aims to support the introduction of ILAs with a value of more than 5 million EUR, thus demonstrating the intention to achieve the policy objective. The classification of the ILA project under the specific objective will be reviewed in the light of the outcome of the TSI project.⁴⁶

3.2.3. Situation analysis of ILAs in Poland

The promotion of adult learning was not a priority during the first two decades of transformation which began in the 1990s, and there was no established agency to ensure quality, provide oversight in this area, or promote adult learning. Private training enterprises have been operating on a laissez-faire basis. Public institutions and agencies, usually under ministerial supervision, also organise training, and award qualifications in accordance with the relevant laws governing such qualifications (e.g., heavy machinery operation in the construction sector, electrical work or aviation), but practices and quality assurance mechanisms have varied.

After Poland's accession to the EU, more emphasis was placed on adult learning. The first policy instruments financed by the European Social Fund were designed to support the supply side of the adult education market, i.e., private and public training institutions and labour offices organising training for the unemployed, although these instruments proved to be largely ineffective. Dębowski et al. (2010) suggested that the distribution of public funds was not based on the expectations of learners or employers, and the system was therefore unable to motivate training institutions to align their offers to the needs of the labour market.

Poland has one of the lowest levels of participation in formal and non-formal education in Europe in order to enhance people's skills in later life. This situation has not changed for more than ten years,

⁴⁴ <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52021DC0773&from=EN>

⁴⁵ "An in-depth analysis of adult learning policies and their effectiveness in Europe" provides an overview of existing research on adult learning policies to support the implementation of the European Agenda for Adult Learning.

<https://ec.europa.eu/social/main.jsp?catId=738&langId=en&pubId=7851&type=2&furtherPubs=yes>

⁴⁶ Economic Development and Innovation Operational Programme Plus - GINOP Plus 2021-2027 version 3.3 2nd November 2022.

despite a significant increase in public expenditure, especially from the European Social Fund. This is also one of the paradoxes of the Polish education system - Polish students achieve some of the best results in the PISA study, they are highly motivated to participate in higher education, and after finishing school education, participation in lifelong learning collapses. For this reason, work is being carried out to support adults, including work on ILAs.

The lack of clarity about training outcomes and quality assurance undermined the decision-making processes of individuals and enterprises, which discouraged participation in learning or its funding. When the new EU programming period for 2014-2020 was being planned, there was a broad consensus that the State should act to reduce the asymmetry of information on the training market, increase the transparency of spending, and introduce quality assurance mechanisms (Kocór & Worek 2017).

The search for effective solutions coincided with the development of the European Qualifications Framework (EQF) and support for the development of national qualifications frameworks. The subsequent introduction of the Integrated Qualifications System (IQS) Act in 2015 resulted in a new institutional framework for the adult education sector. The IQS Act aimed to integrate formal general, vocational and higher education, and non-formal adult education (including private training providers and providers operating under the auspices of ministries). The inclusion of market and regulated qualifications in the IQS is voluntary (see Dębowski et al. 2018, 411-423).

At the time of writing, no further information was acquired.

Work on the concept of ILAs

At this moment, stocktaking of the pre-existing institutions, portals, and data is taking place and some of the practical aspects of using individual entitlements will be piloted. The work on the concept of ILAs was only initiated in 2023, a pilot project is supposed to start in 2024. Most recently, the aspect of creating a repository of educational achievements – ILAs – has been widely discussed.

In June 2022, a debate on individual educational accounts began in Poland when the Ministry of Education and Science announced the creation of a 'new' educational portal: **edukacja.gov.pl**. It is difficult to find information on whether this new educational platform will be created based on the already existing platform on the website: <https://zpe.gov.pl/>. It is known that the current educational platform did not meet the expectations. It was supposed to support distance learning, but teachers and students did not want to use it [Rzeczpospolita, 09/06/2022, online]. Currently the Integrated Educational Platform contains materials produced with European Union funding from the European Social Fund: Operational Programme Human Capital 2007-2013 and Operational Programme Knowledge Education Development 2014-2020 (<https://zpe.gov.pl/>).

For some reason, the ministry decided to develop a new educational platform. According to the plans, the +edukacja.gov+ platform will fulfil five tasks [Kolasa, 24.09.2022, online]:

1. Gather all educational services in one place.
2. Provide comprehensive access to information on science and education.
3. Combine primary/secondary and higher education.
4. Integrate all educational services and tools.
5. Gather the individual achievements of each student.

The aim of the article is to determine the development opportunities for an ILA in Poland as part of an educational platform. This goal will be achieved by analysing the content of the Integrated Educational Platform in terms of its functionality. It is worth pointing out what was missing in the existing solutions,

taking into account the idea for a new educational platform. The analysis of the platform's content according to the above tasks was carried out in March 2023 and allows us to draw several conclusions.

Functions of Integrated Educational Platform

The Integrated Educational Platform aroused the greatest interest among internet users immediately after its introduction. Chart 1 shows the decreasing interest in the educational platform and the need to conduct a broader information campaign on the old and new functionalities of the platform.

Chart 1. Integrated Educational Platform in Google Trends



Source: Google Trends

If the educational platform is to **bring together all educational services in one place**, it is worth defining the scope of this term at the outset. It is difficult to find a clear definition of an educational service. Simply put, the term refers to services that are related to education [Infor, 28.10.2008, online]. Their common feature is that they enable the acquisition of knowledge and skills needed for life and at work. Examples of educational services divided according to the area of education are foreign language learning and supplementary education (e.g. preparatory courses for the final examinations, vocational studies, career counselling, scientific education). In terms of the recipient, educational services are education for children (e.g. creative classes), education for primary and secondary school students, supplementary education for university students, supplementary education for adults, education for seniors. Educational services can also be subdivided according to the form of instruction, e.g. lectures, exercises, seminars, training, courses, workshops, presentations, or films.

Another educational solution

The portal is modelled on the pacjent.gov.pl service. The announced website is to include the following functionalities:

- distance learning tools
- online community
- educational materials for students and teachers
- tools for continuous research of students' and teachers' needs
- **the student's educational account.**

According to the assumptions, the individual educational account is to collect information about each user (pupil, student, graduate) on their education, professional achievements, and qualifications, but also to characterise the competences that will be useful in building a professional career, among others. The idea of the individual educational account is to allow the user to manage their own education from primary school to universities of the third age. It is difficult to find information on

whether the registration of pupils, students, and graduates will be voluntary or top-down, so that everyone would have their account on the platform, but its activation would need to be on the 'student's' side.

The ministry itself points to the following benefits of having an educational account [MEiNTech, online]:

- the possibility of resolving issues related to online education
- access to digital versions of documents
- information on the needs of the labour market in the specific region in the long term, recommendations for skills development
- personalised learning programmes (proposed).

As pointed out by Kulasa [24.09.2022, online], deputy director of the Digital Transformation Centre, each person will have their own portfolio and will be able to use it both when applying to school/university and when applying for a job. Data mobility will also be a possible feature of such a solution.

3.2.4. Situation analysis of ILAs in Slovakia

ILAs as a tool to motivate higher participation of adults in learning were introduced by the Strategy for Lifelong Learning and Guidance for 2021-2030. In Slovakia, there is an equivalent in the form of training accounts, known as REPAS and KOMPAS instruments for jobseekers, but their use so far does not reflect the objective of greater involvement of the wider adult population, not just the unemployed.

The term 'Individual Learning Accounts' used in Slovakia, without a clear definition, is in fact a narrow term encompassing a relatively wide range of individual learning schemes for adults, ranging from savings accounts to education accounts and education vouchers⁴⁷.

The basic characteristic of each scheme is to provide full or partial financial support to users of defined learning activities in order to increase adult participation in learning⁴⁸.

Although the existing barriers to adult learning are diverse, the financial barrier is a non-negligible barrier for many potential participants in adult learning⁴⁹. The cost of education was the second most important reason for non-participation cited in the 2016 survey (EU average 32%, Slovakia 33%).

The financial contribution can be used for the courses listed in the register of providers and for career guidance listed in the relevant part of the information web portal (ideally also with a mobile app), or for other activities such as the validation of prior learning.

For the implementation of ILAs in Slovakia it is recommended:

⁴⁷ The differences are briefly explained, for example, in OECD (2019a). Individual education vouchers are the most commonly implemented instrument, with the main difference between vouchers and accounts being the absence of the possibility of fund accumulation in the case of vouchers.

⁴⁸ We use the broader term learning activities to include any kind or form of education, or more specifically learning. Relevant literature may also include terms such as 'training programmes' or just 'training'. A particular scheme specifies the types of training according to its objectives. If the objectives are vocational education and training oriented, schemes tend to be referred to as training schemes, such as the move from 'learning accounts' to 'training accounts' in Scotland (ILA and ITA).

⁴⁹ Adult Education Survey 2016. The very next barrier was family reasons. The main barrier was considered by respondents to be the timetable (schedule), freely translatable as time mismatch (EU average 41%, Slovakia 49%, Eurostat [trng_aes_176]).

- To integrate support for providers with direct support to participants (from supply to demand).
- To emphasise individual autonomy in the choice of learning activities in the area of transferable skills defined by the State.
- To open it for residents aged 16 and over (excluding those in formal education) and migrants with a residence permit.
- To set the duration of the scheme until the allocated budget is spent.
- To use the term Individual Learning Accounts (ILAs), although a more accurate name would be Individual Learning Vouchers. This is because the term ILA is already established and we do not consider the change in terminology to be crucial.
- That the main objective of the ILAs should be to achieve higher levels of adult participation in education.
- That a cumulative maximum contribution for ILAs should be 200 EUR for those interested in participating in the scheme. This means that the government contribution is not claimable and that participants sign up until the allocated budget for a given cycle is spent. In the event of a lower priced activity, it should be possible to re-apply for the scheme if funds are still available. Based on the available international data, we estimate participation of approximately 2% of the population.
- For the design of the ILA scheme itself to draw on the existing experience of the REPAS/KOMPAS instruments. This is a long-standing scheme which in principle is an individual training voucher for jobseekers under the Employment Services Act, funded by the ESF, in which a jobseeker chooses a training course from the existing range of vocational and competence courses, which is then approved by the Labour Office.
- In view of the gradual implementation of the validation of prior learning in Slovakia, the activities related to this process, in particular the participation in examinations or compilation of a portfolio with a qualified career counsellor, should be a part of the activities funded by the ILA scheme.
- That the inclusion of the migrants without Slovak citizenship but with a residence permit or granted asylum in the ILA scheme should be possible. Language or educational courses for migrants are part of a number of foreign ILA programmes as a form of support for integration, although we believe that the integration of foreigners should be addressed by separate schemes with more direct support.
- That to ensure successful implementation, it is essential to address the availability of information on the activities on offer. Information should be concentrated in one place, e.g. a web portal which would contain: 1) basic information on available courses, including their content, price, format and geographical location, and 2) a platform providing information that constitutes a form of general career guidance.

3.2.5. Notable international examples

In this chapter, the ILA system in other relevant countries is reviewed.

France

The French model of ILAs (the Compte Personnel d'Activité (CPA) – personal activity account) was introduced in response to changes in the labour market and as a part of a wider reform of the French labour market. The system has been in effect since January 2017. Overall, it is an example of a rather complex and ambitious system with multiple functions, although the educational ones are

predominant. Among other things, it was intended to help provide for citizens in various life situations that require a reduction in work activity; it should also decouple social rights from the employment relationship (contributions are concentrated in a personal account linked to the individual citizen, not to their employment relationship).

The CPA consists of three personal accounts, to each of which different rules apply. Any working person aged 16 or over can open an account, including self-employed and the unemployed, the account is held under a social security number and can be managed online. The individual accounts are:

1. Individual Training Account (CPF) – dedicated specifically to training – see below.
2. Individual Job Risk Account (C2P) – enables employees to accumulate points per year if they are exposed to risks in the workplace. The points provide entitlement to some benefits including vocational training (others include, for example, reduction in working hours for a period of time etc.)
3. The Civic Engagement Account (CEC) – is for people who perform voluntary activities (such as military and civilian service, volunteer firefighters, civic association etc.) They may qualify for a certain number of hours of vocational training.

The Personal Training Account (CPF) can be used throughout a person's working life to pursue training and gain qualifications. It is automatically credited at the beginning of the year following the year worked and remains accessible regardless of a change of employer or in the case of unemployment.

The following groups are entitled to the account:

- Employees aged 16 years or older.
- Apprentices aged 15 and over.
- Jobseekers (do not need to be registered)
- Persons enrolled in labour market orientation or labour market integration programmes.
- Self-employed individuals.

Special credit is available for minors without a vocational qualification. The regional government will provide them with sufficient credit on the CPF to complete their vocational training.

CPF holders can use the credits as they choose to:

- Obtain a certified qualification.
- Prepare for an examination validating knowledge acquired informally.
- Prepare for setting up a trade/business.

It is also possible to finance training beyond the CPF credit, provided that either the Labour Office, the training institution, the employer, the employee or a collective agreement makes an additional contribution. The CPF makes it possible to cover the costs of training but does not provide wage compensation. This can either be provided by the employer or the use of the CPF can be combined with training leave which includes wage compensation. The application for training is at the initiative of the employee. It can be requested during or outside working hours. If the training takes place during working hours, the employer's consent is required.

Employers contribute 0.2% of their employees' gross wages (if the enterprise employs more than 10 employees). Additional payments, e.g. on the basis of a collective agreement, are possible.

From 2014 to 2018, the CPF granted training hours. To pay for training through the CPF, a third party (such as a joint sectoral training fund for employees or Pôle Emploi for jobseekers) had to provide additional funds to supplement the basic hours credited. However, since September 2018, the CPF has been credited in euros, with full-time employees receiving 500 EUR per year and low-skilled employees receiving 800 EUR per year (with a cap of 5,000 and 8,000 EUR, respectively). The switch to euros was intended to provide individuals with greater transparency about the amount of funding available to them and to encourage competition in the training market by allowing demand to drive investment.

Initially, only certifications listed by the social partners were eligible for CPF funding, creating a complex system that was challenging for individuals to navigate. However, the 2018 law expanded eligibility to include all certifications and introduced a digital application that enables individuals to purchase training online without the need for a third party. The governance of the CPF, which involved numerous stakeholders, made its use a complex matter until 2018. The new law therefore created a national body, France Compétences, to centralise the funding and regulation of training. This system reduced the role of collective stakeholders, including industry sectors and joint sectoral training funds, which had previously been responsible for collecting and funding contributions for the continued training of employees.

The shift to a single, mandatory certification for training providers seeking public funding has addressed issues arising from the initial phase of CPF implementation, such as the proliferation of certificates and labels, and the mixed assurances they offered. By removing the lists, this simplification should make the system more accessible to individuals. However, ensuring the quality of training goes beyond certification; it also depends on content and teaching methods. As these factors are difficult for individuals to assess, the evaluation of training and its outcomes by public funders, and the communication of these outcomes to the public, remain crucial. Furthermore, the shift to a single, mandatory certification may disadvantage small training providers and limit the diversity of training provision.

To further promote personal autonomy in training, a free career guidance service called Conseil en Évolution Professionnelle (CEP) was introduced alongside the CPF. Initially, it was entrusted to public employment service operators for the unemployed and to joint training funds for the employed. However, the law of September 2018 allocated funding and entrusted the CEP to the private sector.

Wales

A notable example of the implementation of ILAs is the older Welsh scheme. Launched in 2003, it was open to all UK or EU citizens resident in Wales aged 18 or over and targeted people on low incomes and with low levels of qualifications. The main aim of the scheme was to increase the participation of the target group in education and to help them move off welfare dependency.

The maximum amount of support was £200 per year (the average actual contribution was less), and only registered providers, 38 public and 34 private institutions, could provide training. The first year of implementation was relatively slow, not all providers were well informed about the correct procedures, so many applicants did not receive support. In the following year, the rules were adjusted to be more flexible and the information and promotion campaign was also intensified. The scheme was evaluated in 2007 with positive results, e.g.: 3/4 of the participants felt better after finding a new job, 53% stated that they found a job as a result of the training, 83% stated that their knowledge and skills had improved and finally, 92% were satisfied with their participation and the use of the training

account. The most common fields of training for participants were ICT (42%), health and social services related fields (17%), education and employment or languages and communication (both 8% each).

Overall, the implementation was judged to be highly successful. The Welsh design of the Learning Accounts is an example of a relatively small and simple scheme where a clearly defined target group and objectives lead to successful implementation. The use of registered providers only is obviously important, and it is instructive to note that, even on such a relatively small scale, the importance of awareness raising and promotion to participants should not be underestimated.

This scheme was closed in 2011.

The Personal Learning Account (PLA) scheme was introduced as a pilot programme in two colleges in Wales in 2019, with the aim of supporting employed individuals aged 19 and over to upskill or reskill in the health, engineering, construction, and digital sectors. However, during the Covid pandemic, the scheme was expanded to include all furloughed workers across Wales, regardless of salary. Additionally, the programme became eligible for employers to provide funded flexible learning opportunities to their employees.

The courses and qualifications offered through the PLA have been approved in collaboration with the Regional Skills Partnerships to address skills gaps and sector priorities across Wales. The Welsh Government provides funding for the course costs, enabling individuals to undertake learning that fits in with their existing family and work commitments.

The Personal Learning Account (PLA) scheme has significant benefits, including the ability for colleges to mainstream their provision and keep up to date with industry standards, enabling learners to be better prepared for employment. The PLA also enables learners who are employed to study at times that suit them, which is a positive factor for those with family or work commitments. The targeted interventions of the scheme also mean that local and national needs can be addressed quickly. However, one issue with the PLA is the lack of financial input from learners, which can lead to higher drop-out rates. Additionally, there can be a confusing message in terms of college/employer relationships, with the scheme offering free priority qualifications while colleges are also expected to generate commercial income.

Netherlands

An older but well-documented example is the Dutch experiment from 2001-2008 which included an evaluation of the ILA programme compared to a control group of people without the use of ILAs. Initially, the Dutch government was considering how to increase the motivation of adults to participate in further education and also how to strengthen the demand side of the education market. As a result, two pilot projects were carried out in 2001-03, involving around 3,000 employees and 100 enterprises. Each participant received a grant of 450 EUR from the ministry, the amount could be increased by the employer or by the participant and had to be used within 18 months. Recruiting participants was not easy, as low-skilled workers had little experience of organising their own training. With the help of employers and an intensive publicity campaign, the 3,000 participants mentioned above were eventually recruited. The main reasons for participation were personal development (61% of participants) and better functioning in their current job (39% of participants).

A few years later, the Dutch government approved a research project comparing two groups: 637 employees with access to an ILA (again with a grant of 450 EUR) and 629 employees without access to an ILA. The research was conducted between 2006 and 2008. The participants' level of education was

rather low, they were young (the average age was 38 years), 75% were male and more than 60% had not received any training in the previous year.

The experiment was evaluated in great detail and the results showed some differences between the groups, although they were not as pronounced as may initially have been expected. Participation in training was only about 10% higher for those using ILAs than for those not using them (54% vs. 44%). Both groups cited their own personal development as the most important reason (about 70% of both groups). The group without an ILA mainly cited improving their position in their current job as another reason, whereas the group that had the opportunity to use the ILA referred to a more general enhancement in their position in the labour market. An important finding (although perhaps not too surprising) is that people with low levels of education and low incomes have little motivation and willingness to save for education (i.e. to use learning accounts as savings accounts), but with reasonable intentions and motivation are more likely to use ILAs in the form of a one-off voucher (grant). More generally, this leads to the conclusion that the parameters of the chosen model (scheme) work in conjunction with each other, not in isolation.

Introduced in 2022, a current arrangement in the Netherlands is called the STAP ("Stimulating Labour Market Position") budget. Participants in the Dutch labour market, composed of employees, entrepreneurs, and jobseekers, can use up to 1,000 EUR (incl. VAT) for training and development purposes. The primary objective is to empower applicants to keep their current job or find new employment opportunities. The budget can be utilised for a variety of purposes such as enhancing skills in a specific field or personal development areas such as leadership and communication.

Individuals can apply for a STAP budget once per year through the UWV website (Employee Insurance Agency). The budget is restricted to training activities listed in the training register of the DUO (Dienst Uitvoering Onderwijs). Upon application, if approved (usually within four weeks), the budget is paid to the relevant training provider. The STAP account is only granted for a training programme that begins within three months of the closure of the relevant two-month application period, except for multi-annual education which has a longer application period of five months.

3.3. Situation analysis of micro-credentials

Micro-credentials are a response to the growing need for the provision of well-designed, small-scale learning that responds to learners' interest in acquiring new specialised knowledge and skills. They are also a recognition that traditional vocational training with almost lifelong relevance is not possible anymore, and that lifelong learning is a competitive necessity. In the EU Recommendation, micro-credentials are used as evidence of learning outcomes after short, transparent courses. The ILA data model is tentatively planned to include micro-credentials. This chapter provides an overview of the current situation of micro-credentials in the different countries.

3.3.1. Situation analysis of micro-credentials in Czechia

Micro-credentials are compatible with the National Register of Qualifications⁵⁰, the nationally recognized vocational qualifications system, where the certification of non-formal and informal learning outcomes can be obtained based on a certified exam. The system was developed in 2005 and is based on a public register of complete and partial qualifications. There are also qualification and

⁵⁰<https://www.narodnikvalifikace.cz/en-us/>

assessment standards that are used to check qualifications. There are currently 1,455 vocational qualifications and 1,036 authorised individuals certified to examine participants. Qualification levels corresponding to the EQF (European Qualifications Framework) are also included. In particular, the partial qualifications and their certification are in line with the idea of micro-credentials but are not directly applicable or transferable.

The technical system for issuing micro-credentials should be based on block-chain technology and public-private partnership ideas. The consortium will be composed of representatives of enterprises and institutions relevant to the sector for which the consortium will issue micro-credentials. Interest in micro-credentials is expected to be high in some sectors (e.g. in the IT sector this type of training makes a lot of sense in the IT sector), and low or non-existent in others (e.g. crafts). The system should be in line with the National Qualifications Framework and based on competences rather than learning outcomes. Micro-credentials will not be linked to the duration of the course. Micro-credentials should be linked to EUROPASS. The project proposal is currently being prepared to carry out a feasibility study on the implementation of micro-credentials (with the help of EU funding). The Czech approach to micro-credentials is still taking shape and the final form may be different from the intention described here.

The Ministry of Labour and Social Affairs is responsible for retraining, which is provided through LOs and various projects. At present, a large database of retraining and further education opportunities has been established and is gradually being populated with courses registered by training enterprises. A significant number of these courses have the characteristics of courses leading to micro-credentials, including accredited retraining courses. However, the current idea of the micro-credential system does not include these courses, although it is possible that there will be a way to use micro-credentials also for services of ministry (before being implemented by PES as well).

Micro-credentials in Higher Education Institutions ecosystem

Higher Education Institutions in the Czech Republic are aware of the concept of micro-credentials and are looking for ways to use them. Although they are not called micro-credentials, universities already offer courses of this type. However, they are more of a supplement to their educational offer. They are different types of training courses offered to the general public, usually for a fee (they could also be funded by a grant, for example).

Micro-credentials in the private sector

Education corresponding more or less to micro-credentials is also taking place in some enterprises, the most prominent example being IBM and its SkillsBuild platform. Google plans⁵¹ to work with micro-credentials in such a way that, in the future, it will be possible to obtain a qualification at the level of a bachelor's degree, which would represent a significant change in the educational landscape. Private educators often offer their own certification after completion of their training (e.g. the private IT educator Engeto offers the certificate "ECPB - ENGETO Certified Python Beginner"⁵²). In general, private educators use certifications in many different ways and they could hardly be considered as micro-credentials, as the degree of transferability and recognition is very variable. Recruiters look at courses taken rather than certifications when selecting employees.

⁵¹ Information from presentation at a conference <https://czv.zcu.cz/akce/trendy-microcredentials/>

⁵² https://engeto.cz/python-akademie/?gclid=CjwKCAjwl6OiBhA2EiwAuUwWZYsDcX63bTyk-mKwNvChwfnY4DYfc2WR5m8JIRrPZIM6KyDb2PulbRoCm6MQAvD_BwE

3.3.2. Situation analysis of micro-credentials in Hungary

Hungary's objectives according to the Resilience and Recovery Plan are to transform the higher education training system with a practical focus, to establish training and regulatory cooperation with VET and innovation, and to strengthen the system of further training, upskilling and reskilling related to higher education in alignment with labour market requirements. In the context of the digital and green transition, it is particularly important that labour market expectations focus on improving and extending the digital and green skills of the working age population. Higher education has a key contribution to make to the development of these skills at tertiary and post-secondary level, and the regulatory environment should prioritise meeting these needs. Education reforms in higher education institutions will contribute to increasing the role of these institutions in adult education in the future. As a result of this development, adult participation in education and training will increase, enhancing the adult population's skills and competences and thus their labour market opportunities. The rationale and need for short-term training programmes and so-called micro-credentials is becoming increasingly evident, as they enable a high degree of flexibility in tailoring different training courses to labour market requirements and in making skills development personalised and easily accessible.

The following key targets have been identified in relation to micro-credentials:

- Investment 1 - Institutional innovation and increased activity in higher education
- At least 557 of the students/individuals participating in adult training in higher education will be awarded with a micro-credential in 19 courses.

Based on the objectives above, the following projects have been launched:

- RRF-2.1.1-21 Sectoral modernisation of higher education and training
- RRF-2.1.3-21 Institutional innovation in higher education courses and services adapted to the core activities of higher education institutions and increasing adult learning in higher education.

The project partners are working to create the conditions for the emergence of micro-credentials:

- Training sections, modules or short training periods clearly define the outputs of short learning programmes (learning outcomes) and the achievement of learning outcomes, as well as developing a system to monitor the achievement of learning outcomes.
- Integration of micro-credentials into the training system, quality-assured classification in the Hungarian Qualification Framework and database
- Micro-credentials in Neptun⁵³ and FIR⁵⁴

⁵³ Neptun is an integrated university administration system used by many higher education institutions in Hungary. It provides a platform for students to manage their academic affairs, including enrolling in courses, checking grades, and handling administrative tasks. Students can also use Neptun to pay tuition fees, register for exams, and communicate with professors and other students. Each student is given a unique Neptun code, which they use to log in and access their personal academic information.

⁵⁴ FIR stands for "Felvételi Információs Rendszer," which translates to "Admission Information System" in English. It is a system used for the university and college admission process in Hungary. Prospective students can use FIR to apply to higher education institutions, check admission requirements, and view their application status. The system is designed to streamline the admission process and provide a centralised platform for both students and institutions.

- Integration of micro-credentials into the credit recognition system.

3.3.3. Situation analysis of micro-credentials in Poland

Micro-credentials are gaining momentum in Poland. They are currently an important topic on the political agenda and a part of the reality of non-formal training. In 2021, an informal ministerial workgroup was established in the Ministry of Education and Science, with representatives from different sectors of education and training. In 2022, the group was formalised and supported the minister in formulating recommendations and shaping regulations on micro-credentials.

The term is becoming increasingly popular but denotes various initiatives in different education and training sectors, the labour market or social and cultural activity. While the impact of the EU Recommendation on micro-credentials is being discussed in formal contexts, especially the educational but also the labour market, many existing solutions are closely aligned with the idea of micro-credentials. The list of learning opportunities and qualifications that can be considered micro-credentials includes short courses and MOOCs offered by universities, digital certificates offered by private entities (e.g. coding schools, technology enterprises, NGOs), micro-learning on social media platforms and some market qualifications in the Integrated Qualifications Register.

Odznaka+

The Odznaka+ system is an internet application that enables the issuance, phased collection, storage, and sharing of digital badges in the Open Badges standard and digitally secured PDF certificates. The system is operational and is currently in its third phase of pilot implementation and development. It is a public initiative implemented by the Educational Research Institute and funded by the ESF.

The application allows the user to digitally certify qualifications, individual learning outcomes and the sets of those outcomes, participation in events, and other achievements that are documented. Each badge has specific award criteria. The Odznaka+ system is available to all users via the website, and later as a mobile application for individual users.

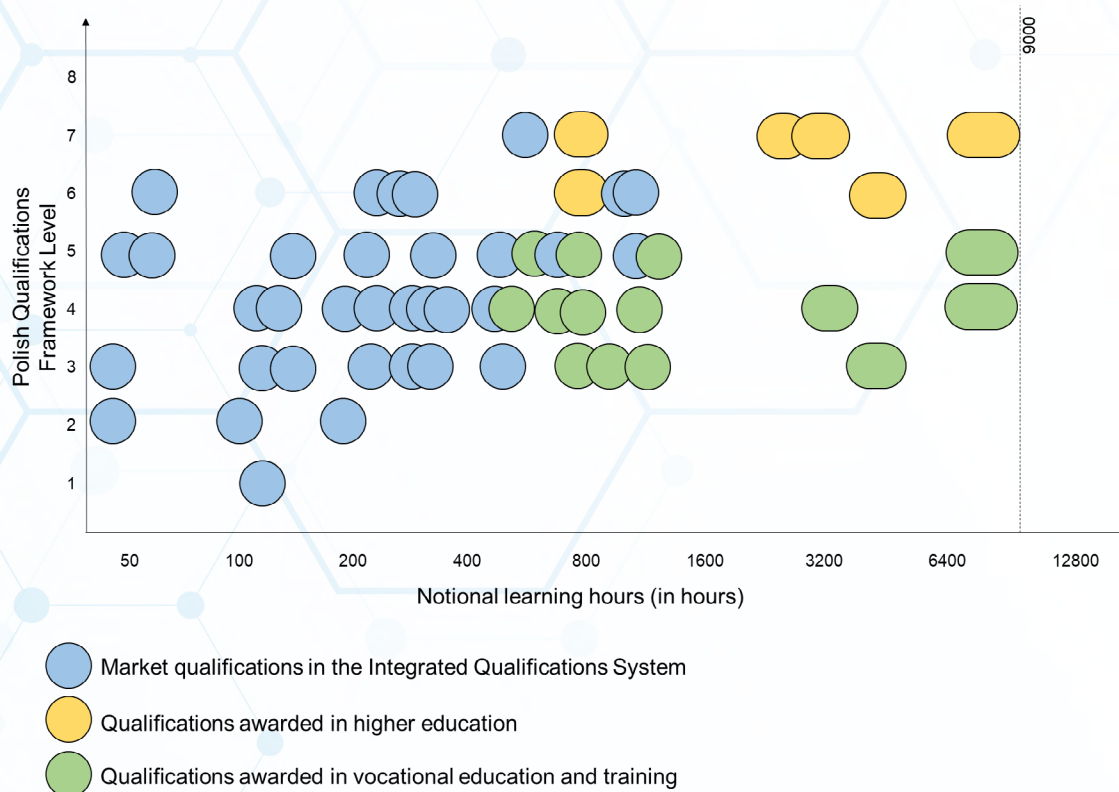
<https://odznakaplus.ibe.edu.pl/>

Market qualifications in the Integrated Qualifications System

The Integrated Qualifications System is a set of rules, procedures and tools that support the functioning of the qualifications system in Poland – they increase access to qualifications, and ensure conditions for the creation of new qualifications and the improvement of the existing ones (e.g. through quality assurance arrangements).

Qualifications in the IQS differ significantly considering the level of requirements in terms of knowledge, skills, and social competences (a generic description of these requirements in eight levels is the Polish Qualifications Framework), as well as the average time needed to master the learning outcomes required for a given qualification (which can be measured in ECTS points or notional learning hours). Due to their small size, a significant part of the qualifications included in the IQS can be considered as “micro-credentials” – see the graph below.

1. Figure: Types of qualifications in IQS by PQF level and notional learning hours



Source: Nowakowski M., Stęchły W. (2021), Szanse i zagrożenia związane z nowymi rodzajami poświadczania umiejętności. Micro-credentials, open badges, ECVET oraz osiągnięcia w ZSK. Warszawa, Fundacja Rozwoju Systemu Edukacji (<https://depot.ceon.pl/handle/123456789/19698>)

Situation in VET

In the last decade, a new structure of vocational qualifications and the possibility of obtaining them has been introduced in the Polish VET; more diplomas and vocational certificates in a given profession (i.e. "smaller" qualifications, confirmation of additional skills), and the students participating in the so-called learning mobility receive several different documents attesting to their achievements. These changes, together with a system of external examinations, allow adults to use the public VET system and obtain qualifications – they can do this by taking extramural examinations or by taking an examination after a vocational course.

VET legislation allows for attaining an additional vocational skill, which can be seen as an additional unit of learning outcomes, helping to make students in VET schools to be better able to meet the needs of local employers and be trained in the latest technologies. This solution has not yet been widely implemented and is being criticised for the lack of a clear and sound assessment framework.

Currently, the Ministry of Education and Science is proposing the introduction of a new type of qualification – a sectoral qualification, which could be awarded to people learning in Sectoral Centres of Skills (a Polish initiative corresponding to Centres for Vocational Excellence).

Solutions in Higher Education

Many higher education institutions provide platforms for distance learning, open learning materials, and offer MOOCs. In recent years, the higher education institutions active in the European University

Alliances especially have been active in developing and offering micro-credentials. At least 7 higher education institutions (the number may be higher) are testing the Odznaka+ system, either to develop a digital format for their qualifications or as a platform for issuing micro-credentials.

The traditional offer of universities, such as summer/winter schools, language courses, open universities, and training certificates, also conform to most (if not all) elements of micro-credentials definitions.

Limitations in the recognition of micro-credentials in higher education. In Poland, the introduction of micro-credentials in higher education is severely limited by legal barriers related to the recognition of learning outcomes (RPL - Recognition of prior learning). Art. 71 of the Law on Higher Education and Science states that: [Art. Art. 71. 5.] As a result of confirming the learning outcomes, no more than 50% of the ECTS points assigned to the courses covered by the study programme may be credited [Art. 71. 7.]. The number of students admitted on the basis of the confirmation of learning outcomes may not exceed 20% of the total number of students in a given field of study, level, and profile.

The above provisions make it impossible for universities to validate learning outcomes during the course of study. Therefore, the university cannot recognise the certificate/attestation obtained externally by the student, and thus transfer part of the implementation of the study programme to an external entity. As a result, universities do not use mechanisms for the recognition of learning outcomes which are already widely used in other countries.

Micro-credentials in the private sector

Digital badges are used by numerous vendors, most of which operate internationally. In the case of national enterprises, for example, coding schools usually offer both physical and digital forms of certificates.

There is a pool of training opportunities in public database „Baza Usług Rozwojowych” (Development Services Database) and “Rejestr Firm Szkoleniowych” (Register of Training Enterprises) that can be funded through “Krajowy Fundusz Szkoleniowy” (National Training Fund). However, in the first case, only a part of the training is of small volume of learning and in a digital format, and in the second case the database shows what the providers offer, but there is limited information on the training content (and it is unclear whether the offer is up to date).

3.3.4. Situation analysis of micro-credentials in Slovakia

In Slovakia, micro-credentials can play an important role in supporting the acquisition of skills that are in the public interest, e.g. the use of digital communication with the State or overcoming the digital skills gap in part of the population.

The definition of micro-credentials first appeared in the Lifelong Learning and Guidance Strategy 2021-2030 ("LLG Strategy") in the section 1.6 Increasing flexibility of the qualification system with smaller qualifications and micro-qualifications (micro-certificates)⁵⁵. The strategy notes that they are "an expression of the need to take into account even small changes in work ability, including the acquisition or development of only one specific skill, if this is a market-relevant need" and that foreign experience "shows that the evidence of qualifications as outcomes of even very short courses (e.g. lasting only 10 hours) is useful for both employees and employers".

⁵⁵ <https://www.minedu.sk/data/att/22182.pdf>

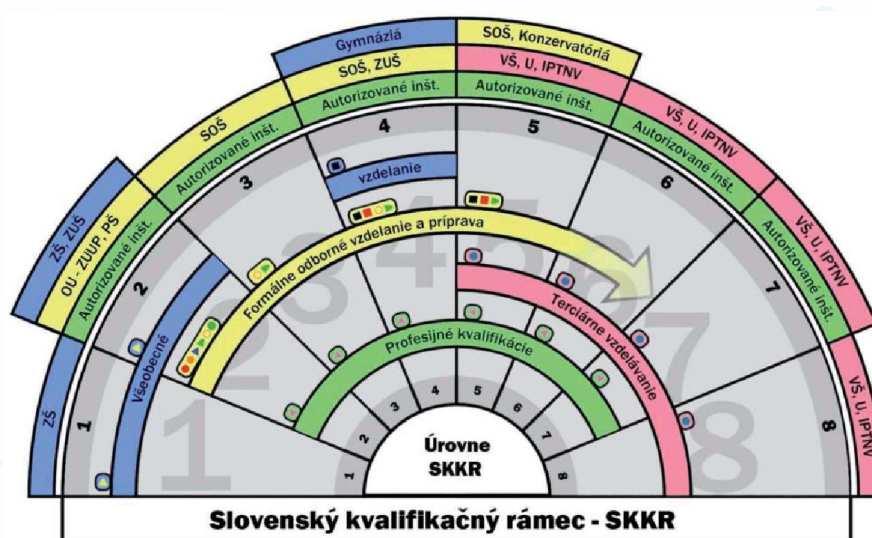
The strategy proposes to introduce two different terms: 'micro-qualification' and 'micro-certificates'. Therefore, it is proposed to translate the English term 'micro-credential' as 'micro-certificates' and to use the term 'micro-qualification' when it is evidence of the acquisition of a qualification included in the National Qualifications Framework (SKKR) (by assigning a SKKR level). Thus, a micro-certificate that attests to the achievement of learning outcomes recognised as qualifications with an aligned SKKR level is a micro-qualification. However, the recent proposal of the LLL Act takes a different approach and defines a micro-certificate as “a record of learning outcomes acquired within short learning programmes, assessed against transparent and clearly defined standards, and aligned to the level of the SKKR.” This suggests that the term “micro-credential” should be translated as “micro-certificate” which is narrower than the European definition. In fact, the European definition of micro-credentials refers to learning outcomes related to a small amount of learning (in the original 'learning outcomes' and 'small volume of learning'⁵⁶), which opens up the possibility of obtaining micro-credentials not only on the basis of formal education and completion of a training programme. The Recommendation explicitly states that “micro-credentials could be created and issued by different providers in different learning environments (formal, non-formal, and informal)⁵⁷”

The approach proposed by the LLLG Strategy, based on the duality of the two terms (micro-certificate vs. micro-qualification), provides a simple pragmatic solution. It requires:

- The use of the definition of micro-credentials as proposed by the Recommendation on micro-credentials.
- Meeting the 'European' requirements for the data contained in the document to support interoperability and understanding of the data contained in the micro-credentials documents based on the Annex VI of the Council Recommendation on the European Qualifications Framework.

The SKKR introduced a classification of qualifications into eight levels of difficulty analogous to the European Qualifications Framework (EQF), and four sub-frameworks.

2. Figure: Slovak Qualifications Framework (SKKR)



⁵⁶ [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32022H0627\(02\)&from=EN](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32022H0627(02)&from=EN)

⁵⁷ [https://eur-lex.europa.eu/legal-content/SK/TXT/PDF/?uri=CELEX:32022H0627\(02\)&from=EN](https://eur-lex.europa.eu/legal-content/SK/TXT/PDF/?uri=CELEX:32022H0627(02)&from=EN)

While the three sub-frameworks reflect the formal education system, the fourth sub-framework contains the so-called occupational qualifications generated by labour market needs. These qualifications do not require a large amount of formal education and the learning outcomes related to these qualifications are closely linked to the competences immediately required for work.

A special case of qualifications under the fourth sub-framework are also 'micro-credentials'. As they require relatively little training or self-learning to acquire, they are consistent with the proposal of using the term 'micro-qualifications'.

Further impetus for the expansion of micro-credentials may come with the gradual development of graduate tracking. Information from school graduates can identify the need for strengthening the development of certain skills required for employment in the labour market that the existing curriculum did not develop or did not develop sufficiently, and thus induce the emergence of modules to compensate for the identified shortfall.

Last but not least, impulses coming from employers and employer surveys, which should be provided directly or indirectly by the sectoral councils, could become a source for the expansion of micro-credentials.⁵⁸

3.4. Focus on soft skills - analytical framework.

In this chapter, we present the conceptual framework for understanding soft skills and review the process of analysis.

3.4.1. Conceptual framework

Although the topic of soft skills has been discussed extensively in the international literature, a common definition has not yet been established: soft skills have different meanings in different professional organisations and countries.

As a starting point, it is worth clarifying the concept of skills. "A skill is nothing more than an automated element of action (and activity) that functions without direct control of the mind. A skill is a part of performable knowledge, the result of learning, where a sequence of actions is performed automatically as a result of a sufficient number of practices."⁵⁹

According to Decision 2018/646 of the European Parliament and of the Council on a common framework for the provision of better services for skills and qualifications (Europass): "For the purposes of this Decision, skills are understood in a broad sense covering what a person knows, understands and can do. Skills refer to different types of learning outcomes, including knowledge and competences as well as the ability to apply knowledge and to use know-how in order to complete tasks and solve problems."⁶⁰

⁵⁸ <https://europass.sk/wp-content/uploads/2023/06/Analiza-2-EN-FINAL.pdf>

⁵⁹ Source: https://dtk.tankonyvtar.hu/bitstream/handle/123456789/12663/modszertani_fuzet_1.pdf?sequence=1&isAllowed=y [32. p.]

⁶⁰ Source: <https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX%3A32018D0646> [3. p.]

“Soft skills are personal attributes that enhance an individual's interactions and their job performance. Unlike hard skills, which are about a person's skill set and ability to perform a certain type of task or activity, soft skills are interpersonal and broadly applicable. There has been so much research into soft skills, such as the one conducted by Spencer and Spencer (1993).”⁶¹

Good job performance is the right combination of soft skills and hard skills. Soft skills are non-technical, closely related to personal qualities and attitudes, social, and management skills. Some of the soft skills are more difficult to measure (mostly through our feelings and senses) and harder to develop. In contrast, hard skills refer to professional and technical knowledge that can be demonstrated by tangible qualifications (vocational and professional qualifications, diplomas, etc.); our measurable, verifiable skills are therefore called hard skills.⁶² “Even though “hard” and “soft” are treated as a dichotomy in everyday language, it is not a true dichotomy, but two opposites on a continuum. In reality, the two approaches should thus be understood as a mix of aspects (Crawford and Pollack, 2004).”⁶³

For success-oriented businesses and organisations, the behaviour and attitudes of job applicants are almost more important than their theoretical knowledge. Of the trio of knowledge, competences and soft skills, soft skills are considered the most important by recruiters (36.9%). These are followed by competences (33.8%) and then theoretical knowledge (29.2%) in terms of success within the company. Work experience and practical skills are the most important for promotion. In this respect, the second most important aspect is the interoperability between theoretical and practical knowledge.⁶⁴

In some of the available literature, transferable skills (so-called transversal skills) are considered synonymous with soft skills, as if hard skills were not transferable at all. In fact, all skills (soft and hard) are transferable: from company to company, from sector to sector, from country to country. The difference lies in the degree of transferability, the degree of transversality: hard skills have a lower level of transferability than soft skills.⁶⁵

In the glossary published by the UNESCO International Bureau of Education, soft skills are defined as follows:

*“As a term used to indicate a set of intangible personal qualities, traits, attributes, habits, and attitudes that can be used in many different types of jobs. As they are broadly applicable, they are also seen as transferable skills, even if the idea of transferability is often questioned because individuals learn to perform tasks in particular contexts and may not be able to apply them to others. Examples of soft skills include empathy, leadership, a sense of responsibility, integrity, self-esteem, self-management, motivation, flexibility, sociability, time management, and making decisions. The term is also used in contrast to ‘hard’ skills that are considered as more technical, highly specific in nature and particular to an occupation, and that can be (generally) taught more easily than soft skills.”*⁶⁶

⁶¹ <https://www.sciencedirect.com/science/article/pii/S1877042812038943>

⁶² Source: <https://blog.cvonline.hu/2018/karriertanacsok/soft-skills-vagyis-a-puha-keszsegek-mit-kell-tudni-rola/17400>

⁶³ <https://www.sciencedirect.com/science/article/abs/pii/S0263786313001488>

⁶⁴ Source: <https://www.hrportal.hu/jelentese/soft-skills---puha-faktorok.html>

⁶⁵ Source: https://ec.europa.eu/programmes/erasmus-plus/project-result-content/dce32717-6cfc-4b23-b7af-e4effad68f21/Framework_soft_skill_Report.pdf [10-11. p.]

⁶⁶ Source: http://www.ibe.unesco.org/fileadmin/user_upload/Publications/IBE_GlossaryCurriculumTerminology2013_eng.pdf [53-54. p.]

In other words, soft skills are a set of "intangible" personal qualities, traits, characteristics, habits, and attitudes that can be used in a wide range of jobs.

In the publication *Transferability of Skills across Economic Sectors: Role and Importance for Employment at the European Level* (published by the European Commission, Directorate-General for Employment, Social Affairs and Inclusion) soft skills are defined as: *"non-job specific skills that are related to individual ability to operate effectively in the workplace and are usually described as perfectly transferable."*⁶⁷

In 2016, the Irish National Training and Employment Authority (FÁS) published a report on soft skills development to assess the state of play in terms of labour market expectations of soft skills and to identify areas for recommendations for improvement in meeting these expectations. According to the report, soft skills are *"the interpersonal and intrapersonal skills required to be effective in the workplace."*⁶⁸

Skills Panorama is supported by the European Commission's Directorate-General for Employment, Social Affairs and Inclusion and Cedefop, the European Centre for the Development of Vocational Training. According to their 2015 glossary, soft skills are *"skills that cut across jobs (see Job-specific skills) and sectors (see Sector-specific skills) and relate to personal competences (confidence, discipline, self-management) and social competences (teamwork, communication, emotional intelligence)."*⁶⁹

Although the term 'soft skills' has important limitations, e.g. it has the characteristics of a buzzword and is open to different interpretations, we decided to use it because it is widely accepted and understood. In other words, if we asked our interviewees "How do you develop transversal skills in the adult education system?", we would encounter difficulties with the reception of this non-mainstream concept. This has also been the case in other research projects (Dębowski et al. 2021, p.103).⁷⁰

3.4.2. Procedure of the analysis

The scope of research is multi-level:

- First, we explore the international terminology on soft skills and define soft skills in the context of this project.
- Then, we will map the systemic approaches to soft skills in the EU, including European frameworks and classifications that provide a transparent picture of the qualifications or occupations acquired in each country, but also of the aptitudes, skills or competences required to exercise them. The analysis of the data contained in the frameworks and classifications can be key to the data model and can influence the AI-based algorithm that recommends the level of training for each individual.
- An indispensable part of our analysis are the frameworks beyond the above, which include competences that can be acquired through formal, informal or non-formal learning, that help

⁶⁷ Source: <https://op.europa.eu/en/publication-detail/-/publication/21d614b0-5da2-41e9-b71d-1cb470fa9789> [10. p.]

⁶⁸ Source: <https://unevoc.unesco.org/home/TVETipedia+Glossary/filt=all/id=602>

⁶⁹ Source: <https://unevoc.unesco.org/home/TVETipedia+Glossary/filt=all/id=602>

⁷⁰ Dębowski, H., Stęchły, W., Tomengova, A., Reegård, K.,

Valovic, J. (2021), Development and assessment of transversal key competences in the VET sector – model solutions and practices in six European countries, Warsaw: SGH Warsaw School of Economics.

See section 5.1.1 Perception of transversal key competence concepts and terms on page 103. https://track-vet.eu/system/files/TRACK-VET_Synthesis_Report.pdf

employees (and entrepreneurs) to thrive in the 21st century labour market, and that are essential for their active participation in society. The framework overview briefly describes the main objective, structure and usability of the framework.

- The chapter also describes the national-level solutions to soft skills in the V4 countries participating in the project and highlights good practices in soft skills based on the available literature.
- Finally, conclusions are drawn on the design of the soft skills data model. Beyond the delineation of soft skills, the aim is to describe the soft skills expected in different segments of the labour market, which may require different development for different levels of workers in different jobs.

3.5. Systemic solutions regarding soft skills

This chapter presents the systemic EU solutions that we believe can be linked to soft skills.

3.5.1. European Qualifications Framework (EQF)

The EQF is an 8-level, learning outcomes-based framework for all types of qualifications that serves as a translation tool between different national qualifications frameworks. This framework helps improve the transparency, comparability and portability of people's qualifications and makes it possible to compare qualifications from different countries and institutions.

The EQF covers all types and levels of qualifications, and the use of learning outcomes makes it clear what a person knows, understands, and is able to do. The level increases according to the level of proficiency, with level 1 being the lowest and level 8 the highest. Most importantly, the EQF is closely linked to national qualifications frameworks, so that it can provide a comprehensive map of all types and levels of qualifications in Europe, which are increasingly accessible through qualifications databases.

The EQF was established in 2008 and later revised in 2017. Its revision has maintained the core objectives of creating transparency and mutual trust in the landscape of qualifications in Europe. Member States committed themselves to further developing the EQF and making it more effective in facilitating the understanding of national, international, and third country qualifications by employers, employees and learners.⁷¹

The EQF cannot really be considered a soft skill focused system, it is included in this chapter for the big picture.

3.5.2. Key competences for lifelong learning

In 2018, the European Union renewed its 2006 position and issued a Recommendation on key competences for lifelong learning, which includes a number of substantial innovations in the light of new developments in education and training. The proposal aims to support the development of key competences throughout people's lives, regardless of their age, with a particular emphasis on

⁷¹ Source: <https://europa.eu/europass/en/europass-tools/european-qualifications-framework> (2022.12.09.)

promoting entrepreneurship and innovative thinking to develop personal potential, creativity, and initiative.⁷²

“For the purposes of this Recommendation, competences are defined as a combination of knowledge, skills and attitudes” and “key competences are those which all individuals need for personal fulfilment and development, employability, social inclusion, a sustainable lifestyle, a successful life in peaceful societies, health-conscious life management, and active citizenship.”

“The Reference Framework sets out eight key competences:

- *Literacy competence,*
- *Multilingual competence,*
- *Mathematical competence and competence in science, technology, and engineering,*
- *Digital competence,*
- *Personal, social, and learning to learn competence,*
- *Citizenship competence,*
- *Entrepreneurship competence,*
- *Cultural awareness and expression competence.”⁷³*

It is important to stress that the key competences are all equally important and can be used in many different contexts and in many different combinations. *“They overlap and interlock; aspects essential to one domain will support competence in another. Skills such as critical thinking, problem solving, teamwork, communication and negotiation skills, analytical skills, creativity, and intercultural skills are embedded throughout the key competences.”⁷⁴*

In the current and future labour market, the existence and level of development of these key competences is more important than ever.

3.5.3. ESCO - Analysis of available databases and data sources in the field of soft skills

What is ESCO? Why is it relevant?

ESCO is a classification of European Skills, Competences, Qualifications, and Occupations. It is a multilingual open resource developed within the European Union as part of the Europe 2020 strategy. The ESCO classification identifies and categorises skills, competences, qualifications and occupations relevant to the EU labour market and to education and training. It systematically presents the relationships between the different concepts.

The development and updating of the ESCO classification is an ongoing effort, which is conducted with the support of external stakeholders and the European Centre for the Development of Vocational Training (Cedefop). The Directorate General responsible for ESCO is DG of Employment, Social Affairs and Inclusion. As the ESCO database is evolving, there are several versions of it, with the last full version having been released in 2021 (ESCO v.1.1).

ESCO is available for download in different formats and language versions – see here: <https://esco.ec.europa.eu/en/use-esco/download>.

The relevance of ESCO for the D-ILA V4 project goals lies in:

1. The knowledge embedded in the links between different concepts in ESCO. Especially between soft skills and other entities (e.g. occupations).

⁷²Source: <https://hirlevel.egov.hu/2018/01/22/az-europai-bizottsag-uj-oktatasi-kezdemenyezesei-kozeppontban-a-lulcskompetenciak-es-digitalis-keszsegek-valamint-az-oktatas-europai-dimenzioja/>

⁷³ Source: [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018H0604\(01\)&rid=7](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018H0604(01)&rid=7) [7-8. p.]

⁷⁴ Source: [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018H0604\(01\)&rid=7](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018H0604(01)&rid=7) [7. p.]

Comment: This feature creates the possibility to build recommendations for soft skills development with reference to one's professional background, which is at the heart of the ILA enabling framework that can be built with the help of the D-ILA project results.

2. The availability and relatively widespread use of ESCO for initiatives on skills matching based on automation/machine learning.

Comment: This feature is important since using a widespread/popular reference framework for concepts will increase the usability of the project outputs.

Structure of ESCO

ESCO is structured in three pillars. The concepts grouped in these three pillars are structured hierarchically and interrelated with each other. The pillars are:

- occupations
- knowledge, skills, and competences (in brief often referred to as the “skills pillar”)
- qualifications.

Occupations

The occupations pillar contains ca. 3,000 occupation concepts. Since each occupation is mapped to the ISCO-08 it is used as the hierarchical structure of the occupations pillar. Additionally, the ISCO-08 standard is commonly used in national classifications of occupations, which allows easy mapping at the level of occupational groups.

Skills pillar

The skills pillar contains knowledge, skills, and competences as well as some group concepts. It currently contains about 13,500 concepts and is organised in a hierarchy. ESCO distinguishes between two types of concepts in this pillar:

- skill/competence concepts
- knowledge concepts.

However, there is no distinction between skills and competences recorded in the ESCO skills pillar. The skills pillar hierarchy contains four distinct sub-classifications (groups of concepts):

- Knowledge
- Skills
- Transversal skills and competences (sometimes also referred to as “attitudes & values”)
- Language skills and knowledge

The latter two categories are of special interest to the DILA-V4 project.

Qualifications pillar

The qualifications pillar allowed Member States and awarding bodies to provide data on qualifications, which is now displayed in Europass. The qualifications are structured according to the European Qualifications Framework (EQF) and refer to the Annex VI of the EQF Recommendation. The structure of the data used for the transfer between Member States and ESCO and Europass (the Qualification

Register Database) is defined as the Qualifications Metadata Scheme (QMS)⁷⁵ which is a computer-readable format enabling, inter alia, the automatic updating of data between national qualifications registers and the QDR.

The work on linking the qualifications pillar with the skills and occupations pillars is on-going. A pilot exercise with selected Member States has now (early 2023) finished the third phase. In this pilot, a tool for matching skills concepts from ESCO and learning outcomes specified in qualifications has been developed. The tool enables browsing the ESCO concepts as well as providing automatic recommendations. One of the recommendations in this work has been to make the tool available to the public.

It is worth mentioning that the qualifications are not available for download and the scope of the data uploaded by Member States remains limited.

Relationships between the three pillars

The three pillars of ESCO are interlinked to make visible:

- Which knowledge, skills, and competences terms are useful to describe jobs in a specific occupation,
- Which knowledge, skills, and competences terms are useful to describe the learning outcomes of a qualification,
- Which qualifications Member States consider relevant in the context of a specific occupation.

The relationship between knowledge, skills and competences, and occupations is defined as "essential" or "optional". "Essential" are the knowledge, skills and competences that are usually required when working in an occupation, independent of the work context or the employer. "Optional" refers to knowledge, skills and competences that may be required or occur when working in an occupation depending on the employer, the working context or the country.

In addition to the full learning outcome description, Member States or awarding bodies that provide data on qualifications can indicate which ESCO knowledge, skills, and competence concepts are relevant in this context. This semantic annotation creates relationships between the qualifications and the skills pillar.

The relationship between qualifications and occupations describes how Member States considered certain qualifications or certificates to be relevant to occupations. It merely reproduces information that is managed and kept at a national level, in case the Member State transmits this information together with data on qualifications. In the course of the ESCO project, such relationships are not being created actively.

How can ESCO be used?

The ESCO portal provides numerous examples of ESCO use (<https://esco.ec.europa.eu/en/about-esco/escopedia/escopedia>). Examples from the portal include the following (with links):

- ESCO in job search and job matching: [EURES, job search, competence-based job matching](#)

⁷⁵ More information about QMS is available here: https://europa.eu/europass/system/files/2020-07/Documentation_publishing%20of%20Q%20and%20LO%20Data_v2.0.pdf

- ESCO for career management: [CV creation](#), [searching learning opportunities](#), identify training needs
- ESCO for labour market analyses: [statistics](#), [big data](#)
- Implementing ESCO into systems: [ESCO data formats](#), [Linked Open Data](#), [ESCO API](#), [Mapping to ESCO](#), [Extending ESCO](#), [Linking learning outcomes of qualifications with ESCO skills](#)
- Use of ESCO in the public sector: [Europass](#), [Cedefop](#), [EURES](#), [Public Employment Service of Finland](#), [EU Skills Profile Tool](#), [House of Skills](#)
- Use of ESCO in the private sector: [Actonomy](#), [Adecco Group](#), [Ariston](#), [Boost.rs](#), [House of Skills](#), [JANZZ technology](#), [Milch & Zucker](#), [Open Badge Factory](#), [Peers Solutions](#), [Randstad](#), [SkillLab](#), [WCC Group](#), [Xtramile](#)

Transversal skills and competences in ESCO

The structure and content of the skills pillar (as well as occupations pillar) can be explored on the ESCO portal (https://esco.ec.europa.eu/en/classification/skill_main#overlayspin). Because of the project focus, the subgroup of transversal skills and competences is of special interest.

In 2021, the ESCO Member States Working Group on terminology for transversal skills and competences (TSCs) published a report entitled “Towards a structured and consistent terminology on transversal skills and competences”, which provides a definition and explanation of the hierarchy and group concepts used in ESCO. The full report is available here: <https://esco.ec.europa.eu/system/files/2022-05/MSWG%2014-04%20Report%20of%20the%20expert%20group%20on%20transversal%20skills%20and%20competences.pdf>.

DigComp in ESCO

The Commission has integrated the 21 competences of DigComp 2.2 accompanied by its five competence areas in the skills pillar of ESCO. Users can browse the competences through the skills group digital competences. In addition, users can download DigComp via the download page of the ESCO portal or access it through the ESCO API.

As a result, DigComp is aligned with the ESCO data model. Its competences are listed in a hierarchical structure, i.e. 21 competences are classified across five competence areas and they contain various metadata, such as preferred terms in 27 languages and descriptions. Thanks to this alignment, the 21 competences of DigComp together with its five competence areas were integrated in the ESCO skills pillar with minimal changes.

The translations of DigComp in ESCO (all languages) are available here: https://esco.ec.europa.eu/system/files/2022-03/Translations%20of%20Digcomp%202.0%20ESCO_final.pdf.

Green Skills and Knowledge Concepts in ESCO

In January 2022, a result of labelling Green Skills in ESCO Skills pillar has been presented in the report: “Green Skills and Knowledge Concepts: Labelling the ESCO classification” (https://esco.ec.europa.eu/system/files/2023-01/Green%20Skills%20and%20Knowledge%20-%20Labelling%20ESCO_0%20.pdf).

As a result, a total of 571 ESCO skills and knowledge concepts are labelled as green. This includes: 381 skills, 185 knowledge concepts, and 5 transversal skills. The full list of green concepts is available in the ESCO portal.

ESCO green skills and knowledge concepts can be accessed via different channels. As of January 2022, a document (.xlsx format) listing all the green concepts can be downloaded in the Download Section.

Using ESCO for machine learning-assisted mapping of data

One of the most fundamental uses of ESCO is mapping objects (e.g. qualifications, occupations, certificates or training programmes) onto it. This means that concepts in ESCO (usually skills) are assigned to the object. As a result, there is a representation of the object in ESCO terms, and since ESCO is a stable vocabulary, this operation opens up possibilities for further comparison or matching of different objects, where ESCO serves as an intermediary.

The quality of the mapping depends on the contents of ESCO (if the relevant concepts are available) and the ability to map (to identify and match adequate concepts). There are numerous question marks on both points; nevertheless, the results visible in consequent examples prove to be useful.

Needless to say, manual mapping is out of the question in the framework of the D-ILA V4 project because of time constraints and workload, yet automated methods have improved significantly in recent years. For a more technical description of how this can be done, see the report “Machine Learning Assisted Mapping of Multilingual Occupational Data to ESCO (https://esco.ec.europa.eu/system/files/2022-10/machineLearningAssistedMappingOfMultilingualOccupationalDataToESCO_v3.pdf).

The use of ESCO may be relevant for the D-ILA project, consider for example:

- First group of objects: a ‘training offer’ or ‘training programme’ or ‘credential’ that contains a description of content and skills.
- Second group of objects: “a training need” that contains a description of tasks and/or skills.

After mapping the objects from the first and second group onto ESCO, it is possible to perform a matching exercise by finding objects that meet specific criteria (e.g. have a critical number of links, have the most similar mapping). Each of these tasks (mapping a group of objects, matching) requires substantial work on fine-tuning the automation process (e.g. selection of language models, text representation, choosing and testing similarity measures, gathering data).

3.5.4. European Skills Agenda

The European Commission is putting skills development at the heart of the EU's policy agenda for sustainable recovery from the coronavirus pandemic: *“Businesses need workers with the skills required to master the green and digital transitions, and people need to be able to get the right education and training to thrive in life.”*⁷⁶

To this end, in 2020, the European Commission presented the European Agenda for Sustainable Competitiveness, Social Justice and Resilience, which:

- “Calls for collective action, mobilising business, social partners and stakeholders, to commit to working together, in particular within the EU’s industrial eco-systems
- Identifies the financial means to foster investment in skills

⁷⁶ Source: https://ec.europa.eu/commission/presscorner/detail/en/ip_20_1196

- Defines a clear strategy to ensure that skills lead to jobs
- Helps people build their skills throughout life in an environment where lifelong learning is the norm
- Sets ambitious objectives for up- and reskilling to be achieved within the next 5 years.”⁷⁷

The Commission also notes that following the crisis, some employees will need to learn or develop new skills in order to adapt to a changing labour market.

3.5.5. PIAAC

The PIAAC (Programme for the International Assessment of Adult Competencies) survey assesses the proficiency of adults from age 16 and over in literacy, numeracy and problem solving in technology-rich environments which are directly tested. These skills are “key information-processing competencies” that are relevant to adults in many social contexts and work situations, and necessary for fully integrating and participating in the labour market, education and training, and social and civic life.

In addition, the survey collects a range of information on respondents' literacy and numeracy activities, the use of information and communication technologies at work and in everyday life, a range of generic skills, such as collaborating with others, influencing others, organising one's time, etc. that are required of individuals in their work. These skills are self-reported.

Respondents are also asked whether their skills and qualifications match their job requirements and whether they have autonomy over key aspects of their work.

The survey is organised by the OECD and coordinated by a consortium of international research organisations.

Definition

The skills assessed in the PIAAC Survey (literacy, numeracy, problem solving) are each defined by a framework that guides the development of the assessment and provides a reference point for interpreting results. Each framework defines the skills assessed in terms of:

- content – the texts, artefacts, tools, knowledge, representations, and cognitive challenges that constitute the corpus to which adults must respond or use when they read, perform numeracy or solve problems in technology-rich environments.
- cognitive strategies – the processes that adults must bring into play to respond to or use given content in an appropriate manner.
- context – the different situations in which adults have to read, use numeracy, and solve problems.

Literacy is defined as the ability to understand, evaluate, use, and engage with written texts to participate in society, to achieve one's goals, and to develop one's knowledge and potential. Literacy encompasses a range of skills from the decoding of written words and sentences to the comprehension, interpretation, and evaluation of complex texts.

Numeracy is defined as the ability to access, use, interpret and communicate mathematical information and ideas in order to engage in and manage the mathematical demands of a range of

⁷⁷ Source: <https://ec.europa.eu/social/BlobServlet?docId=22827&langId=en>

situations in adult life. To this end, numeracy involves managing a situation or solving a problem in a real context, by responding to mathematical content/information/ideas represented in multiple ways.

Problem solving in technology-rich environments is defined as the ability to use digital technology, communication tools, and networks to acquire and evaluate information, communicate with others, and perform practical tasks. The assessment focuses on the abilities to solve problems for personal, work, and civic purposes by setting up appropriate goals and plans, and accessing and making use of information through computers and the internet.

3.5.6. PISA: Programme for International Student Assessment

PISA is the OECD's Programme for International Student Assessment. PISA measures 15-year-olds' ability to use their knowledge and skills in reading, mathematics, and science to meet real-life challenges.

Competences assessed by PISA.

Reading literacy: An individual's capacity to understand, use, evaluate, reflect on, and engage with texts in order to achieve one's goals, develop one's knowledge and potential, and participate in society.

Mathematical literacy: An individual's capacity to formulate, employ, and interpret mathematics in a variety of contexts. It includes reasoning mathematically and using mathematical concepts, procedures, facts, and tools to describe, explain, and predict phenomena.

Scientific literacy: The ability to engage with science-related issues, and with the ideas of science, as a reflective citizen. A scientifically literate person is willing to engage in reasoned discourse about science and technology, which requires the competencies to explain phenomena scientifically, evaluate and design scientific enquiry, and interpret data and evidence scientifically.

Global competences: Global competence is a multidimensional, life-long learning goal. Globally competent individuals can examine local, global, and intercultural issues, understand and appreciate different perspectives and worldviews, interact successfully and respectfully with others, and take responsible action toward sustainability and collective well-being.

Since global competences may be of more interest for the D-ILA project, we decided to devote more space to these competences in the section below.

Financial literacy: The knowledge and understanding of financial concepts and risks, and the skills, motivation, and confidence to apply this knowledge and understanding in order to make effective decisions across a range of financial contexts, to improve the financial well-being of individuals and society, and to enable participation in economic life.

3.5.7. DESI - Analysis of available quantitative databases in the field of soft skills

The Digital Economy and Society Index (DESI) is a composite index which provides an overview of performance in terms of the digital transformation. The European Commission has published Digital Economy and Society Index (DESI) reports for Member States since 2014. The reports include country profiles to identify areas for priority action and contain thematic chapters on key digital policy areas. The DESI has a three-level structure as shown in the table below. Of these, the human capital dimension relevant to ILAs is presented.

2. Table: DESI structure

Dimension	Sub-dimension	Indicator
1 Human capital	1a Internet user skills	1a1 At least basic digital skills
		1a2 Above basic digital skills
		1a3 At least basic digital content creation skills
	1b Advanced skills and development	1b1 ICT specialists
		1b2 Female ICT specialists
		1b3 Enterprises providing ICT training 1b4 ICT graduates

Source: Digital Economy and Society Index (DESI) 2022, Methodological Note.

3.5.8. Cedefop databases

The following databases dealing with or containing data related to soft skills were examined: Cedefop Skills Intelligence, European Skills Index (ESI), Key Indicators on VET, European Skills and Jobs Survey (ESJS), Cedefop's Skills Forecast and Skills-OVATE.

Cedefop Skills Intelligence⁷⁸

Cedefop Skills Intelligence is an online tool that brings together various results of Cedefop's own and other research and analytical work. It presents a set of over 50 indicators that are sourced and/or calculated from various datasets. Thus, we do not analyse the Skills Intelligence data as such, but in the framework of the original datasets, when relevant with regard to soft skills (i.e. especially the ESJS and European database of tasks indices).

European Skills Index (ESI)⁷⁹

It is based on 15 original indicators from which only the following two directly describe skills (at the national level):

- The composite results of reading, mathematics, and science knowledge and skills of 15-year-old children as measured by the **OECD PISA survey**.
- Digital skills as measured by the **Eurostat Community survey on ICT usage in households and by individuals**.

Key indicators on VET⁸⁰

This database contains 41 indicators on VET for all Member States for the years 2015-2021. As with the ESI, the indicators are sourced from various other datasets and databases. The only indicator that covers soft skills is the percentage of adults (16-74) with at least basic digital skills. This data relates to the new Digital Skills Indicator 2.0 (DSI) which is based on **Eurostat's EU Community survey on ICT usage in households and by individuals**.

⁷⁸ <https://www.cedefop.europa.eu/en/tools/skills-intelligence>

⁷⁹ <https://www.cedefop.europa.eu/en/tools/european-skills-index>

⁸⁰ <https://www.cedefop.europa.eu/en/tools/key-indicators-on-vet>

European Skills and Jobs Survey (ESJS)

The ESJS covers representative samples of adult workers and asks about a number of core variables, including: socio-demographic characteristics, job characteristics, skill requirements, skill mismatches (vertical, horizontal, mismatches in specific skills, skill gaps and deficits, skill mismatch transitions), participation in initial and continuing vocational education, and training participation and labour market outcomes (wages, job insecurity, job satisfaction).

Skills are examined in particular in terms of the skill requirements of the jobs and respective skill gaps. The ESJS2 provides new robust and harmonised measures of different skill requirements for jobs. The survey examines the tasks required by the jobs. As there is always a corresponding skill required to perform the tasks, the tasks can be regarded as skills for the purpose of categorisation and analysis.

The ESJS2 contained questions about how often the respondent is required to perform a given task (i.e. apply relevant skill). The tasks/skills were grouped into several categories.

Interpersonal skills (*for each of the items a frequency scale is given: rarely or never/sometimes/often/always or very often*)

- Providing advice or counselling
- Giving oral presentations
- Dealing with outsiders (people not working in the same organisation – typically customers or clients)
- Teaching or training
- Caring for others (providing emotional support or personal care)
- Selling (trying to convince people to do or buy something)
- Teamwork

Learning demands⁸¹

- Working on varying tasks
- Learning new things

Literacy skills

- Reading tasks
- Writing tasks

Manual skills (*all are yes/no variables*)

- Lifting heavy loads
- Hazardous work
- Use of digital machines at work

Numeracy skills

- Mathematical tasks
- Problem-solving skills (for each of the items a frequency scale is given: rarely or never/sometimes/often/always or very often)
- Developing or creating new products or services
- Developing new work methods

⁸¹ Although not technically labelled “skills”, the corresponding abilities can be described as learning skills – competences for continuous learning.

- Trying out new ideas to solve problems.

Digital skills

ESJS2 lists a set of digital activities that may be performed at work. The exact question is whether the respondent used a computing to carry out the activity as part of their main job in the last month (yes/no question).

Cedefop's Skills Forecast⁸²

The Cedefop Skills Forecast consists of quantitative projections of future employment trends by sector and occupation.⁸³ The most recent forecast was published in 2020 and covers the period up to 2030. The forecast itself does not collect information about skills. However, it combines the outcomes for occupations with inputs from the European database of task indices (Eurofound). 17 broad tasks are defined based on the database. The "importance" of each task is assigned to each occupation. The importance is represented by a number between 0 and 1.

The following tasks are defined:

Intellectual

- Creativity and resolution
- Gathering and evaluation of information
- Literacy
- Numeracy

Physical

- Dexterity
- Navigation
- Strength

Social

- Caring
- Management and coordination
- Service and attend
- Selling and influence
- Teaching, training, and coaching

Use of methods

- Autonomy
- Routine
- Teamwork

Use of technology

- Use of ICT
- Use of machines

Skills-OVATE⁸⁴

⁸² <https://www.cedefop.europa.eu/en/tools/skills-forecast>

⁸³ <https://www.cedefop.europa.eu/en/tools/skills-forecast>

⁸⁴ <https://www.cedefop.europa.eu/en/tools/skills-online-vacancies>

Skills-OVATE provides information on the jobs and skills that are demanded by employers based on online job advertisements in 28 European countries. It provides information on occupations, skills, and regions based on international classifications: ISCO-08 for occupations, NACE rev. 2 for sectors and NUTS-2 for regions. There are two ways to view skills information: via **ESCO version 1** or **O*Net**

3.5.9. Eurofound: European database of tasks indices

The newest version of the European database of task indices (2022) is based on jobs in the EU15 economy (excluding the UK). It was created using data from the European Working Conditions Survey (EWCS 2015), a European (Italian) version of the O*NET database of occupational contents (ICP 2012) and the OECD's PIAAC Survey. The 2022 version of the database contains the following more detailed definitions and structure of job-related tasks:

A. In terms of the content:

1. Physical tasks: aimed at the physical manipulation and transformation of material things.
2. Intellectual tasks: aimed at the manipulation and transformation of information and the active resolution of problems.
3. Social tasks: whose primary aim is the interaction with other people.

B. In terms of the methods and tools of work:

1. Methods: forms of work organisation used in performing the tasks
2. Tools: type of technology used at work
3. Other

3.5.10. O*NET - Occupational Information Network

O*NET (Occupational Information Network) is the primary source of occupational information in the US. Central to the project is the O*NET database, containing information on hundreds of standardised and occupation-specific descriptors. The database is continually updated by surveying a broad range of workers from each occupation⁸⁵. The database covers 923 occupations found in the US economy. Each occupation contains a mix of skills, abilities, and knowledge. There are 120 in total (35 skills, 52 abilities, 33 knowledge). The database can be downloaded for free⁸⁶. The O*NET database does not contain any personal information about workers; it is based on a statistically random sample of businesses and of workers.

For each occupation in the database, there is a list of skills, abilities, and knowledge which are required with a different level of importance on a scale of 0-100. All of them are described by short definitions.

- **Knowledge** is organised sets of principles and facts applied in general domains.
- **Abilities** are enduring attributes of the individual that influence performance.
- **Skills** are developed capacities that facilitate learning or the more rapid acquisition of knowledge.

O*NET is based on the SOC 2019 classification (Standard Occupational Classification)⁸⁷. There is a crosswalk from SOC 2019 to ESCO/ISCO classification available⁸⁸.

⁸⁵ <https://www.onetonline.org/help/onet/>

⁸⁶ <https://www.onetcenter.org/overview.html>

⁸⁷ <https://www.onetcenter.org/taxonomy/2019/list.html>

⁸⁸ https://www.onetcenter.org/crosswalks/esco/ESCO_to_ONET-SOC.xlsx

Most importantly, O*NET names several **soft skills**. They are grouped into two categories: **social skills** (6) and **thinking skills** (8)⁸⁹.

Social skills with a short definition:

- **Coordination** - Adjusting actions in relation to others' actions.
- **Instructing** - Teaching others how to do something.
- **Negotiation** - Bringing others together and trying to reconcile differences.
- **Persuasion** - Persuading others to change their minds or behaviour.
- **Service Orientation** - Actively looking for ways to help people.
- **Social Perceptiveness** - Being aware of others' reactions and understanding why they react as they do.

Thinking skills with a short definition:

- **Active Learning** - Understanding the implications of new information for both current and future problem-solving and decision-making.
- **Active Listening** - Giving full attention to what others are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.
- **Complex Problem Solving** - Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.
- **Critical Thinking** - Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.
- **Judgment and Decision Making** - Considering the relative costs and benefits of potential actions to choose the most appropriate one.
- **Learning Strategies** - Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.
- **Monitoring** - Monitoring/Assessing the performance of yourself, others or organisations to make improvements or take corrective action.
- **Time Management** - Managing one's own time and the time of others.

Available O*NET databases:

<https://www.onetcenter.org/database.html#individual-files>

Databases can be downloaded in xlsx, csv, MySQL, SQL Server and Oracle formats.

3.5.11. OECD survey on social-emotional skills

There is a large body of empirical evidence on the importance of social and emotional skills for successful life management.

In recent years, social and emotional skills have been rising up the education policy agenda and in the public debate. However, for the majority of students, their development remains a matter of luck,

⁸⁹ <https://www.onetonline.org/skills/soft/>

depending on whether this is a priority for their teacher and their school. A major obstacle is the lack of reliable measures in this area that allow educators and policymakers to make progress visible and to address shortcomings.

This is why the OECD developed a comprehensive international assessment of the social and emotional skills of students.⁹⁰

Social and emotional skills included in the Survey:

"BIG FIVE" DOMAINS	SKILLS	Description
TASK PERFORMANCE (Conscientiousness)	ACHIEVEMENT ORIENTATION	Setting high standards for oneself and working hard to meet them.
	RESPONSIBILITY	Able to honour commitments, be punctual, and reliable.
	SELF-CONTROL	Able to avoid distractions and focus attention on the current task in order to achieve personal goals.
	PERSISTENCE	Persevering in tasks and activities until they get done.
MOTION REGULATION (Emotional stability)	STRESS RESISTANCE	Effectiveness in modulating anxiety and able to calmly solve problems (is relaxed, handles stress well).
	OPTIMISM	Positive and optimistic expectations for self and life in general.
	EMOTIONAL CONTROL	Effective strategies for regulating temper, anger, and irritation in the face of frustrations.
COLLABORATION (Agreeableness)	EMPATHY	Kindness and caring for others and their well-being that leads to valuing and investing in close relationships.
	TRUST	Assuming that others generally have good intentions and forgiving those who have done wrong.
	COOPERATION	Living in harmony with others and valuing interconnectedness among all people.
OPEN-MINDEDNESS (Openness to Experience)	CURIOSITY	Interest in ideas and love of learning, understanding, and intellectual exploration; an inquisitive mindset.
	TOLERANCE	Is open to different points of view, values diversity, is appreciative of foreign people and cultures.
	CREATIVITY	Generating novel ways to do or think about things through exploring, learning from failure, insight, and vision.

⁹⁰ Source: [https://www.oecd.org/education/school/UPDATED%20Social%20and%20Emotional%20Skills%20-%20Well-being,%20connectedness%20and%20success.pdf%20\(website\).pdf](https://www.oecd.org/education/school/UPDATED%20Social%20and%20Emotional%20Skills%20-%20Well-being,%20connectedness%20and%20success.pdf%20(website).pdf) [3-10. p.]

ENGAGEMENT WITH OTHERS (Extraversion)	SOCIABILITY	Able to approach others, both friends and strangers, initiating and maintaining social connections.
	ASSERTIVENESS	Able to confidently voice opinions, needs, and feelings, and exert social influence.
	ENERGY	Approaching daily life with energy, excitement, and spontaneity.
COMPOUND SKILLS	SELF-EFFICACY	The strength of individuals' beliefs in their ability to execute tasks and achieve goals.
	CRITICAL THINKING/ INDEPENDENCE	The ability to evaluate information and interpret it through independent and unconstrained analysis.
	SELF-REFLECTION/ META-COGNITION	Awareness of inner processes and subjective experiences, such as thoughts and feelings, and the ability to reflect on and articulate such experiences.

Source: <https://www.oecd.org/education/ceeri/social-emotional-skills-study/about/>

The survey's assessment instruments were reports of typical behaviours, thoughts, and feelings. Questions/items were in the form of simple statements such as "I like learning new things" (item assessing students' curiosity) and "I stay calm even in tense situations" (item assessing stress resistance). The researchers used a 5-point Likert type agree/disagree response scale, with answers ranging from 1 – completely disagree to 5 – completely agree. All of the 17 assessment scales used positively and negatively worded items to adjust for potential response bias.

These methods were most commonly used in social and emotional skills assessments. They provided a simple and efficient way of collecting information from a large number of respondents, were cost-efficient and simple to administer, tended to produce consistent results, and in many cases provided a remarkably high approximation of objective measures.

The survey collected information on students' background characteristics, as well as on family, school, and community learning contexts through three contextual questionnaires designed for: students, teachers, and principals. A fourth contextual questionnaire for parents was optional.

3.6. Labour market trends in soft skills

This chapter briefly discusses labour market trends related to soft skills.

3.6.1. Workplace Learning Trends Report - UdeMy Business

The Workplace Learning Trends Report⁹¹, compiled by UdeMy based on data from the learning behaviour of thousands of global enterprises using the UdeMy Business platform in two perspectives:

- consumption of courses from 2019–2021
- year-over-year growth rates of course consumption in 2017-2021.

⁹¹ https://info.udemy.com/rs/273-CKQ-053/images/2022_Workplace_LearningTrends_Report.pdf

The platform highlights trending skills identified by topic, with each course containing up to five topics. For courses with multiple topics, the consumption minutes are divided equally across all topics associated with those courses. The report has been divided into 3 chapters of skills sets:

- power skills (new categorisation of soft skills),
- tactical skills (business intelligence, data literacy, marketing, finance),
- technical skills (skills ensuring productivity and competitiveness).

According to the report “nearly nine out of ten executives and managers say that their organisations either face skills gaps already or expect them to emerge within the next five years”.

1. Power skills

The report highlights the importance of leadership, teamwork, communication, productivity, and well-being skills, previously referred to as soft skills, for work performance, and renames them power skills. Power skills should ensure that every employee is able to operate in a digital environment and adapt flexibly to new ways of working and new technologies.

Communication & teamwork skills lay the foundations for working teams to operate in the changing workplace environment.

In 2021, the top skills developed represented:

Assertiveness	250%
Facilitation	148%
Team building	129%
Business writing	104%
Critical thinking	96%

This skill category saw the highest growth over the 2017-2021 period and shows a workforce adapting to global changes.

Microsoft Teams	760%
Assertiveness	602%
Listening skills	530%
Business writing	415%
Critical thinking	340%

The category **leadership & management skills** confirms the strategy of enterprises to build diverse and inclusive enterprises in the course of 2021.

Diversity and inclusion	205%
Objectives and key results	184%
Strategic thinking	119%

Problem solving	108%
-----------------	------

Management coaching	108%
---------------------	------

Between 2017-2021, the biggest increases in course consumption were in strategic thinking (331%) and diversity and inclusion (324%)

The growing trend of working from home was reflected in 2021 in the productivity **& collaboration** skill set, which enables employees to work efficiently and effectively, collaborate in online spaces and use appropriate presentation tools.

Computer skills	169%
-----------------	------

Time management	86%
-----------------	-----

Windows 10	77%
------------	-----

SharePoint	76%
------------	-----

PowerPoint	70%
------------	-----

Consumption growth in these skills in 2017-2021 is also significant:

Computer skills	404%
-----------------	------

Microsoft Word	272%
----------------	------

Time management	254%
-----------------	------

PowerPoint	222%
------------	------

Confluence	201%
------------	------

In 2021, the category **personal development & wellness skills** showed increased interest in English language courses (115%).

2. Tactical skills

Tactical skills are comprised of financial decisions, marketing strategy, product design, and customer experience. According to the report, only 21% of employees are confident in their data skills.

In the skills set **Business intelligence**, the use of Excel saw the highest growth in 2021 (195%) and also the highest percentage consumption growth between 2017 and 2021.

Design and user experience skills reflect the enterprises' efforts to reinforce user research, marketing, accessibility, and information architecture to support customers retention.

Among the top 5 growing design and user experience skills in 2021, graphic design (227%), product design (195%), as well as web design and mobile app design (about 100%) dominate.

Between 2017-2021, web accessibility (+439%) saw the biggest surge in consumption of training.

In 2021, the **Finance & accounting skills** category recorded the highest consumption of courses on personal finance topics such as cryptocurrency, Solidity (a programming language for blockchain platforms), and day trading. Traditional finance topics such as bookkeeping (+552%) and financial markets (+263%) saw steady growth over the previous four years.

HR and talent development data highlights that HR teams focus on creating training content tailored to their company's needs - the growth of online course creation (86%) and instructional design course (49%) consumption. The consumption of hours spent on manager training programmes grew by 56% in 2021 and 104% since 2017.

Marketing skills have been increasingly used in various parts of work teams, not exclusively marketing teams. The topic of marketing analytics and marketing strategy saw an increase in the number of hours consumed in 2021. Google Analytics Individual Qualification (IQ) consumption surged to 256% in the previous four years.

With the increasing complexity of work projects and the challenges of remote working, **project management skills** have gained more attention. According to the Project Management Institute,⁹² 25 million new project managers will be needed worldwide by 2030. In 2021, various certifications in project management recorded an increase in popularity.

3. Technical skills

Technical skills are related to technical aspects of an enterprises' operations, such as the use of cloud computing technologies, cybersecurity, data science or software development. For the purposes of this analysis, we will not look more closely at these skills categories.

3.6.2. Europass

The Europass portal was launched in 2020 as a complex solution for the recording and presentation of knowledge, skills, and competences of individuals. Europass allows users to build a portfolio, in which various skills can be detailed, mainly:

- language skills
- organisational skills,
- communication and interpersonal skills
- language skills
- job-related skills

The identification of language skills is based on self-assessment supported by the descriptions of the level of listening, reading, spoken interaction, spoken production, and writing skills in any language based on the Common European Framework for Languages (CEFR).

Digital skills can be listed in the portfolio based on self-assessment, and/or help and recommendations from the system. A self-assessment test⁹³ is also available which is based on DigComp and focuses on:

- information and data literacy
- communication and collaboration
- digital content creation
- safety⁹⁴

⁹² <https://www.pmi.org/about/learn-about-pmi/what-is-project-management>

⁹³ <https://europa.eu/europass/digitalskills/screen/home&sa=D&source=docs&ust=1691573793052087&usg=AOvVaw0L73nPMkiBWYwXfZk5YqP>

⁹⁴ <https://www.google.com/url?q=https://europa.eu/europass/en/node/2128&sa=D&source=docs&ust=1691573793096336&usg=AOvVaw02Zc0R4XcfvRigzFxausz2>

- problem solving

The testing tool generates a certificate which highlights strong skills as well as skills gaps and suggests where upskilling or reskilling is needed.

Europass uses the European Learning Model (ELM) – the data model which was developed as a standard to support the exchange of data about qualifications, learning opportunities, etc. and for issuing digital credentials. It is based on Annex VI of the EQF Recommendation.

3.6.3. Key skills projected by the World Economic Forum for 2025

The third edition of the World Economic Forum's (WEF) "Future of Jobs" 2020 report, which analyses future trends in labour markets and provides employers and employees with essential information on the opportunities that lie ahead, must be mentioned. By listing the ten most important skills for the near future, the report contributes to an understanding of the challenges that enterprises and employees will face over the next five years.⁹⁵ These skills are (the soft skills in the list are in bold):

1. **Analytical thinking and innovation**
2. **Active learning and learning strategies**
3. **Complex problem solving**
4. **Critical thinking and analysis**
5. **Creativity, originality, and initiative**
6. **Leadership and social influence**
7. Using, monitoring, and controlling technology
8. Technological design and programming
9. **Resilience, stress tolerance, and flexibility**
10. **Resource provision, problem solving, and brainstorming.**⁹⁶

3.6.4. Short-term labour market forecast in Hungary.

Short-term labour market forecast of the Institute of Economic and Business Research of the Hungarian Chamber of Commerce and Industry: The questionnaire also measured the satisfaction of the managers of firms planning to employ or already employing skilled new entrants, rating them on a scale of 1 to 5 on the following competencies:

- a. Professional theoretical foundations
- b. Professional practical skills
- c. User level computer skills/practice
- d. Professional computer skills/practice
- e. Up-to-date technical skills
- f. Economic knowledge
- g. Reading skills
- h. Numeracy
- i. Mother-tongue speaking skills
- j. Mother-tongue literacy
- k. Foreign language skills
- l. Work culture
- m. Work discipline

⁹⁵ Source: <https://www.weforum.org/agenda/2020/10/top-10-work-skills-of-tomorrow-how-long-it-takes-to-learn-them/>

⁹⁶ Source: <https://www.weforum.org/reports/the-future-of-jobs-report-2020/in-full/infographics-e4e69e4de7>

- n. Ability to work independently
- o. Ability to cooperate
- p. Problem-solving skills
- q. Customer handling skills
- r. Management and organisational skills
- s. Office administration skills
- t. Technical, task-specific skills
- u. Other skills or abilities considered important by the respondent.

The results of the most recent Spring 2022 survey show that managers are most satisfied with the user-level computer skills of skilled entrants, with 74% of all managers satisfied with this indicator.⁹⁷ Satisfaction levels are also above 60% for native language speaking skills (69%), collaboration skills (63%) and reading skills (61%). Respondents were least satisfied with leadership and organisational skills (29%), the ability to work independently (35%) and economic skills (36%). In addition, the majority of the enterprises surveyed were not satisfied with the following competences of new entrants: professional computer skills/practice, office administration skills, foreign language skills, technical, task-specific skills, work discipline, work culture, professional practice, and problem-solving skills.⁹⁸

3.7. Soft skills frameworks in the EU

This chapter focuses on an overview of EU frameworks relevant to soft skills.

3.7.1. DigComp 2.2

The Digital Competence Framework for Citizens, also known as DigComp, provides a common language to identify and describe the key areas of digital competence. It is an EU-wide tool to improve citizens' digital competence, help policy makers formulate policies that support digital competence development, and plan education and training initiatives to improve the digital competence of specific target groups.

This chapter presents version 2.2 of the Digital Competence Framework for Citizens.⁹⁹

Structure of the framework

DigComp 2.2 defines 5 competence areas with 21 competence elements. Each competence element has 1 to 8 proficiency levels from basic to mastery.

Dimension 1 – competence areas	Short description of competence areas	Dimension 2 – competence
1 Information and data literacy	To articulate information needs, to locate and retrieve digital data, information, and content. To judge the relevance of the source and its content. To store, manage, and organise digital data, information, and content.	1.1 Browsing, searching and filtering data, information, and digital content. 1.2 Evaluating data, information, and digital content.

⁹⁷ Respondents who marked the two highest values (completely satisfied, somewhat satisfied) on a five-point scale were considered satisfied with each competence. The proportions shown in the analysis represent the combined share of these two categories for the competences under analysis.

⁹⁸ Source: https://gvi.hu/files/researches/684/prognozis_2022_1_tanulmany_220715.pdf [76. o.]

⁹⁹ <https://publications.jrc.ec.europa.eu/repository/handle/JRC128415>

		1.3 Managing data, information, and digital content
2 Communication and collaboration	To interact, communicate, and collaborate through digital technologies while being aware of cultural and generational diversity. To participate in society through public and private digital services, and participatory citizenship. To manage one's digital identity and reputation.	2.1 Interacting through digital technologies. 2.2 Sharing through digital technologies 2.3 Engaging in citizenship through digital technologies. 2.4 Collaborating through digital technologies. 2.5 Netiquette 2.6 Managing digital identity
3 Digital content creation	To create and edit digital content. To improve and integrate information and content into an existing body of knowledge while understanding how copyright and licences are to be applied. To know how to give understandable instructions for a computer system.	3.1 Developing digital content. 3.2 Integrating and re-laborating digital content 3.3 Copyright and licences 3.4 Programming
4 Safety	To protect devices, content, personal data, and privacy in digital environments. To protect physical and psychological health, and to be aware of digital technologies for social well-being and social inclusion. To be aware of the environmental impact of digital technologies and their use.	4.1 Protecting devices. 4.2 Protecting personal data and privacy. 4.3 Protecting health and well-being. 4.4 Protecting the environment.
5 Problem solving	To identify needs and problems, and to resolve conceptual problems and problem situations in digital environments. To use digital tools to innovate processes and products. To keep up to date with the digital evolution.	5.1 Solving technical problems. 5.2 Identifying needs and technological responses. 5.3 Creatively using digital technologies. 5.4 Identifying digital competence gaps.

Usability

DigComp is used by Europass CV Online, a self-assessment tool based on the Digital Skills and Jobs Platform, a self-checker for DigCompSat and integrated into the Digital Skills Index.

In addition, DigComp is a conceptual, reference-level framework that EU countries can use as a basis for developing their own digital competences frameworks for citizens, taking into account local needs.

Measurement tools: Several self-assessments and a learning outcomes-based development system (the French PIX) have been completed. A technical concept for the Hungarian DigKomp Learning Support Platform has been developed, which also implements learning outcomes-based assessment.

Self-assessment tools: DigCompSat, Europass, Digital Skills and Jobs Platform, IKANOS.

3.7.2. DigCompConsumers

The Digital Competence Framework for Consumers (DigCompConsumers) provides a reference framework to support and improve consumers' digital competence, i.e. the competence that consumers need to function actively, safely and assertively in the digital marketplace. DigCompConsumers is considered a derivative work as it uses the DigComp conceptual reference model as the basis for a new digital competence framework in a specific context.

3.7.3. DigCompEdu

The European Framework for the Digital Competence of Educators (DigCompEDU) is a framework describing what it means for educators to be digitally competent. It provides a common frame of reference to support the development of educator-specific digital competences in Europe. DigCompEdu is aimed at educators at all levels of education, from early childhood to higher and adult education, including general and vocational education and training, special needs education, and non-formal learning contexts.

3.7.4. DigCompOrg

There is a need to support educational organisations in building their digital capacity. The European framework for digitally-competent educational organisations aims to promote effective learning in the digital age. The framework can facilitate transparency and comparability between related initiatives throughout Europe and play a role in addressing fragmentation and uneven development across the Member States

3.7.5. CEFR

The Common European Framework of Reference for Languages (CEFR) was developed by the Council of Europe and officially published in 2001. Its main objective was to achieve educational and cultural convergence between the Member States in the field of foreign language teaching and to promote transparency and consistency in the learning and teaching of modern languages throughout Europe.¹⁰⁰ The CEFR was first published in English and French and has since been translated into 33 languages.

Structure of the framework¹⁰¹

The CEFR defines a total of six language proficiency levels, divided into three groups. At each level, action-oriented descriptions are used to define what language learners at each level should know and are able to do. These levels range from the basic knowledge of the minimal language learner to the advanced language learner.

3. Table: Global scale

<i>User category</i>	<i>Level</i>
Proficient User	C2
	C1

¹⁰⁰ Source: [https://www.europarl.europa.eu/RegData/etudes/etudes//2013/495871/IPOL-CULT_ET\(2013\)495871\(SUM01\)_HU.pdf](https://www.europarl.europa.eu/RegData/etudes/etudes//2013/495871/IPOL-CULT_ET(2013)495871(SUM01)_HU.pdf) [4. o.]

¹⁰¹ <https://rm.coe.int/168045b15e>

Independent User	B2
	B1
Basic User	A2
	A1

In addition to the six levels of criteria shown in the table, the CER also distinguishes three additional levels: A2+ (between A2 and B1), B1+ (between B1 and B2), and B2+ (between B2 and C1).

4. Table: Self-assessment grid

<i>Competence area</i>	<i>Competence</i>
Reception	Listening
	Reading
Interaction	Spoken Interaction
	Written Interaction
Production	Spoken Production
	Written Production

All 6 competences can be assigned a level from A1 to C2.

The CEFR alone cannot be used to measure language proficiency; it is a framework in itself and is not suitable for measurement, but a range of measurement tools compatible with the framework has been developed and no major language examination centre today will issue a language examination without indicating the level of the framework. A Level Matching Manual has also been developed to help different exam developers to align the levels of their language tests with the levels of the CEFR. As a result, most language examination centres, language training centres advertising their courses, and even language books indicate the relevant CEFR levels. As a result, most language learners are aware of the levels' meaning.

The CEFR is not language-specific, and therefore does not contain specific vocabulary lists or grammatical structure lists broken down into levels for any living foreign language.¹⁰²

In terms of implications for the development of the data model, the competence areas should definitely be included, both because of the training as well as the needs of employers, because some areas are communication, some are literacy, some are both.

¹⁰² <http://www.keronline.hu/> There is no official list, but various publishers have already produced a large number of lists giving suggested vocabulary sets for different levels. This is more positive than if something had been published centrally by the creators of the CEFR, because it demonstrates the acceptance (and use) of the framework. They are also the basis for the EUROPASS CV and are used elsewhere to identify individuals or to assess them when they are recruited for a traineeship. For employers this is an important factor, it should not be left out of the data model. See here, too: <https://nyelviskola.hu/kozos-europai-referenciakeret-szintek>

3.7.6. LifeComp¹⁰³

LifeComp: The European Framework for Personal, Social and Learning to Learn Key Competence is a framework to establish a shared understanding on the “personal, social, and learning to learn” key competence. LifeComp is a non-prescriptive conceptual framework that can be used as a basis for the development of curricula and learning activities. The aim is to build a meaningful life, manage complexity, be thriving individuals, responsible social citizens, and reflective lifelong learners. LifeComp describes nine competence skills that can be learned by everyone in formal, informal, and non-formal education.

The framework describes nine competences (P1-3, S1-3, L1-3), which are structured around 3 interlinked areas of competence:

5. Table: The structure of LifeComp

<i>Competence area</i>	<i>Competence</i>
Personal	P1 self-regulation
	P2 flexibility
	P3 wellbeing
Social	S1 empathy
	S2 communication
	S3 collaboration
Learning to learn	L1 growth mindset
	L2 critical thinking
	L3 managing learning

Instruments to measure personal, social and learning competences can be used to determine whether a person has them. More sophisticated use would require levels and level descriptions, which are not currently available from the information available. To our knowledge, no self-assessment or measurement tool has yet been developed for the framework. The next step in the development of LifeComp is to field test the framework, implement it in a real environment and evaluate the results.¹⁰⁴

3.7.7. GreenComp¹⁰⁵

GreenComp defines sustainability competences that can be integrated into educational programmes to help learners develop knowledge, skills, and attitudes that promote thinking, planning and acting with empathy, responsibility, and care for our planet and public health.

¹⁰³ https://joint-research-centre.ec.europa.eu/lifecomplife_en

¹⁰⁴ Source: Sala, A., Punie, Y., Garkov, V. and Cabrera Giraldez, M., LifeComp: The European Framework for Personal, Social and Learning to Learn Key Competences, EUR 30246 EN, Publications Office of the European Union, Luxembourg, 2020, ISBN 978-92-76-19418-7, doi:10.2760/302967, JRC120911. 16. p.

¹⁰⁵ https://joint-research-centre.ec.europa.eu/greencomp-european-sustainability-competence-framework_en

Structure of the framework

“GreenComp comprises four interrelated competence areas: ‘embodying sustainability values’, ‘embracing complexity in sustainability’, ‘envisioning sustainable futures’, and ‘acting for sustainability’. Each area comprises three competences that are interlinked and equally important.”¹⁰⁶ GreenComp consists of 12 competences organised into the four areas below:

6. Table: The structure of GreenComp

Competence area	Competence
Embodying sustainability values	valuing sustainability
	supporting fairness
	promoting nature
Embracing complexity in sustainability	systems thinking
	critical thinking
	problem framing
Envisioning sustainable futures	futures literacy
	adaptability
	exploratory thinking
Acting for sustainability	political agency
	collective action
	individual initiative

Customised measurement tools specific to the competences of the European Framework of Competence for Sustainable Development can be used to assess whether a person has the competences for which no level definitions are available. No measurement tool has been developed for the framework. No self-assessment tool has been developed for the framework.

“Although widely endorsed by subject-matter experts and representatives of different stakeholder groups, the framework has not yet been tested in a real-world setting. Putting GreenComp into practice by implementing and evaluating it in a specific context could and should lead to its modification and refinement based on feedback from practitioners and end-users. The framework should therefore be treated as a living document.”¹⁰⁷

¹⁰⁶ Source: <https://publications.jrc.ec.europa.eu/repository/handle/JRC128040>

¹⁰⁷ Source: Bianchi, G., Pisiotis, U., Cabrera Giraldez, M. GreenComp – The European Sustainability Competence Framework. Bacigalupo, M., Punie, Y. (editors), EUR 30955 EN, Publications Office of the European Union, Luxembourg, 2022; ISBN 978-92-76-46485-3, doi:10.2760/13286, JRC128040. 9. p.

3.7.8. EntreComp¹⁰⁸

Developing the entrepreneurial capacity of European citizens is one of the eight key competences for lifelong learning. Entrepreneurial value creation and entrepreneurial learning can take place in all walks of life; turning ideas into shared value is important for career development. EntreComp describes entrepreneurship as a lifelong competence and identifies the elements that make someone an entrepreneur.

Structure of the framework

The EntreComp consists of 3 interrelated and interconnected areas of competence: 'Ideas and Opportunities', 'Resources' and 'Taking action'. Each of these areas is made up of 5 competencies, which together form the building blocks of entrepreneurship as a competence. The framework develops the 15 competences along an 8-level progression model and proposes a comprehensive list of 442 learning outcomes."¹⁰⁹

7. Table: The structure of GreenComp

<i>Competence area</i>	<i>Competences</i>
Ideas and opportunities	spotting opportunities
	Creativity
	Vision
	valuing ideas
	ethical and sustainable thinking
Resources	self-awareness and self-efficacy
	motivation and perseverance
	mobilising resources
	financial and economic literacy
	mobilising others
Into action	taking the initiative
	planning and management
	managing ambiguity, uncertainty, and risk
	working with others
	learning through experience

¹⁰⁸ <https://entrecomeurope.eu/wp-content/uploads/EntreComp-A-Practical-Guide-English.pdf>

¹⁰⁹ Source: Bacigalupo, M., Kampylis, P., Punie, Y., Van den Brande, G. (2016). EntreComp: The Entrepreneurship Competence Framework. Luxembourg: Publication Office of the European Union; EUR 27939 EN; doi:10.2791/593884. 0. p. Abstract

EntreComp contains definitions of competences and associated level definitions. For each competence, the same levels are defined. They are numbered from 1 to 8 and define the proficiency levels: basic (1 and 2), intermediate (3 and 4), advanced (5 and 6) and expert (7 and 8). The definitions can support the development of measurement tools. The competence areas of the Entrepreneurship Competence Framework can be measured using custom-developed measurement tools. No self-assessment tool has been developed for the framework. A subsequent step will be to test the EntreComp Framework in practice by implementing and evaluating it in a specific context and, if necessary, to modify and refine it according to feedback from practitioners and end-users.¹¹⁰

3.7.9. FinComp¹¹¹

The meaning of the FinComp acronym: Financial Competence Framework for Adults in the European Union. “The objective of the EU/OECD-INFE financial competence framework for adults is to promote a common understanding of financial competence skills for adults amongst Member States and national authorities, educational institutions, industries, and individuals. In addition, it provides a basis for a more coordinated approach among EU and national policymakers. By supporting efforts to improve financial literacy, the framework aims to contribute to the overall goal of improving the financial well-being of individuals.”¹¹²

Structure of the framework

The FinComp divides the competences into four content areas: money and transactions, planning and managing finances, risks and reward, and financial landscape¹¹³. These content areas have then been further divided into topics and subtopics.

8. Table: The structure of FinComp

<i>Content area</i>	<i>Topic</i>
1. Money and Transactions	1.1 Money and Currencies
	1.2 Income
	1.3 Prices, Purchases, and Payments
	1.4 Financial Records and Contracts
2. Planning and managing finances	2.1 Budgeting
	2.2 Managing Income and Expenditure
	2.3 Saving
	2.4 Investing
	2.5 Longer-Term Planning and Asset Building

¹¹⁰ Source: Bacigalupo, M., Kamylyis, P., Punie, Y., Van den Brande, G. (2016). EntreComp: The Entrepreneurship Competence Framework. Luxembourg: Publication Office of the European Union; EUR 27939 EN; doi:10.2791/593884. 9. p

¹¹¹ <https://www.oecd.org/finance/financial-competence-framework-for-adults-in-the-european-union.htm>

¹¹² Source: European Union/OECD (2022), Financial Competence Framework for Adults in the European Union. 2. p.

¹¹³ This structure is in line with the previous OECD/INFE Competence Framework for Adults.

	2.6 Retirement
	2.7 Credit
	2.8 Debt and Debt Management
3. Risk and reward	3.1 Identifying Risks
	3.2 Financial safety nets and insurance
	3.3 Balancing Risk and Reward
4. Financial Landscape	4.1 Regulation and Consumer Protection
	4.2 Rights and Responsibilities
	4.3 Financial Education, Information, and Advice
	4.4 Financial Products and Services
	4.5 Scams and Fraud
	4.6 Tax and Public Spending
	4.7 External Influences

Unlike the frameworks presented earlier, FinComp has hundreds of competences, which makes its use in ILAs questionable. At the same time, each indicator is assigned tags, of which there are only 4.

9. Table: Tags in the FinComp framework

Digital financial competence
Sustainable finance competence
Competence relevant for financial resilience
Competence relevant for daily life and/or for current or future financial well-being
Competence relevant to a large majority of the adult population

Several labels can be assigned to a FinComp competence. Each label can have a value of 0 or 1. For the most general competence, the value of 5 labels can be up to 5 values of 1.

This framework is a tool to support policymakers and practitioners in designing their own policies and programmes, rather than a curriculum, but it can easily be adapted to address the needs of specific life situations or target groups. For example, future users of the framework will be able to select and extract the most relevant competences for some specific “life stages”. Another possible use of the framework is to select and extract the most relevant competences for some specific target groups, such as women, seniors, young people, low-income groups or other groups who may be financially vulnerable.¹¹⁴

No measurement tool was made for the framework. No self-assessment tool has been developed for the framework.

¹¹⁴ Source: European Union/OECD (2022), Financial Competence Framework for Adults in the European Union 6-7. p.

3.7.10. Competences for Democratic Culture

A Reference Framework of Competences for Democratic Culture developed by the Council of Europe¹¹⁵ focuses on the competences needed to participate effectively in democratic culture and to live peacefully together with others in culturally diverse democratic societies. It describes a wide range of intercultural, civic, social, and transversal competences that can be used to support teaching about the key competence of cultural awareness and expression.

The framework includes a series of statements setting out learning targets and outcomes for each competence to help educators design learning situations that enable them to observe learners' behaviour in relation to a given competence.

3.8. National solutions for soft skills management

This chapter describes how soft skills development is being addressed in the 4 Partnership countries.

3.8.1. National solutions for soft skill - Czechia

There is no unified system solution that focuses specifically on soft skills in the Czech Republic. There are two nationwide official frameworks covering qualifications and occupations that also contain descriptions of related skills and competences: the National Register of Occupations (Národní soustava povolání - NSP) and the National Register of Qualifications (NSK). Under the NSP, the Central Database of Competences (CDK) is being developed to provide a common reference framework in the area of competence for these tools.

National Register of Occupations (NSP)

The NSP is a continuously developed publicly accessible catalogue of descriptions of occupations. It is a tool to support the labour force mobility based on the labour market needs identified by employers and labour market experts. The NSP was established by the Employment Act and managed by the Ministry of Labour and Social Affairs.

The NSP contains the following:

1. title and code of the occupation
2. concise description of the occupation
3. working activities in the occupation
4. prerequisites for performance of the occupation, especially in terms of qualification, vocational, and health prerequisites
5. other related information.

Central Database of Competences

In the NSP each occupation is defined by the work units. Work units are described with the help of competences. For this purpose, a **competence model** was developed which makes it possible to assign competences to the work units and provides a structured system with logical classification keys. This system is published under the NSP as a Central Database of Competences (Centrální databáze kompetencí – CDK: <https://cdk.nsp.cz>). The CDK is an autonomous system for the administration of competencies. It is being developed as a common reference framework for the NSP and the NSK (see below). It also provides opportunities for linking with other systems through competences.

¹¹⁵ <https://www.coe.int/en/web/reference-framework-of-competences-for-democratic-culture>

In the NSP, the competences represent the prerequisites for a certain set of activities to be performed by a worker in the given occupation. Within the model, competences are understood as a summary of the knowledge, skills, abilities, and attitudes that enable individuals to work and develop personally.

Characteristics of competences within the model:

- they can be monitored.
- they are measurable/evaluable.
- they have to be trainable/open to change and development.

The competences are organised hierarchically and classified according to the content and type. There are **four main categories of competences**:

- Professional/vocational skills and knowledge
- General skills (generic hard competences)
- Soft skills
- Digital competences

Based on the definition of soft skills adopted by the D-ILA project, the three latter groups are of interest to the project.

Within the model, competences are characterised by their **level**. This is a number that indicates what range and depth of the competence is required for the performance of the given unit of work. This number is complemented by descriptors that describe each level. At the lowest levels, there are low or no requirements to perform the competence, at the highest levels there are high expectations to perform the competence.

Competences in the database:

Professional/vocational skills and knowledge are linked to qualification levels and general descriptors based on the EQF have been developed for them. They are graded from 1-8 based on difficulty. There are over 27 thousand professional/vocational skills and knowledge-related items in the database.

1. **General skills (generic hard competences)** are a set of general requirements necessary for work performance which are not exceptionally linked to a specific profession. They are transversal, transferable, and applicable across disciplines.

General skills are graded from 0-3 based on difficulty. For each skill the levels are defined individually. There are 8 general skills in the database:

- ICT competence
- Driving competence
- Numerical competence
- Economic awareness
- Legal awareness
- Language competence in Czech
- Language competence in English
- Language competence in another foreign language

2. **Soft skills** are a set of requirements necessary for the quality performance of a unit of work, independent of specific expertise, but dependent on the complex abilities of an individual. They are transversal, transferable and applicable across disciplines.

Soft skills are graded from 0-5 based on difficulty. Each soft skill is described by the set of descriptors developed specifically for the skill. They represent models of behaviour of the work unit performer. There are 4 broad categories of soft skills under which there are 19 soft competencies:

Personality competence

- Competence for lifelong learning
- Competence for flexibility
- Competence for creativity
- Competence for managing stress and strain.

Interpersonal competence

- Competence for communicating effectively
- Competence for cooperating
- Competence for being focused on the customer and meeting customer needs
- Competence for influencing and developing others
- Competence for self-knowledge and understanding others
- Competence for leading people.

Cognitive competence

- Competence for analytical thinking
- Competence for conceptual thinking
- Competence for discovering and navigating information.

Performance related competence

- Competence for being active
- Competence for planning and organising of work
- Competence for entrepreneurship
- Competence for problem solving
- Competence for independence
- Competence for high performance.

3. **Digital competences** are graded from 0-4 depending on difficulty. Each competence is defined by a set of descriptors specifically developed for that skill. They represent models of behaviour of the work unit performer. There are 5 wide digital competence categories under which there are 18 digital competences:

Information and data literacy (the ability to articulate one's own information needs, search and retrieve digital data, information and content, critically evaluate the relevance of a source and its content, store, manage and organise data, information and content in a digital environment, find and use a variety of personal searching strategies)

- Browsing, searching and filtering data, information and digital content
- Evaluating data, information, and digital content
- Managing data, information, and digital content

Communication and collaboration (the ability to communicate, collaborate and share data and information through digital technologies, taking into account cultural and generational diversity, to engage in society through public and private digital services and, in the framework of participatory citizenship, to manage one's digital identity and reputation)

- Interaction through digital technologies
- Sharing through digital technologies

- Collaboration through digital technologies
- Internet etiquette

Digital content creation (the ability to create digital content in a variety of formats such as original author statements, integrate information into existing digital content, revise and improve previous information and content, generate new knowledge, respect copyright and licences, build programmes to solve problems)

- Digital content creation
- Digital content integration and reworking
- Copyrighting and licensing

Security (the ability to protect devices, personal data, and privacy in the digital environment, to protect and avoid health risks and threats to physical and mental well-being when using digital technologies, to use modern technologies for the benefit of seamless social inclusion, to be aware of the impact of the use of digital technologies on social well-being, social inclusion, and the environment)

- Equipment protection
- Personal data protection and privacy
- Protection of health and mental well-being
- Environmental protection

Problem solving (the ability to identify problems, evaluate the need and technological options for solving them, solve conceptual problems and problem situations in a digital environment, use digital tools to acquire knowledge, innovate processes and products and solve various life situations, and ensure the development of one's own digital competences)

- Solving technical problems
- Identification of needs and selection of appropriate technologies
- Creative use of digital technologies
- Identifying gaps in digital competences

“Semaphore”

For each occupation in the NSP, the requirements for competences are depicted as a “semaphore” (traffic lights) table. The required levels of individual competences are listed. Green bullet points represent necessary competences while blue bullet points represent advantageous competences (see, for example, Occupation – Marketing director <https://www.nsp.cz/jednotka-prace/marketingovy-redite!>). The semaphore is not yet developed for all occupations, nor have all types of competences been assigned to all occupations yet.

National Register of Qualifications (NSK)

The National Register of Qualifications (Národní soustava kvalifikací – NSK) contains descriptions of qualifications in the form of standards for the so-called (a) vocational and (b) complete vocational qualifications. A complete vocational qualification is defined by a set of relevant vocational qualifications and by the EQF level. Complete vocational qualifications are equivalent to those acquired within the formal school system.

The NSK was established by the Act on Verification and Recognition of Further Education Results and is managed by the Ministry of Education, Youth and Sports. The NSK is based on the NSP and thus should reflect labour market requirements. Both systems are being developed gradually.

Vocational qualifications are developed by sector councils in cooperation with employers' and employees' representatives. The standards are approved by the Ministry of Education and are published in the NSK information system (www.narodnikvalifikace.cz) in both Czech and English. As of January 2023, the system contains 217 complete vocational qualifications and 1,455 vocational qualifications.

The NSK vocational qualifications consist of two standards: a qualification standard, which includes a specific set of competences, and an assessment standard describing the methods and procedures used in the assessment and certification of prior learning¹¹⁶. The contents of the qualifications are developed individually, the skills assigned to each qualification are derived from the professional/vocational requirements and therefore the majority of them are professional/vocational. Nevertheless, in some cases **soft skills** relevant for the qualification are also included, or, more often, soft skills are cemented for application in the given profession.

3.8.2. National solutions for soft skill - Hungary

The Hungarian Qualifications Framework (HuQF) is Hungary's national qualifications framework, covering qualifications from general education, vocational education and training, adult education and higher education, and following the structure of the European Qualifications Framework (EQF), and also includes eight levels.

The EQF summarises the content of the different qualifications and clearly defines their place in the Hungarian qualifications system, thus facilitating labour market orientation and helping education and training providers to design their training programmes and to identify and credit the learning outcomes of candidates.

Conclusion: Although the HuQF levels do not reflect the level of competences, it is recommended to include them in the data model, as they provide some orientation and information on the level of competence the people with the occupations, and the qualifications obtained can be used to screen the people who can be included in the training.

3.8.3. National solutions for soft skills - Poland

“Soft skills” is not a term that is frequently used in public-policy discourse or agendas. In formal documents, key competencies are mentioned more often, but soft skills is often used as an umbrella term to refer to various sets of transversal skills, basic/fundamental competencies and/or simply non-specific, universal skills.

Depending on the context, soft skills are either specified (as: entrepreneurship, problem-solving or personal competences etc.) or treated as a general category (e.g.: soft skills, key competences or social competences in a broad sense). In some cases, specific typologies or lists of soft skills are used, but in the most detailed descriptions (e.g. in job advertisements, qualifications or jobs descriptions) the terms used are not subject to any controlled vocabulary. In other words, the existing typologies are being used for guidance or as attempts at aggregation.

In recent years, the interest in key competencies has been fuelled by both the educational as well as labour market partners. On the one hand, this can be linked to a more active and explicit educational policy (e.g. general education and VET core curricula explicitly require the development of these

¹¹⁶ These standards may also be used in developing non-formal training programmes.

competences since at least 2008 and 2012, respectively) On the other hand, the Polish economy is evolving – with the constant growth of the service sector, increasing automation etc. The changing model of competition on the national markets and the international competitive position of Poland as an exporter of goods, provider of services, and service outsourcing destination created pressure for the promotion of soft skills. This interest has been paired with media attention generated by the results of major research projects related to competences. These include PISA (Programme for International Student Assessment), focusing on i.e. problem-solving, and Bilans Kapitału Ludzkiego (Study of Human Capital - panel research project¹¹⁷), focusing primarily on competences in all aspects. These have contributed to an increased awareness of the issue.

The results of the TRACK-VET project show that, in formal settings, the development of soft skills is generally perceived as the responsibility of teachers and trainers. The approach towards Transversal Key Competences (TKC) development is expressed in the core curricula for general and vocational education. It should be noted that both documents are relevant for learners in VET schools, but also for adults using the formal education system. In terms of entrepreneurship or business-related skills, attempts are being made to introduce a new subject in secondary schools; “Business and Management”.

The soft skills training offered on the market is not monitored. Most providers use their own categories or labels that are currently in demand and relevant to a particular sector. Many of the training enterprises refer to specific skill typologies from academic literature (e.g. related to project management, leadership or communication skills).

In the following part, we present the systemic solutions for soft skills management: the Polish Qualifications Framework, the descriptions of occupations prepared for the Ministry of Labour (e.g. for the Public Employment Services) and the skills categories introduced in the Integrated Skills Strategy.

Polish Qualifications Framework

The Polish Qualifications Framework (PQF) consists of eight levels. Each level is described by general statements characterising the requirements in terms of knowledge, skills and social competences relevant to a qualification at a specific level. Level descriptors reflect the progression of requirements between qualifications at subsequent levels. From the PQF perspective, it is not relevant when and how the knowledge, social skills and competences required for a qualification at a specific level were acquired. PQF level descriptors are consistent with the EQF level descriptors.

A unique solution applied in Poland is the development of two stages of PQF level descriptors:

- first stage, or universal, descriptors which refer to all types of qualifications,
- second stage descriptors typical for qualifications attained in:
 - o general education
 - o higher education
 - o vocational education and training.

¹¹⁷ Bilans Kapitału Ludzkiego is one of the biggest European research projects on competences, employment, and the labour market. The goal of the project is the diagnosis and monitoring of human capital in Poland and identification of factors contributing to its growth. The panel research was already up to its 5th edition (from 2009 to 2015) and is currently continuing and deepening in selected sectors.

The differences between the levels described by the universal descriptors relate to:

- knowledge – the scope and depth of understanding of facts, objects, phenomena, concepts and theories, comprising both general knowledge and specialist knowledge relating to the field of learning or occupational activity
- skills – the ability to solve problems and apply knowledge in practice, including performing tasks of varying complexity, learning and communication
- social competences – the readiness to take on the obligations of membership in different communities, to cooperate, to evaluate the consequences of one's own actions and take responsibility for them.

The PQF uses categories and aspects to structure the level descriptors. An example of this is shown below.

10. Table: Descriptive categories and basic aspects of PQF universal descriptors.

	Descriptive categories	Basic aspects
Knowledge	Scope	Completeness of the cognitive perspective
	Depth of understanding	Dependencies
Skills	Problem solving and applying knowledge in practice	Complexity of the problem
		Level of autonomy
		Innovation in the approach
		Conditions under which one acts
	Learning	Autonomy
		Methods
Communication	Scope of expression	
	Complexity of expression	
Social competences	Identity	Participation
		Sense of responsibility
		Conduct
	Cooperation	Teamwork
		Conditions under which one acts
		Leadership
Responsibility	Consequences of one's own actions	
	Consequences of the team's actions	

		Evaluation
--	--	------------

INFOdoradca+ ["infoadvisor+"]

INFOdoradca+: Information on 1,000 professions containing primarily: a description of the profession, a description of the professional competences, a reference to the situation of the profession on the labour market and opportunities for professional development, as well as employment opportunities for people with disabilities in the profession. The complete data is available at: <https://psz.praca.gov.pl/rynek-pracy/bazy-danych/infodoradca>.

The descriptions of occupations were created as part of the project "Developing, Supplementing, and Updating Information on Occupations and its Dissemination Using Modern Communication Tools - INFOdoradca+"¹¹⁸. The project was co-funded by the EU by the European Social Fund.

The description includes a description of the work tasks and work environment but also psychophysical and health requirements, which are divided into four categories: physical requirements, sensorimotor skills, **skills and abilities**, and **personality traits**. The latter two categories' examples of soft skills, however, no controlled dictionary was used. An example of the description in this regard is shown in the table below.

11. Table: Excerpt from occupation description (psychophysical and health requirements) of database administrator.

Requirements in the category of skills and abilities
<ul style="list-style-type: none"> - concentration of attention - divided attention - good memory - technical skills - organisational skills - logical reasoning - the ability to make quick and accurate decisions - the ability to motivate yourself - the ability to analyse and systematise complex problems - the ability to analyse the situation and take risks - the ability to comply with rules, regulations, and standards - cooperation in a team (group).
Requirements in the category of personality traits
<ul style="list-style-type: none"> - ready to work at a fast pace

¹¹⁸ Rozwijanie, uzupełnienie i aktualizacja informacji o zawodach oraz jej upowszechnienie za pomocą nowoczesnych narzędzi komunikacji – INFODORADCA+

- readiness to cooperate
- readiness for individual work
- communicativeness
- operability and effectiveness
- responsibility for professional activities
- independence
- self-control
- high self-discipline
- regularity
- emotional resilience
- resistance to work under time pressure
- coping with stress
- reliability
- accuracy
- attention to the quality of work
- readiness for continuous learning
- technical interests
- IT interests
- flexibility and openness to change.

The Integrated Skills Strategy 2030

The strategy has the status of a public policy in Poland and defines the basic conditions, goals, and directions of the country's development in the social, economic, and spatial dimensions of a given field or a given area, which is a direct result of the medium-term national development strategy, i.e. the Strategy for Responsible Development (with a view to 2030). The strategy consists of two parts:

- Integrated Skills Strategy 2030 (general part) - adopted by the Council of Ministers on 25th January 2019.
- Integrated Skills Strategy 2030 (detailed part). Policy for the development of skills in line with the concept of lifelong learning - adopted by the Council of Ministers on 28th December 2020.

In the Integrated Skills Strategy, the word "skill" refers to the ability to correctly and efficiently perform a particular type of activity, task, or function. "Proper performance" means the use of relevant theoretical and practical knowledge in action and conforming to social norms, in particular those relating to the type of an activity.

The strategy defines a list of basic and transversal skills, referencing key competences as defined in the EU Recommendation of 2017 (see below).

12. Table: Basic and transversal skills in Integrated Skills Strategy 2030.

Basic Skills
understanding and creating information
Multilingualism
Mathematical
in the field of natural sciences, technology, and engineering
Transversal skills
Digital
personal, social, and in the field of learning
Civic
in the field of entrepreneurship
in terms of cultural awareness and expression
in terms of critical thinking and comprehensive problem solving
in the field of teamwork
the ability to adapt to new conditions
Leadership
related to multiculturalism
related to creativity and innovation

Source: own translation of Zintegrowana Strategia Umiejętności 2030 (część ogólna). (2018). Warszawa: Ministerstwo Edukacji Narodowej (<https://www.gov.pl/attachment/d878ece0-503d-4b91-a9a1-68e8b3c9a375>)

3.8.4. National solutions for soft skills - Slovakia

Slovak Qualifications Framework

The Slovak National Qualifications Framework (SKKR), which was referenced to the EQF in 2017, fully corresponds with 8 EQF levels. Unlike the EQF, the categories of the SKKR (knowledge, skills, and competences) were further broken down into subcategories¹¹⁹. The division of skills and competences is as follows:

Skills

- a) cognitive skills (e.g. logical, creative, and intuitive thinking, reflection);
- b) practical skills (e.g. material selection, clinical examination, quality assessment, manufacture of products, organisational skills and time management, communication skills and self-presentation, management skills, etc.).

¹¹⁹ [http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32008H0506\(01\)&from=EN](http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32008H0506(01)&from=EN)

Competences

- a) responsibility (e. g. taking responsibility for the performance of tasks and for decisions, responsibility for oneself, co-workers, for own and joint work, product quality, responsibility for social and common values, responsibility for carrying out duties, protection of life, health, safety and hygiene at work, responsibility for environmental protection, etc.).
- b) autonomy (e. g. independence of judgement, critical thinking, autonomy of decisions in problem solving, autonomy in respect of employment, the implementation of projects, product manufacturing, etc.)
- c) social competences (e. g. the ability to work in a team, cooperative attitude, ability to face conflict situations, communication skills, building one's own independence/autonomy as a member of the group, etc.).

The SKKR descriptors reflect an increase of requirements from the lowest level (1) to the highest level (8) – in the dimension of skills they increase from simple imitation of activities at the lowest level to mechanical performance and adaptation to concrete conditions. The highest levels of SKKR represent individualised, creative activities. The dimension of competences includes the reception of impulses, the passive reaction to impulses up to the creation of one's own attitude system, and involvement in the development of a value system of others.¹²⁰

OECD Skills Strategy - Slovak Republic

The OECD Skills Strategy - Slovak Republic¹²¹ provides an overview of specific findings and recommendations for Slovakia on skills from an international perspective. It is based on the fact that the Slovak Republic is particularly exposed to the effects of digitalisation, globalisation, and demographic change. It points to a significant skills disparity; a shortage of skilled labour, especially in knowledge and technology-intensive sectors; a lack of uptake of skills in the workplace; as well as a poorly developed learning culture and low participation in adult education, with the lowest levels of participation among those who need it most. It is clear that all citizens need a stronger and more specific set of skills, including **cognitive, social, and emotional skills**, as well as **the skills needed for individual jobs**. The Strategy also emphasises the need to focus on digital skills development especially among less educated adults.

Lifelong Learning and Guidance Strategy for 2021-2030

The aim of the Lifelong Learning and Guidance Strategy for 2021-2030¹²² is to define forward-looking measures in the field of education policy. It identifies three main areas of intervention: promoting adult participation in learning by removing existing barriers, supporting selected target groups and considering their specific needs (e.g. low-skilled people), and supporting selected skill areas, namely **basic, transferable, civic, and digital skills**.

The new **Lifelong Learning Act**, currently under preparation, will provide legislative support for citizens' demand for the development of **basic skills and civic education** and for the provision of non-formal education opportunities. Methodological support and training for civic education providers and

¹²⁰ <https://www.minedu.sk/data/att/15015.pdf>

¹²¹ OECD (2020), *OECD Skills Strategy Slovak Republic: Assessment and Recommendations*, OECD Skills Studies, OECD Publishing, Paris, <https://doi.org/10.1787/bb688e68-en>

¹²² <https://www.minedu.sk/data/att/22182.pdf>

regional/local authorities will be established. The whole process should culminate in the establishment of the National Network for Basic Skills in 2024.

According to the Lifelong Learning and Guidance Strategy, the **digital skills** included in the Top 10 Skills of 2025¹²³ should be developed through inter-ministerial cooperation and supported within 3 lines:

- a. digital skills for Slovak citizens in electronic communication with the state
- b. the digital skills necessary for adaptation and sustainability in the labour market - upskilling, reskilling
- c. digital skills as a part of basic or transversal skills.

National Digital Skills Strategy of the Slovak Republic and the Action plan for 2023 – 2026

The National Digital Skills Strategy of SR and the Action Plan for 2023 – 2026¹²⁴ states that there is no publicly funded digital skills development system in Slovakia. Therefore, only 2% of citizens have acquired digital skills through public education programmes in this field. Education and digital skills development is based on employment or employer-paid education. In addition to the efficient use of digital technologies, there is also a need to focus on building awareness of **basic literacy in the areas of cybersecurity, media literacy and increasing need for digital hygiene**. The educational infrastructure for the development of digital skills is poorly established - mainly due to the lack of a digital learning platform, unprepared training staff and lack of testing and certification sites. The unavailability of publicly-funded educational programmes is a barrier to the development of digital skills, especially for post-working age seniors.

Digital literacy should be closely intertwined with the **soft skills** that will be most important in the transition process to an information society: **emotional intelligence, creative thinking, collaboration, and critical thinking**. The main priorities, objectives, and a subsequent action plan are oriented towards the development of digital skills consistent with DigComp 2.2.: **Information and data literacy, Communication and cooperation, Development of digital content, Cybersecurity, and Problem solving**.

Basic skills of adults

In 2011, the Slovak Republic participated in PIAAC¹²⁵, the international survey of skills of adults aged 16 - 65, which focused on the reading, numeracy, and digital skills (referred to as basic skills) of adults in Slovakia. The results showed that up to 11.8% of adults showed only the lowest level of reading skills and 13.8% only the lowest level of numeracy. Slovakia is also one of the countries with the highest proportion of people without digital skills - up to 21.7%, which is more than double the OECD average (10%) (OECD, 2016)¹²⁶.

Basic skills have not been defined in the national legislation and there are no standards that would determine the level of basic skills that a learner has to achieve. The lack of basic skills is mainly related to the groups of the population with no or with the lowest levels of education/qualifications (SKKR 0-2)¹²⁷.

¹²³ World Economic Forum - The Future of Jobs Report 2020

¹²⁴ https://www.planobnovy.sk/site/assets/files/1055/komponent_17_digitalne_slovensko_1.pdf

¹²⁵ <https://www.minedu.sk/program-medzinarodneho-hodnotenia-kompetencii-dospelych-piaac/>

¹²⁶ OECD Skills Strategy Slovak Republic, <https://www.oecd.org/skills/centre-for-skills/OECDskillsStrategySlovakRepublicReportSummaryEnglish.pdf>

¹²⁷ The state of basic skills in the Slovak Republic. <https://zakladnezrucnosti.sk/vystupy-projektu/>

The project BLUESS – Development of basic skills in Slovakia (2019-2021), implemented by ŠIOV, created a methodology for developing this group of skills for adults and a tool for their assessment¹²⁸ used by labour offices. The project also proposed to include these skills in the lower levels of the SKKR. The need to develop digital skills is also confirmed by the Digitalisation Index (DESI), in which the Slovak Republic is slightly below average in the indicator for the level of basic skills of the population aged 16-74¹²⁹.

The Lifelong Learning and Guidance Strategy 2021-2030 pays attention to the promotion basic skills and digital skills in particular, which is reflected in its goals – to strengthen the inclusiveness of adult learning and improve learning pathways for all, including adults with low levels of basic skills, and in concrete measures relating to basic skills development, including the embedding of basic skills in the national legislation and piloting tools for mapping, assessment, and testing the basic skills of low-skilled adults.

Act on Employment Services

Act No. 5/2004 on Employment Services defines the tasks of the Public Employment Service. It deals with, inter alia, active measures in the labour market to promote employment as well as training to increase the chances of finding a job. Part 7, Paragraph 35b establishes the Alliance of Sectoral Councils and its role in defining the areas for the development of **key competences**. Paragraph 44 regulates the forms of training and preparation for the labour market, one of which is participation in training programmes focusing on the development of **communication, computer, managerial, social, and entrepreneurial as well as language competences**. Paragraph 54 includes those projects and programmes among active labour market policies (ALMP) measures that aim at improving the labour market position of both jobseekers and individuals interested in employment (i.e. those currently employed).

KOMPAS+

Examples of such measures are two national projects currently funded by the ESF: “Training of Jobseekers”, and “Don’t Lose Your Job – Get Trained”. In the framework of the former, a scheme called KOMPAS+ has been implemented. It supports the development of selected **key competences** of jobseekers in the form of competence courses, in particular **communication skills, personal development (including managerial and entrepreneurial competences), computer and language skills**. The latter one aims to promote the development of skills of individuals interested in employment, primarily in the most in-demand occupations, **digitalisation, automation, and the green economy**. As in KOMPAS+, the training can focus on vocational as well as **transferable competences**.

Bilan de compétences

The Bilan de compétences system for the provision and quality management of career guidance is applied in labour offices across Slovakia. It is a tool for individual career development as well as for human resource management, labour market policy, and lifelong learning. It was implemented through an ESF-funded national project “Support for Personalised Counselling For Long-Term

¹²⁸ This tool is a manual for live assessment, not an IT tool ready for use in an e-environment.

¹²⁹ Strategy for Lifelong Learning and Guidance for 2021-2030 <https://www.minedu.sk/data/att/22182.pdf>

Unemployed Jobseekers” in 2015¹³⁰. The implementation of the project has contributed to the better employment of the long-term unemployed by developing the **skills needed to enter the labour market**, including **career management skills**, and by strengthening their motivation to find employment through long-term and systematic counselling. The Lifelong Learning and Guidance Strategy for 2021-2030 refers to the Bilan de compétences as a tool for profiling of learners.

Strategy for human resources development in the education, training, and sport sectors up to 2030

The Sectoral Council for Education and Sport, as a member of the Alliance of Sectoral Councils established under the Employment Services Act, developed a strategy for human resources development in the education, training, and sport sectors up to 2030¹³¹. The main priorities in the field of adult education are as follows:

- ✓ the establishment of a system of counselling and education for low-skilled adults, the preparation of human resources with knowledge of tools and methodology to identify the **literacy needs** of low-skilled individuals
- ✓ creating conditions for inclusion through the education of foreigners – establishment of a system for their preparation for the labour market and full integration into society (**language training, knowledge of culture and lifestyle, acquisition of skills necessary for life in a new environment**)
- ✓ the development of competences of lecturers and trainers specialising in the education of seniors
- ✓ the inclusion of age management in the curriculum of adult education study programmes.

IT Fitness Test

The IT Fitness Test¹³² is a large, comprehensive, free-of-charge online test of **digital skills** developed by the IT Association of Slovakia within the framework of the National Digital Coalition. It provides a way to assess the level of one’s digital skills and knowledge and to compare the results with other users. The test is a self-assessment tool primarily aimed at high-school and university students, as well as primary school pupils and teachers. However, the more advanced level is open to all citizens who wish to assess their digital skills level for both personal and professional purposes. As part of the Slovak active labour market policy, the final certificate is a recommended annex to a citizen’s application for the training subsidy. Enterprises can also use the tool to test their employees.

The IT Fitness Test has recently been scaled up from national level to **all four V4 countries**. In 2014, the IT Fitness Test was recognised by the European Commission for its complex and innovative approach to increasing digital literacy among young people in Europe.

3.9. Conclusions on the design of the D-ILA-V4 data model

Finally, this chapter summarises our conclusions for Chapter 3 as a whole. Each sub-chapter is linked to a topic.

3.9.1. Conclusions on adult learning systems and their funding solutions

The conclusions that can be drawn from the analysis of adult education funding systems, including the situation of ILAs, are as follows:

¹³⁰ https://www.upsvr.gov.sk/sluzby-zamestnanosti/odborne-poradenske-sluzby/narodny-projekt-podpora-individualizovaneho-poradenstva-pre-dlhodobu-nezamestnanost-uoz.html?page_id=762754

¹³¹ Strategy for Human Resources Development in the Education, Training and Sport Sector up to 2030

¹³² <https://itfitness.eu/en/>

- Based on the analysis of adult education systems, it can be concluded that each country is building its own systems according to very different philosophies. It follows that, because of these different philosophies, the practical implementations also differ.
- This discrepancy is also reflected in the availability of data. From an ILA data model perspective, it is currently difficult to develop a common dataset that can be used in various countries.
- The ILA data model may reflect a future state that countries aspire to achieve.
- In our view, the EU concept of ILAs is general enough to be integrated into the adult education systems of all the countries analysed.
- Adaptation to local characteristics implies that interoperability of ILAs between countries can only be achieved with great difficulty, considering the conclusions drawn from the feasibility study.
- The question for us is whether the EU concept of ILAs (as well as micro-credentials) and the EU resources allocated to its implementation are capable of influencing the further development of each country's own adult education system.
- A systemic difficulty in implementing ILAs is that EU projects tend to be one-off initiatives that lack the necessary continuity.
- Enterprises use their own training solutions. On the one hand, this is advantageous due to the applicability of the ILA data model, as data requirements are significantly easier to implement than in large public systems. On the other hand, it is disadvantageous from an ILA point of view: enterprises pay for training on their own initiative, they have no interest in transferring money to employees' learning accounts. Whether employers participate in the ILA system depends on the country that is implementing the ILAs; there are countries where not only the state, but also the employer can contribute to an individual's learning account.
- There is a need to increase the participation in adult education in the four countries studied. One obstacle to this is the lack of financial resources, especially for disadvantaged people.
- However, we believe that the reorganisation of financial resources is not in itself a solution to increasing the participation in adult education.
- In addition, given the current specificities of adult education systems, we are not convinced that individuals will be able to effectively manage the budget allocated to them from different sources. We believe that it is very important that widespread support services are put in place in parallel with the implementation of ILAs. In the countries studied, we do not believe that the support services needed for ILAs are currently in place.
- Our analysis shows that the inclusion of micro-credentials in the ILA data model is important as adult education systems in the countries studied have moved towards shorter courses. Digital micro-credentials are primarily suitable for certifying the learning outcomes of micro-training.
- The situation is further complicated by the fact that international corporations, as market players, also issue micro-credentials to promote their technology and develop potential employees in response to emerging needs.

3.9.2. Conclusions to be drawn from the presentation of soft skills solutions.

Our conclusions from the examination of systemic soft skills solutions, including the different EU frameworks, are as follows:

- There are various definitions of soft skills as a concept. From the point of view of the ILA data model, there is really no need to choose between theoretical approaches and to apply the chosen set of concepts exclusively. The project approaches the concept of soft skills from a practical point of view: data fields that are considered and selected by our experts to be socially or labour market relevant are identified as soft skills. This approach allows both foreign language competences and digital competences to be understood as soft skills and to be included in the ILA data model – in full harmony with other competences.
- In our view, the European Qualifications Framework (EQF) focuses primarily on the categorisation and levelling of traditional education; therefore, its use in the ILA data model is proposed.
- The Recommendation on Key Competences for Lifelong Learning identifies 8 competences that we consider to be of paramount importance. As basic skills are outside the scope of the project, some of the 8 key competences were omitted, e.g. mathematical competence, while in other cases we propose to explain the given competence in detail in the ILA data model (e.g. digital competence).
- The philosophy and structure of ESCO is close to the ideas formulated in the project in that it aims to integrate previously independent areas at the data-level. In addition, ESCO is constantly evolving, for example, DigComp has recently been incorporated and even green competences are included in ESCO. One of the reasons for using ESCO code bodies in the D-ILA data model is that they can serve as connecting fields when the scope of the data is extended.
- ISCO categories have been incorporated into ESCO, which is also recommended for use in the ILA data model.
- ESCO uses advanced data management solutions primarily for machine data processing. This feature cannot be used in the framework of this project, but it is advisable to rely on it in the future development of the project.
- The objectives and recommendations of the Skills Agenda for Europe will be taken into account by the Partnership experts in the development of the ILA data model.
- The Workplace Learning Trends Report by Udey Business provides data on the growing importance of soft skills development. However, the categorisation proposed in the report does not seem to be useful in the ILA data model. The competences classified in each category are essentially consistent with other sources of information. However, data showing changes in training provision is particularly valuable and unique information from the perspective of the ILA data model.
- Europass is a system of complex services based on the creation of Europass profiles, which allows individuals to test different skills before adding them to their CV. The skills provided are digital skills, management and leadership skills, communication and interpersonal skills, and organisational skills. When designing data fields for the ILA data model, it is also useful to review the Europass categories.

- The target group of the international PISA measurement is limited to the age group of 15 year olds and is therefore outside the scope of adult education. The competences concerned are extremely important, but they are less central to adult education.
- Skills are also included in CEDEFOP's various solutions, and their applicability in the ILA data model should be examined in detail. Of particular interest are CEDEFOP's Skills Intelligence and Skills Forecast, which can also be used indirectly to predict skills. The inclusion in the ILA data model of skills that will play a greater role in the future is justified.
- The Eurofound database is of limited use in the ILA data model.
- O*NET's analysis shows that soft skills play a crucial role outside Europe as well. The structure of the system is largely comparable to ESCO, the competences examined are also largely reflected in the EU solutions.
- The OECD's Big Five model includes social and emotional skills. These skills have a fundamental place in the ILA data model, but it is useful to distinguish between areas that can be developed through training and areas that are less likely to be developed through training. For example, many training programmes aim to increase stress resilience, but the development of curiosity, which is also part of the "Big Five" model, is less amenable to training.
- The PIAAC survey also covers soft skills and areas relevant to the labour market. The ILA data model should take into account the competences also used in PIAAC.
- The World Economic Forum highlights the importance of 10 skills that are projected to become key by 2025. According to our analysis, 8 of these can be considered soft skills and their integration into the ILA data model is justified.
- In the Hungarian Chamber of Commerce and Industry survey, company managers commented on the level of competence of new employees. The survey is not relevant for ILA purposes.
- One of the characteristics of the ILA data model is that it avoids the multiplication of competences. For example, creativity appears in several aspects in the different solutions presented, moreover, the definition of the concept also differs in each solution. Nevertheless, in the ILA data model, creativity is given a single data field. The example illustrates the synthesising nature of the ILA data model, as it can mask conceptual differences between different solutions at the data level.

3.9.3. Conclusions to be drawn from the presentation of the frameworks.

The feasibility study presents 10 different EU frameworks. Our conclusions are as follows.

- The frameworks presented can be divided into 3 categories according to their level of development and acceptance:
 - o The most advanced category is the CEFR, which has been translated into 33 languages. The CEFR is a widely used framework for indicating individual levels of foreign language competence (e.g. in Europass) and plays an important role in the description of training provision. A multitude of self-assessment and measurement tools are based on the CEFR.
 - o DigComp is similar in level of elaboration to the CEFR, but its visibility is significantly lower and it is still in the process of being integrated into other systems, e.g. training courses are

often not yet DigComp compatible. Significant resources are available in the EU budget to strengthen the role of DigComp.¹³³

- In general, the other frameworks studied (LifeComp, FinComp, EntreComp, GreenComp) have yet to be tested in practice, self-assessment, and measurement tools, where they exist, are not yet mature, and their awareness and applicability are limited.
- From the perspective of the ILA data model, the CEFR seems to be an ideal solution, as it creates compatibility between people's existing competences, the level of competence at which they enter training and the goal to be achieved (training output). For example, a person is expected to be at level B2 in English. Based on the self-assessment questionnaire, the person evaluates their knowledge at A2 level. The course placement assessment places them at A1 level and recommends a course accordingly. The course description states that it can take people from A1 level up to B2 level. The assessment after completing the training confirms the individual has achieved B2 level, thus meeting the expectations of the workplace.
- One of the key questions in developing the ILA data model is the extent to which frameworks that already exist in official EU communication, but are not yet widely used in practice, should be relied upon. The example of the CEFR shows how the general application of frameworks can benefit the ILA data model.
- Considering the above, we recommend a mixed solution. During the development of the ILA data model, it is advisable to consider the soft skills appearing in the frameworks as a first priority, and then the soft skills missing from these frameworks can be added to the data field structure of the ILA data model.

3.9.4. Conclusions based on the presentation of national soft skill solutions.

- In general, the management of soft skills training has not yet been established in the countries studied, but the first steps have already been taken.
- Soft skills are managed using existing and older systems, with a function expansion. First of all, adding soft skills to the existing characteristics of the occupations.
- Soft skills management solutions primarily reflect labour market needs, which place increasing demands on the adult education system.
- A general aim is to assign levels to competences and ensure their measurability.
- At national level, the most accepted approach to soft skills emphasises transferability between jobs and occupations, a transversal approach.
- In general, the development of basic competences is primarily the responsibility of the school system, while the development of transversal competences falls within the responsibility of adult education.
- An important starting point in the countries studied is the concept of lifelong learning, which is also accompanied by the development of soft skills.

¹³³ National level operative programmes included DigComp-related developments.

4. Analysis of databases

The Partnership's experts collected and processed information on the data systems of training and individuals participating in adult training for their own country, as well as for the EU and at an international level. In this chapter, we present the conclusions that can be drawn from this information in a consensus form, and on which the activities foreseen in WP3 will be founded.

Our conclusions no longer contain country-specific elements (e.g. country-specific contact details), their validity extends to the entire ILA data model designed. It is important to note that in the phase of creating the data structure and the edited data series (WP3) it is possible to override what is described here, so this chapter contains recommendations only.

Our conclusions no longer contain country-specific elements, their validity extends to the entirety of the ILA data models and can be adapted by all Member States. This chapter contains recommendations formulated at the stage of the feasibility study, hence it is important to note that in the phase of creating the data structure and the edited data series (WP3) it will be possible to override what is described here.

This chapter is informed by a background study prepared by the experts involved in the consortium, including country-specific elements.

4.1. General findings

Our general findings on the ILA data model are summarised in this chapter based on the background study prepared by the Partnership within the framework of the project:

- The adult education system and related statistical system of each country largely determines the availability and structure of data relevant to the ILA data model. These vary considerably from country to country. Therefore, the EU Recommendation on ILAs and various frameworks have been given high priority in the development of the data field structure of our ILA data model.
- The differences between national adult education systems have implications for the availability and structure of data relevant to the construction of an ILA data model. As a consequence, the proposed data model will be aligned with EU recommendations and international frameworks. This means that, while the proposed model may include a controlled vocabulary of skills based on EU competence frameworks such as DigComp or EntreComp, we expect that future implementations of ILAs in Member States will use national classifications of skills, occupations, qualifications, and national competence frameworks where these exist. This decision is based on the assumption that Member States will implement or refer to these reference frameworks (as in the case of NQFs-EQF).
- The background studies carried out as part of the project revealed that state and corporate spending on soft skills development is directed at significantly different target groups. Corporate resources serve the upskilling and/or retraining of employees, while public spending is often aimed at promoting social inclusion. Although the ILAs as a delivery mode foreseen in the Recommendation are independent of the funding source and provide full control to the individual, the findings reveal that various biases can be found in the datasets. Moreover, Member States may decide to develop a variant of ILAs in which the individuals' spending

decisions will not be completely independent of the funding or individuals will be provided with recommendations based on a specific perspective. The key issue to be decided during the development of the ILA data model is whether to construct the participants' data series of the AI training data table and the data series of the test data table exclusively from a corporate or state perspective, or from a mixed perspective. We did not find such a sharp difference in the case of training courses, due to the transversal nature of soft skill training, where a specific training may be relevant from both corporate and state perspectives.

- At the corporate level, especially SMEs, there is a better chance of creating an abundance of data – if the return on investment (ROI) and corporate interests can be demonstrated. (Employees can easily give their consent to the management of their data).
- It follows from the EU concept of ILAs that it is not statistical, i.e. it is not based on sampling and representativeness. Accordingly, our ILA data model does not take a statistical approach either; each member of the target group involved in training funding has identifiable and unique characteristics.
- Previously, professional competencies related to specific professions were considered significantly more important by enterprises than soft skill training. Based on the available data, changes can be observed: in line with EU efforts and related research, enterprises are placing increasing emphasis on soft skills development. Moreover, in many cases, recruitment has become soft skills based rather than focused on existing professional knowledge. Our ILA data model deals exclusively with the development of soft skills.
- The above-mentioned development is not so much related to EU efforts as to changes in the labour market. It is difficult for enterprises to find a person with the right hard skills, either because of (a) the general lack of qualified workers available (due to low unemployment), or (b) the nature of the technological developments where the requirements for technical skills are so specific (often even company specific) that it is not possible to find the right person ready on the labour market. At the same time, many jobs require more soft skills due to the same technology developments (everything is more connected, collaboration and willingness to constantly learn is needed etc....). For all these reasons, enterprises are placing more emphasis on soft skills than before.
- A general guideline for the development of the ILA data model is that the funder of training can influence the selection of the courses available throughout the scheme according to its priorities. For example, in the case of public funding, the same individual would receive a different training offer than if the training were funded by that individual's employer. A rare exception is when a company funds adult education in such a way that its employees are free to choose.
- To train an AI, it is necessary to generate a data table in which people are assigned training courses. A very serious dilemma when designing an ILA data model is whether to model the real state or the desired one. For example, real statistics show that people with higher qualifications are more likely to participate in adult education. So should we also edit the data table needed to train the AI in this way? Or, conversely, should we assume that people with lower qualifications are more likely to need training?

- These two bullet points above show that, in short, the key decision point is the **goal** of the training. What training is recommended is (should be) determined by what we want to achieve. (Employability/social inclusion/ company profit/ good economy)
- Every person should receive the adult education they need. An important principle in the development of our ILA data model is that we consider limited financial resources. The crux of the project is the lack of a financial framework to ensure that every person receives the training that best suits them – compromises are necessary. Our project seeks to identify the effects of these trade-offs at the data level.
- Throughout the development of the ILA data model, efforts should be made to ensure that there is a one-to-one correspondence between the data fields describing the characteristics of the learners and the properties of the training, and the value sets of the data fields (the values that the data field can take). The best way to do this is to use EU frameworks for specific competences, such as the CEFR (Common European Framework of Reference of Languages) for foreign language competences. By using the CEFR in the ILA data model, it is possible to define a person's foreign language competence, the input expectation of a given training and the level of competence that can be achieved upon completion of the training, as well as the level of foreign language competence required for a job can be defined in the ILA data model.
- The measurement of soft skills, especially their level, is a general challenge that needs to be solved in the near future (see chapter on Good Practices). During the development of the ILA data model, we dispense with measurement difficulties and deliberately analyse the future state when the measurability of soft skills is possible. At the same time, an example is given: Based on the CEFR mentioned above, there are very accurate and usable measurement tools. We expect a similar framework for other soft skills, just as we can already see the efforts of DigComp.
- GDPR requirements must also be considered when implementing ILAs. At the same time, we are structuring our ILA data model in such a way that the individuals concerned consent to the purpose-related processing of their data in the ILA data model. It is important to note that this is partly the case now, since, for example, personal, GDPR-sensitive data is also collected during the provision of training grants provided by the EU.
- An important limitation of our ILA data model is that the training courses edited by the experts included in it are not real courses which individuals can apply for, but types of training. The IT solutions capable of recommending real training courses go far beyond the framework of our project; this could be the subject of a future project. When defining a training course in the ILA data model, it means that real-world training with partially or completely identical parameters must be searched for manually on the adult learning market.
- When experts link individuals with a training course, each data field is assessed separately. For example, if online training is required for an individual, the experts should not assign face-to-face training to that individual. The situation is fundamentally different when it comes to the training an individual wants to take. An individual's training needs may differ from the company's training needs, and so the proposed training may not be what the individual needs. When designing an ILA data model, this dilemma must be answered in almost all data fields.

- The ILA data model seems to be easily applicable in the field of career guidance, where the user is not given a specific training recommendation, but a type of training. This makes it much easier to find a relevant training course.
- In the table used to define the ILA data model, we also indicate data fields that were considered relevant during our analysis but were not included in the data model. This is done to allow users to activate the data fields listed here according to their needs during the practical implementation.
- According to the EU Recommendation, in the case of ILAs, the budget for individuals changes dynamically over time as income is received in ILAs and spent on training. In our ILA data model, we record the specific point in time when the available budget is recorded at the individual level, and from there we consider training expenditure one year after the fixed point in time. This makes it possible to assign multiple training courses to an individual.

4.2. ILA data model design recommendations

Recommendations for data fields and edited data series to be used in the ILA data model are collected in this chapter. As mentioned above, these proposals are based on a background study carried out as part of the project.

4.2.1. The training data field structure

Recommendations for building the training data field structure:

- A specific characteristic of soft skills is that several soft skills can be developed within one training course. For example, during the development of foreign language competences very often includes the development of other topics e.g. green competences or logical reasoning. During the development of the ILA data model, it should be possible to classify a given training as related to the development of several soft skills.
- Based on the specificity of soft skills, the distinction between upskilling/reskilling is not justified at the data field level; there is no need for an independent data field. Any soft skill training can be interpreted in the same way in both cases.
- According to the EU concept of ILAs, individuals receive adult education support, whereas in the past, in many cases, training courses or training organisers received support to provide training, even free of charge, to those interested. The ILA data model should be designed so that the price of training includes the total cost and public and/or corporate training grants are reflected at the individual level. In this approach, the cost of training is determined by purely market processes. At the data field level, one cost column is recommended. At the same time, it is difficult to determine the market price because it is determined by supply and demand at any given time, often there is individualised pricing or pricing based on order volume.
- In the ILA data model, defining the target group is an important aspect, several of which can be marked simultaneously for a given soft skill training. Target groups proposed on the basis of the background study carried out within the framework of the project are:
 - o 3 or more target groups may be designated
 - o The unemployed

- NEET (unemployed, jobseekers, individuals outside of the labour force - students, retired, housewives...)
- The disabled
- The low-educated
- Women
- Women teleworking
- The socially disadvantaged
- AI-compromised workplace workers
- Non-EU immigrants
- Intra-EU displacements
- Non-native speakers
- Educators
- Civil servants

This is only an initial list; the list of target groups may change during the data field development phase.

- Previously, the language of the training courses clearly defined the circle of participants, and each course prepared in a national language was attended by people who spoke that language. At the same time, the EU concept of ILAs places great emphasis on the possibility of transferring the personal financial adult education framework between countries. It follows from this, and from market logic, that adult training courses produced exclusively in the national language are expected to be replaced by courses available in several languages. A serious dilemma during the development of the ILA data model is how much emphasis should be placed on the language of the training, and does the language of the training determine the circle of participants when training the AI?
- Location also severely restricts the application of the ILA data model, as it predetermines which training course the individual can participate in, whereas the ILA EU Recommendation is to loosen this. In addition, the training proposal based on the ILA data model can now be converted into a specific training course for each individual, considering their geographical location – if necessary. In summary, we do not recommend data fields in the training data table that refer to location-based availability.
- Portals providing access to adult training usually include a community evaluation service, meaning that participants in specific training courses can provide feedback based on their experiences. Our proposed ILA data model does not include data on the training organisation, so the data field for feedback is not meaningful.
- In the ILA data model, it is advisable to ensure that the individual training courses build on each other and create training paths at the data field level. This requires two data fields: one containing the code of the previous course and the other containing the code of the course based on it.
- A detailed description of the training content is often available on the adult learning portals studied in the project. We do not recommend including training content in the ILA data model due to its diversity and difficulty in converting it into data. Another solution is to use a keyword field, which requires you to create a list of keywords. The list of keywords can be edited by the Partnership or borrowed from other systems.

- Based on the research carried out within the project, it can be concluded that few adult education programmes deal with the development of green competences. At the same time, EU strategic documents place special emphasis on the development of green competences; therefore, such training courses are expected to appear among adult learning courses in the near future – either independently or integrated into other soft skill developments. In the ILA data model, it is strongly recommended to include data fields allowing for green competences. This is again related to the goals. If the goals are to comply with EU/public interest in pursuing green goals, then yes, it is important. However, enterprises do not consider the stand-alone concept of green skills as being so viable. Of course, they have to comply with the green regulations, but they embed the green skills development in their green transformation processes and do not consider it a separate activity.
- Based on our analysis, some adult learning portals provide detailed information for a fee (e.g. subscription). It is not recommended to use such a data field in the ILA data model, we recommend providing free access to all training information.
- Following the logic of ESCO presented in the previous chapter, adult training aimed at soft skills development can also be linked to ESCO occupations, and the inclusion of the necessary data fields in the ILA data model is justified. Of course, the indication of occupations should not be mandatory since a significant part of the training can certainly not be linked to one or more occupations at the same time.
- Based on the background study carried out as part of the project, some of the training courses are available free of charge. Due to the truly free training courses, it is recommended to display the free training at the data field level. However, training courses that are not really free of charge cannot be marked as free in the ILA data model because, for example, the state bears the training costs. According to the EU concept of ILAs in this case, the state pays the training fee into the ILA, which the individual pays to the training provider – i.e. the training cannot be marked as free of charge in the dedicated data field.
- Common data fields for training characteristics are also included in the ILA data model. Such data fields are the ratio of theoretical/practical training, the ratio of online/offline learning requirements, the duration of the training/exam validity, the average student workload (in hours) required to complete the training, etc.
- The distinction between accredited – and thus quality-assured – training is made by means of an independent data field. When determining the value set (possible values of the data field), it is important to distinguish the status of the accrediting body, as there may be a difference between, for example, a state accreditation or a market-based accreditation. Perhaps a controlled vocabulary of accreditations should be developed in order to control this crucial variable.
- Identified forms of training, which can also occur in combined/blended form or possibly even the number of hours of training, have been broken down according to these types:
 - distance learning in an offline format when attendance is not required
 - distance learning with an online presence, when communication takes place in real time
 - In person training

- Mentoring
- In the ILA data model, the micro-credentials that can be obtained through training are represented by individual data fields. One difficulty is that, in the case of the adult training courses examined, the learning outcomes on the output page are displayed in a text list. In the case of micro-credentials, it needs to be decided whether multiple micro-credentials can be issued from a – typically longer – course, or whether the micro-credential should be of a yes/no type, or whether its level should also be interpreted in our model.
- In the case of soft skills training, competence levels may have different value sets, which must also be tracked at the ILA data model level. For example, in the case of foreign language competences, the value set can have 6 elements (from A1 to C2), while in the case of DigComp there can be 8 levels of each competence element. For other competences, 3 levels may be sufficient.

4.2.2. Proposals for edited training data sets

While information about the data field structure of training courses can be more easily and discretely defined, constructing data series describing soft skills training and uploading the data field structure is a significantly more difficult task. The information available is much more diverse and often contradictory. At the same time, the members of the Partnership have to make decisions during the implementation of the third work package, to which this chapter aims to contribute. The editorial aspects of the data series describing the training courses are as follows:

- The project design did not identify a key indicator for the number of training courses. Based on the background study prepared within the framework of the project, we propose that the Partnership should define at least 100 different soft skills training courses, i.e. the training data table should contain at least 100 data sets. In practice, this means that both the 300-person AI trainer and the 600-person test data table can be assigned 100 different types of training.
- A particular training course can, of course, be assigned to several individuals. As a general principle, the wider the target group for a particular course, the more individuals it will be assigned to. For example, a basic green competence development course can be assigned to every individual – considering that we prioritise the development of green competences in line with EU guidelines.
- Despite the fact that Covid has increased the proportion of training courses available exclusively online, in the case of soft skills training, it is mainly theoretical and not practical lessons that can be delivered online. Therefore, in the case of soft skills training, face-to-face lessons are more appropriate. If 100 soft skills training courses are defined within the framework of the project, a significant number of them, up to 70%, should be defined as being in blended or face-to-face form. In particular, courses with a higher number of hours and a higher level of difficulty can be in blended form, while lessons with a lower number of hours and a more theoretical focus can be exclusively online.
- Based on the background study carried out within the framework of the project, mentoring services already exist on the adult learning market; therefore, we recommend that they are prioritised in the ILA data model as well.

- The proportion of accredited training courses, i.e. training that passes quality assurance, varied widely in the countries studied. We recommend that the proportion of soft skills training courses in the ILA data model be defined in a range of 50% to 80%.
- A total of 16 target groups assigned to each soft skills training were defined in the previous chapter. The assignment of 100 soft skills training courses to target groups is greatly influenced by whether we develop the ILA data model according to State, corporate or mixed aspects. The consortium is currently leaning towards a state-focused data model.
- Based on the experience of the background study, the duration of the soft skills training included in the ILA data model is mostly in the range of 30 hours or less, and at least 90% of the training should be structured accordingly. Of course, 30 hours also includes time spent on individual preparation. If 30 hours is not enough to develop a particular soft skill, training based on it can be defined in the ILA data model, thereby indirectly increasing the number of hours. Based on the background study carried out within the framework of the project, training courses longer than 200 hours will not be typical in the ILA data model.
- In the case of soft skills training, we do not recommend defining educational attainment as an entry requirement, as the competences concerned are, in many cases, independent of the education level. A good example of this is the specification of the entry level for language learning courses. In line with this, it is recommended that 1/3 of the courses have beginner, intermediate, and advanced input competence levels. The proportions may vary. For example, if state-sponsored training is predominant, a higher proportion of training should be at basic input levels. The introduction of input levels in the ILA data model makes it possible to assign several training courses sequentially to the development of a specific soft skill for a specific person.
- On the output side of the training, we recommend issuing micro-credential-type certificates in the majority of the training courses – in line with EU aspirations. It is important to note that the available data does not justify this high rate, as currently the number of courses ending with the issue of micro-credentials is significantly lower in the countries studied.
- Determining the training costs for the 100 training courses processed is one of the most difficult tasks. The EU concept of ILAs means that the real cost of the training has to be reported, as it is not the training that is funded – as mentioned earlier. In the ILA data model, we think it is right that the training falls into a wide range of cost categories, so that we can assign training to both 300 and 600 people according to different concepts. Such a concept could be, for example, that individuals receiving state aid typically engage in low-cost training. Training costs in the ILA data model should be uniformly expressed in EUR. According to the background study carried out within the framework of the project, the cost of accredited courses is typically in the range of 500 – 1,000 EUR, while non-accredited courses are in the range of 100 – 500 EUR.
- A distinction should be made between the total cost of training and the price of training. The total cost is a broader concept: from the participant's point of view, it is the total cost, which may include travel expenses, time invested, lost earnings, the cost of the training, etc. The price of the training is the actual fee paid to the training organiser. The data model will include the price of the training.

- Data fields related to the creation date and validity of the course should be provided for all 100 courses so that there are no obsolete courses in the training offer. We do not recommend providing courses older than 2 years when editing data.

4.2.3. Data field structure - participants

The suggestions for building the data field structure of the participants are as follows:

- The ILA data model does not require data fields that can be used to identify individuals. A single identification data field is sufficient to distinguish between individuals. However, information that can be linked to an individual, such as age, is included in the ILA data model.
- Based on the background study carried out within the framework of the project, the gender data field is also required in the ILA data model. Defining the value set for the gender data field results in a decision situation. In the traditional approach, as we have seen in several countries, the gender data field can take 3 values: male; female; not applicable (N/A). According to another approach, there are several types of gender. In the latter case, the set of values is defined in accordance with Union recommendations or Union statistical requirements. It is strongly discouraged to create a project specific option set for this data field. Although the empirical research showed that gender is irrelevant for the training recommendation, in order to specify the target group, we propose to include this data.
- The project focuses on soft skills training, so it is justified to include data fields for describing soft skills for individuals. There are several ways to define the value set of data fields and the data fields themselves, but it is important to note that the soft skills description data fields used for individuals and training must match their value sets. This is because the soft skill characteristics of the individuals and the input level of the training need to match. Based on what has been described, it is recommended to apply different EU frameworks, as we have seen in the training.

In the case of attendance or non-distance learning, the location of individuals would have to be taken into account by default. As the ILA data model does not work with real-world training, detailed data fields on the geographic location of individuals and training can be omitted from the model.

However, a data field for indicating a country or a region within a country for information purposes is relevant. Instead of a city-level data field, consider adding a data field to the ILA data model that can have the following value types:

- local
 - regional (NUTS level 3 classification)
 - countrywide
 - EU-wide
- For individuals, it's a good idea to include a data field that indicates their willingness to train. For example, if a particular individual is assigned only in-person training, then the form of training should match this. In this case, we expect a stricter match than in the case of competence levels, where the level of competence of the individual and the input competence level of the assigned training do not have to correspond one-to-one. We recommend using the following fields in the ILA data model:
 - maximum time available for training, lessons per week
 - willingness to learn independently
 - geographical mobility

- training motivation
- As a result of the ILAs concept, the funding resources available for training are allocated to individuals, i.e. the necessary data fields appear in the data table containing individuals. Based on the background study carried out within the framework of the project, the available funding resources can be described with 4 data fields:
 - Self-financing amount
 - Amount of employer's support
 - Amount of State support
 - Whether the funding resources include credit (possible values: yes/no)
- In some of the countries studied, State aid is differentiated according to whether it comes from the national budget or from EU funds. In this case, 5 data fields are used to describe the information about the financial framework.
- In case the ISCED data field of highest educational attainment is required, we also recommend the inclusion of data fields related to acquired micro-credentials. On the one hand, micro-credentials will become more widespread, as also supported by the EU Recommendation, and on the other hand, they can help to define the input requirements of training more precisely than with the help of a qualification obtained years earlier. We recommend at least 3 different data fields for the issuing micro-credentials. Additional data fields are required if additional information about micro-credentials (e.g., credit points or levels) is included in the ILA data model.
- The sensitive data of a specific individual belongs to the target group, which is also included in the ILA data model. The value set of the target group data field must match the target group values specified during the training.
- The individuals' current occupation influences the proposed training, so such a data field is also required in the ILA data model. The value set can be determined on the basis of ESCO. Based on ESCO, the occupation can be determined very precisely. If we focus on the main areas of the sessions, the ISCO-08's value set of 53 elements may be appropriate.
- In connection with occupations, it is absolutely necessary to divide occupations into two categories: the so-called white-collar and blue-collar occupations/job titles. However, we do not recommend having a data field covering this information as it may be considered as discriminatory.
- In our view, industry classification, either at the level of individuals or at the level of training, is not necessary in the ILA data model. The reason for this is that soft skills training is considered to be transversal, i.e. they can be developed regardless of sector.
- To enter the completed soft skills training, at least 6 data fields are needed (3 for the soft skill name and 3 for level), which can be used, for example, to specify the most recently completed soft skills training. It is important that, as described above, it is not possible to specify specific training, but rather competence areas and competence levels. From a value set perspective, this data field can take the same values that are used to categorise the training. For example, if a training course develops a basic green competence, then the soft skills training recently completed by the individual can also develop a basic green competence.

- Similarly to the soft skills training undertaken, the training that individuals want to undertake and the training recommended by enterprises can appear in the ILA data model following a similar logic.

4.2.4. Proposals for edited data sets for training participants

The suggestions for edited data sets for training participants are as follows:

- We recommend avoiding gender discrimination, i.e. the recommended ratio is 47-47% in both the 300-person and 600-person lists. The proposed proportion of individuals in the category of those whose gender is not known is 6%. We believe that by establishing the proportions, any anomalies arising from the issue can be resolved. When developing the data model, the consortium will discuss whether or not this proportion is acceptable.
- It is recommended that the year of birth be used to determine age. The age distribution in both the 300 and 600 samples is based on the background study: a minimum age of 18 years and a maximum age of 64 years is recommended, with the 40-49 age group having the highest proportion, between 10% and 20%.
- The matching of individuals with training courses is optimal if the existing competences of a specific individual match the input competence requirements of the selected training. From the perspective of the ILA data model, the extent to which we insist on matching individuals' existing input levels with those of the training is a decisive point. Practice gives a mixed picture: in the case of foreign language training, the levels defined by the EU Framework (CEFR) are followed by practice, i.e. based on input measurements, training enterprises can accurately determine what level of competence a person has and match them to the appropriate input level of training. In the case of other soft skills, the underdevelopment of the measurement system means that such a level of matching between people and training cannot be expected.
- When filling in the data field for geographical location, we run into the already mentioned problem of differences due to the target group. While in the case of an SME, both the 300-person training and the 600-person test datasheets may contain all the individuals within a geographical region, in the case of a national or EU-wide training programme, different geographical units must be assigned to each person. For example, the geo-unit assignment rate may follow the proportion of the population.
- When filling in the data field characterising the willingness to train, it is recommended that at least 80% of the individuals in the 300-person AI training data table indicate their willingness to participate in online training. If the proportion of disadvantaged people in the 300-line-table is high, then 80% may be lower – assuming that disadvantage is associated with a lower willingness to train online.
- One of the indicators of disadvantage may be, for example, that no soft skills training has been completed and there is no need for soft skills training. It is precisely in such cases that the emergence of public funding for training will be significant.
- Employment is also linked to completed training. According to the background study, a significantly higher proportion of employees participate in adult education. The concept of designing an ILA data model also appears here. If we focus on the corporate uses direction, then in both the 300-person and 600-person data tables the number of individuals in

employment will be overwhelming, while in the case of state funding the proportion of unemployed people will also be significant. The consortium is inclined to develop the data model biased towards public funding, leaving open the possibility of corporate contributions.

- Completed training courses have an impact on the training recommendations in the ILA data model: the output level of the proposed training should not be lower than that already indicated for the individual as completed training.
- An individual can be linked to multiple training courses in the ILA data model. According to the background study carried out within the framework of the project, the average time spent on training in a given year is between 30 and 40 hours, which should be considered when filling in the data fields. For example, one individual may attend one 30-hour training course, while another individual attends four 10-hour training courses in a given year. For both the 300-person (AI)trainer and the 600-person test data table, we recommend that no more than 10% of individuals complete more than 50 hours in a given year.

5. Good and unsuccessful examples

The aim of this chapter is to collect some good and unsuccessful approaches regarding ILAs, micro-credential-systems, soft skill frameworks or other related issues our project may learn from. This collection could not be exhaustive, as there are many good and less successful examples available worldwide, but it shows those projects which, for one reason or another, have provided important lessons for D-ILAs in the V4 countries: the example of the English ILAs highlights the importance of monitoring and quality assurance, the SPOCC project shows that it may be possible to assess soft skills, the TRANSVAL project shows how the validation process of soft skills should work, etc.

5.1. Good and unsuccessful examples regarding ILAs

5.1.1. SCOTLAND – ILAs and ITAs

The Scottish ILA funding scheme is often cited as an example of a well-functioning and user-friendly scheme with good governance and support services.

The implementation of the ILA Scotland scheme evolved over time and underwent a number of changes which, according to the 2007 assessment report, “corresponds with ILA Scotland’s objective of addressing financial barriers to learning and increasing participation of a more diverse or non-traditional group of learners”. The first ILA scheme in Scotland was launched in 2000, but despite its initial success, it was suspended and redesigned due to malpractice by some providers. In general, the scheme was open to any individual over the age of 18 residing in Scotland and offered funding of up to 100-200 GBP annually leading to a recognised qualification or certification.

The revised ILAs were in place between 2004-2017 in several variations based on the current needs, reflected in the selection of courses permitted (e.g. ICT), the setting of income limits for certain periods, and requiring a formal qualification/certification based on the Scottish Credit and Qualifications Framework (SCQF) until June 2007.

In 2017, ILAs were replaced with an Individual Training Account scheme (ITA) in order “to better meet the demands of the jobs market”, which transferred its focus to individuals in employment and increased the income threshold to 22,00 GBP.

The scheme covered up to 200 GBP for training courses meeting labour market skills demand. All courses under the ITA scheme had to correspond with one of the curriculum areas aligned to the Scottish Government's Labour Market Strategy - agriculture, business, construction, early years and childcare, health and safety, STEM, social care, and transport. Between 2017-2022 there were a total of 164,280 ITA applications, which resulted in 78,734 ITA courses booked and 59,778 claims made. **Benefits of ILA/ITAs schemes identified by several assessment and research reports:**

- contribute to shaping the demand and supply of the skills provision.
- fast way to use the public investment in skills development with a long-term impact on individuals and the economy.
- variations in the scheme set-up, e.g. the possibility to share training costs among various stakeholders, engaging employers, targeting various groups, and training areas, etc.
- support self-directed learning.
- develop a culture of lifelong learning.
- develop quality-assured, learner-directed provision by setting accreditation criteria for the providers involved.
- flexibility
- removing barriers for learning (most participants reported that they would not have undertaken training without ITA funding)
- helping people to find new and better jobs.

5.1.2. Voucher-based adult education scheme in Croatia

For years, the labour market has indicated a lack of qualified employees, but also the fact that the skills that workers have are not in line with the current needs of the economy. The unemployed are also unable to meet the expectations of today's labour market due to a lack of required competences. Taking into account all these indicators, and in order to encourage additional training and the acquisition of new skills among adults, the Croatian Ministry of Labour, Pensions, Family and Social Policy, in cooperation with the Ministry of Science and Education, launched a system of vouchers for adult education in April 2022. The Croatian Employment Service Department is implementing the voucher-based adult education scheme together with the Ministry.

The aim is to increase the participation rate in adult education in Croatia (in 2019 it was 3.5%, compared to the overall EU level of 10.8%) and to develop workforce's digital and green skills that will foster better coping with technological, social, and economic changes and lay the foundation for the long-term competitiveness of the Croatian economy.

The voucher-based adult education scheme was planned to include a total of 30,000 people over the age of 15 by 2026, who will become voucher-users in a 70:30 ratio; 21,000 for green and 9,000 for digital programmes. The Adult Education Act (2021) provided a legal basis for setting the criteria for the selection of competences required for work and for the selection of service providers, for awarding vouchers to participants in formal and non-formal adult education, and for designing the conditions and ways of using the funds.

Main criteria:

The target group:

- employed or unemployed individuals over the age of 15
- with the exception of:
 - a person currently in a regular education system
 - a student in higher education or science system
 - a pension scheme beneficiary under the general legislation of governing pension insurance.

The skills needed for career development, employment, and job retention are listed in the Skills catalogue based on the mapping analysis document "Methodology of mapping the skills needed for

digital and green transformation/transition of the economy". Educational institutions interested in developing training programmes and qualification standards can find there a list of all green and digital skills that are part of occupational standards registered in the Croatian Qualifications Framework Register.

The eligible training programmes, developed in accordance with the "Methodology for developing adult education programmes for the acquisition of micro-qualifications, partial qualifications, and full qualifications financed through vouchers and other sources of funding", together with the certified educational institutions, are available through an online voucher system.

The complex system is made up of:

- *Skills Catalogue*
- *Catalogue of eligible educational programmes and certified educational institutions*
- *Voucher platform* for submitting voucher applications. It supports the following types of users:
 - *Beneficiaries* who can register and create a profile and a user inbox where they can submit a request and answer questions which guide them through the application process.
 - *CES Advisor* responsible for processing and reviewing applications and coordinating the voucher granting process.
 - *Education providers* who do not use the platform directly but generate an offer for beneficiaries and, upon completion of the training course, fill in a questionnaire for the evaluation of the beneficiaries and their engagement in the training course which the application sends automatically.
 - *Employers* who do not use the platform directly but 6 months after the end of the training activity fill in a questionnaire for the evaluation of the beneficiary in order to assess the effectiveness of the training in improving the skills and work of the employee, which the application sends automatically. (This is a particularly notable good example. From empirical research (see Chapter 6) and other sources, it is evident that the assessment of training quality and measurement of the training's effectiveness is seen as a key issue, but at the same time, stakeholders often have difficulties with it (they have no tools/it is not performed etc.) Systematic feedback from the practice after the training is quite rare.)

The adult learners - voucher users independently choose the course they want to attend as well as the educational provider. The educational programme can last:

- up to 6 months for an unemployed person
- up to 10 months for an employed person.

The cost of the training course in the amount of the approved voucher is paid directly to the selected educational provider by the Croatian Employment Service (CES). The voucher can be activated within 6 months from the date the application is approved. When the price for the selected programme is higher than the voucher, the difference can be funded by the beneficiary themselves or by their employer.

Summary:

- Adult education is a top priority for the close cooperation of national authorities – the Ministry of Labour, Pensions, Family and Social Policy, the Ministry of Science and Education in Adult Education and the Employment Service Department.
- The Eligibility of a wide range of adult learners, 30,000 voucher users, of whom 40% are from vulnerable groups (12,000 users).
- The efficient use of funding (300 million HRK = 39.9 million EUR) from the National Recovery and Resilience Plan and the generous limit of one voucher per adult (10,000 HRK/1,329 EUR), which can make the scheme have a significant impact on adult education in Croatia.
- Focus on the highly relevant green and digital skills.

- Complex, online based and easy to use system, which allows for feedback to be collected from the training provider upon completing the training course and from the employer at a 6-month interval.

Links:

1. Skills Catalogue: <https://vjestine.hzz.hr>
2. Catalogue of eligible educational programmes and certified educational institutions: <https://vauceri.hzz.hr/katalog-vjestina/popis-vjestina-i-programa/>
3. Voucher platform: <https://vauceri.hzz.hr/>

5.1.3. ILAs (2000-2001) in the UK - an unsuccessful example

The main differences between countries that have adopted ILAs are mainly in the definition of eligibility for participation in the scheme, the level of the financial contribution (or source of funding) and the definition of the content of the training activities. The eligibility of providers is closely related to the content definition. Determining the eligibility of providers is appropriate not only to regulate the relevance of the content of the programmes, but also to verify the quality of the provision. The experience with the United Kingdom's ILAs points to the risk of potential fraudulent behaviour, which led to the rapid closure of the scheme in 2001.

ILAs were a flagship policy of the 1997 Labour government in the UK. ILAs provided a new universal right for all adults to receive state financial support to pursue lifelong learning and market-led arrangements were used to deliver this learning. Private learning providers were allowed to offer learning alongside public sector providers, as it was believed that their profit motive would lead them to develop efficient ways to deliver learning to non-traditional learners. Once introduced, demand for ILAs far exceeded expectations. The target of one million account holders by April 2002 was reached in May 2001 and demand continued to grow.

However, following "serious allegations of potential fraud and theft involving ILAs" (Department for Education and Skills, 2005), the scheme was closed in November 2001. A few successful prosecutions ensued. The adoption of lax accounting controls was cited as a reason for fraud being possible as well as over-spending. When a replacement scheme was subsequently introduced, the novel principle of universal financial support was abandoned.

The National Audit Office concluded that the operation of the scheme was not monitored properly – with over a quarter of the learners registered as having started training not doing so. There was no requirement for Capita (the Department's private sector partner in the scheme) to carry out spot checks on the eligibility of learning or to carry out basic validity checks on account holders. Moreover, because there was no exception reporting, the Department was unaware that some 13 providers had registered over 10,000 accounts and 20 had claimed payments of more than 1.5 million GBP. The database of account details was being improperly searched for unused accounts by a few unscrupulous registered learning providers who abused their legitimate access to the system to make claims on these accounts without the knowledge of the account holder.

The Department expected market forces to ensure that new providers would replace inefficient ones. This meant that the responsibility for identifying the most appropriate and good quality learning fell on the learners, some of whom are among those least able to compare and contrast options and determine what learning would suit them best.

"In some respects, this was a very good and innovative scheme: it was popular and encouraged many people to acquire or update much-needed skills. However, the speed with which the Department implemented the scheme resulted in corners being cut. Poor planning and risk management by the Department led to weaknesses in the system that allowed fraudulent activity to take place.

Furthermore, the Department did not keep an eye on the quality of the learning and the indications that a few unscrupulous providers were taking advantage of the inadequate security arrangements.” (Sir John Bourn).

Various evaluations of the UK's learning account models show that the intention to keep the programme as unbureaucratic as possible, while beneficial, is also its main weakness. In principle, a simple application to open an account was sufficient to achieve a significant increase in participation in learning and to reach target groups in education. It should be noted that these objectives were achieved in essence - participation was very high and participants (the actual ones) were mostly satisfied with the education provided. As the training providers also benefited from the programme and saw new business opportunities, they were heavily involved in the promotion. This motivation of the training providers was a significant factor in the majority of accounts opened. However, the openness of the scheme to any providers led to considerable doubts about the quality of the courses being reimbursed and the misuse of contributions. This was accompanied by overall poor programme management (unclear ownership of the programme, poor planning and organisation, undue pressure for speed of delivery and poor-quality management of courses and educators).¹³⁴

5.2. Projects to learn from

5.2.1. The SPOCC Project

SPOCC (Soft Skills for Personal and Career Development) is a project¹³⁵ to develop a comprehensive soft skills framework. Soft skills are non-technical skills that are essential for personal and professional success, such as communication, leadership, teamwork, and problem solving. The SPOCC project focused on creating a framework that encompasses various dimensions of soft skills, and provides individuals with a structured approach to assessing, developing, and enhancing their soft skills. The framework serves as a guide for understanding the different components of soft skills and their interrelationships.

The SPOCC framework consists of several key elements. Firstly, it identifies and defines a range of essential soft skills that are relevant in different contexts, such as the workplace, education, and personal relationships. These skills include effective communication, emotional intelligence, adaptability, creativity, critical thinking, and more. Secondly, the framework outlines specific behaviours and attributes associated with each soft skill, providing individuals with concrete examples and guidelines for developing and demonstrating these skills. This helps individuals understand how to apply the soft skills in practical situations. Thirdly, the SPOCC framework provides assessment tools and techniques to evaluate an individual's existing soft skills. This enables individuals to identify their strengths and areas for improvement, which can inform their personal and professional development plans. Finally, the framework provides resources, strategies, and activities for individuals to enhance their soft skills. These may include workshops, training programmes, self-reflection exercises, and real-world application opportunities. The goal is to empower individuals to continuously develop and refine their soft skills throughout their lives.

Overall, the SPOCC project aims to create a robust framework that promotes the importance of soft skills and equips individuals with the tools and knowledge to enhance their personal and professional

¹³⁴ Source: Možnosti zavádění osobních vzdělávacích kont: Přehledová studie. NVF for Confederation of Industry and Trade of the Czech Republic, 2018.

¹³⁵ https://softskills4.eu/wp-content/uploads/2019/05/SPOCC_Framework_Softskills4EU.pdf

development. We saw synergies between our Erasmus+ project and the SPOCC project; however, the platform¹³⁶ SPOCC colleagues' recommendations did not work for us, discussions are still ongoing.

5.2.2. The TRANSVAL Project

The TRANSVAL project is a research initiative focused on the development and implementation of transformative value frameworks. It aims to explore how value creation and evaluation can be redefined in the context of emerging technologies, societal changes, and environmental considerations.

The project recognises that traditional approaches to value assessment may not adequately capture the full range of impacts and benefits associated with complex systems and innovations. Therefore, TRANSVAL seeks to develop new frameworks that take into account broader perspectives, including social, economic, environmental, and ethical dimensions.

The TRANSVAL project is a multidisciplinary collaboration, bringing together researchers, experts, and stakeholders from various fields such as economics, sociology, philosophy, and technology. The goal is to foster a holistic understanding of value and develop innovative methods for value assessment and decision-making.

The project addresses practical challenges related to value assessment by developing tools and models that can be applied to different domains and sectors. These tools may include metrics, indicators, and evaluation methods that help stakeholders to assess and compare the transformative potential and sustainability of different options.

Additionally, the TRANSVAL project aims to foster dialogue and engagement among stakeholders, including policy makers, industry leaders, and civil society organisations. By incorporating diverse perspectives, the project aims to ensure that the developed frameworks and methods are inclusive, transparent, and align with societal values.

Ultimately, the TRANSVAL project aims to contribute to a more comprehensive and balanced approach to value assessment and decision-making. By integrating diverse dimensions of value and considering long-term sustainability, the project aims to support the development and adoption of transformative innovations that meet societal needs and aspirations.

Since we see synergies between the TRANSVAL and Erasmus+ projects, we presented information on our project to colleagues working on the implementation of TRANSVAL and discussions on how to cooperate are ongoing.

5.2.3. Data Space for Skills

The Data Space for Skills (DS4Skills) is a one-year project that aims to prepare the ground for the development of an open and trusted European Data Space for Skills that supports the sharing and access of skills data. It is funded by the European Commission under the Digital Europe Programme and involves 14 ambitious partners from the industry, education, and data ecosystem sectors.

Coordinated by DIGITALEUROPE, the DS4Skills consortium brings together 10 Full Partners and 4 Associated Partners with solid experience in building data ecosystems and communities, a wide

¹³⁶ <https://academy-softskills4.eu/>

network of stakeholders from diverse backgrounds, including researchers, training providers, and enterprises as well as associations representing industry and data ecosystems.

The Data Space for Skills (DS4Skills) Project¹³⁷ aims at developing a methodology for the categorisation and assessment of existing initiatives on skills and educational data. This lays the foundation for shaping the future data space for skills and education. So far, 108 initiatives were collected and analysed through an online survey.

Accordingly, a methodology is specified to categorise and assess the existing data sharing initiatives in the skills and educational domain. It supports the overview of the current fragmented landscape of existing platforms, services, applications, data spaces, and other initiatives. Also, it provides a baseline to identify the most promising initiatives for further interviews and analysis.

The categorisation of initiatives follows the method of qualitative data classification. A set of relevant parameters with clear definitions is established to classify and assess different types of initiatives. For example, how mature the initiative is, what type of stakeholders it represents, what level of interoperability it achieves, what needs it addresses, etc. In total, the methodology consists of 19 parameters.

A subset of these parameters is used to classify initiatives as in or out of the scope of DS4Skills as follows:

- Type of data: DS4Skills looks for initiatives that are skills data or education data specific – generic data initiatives are considered out of the scope.
- Active: DS4Skills looks for initiatives that are active – initiatives with no visible activity in the past 2 years are considered out of the scope.
- Maturity: DS4Skills looks for initiatives that are well documented – initiatives with no or very limited documentation are considered out of the scope.
- Geographical scope: DS4Skills looks for initiatives with a broad geographical scope – regional only initiatives are considered out of the scope.

Of specific interest the DS4Skills, and therefore always considered within the scope of the methodology, are initiatives that have already developed a data space, a data ecosystem or data standards for skills or education data.

5.3. National good practices in adult learning

Several valuable suggestions of good national LLL practices were obtained from the pool of experts interviewed in the framework of the empirical research (see Chapter 6). **Finland, Norway, Sweden, Denmark, and the Netherlands** were mentioned as countries with a good adult education system. According to one respondent, it is because a lot of money goes to the municipalities that organise education. As a result, everyone has the opportunity to choose anything almost for free. In **Ireland** and the **UK** there is community-based education where people are motivated by each other. This is supposed to be more suitable than conventional education.

In **Slovenia** there is a state-funded LLL centre in every city. In **Estonia** there are adult grammar schools in every city. Also, there are communities in small towns which, according to the respondent, play a

¹³⁷ <https://www.skillsdataspace.eu/library/methodology-for-categorisation-and-assessment-of-existing-initiatives-in-skills-and-educational-data/>

very positive role in supporting lifelong learning. There are also information campaigns on adult learning in those countries so that everyone knows about it, as a result there is a great increase in participation.

All the above-mentioned states claim that their approach is data-based. However, according to the respondent, they (probably) mean that they only calculated the societal benefits (what is the benefit of training an individual and what would be the loss if that individual ends up unemployed).

Another respondent adds the good practice of a nationwide network of VET providers under the umbrella of an association of adult education institutions in **Austria** or **Sweden**. These provide VET for the State, which publishes an annual catalogue of courses for adults.

Sweden is also cited as a good example of the use of ILAs. According to one respondent, an individual in Sweden has, for example, 700 EUR for work-related training.

In **Slovakia**, there is currently a "Don't lose your job, get educated" project, which allows adults, including employees, to receive a relatively high financial subsidy for the training course of their choice. Furthermore, in **Slovakia**, the civic association Aj Ty v IT is also active in the field of ICT skills development. It focuses on girls and women and supports them in developing a career in IT.

In **Germany** there are examples of mothers with children coming to the employment office and being taught how to code (programming).

Micro-credentials may be very interesting for **Ukraine**. Despite the current war, Ukraine was the first non-EU country to adopt or try to introduce micro-credentials into its system.

5.3.1. National projects and initiatives

Project BibEr (Austria) - Monitoring education-related careers (Bildungsbezogenes Erwerbskarrieren monitoring). The Federal Ministry of Labour and Social Affairs, together with the LO and the Statistical Office, evaluate the career paths of all those living in Austria after leaving formal education. Personal characteristics of individuals include education (type of school, field of study), age, sex, place of residence, employment history, current labour market status (employed, registered unemployed, in education, other) 1, 3, 6, 12, 18 and 24 months after graduation, job characteristics, economic sector, time to first job, income from employment. The data is published on the government portal Open Data Österreich¹³⁸.

The Standing Committee for New Skills (Austria) - In cooperation with social partners, the public employment service Arbeitsmarktservice Österreich (AMS) has set up the "**AMS Standing Committee for New Skills**" to support enterprises, employees and jobseekers in adapting to new trends in the world of work. In 2019, the AMS launched the New Digital Skills initiative. The aim was to identify the new requirements for employees and jobseekers against the background of the increasing digitalisation of the world of work, and thus to support the updating of initial and continuing education programmes. Information on the results of the workshops is available online¹³⁹, as is the resulting

¹³⁸ https://www.data.gv.at/katalog/dataset/stat_biber-monitoring-2017-bildungsabschlusse-nach-jahr-abgeschlossener-ausbildung-geschlecht-u

¹³⁹ The results of the individual workshops are available at <https://newdigitalskills.at/>

report¹⁴⁰ and the revisions of the occupational catalogues in the AMS online information system with regard to the required digital competences available online.

All about quality apprenticeships (Austria) - the IBW (Institut für Bildungsforschung der Wirtschaft) specialised portal is a great example of a one-stop-shop service for all those interested in duals, including foreigners, and can be considered a prime example of duals support.

The Qualification Vocational Courses Portal (Poland) – allows an individual to search the range of qualification vocational courses¹⁴¹. The portal provides basic information about the course, answers to frequently asked questions, and graduate evaluations.

ISTP database of job vacancies (Slovakia) - contains an offer of training courses, where the interested individual can find a course free of charge. In addition to offering the candidate a job position, a functional model should then recommend suitable qualification paths leading to that position, which this system does not allow. Also, as another respondent said, employers focused on this profile of the applicant during interviews and found it useful. The counsellor helps diagnose and identify a client's strengths. Although, the algorithm for matching education and job offers did not work well. It can be used, but very cautiously. Maybe now with AI it would be different.

The Education.sk portal (Slovakia) offers a wide range of course providers and their educational offers but lacks the quality assurance of these offers. It is only a functional business model, where the courses are displayed to the interested individual in an order that depends on the amount of the fee paid by the respective company.

The ISĎV database (Slovakia) - contains only accredited courses and it is not used to search for offers.

So-called **Centres of Vocational Excellence (CoVE, Slovakia)** could play an important role in education. They ensure cooperation with universities, organise i-VET (initial Vocational Education and Training) and c-VET (continuous Vocational Education and Training), and cooperate with employment offices. The training of a specific occupational group (e.g. painters) could be organised centrally. At present, this is only done through guilds, unions, and professional organisations. ILAs could also operate within such centres.

POVEZ (Czechia) – the programme of subsidies for enterprises to train their employees. It is based on projects and calls (funded by the EU). The advantage of this programme is its easy access and relatively long-term duration (enterprises are already familiar with it and have had some good experiences).

Nová šichta (Czechia) - a programme¹⁴² in which miners from abandoned mines were brought into the educational pathway for programmers (courses at University level). Most of them dropped out, but some remained and now they have well-paid senior ICT jobs.

So-called **Centres of Vocational Excellence (CoVE)** could play an important role in education.

¹⁴⁰ Bröckl A., Bliem .A. (2020) New Digital Skills. Eine Projektinitiative des AMS. Available at <https://www.ams-forschungsnetzwerk.at/deutsch/publikationen/BibShow.asp?id=13084&sid=804748524&look=14&jahr=2020&woher=1>

¹⁴¹ <https://kkz.edu.pl/oferta>

¹⁴² Nová šichta: <https://www.novasichta.cz/cs>

5.3.2. Private solutions

Scormium (Czechia): Learning Management System platform which integrates several applications into one. The company plans to offer software for employee training. It should also be possible for a company to create courses within it.

LearnerOn (Czechia): Learning platform.

Eastern Automotive Alliance (Poland): A multi-company cluster of automotive enterprises from the Podkarpacie region. These enterprises, in cooperation with universities, VET schools, and regional authorities, are engaged in educational policies at different levels, including policies for the development of adult competences.

Learning at Orange (Slovakia): To launch an educational social network for sharing experiences, ambassadors and internal influencers were invited to start creating content. For this approach to be successful, the company has to take care of it, people have to get used to it, and then use it.

Martinus or Slido (Slovakia): Enterprises with a good training culture. They try to focus on employee development and managers talk to people about what they want to do. If this is in line with the potential activity of the company, they will support it. For example, they had an individual who wanted to learn to take pictures. They paid for the course. And, after finishing it, he moved to another team where he used his skills. Successful and satisfied employees spread this internally, thereby promoting the corporate culture. Talent management is a top-down approach. This is more about an employee's interests, what they want to do.

5.3.3. Notable international examples of micro-credentials

Micro-credentials have been becoming increasingly popular in the last decade. There are currently many initiatives aiming to use micro-credentials for different goals in different countries and sectors. The notable international solutions described here will provide examples of different types of initiatives: public, private, and professional, higher education or lifelong learning oriented.

Because of the number and diversity of the initiatives, the identified solutions will be described in the following paragraphs without attempting to provide a classification. Instead, the names and keywords will be used to help readers navigate the list.

EU: European Approach to micro-credentials. Public policy.

On 16th June 2022, the Council of the European Union (EU) adopted a Recommendation on a European approach to micro-credentials for lifelong learning and employability. The Recommendation aims to support the development, implementation, and recognition of micro-credentials across institutions, businesses, sectors, and borders. Micro-credentials are a key priority in the new Skills Agenda for Europe.

The relatively recent Recommendation signifies that projects and initiatives related to micro-credentials in national and international initiatives will be supported. The EU policy documents indicate the relevance of the link with funding schemes and supporting mechanisms for adult and lifelong learners (especially ILAs).

Ireland: National Institute for Digital Learning and the micro-credential observatory

The first relevant example in Ireland is the [Research Observatory on Micro-Credentials](#). It is an initiative of the National Institute for Digital Learning (based at Dublin City University) created in partnership

with the European Consortium of Innovative Universities. The initiative aims to provide a curated and regularly updated collection of key reports, policy initiatives, and research-related publications on the growth of micro-credentials in HE and lifelong learning more generally.

In 2021, the NIDL launched a facilitated MOOC through the FutureLearn platform ([Higher Education 4.0: Certifying Your Future](#)) to support and explore the growth of micro-credentials.

Micro-credentials in Ireland receive government support, e.g. 12 million EUR via the Human Capital Initiative to develop a national micro-credential system for universities (2020).

Australia, The National Micro-credentials Framework

The Australian Department of Education has consulted with the broader tertiary education sector to develop the National Micro-credentials Framework. The framework's goal is to provide greater clarity and understanding within the tertiary education sector and among learners as to the value and recognition of micro-credentials.

The framework is seen as a tool to promote transparency, consistency, and objectivity in the sector around credit recognition arrangements and the portability of micro-credentials. The National Framework is available online ([here](#)).

New Zealand, Register of Micro-credentials.

The New Zealand Qualifications Authority (NZQA) has been piloting micro-credentials and the possibility of aligning micro-credentials with their Qualification Framework. Micro-credentials are part of New Zealand's regulated education and training system. This is an important step towards the transparency of micro-credentials, since they are registered and available to download and browse online in the [Register of NZQA-approved Micro-credentials](#).

Since 2019, public funding for higher education institutions' micro-credentials initiatives is available.

Canada, official credential wallet for post-secondary learners and graduates.

In 2020, the Association of the Registrars of the Universities and Colleges of Canada (ARUCC) announced that it will create a national credentials network in partnership with Digitary (an Ireland-based company). The initiative, called MyCreds™, is an online platform and national credential wallet for post-secondary learners.

The Canadian platform places a strong emphasis on assuring interoperability and trust-building. MyCreds™ provides access to data and enables the request and delivery of transcripts, diplomas, credentials, badges, and other academic documents to learners, employers, government offices, and others. The platform is recognised as the official platform for document and credential verification.

Private initiatives of transnational corporations. Business, private.

IBM offers badges through its own micro-credentials IT solutions (SkillsBuild). The company provides development opportunities to its employees through its partnership with Coursera. Some of the courses and badges are available publicly. IBM has established a partnership with North Western University so that IBM badges can be used towards professional master's degree programmes at the university. Additionally, the company is an active partner to public institutions in supporting digitalisation and micro-credential development in various countries.

In 2018, Google launched an Online IT support certificate through Coursera and created a consortium of more than 20 employers interested in hiring graduates. More recently, Google has launched its Career Certificates, designed to develop job-ready skills without the need to attend a college or university. Currently, many Google credentials are widely recognised in specific sectors using Google tools, most notably in the digital marketing sector.

In 2019, Amazon decided to retrain 100,000 of its employees outside the traditional education system using its credential programmes. As of October 2022, the AWS (Amazon Web Services) learning platform has trained more than 13 million people with free cloud skills training (according to the AWS webpage). Specific learning programmes for various learners groups, roles or topics can be browsed on the [AWS webpage](#). The badges are hosted on a third-party platform, Acclaim by Credly.

Other technology enterprises, such as Siemens, Microsoft, and CISCO, also use micro-credentials to promote their technology and develop potential employees, as well as for the social good.

Global MOOC's platforms. Public-private, open education.

Since 2011, when the first MOOCs were launched at Stanford University, the popularity of massive open online courses has grown massively and remained popular, becoming a relevant source of credentials worldwide.

Since then, more than 1,200 universities around the world have launched free online courses, according to a report by Class Central. In addition to the larger global MOOC platforms (Coursera, edX, FutureLearn), many national governments around the world have launched their own country-specific MOOC platforms.

The courses and credentials offered via MOOCs differ in duration and cost. The table below presents a comparison by type:

1. Table: A comparison of MOOC-based micro-credentials by type

Microcredential Type	Price	Months	Lowest Minimum Effort /Week	Highest Maximum Effort Per Week
Coursera Specialization	\$27- \$636	1-15	1 hour	40 hours
Coursera MasterTrack	\$2,000 – \$3,474	4-6	4 hours	15 hours
Coursera Professional Certificate	\$406 – \$5,980	4-8	8 hours	10 hours
edX XSeries	\$90 – \$594	2-10	1 hour	10 hours
edX MicroMasters	\$536 – \$1,500	3-15	2 hours	20 hours
edX Professional Certificate	\$68 – \$2,340	1-15	1 hour	13 hours
FutureLearn Program	\$147 – \$1,685	2-12	2 hours	6 hours
FutureLearn Graduate Certificate	\$6,406 – \$11,613	6-12	Not given	Not given
FutureLearn Graduate Diploma	\$15,320 – \$19,689	12	Not given	Not given
Kadenze Program	\$300 – \$900	2-7	6 hours	12 hours
Udacity Nanodegree	\$199 – \$2,400	1-8	5 hours	15 hours

Source: Brown, M., Mhichil, M. N. G., Beirne, E., & Mac Lochlainn, C. (2021). The Global Micro-Credential Landscape: Charting a New Credential Ecology for Lifelong Learning. *Journal of Learning for Development*, 8(2), 228-254.

Europe, European Learning Model. Data interoperability.

The European Learning Model is a semantic standard for describing metadata about learning. It is openly licensed and intended to be used by any stakeholder in any education, training, or employment context, that needs to describe learning data such as:

- qualifications and learning opportunities.
- qualifications standards such as core vocational profiles

- credentials awarded to individuals describing their learning activities, achievements, entitlements, and/or associated assessments.
- accreditation and licensing of courses, programmes, and institutions
- recognition of qualifications and credentials
- personal identity information and student membership/enrolment in educational institutions.

The recently released third version of the ELM links various standards used for education: ELMO/EMREX (a HE data transfer system used for student mobility), Qualifications Metadata Scheme (QMS), Learning Object Metadata Standard, Schema.org Courses, PLOTEUS learning opportunities data model, Open Badges, and ISO/CEN Standards.

The ELM is available in 29 languages of the European Education Area and in the languages of the candidate countries. The model can be used in various applications, such as to develop skills assessment tools, provide suggestions for learning pathways, career guidance, and other types of automated guidance systems.

The ELM consists of relations between concepts, which together create an ontology. This means that there is a controlled approach to the categories used to structure data, allowing, for example, to identify whether “learning outcomes” used in the context of a course are the same concept as “learning outcomes” used in the context of a qualification. This allows the creation of knowledge graphs to explain relationships between data, which can be used for many purposes.

The ELM is available on GitHub ([here](#)) and conforms to the [W3C Verifiable Credentials Data Model](#).

United States, Credentials Engine. Credentials Transparency Description Language. Credential Registry, Credential Finder.

Credential Engine is a non-profit organisation on a mission to map the credential landscape with consistent information and facilitate the creation of resources that empower individuals to find the best pathways. Credential Engine provides web-based services: a centralised Credential Registry, the Credential Transparency Description Language (CTDL), and a platform to support custom applications to search and retrieve information about credentials (Credential Finder).

Credential Engine grew out of the Credential Transparency Initiative (CTI), which was launched in 2013. CTI’s mission was to research and initiate the development of a centralised registry of credential information, a common credentialing language, and a credential search engine. This effort was led by the George Washington University’s Institute of Public Policy (GWIPP), Workcred – an affiliate of the American National Standards Institute, and Southern Illinois University (SIU) Carbondale’s Center for Workforce Development, with support from the Lumina Foundation. Credential Engine was formally founded in December 2016 to operationalise the work of CTI, with the support of Lumina Foundation and JPMorganChase&Co.

The Credential Transparency Description Language (CTDL) – is a set of interconnected standards for making descriptions of credentials and other resources available as data for search and discovery and cross-system interoperability. CTDL can be seen as an ontology of terms related to micro-credentials (high-level ontology linked with controlled vocabularies).

The Credential Registry is a cloud-based repository of linked open data resources published using CTDL JSON-LD. The Credential Registry contains detailed information on all types of credentials and qualifications. Users can explore competences, learning and employment outcomes, current market values, and career pathways and reference data on credential attainment and quality assurance in

schools, professional associations, certification organisations, the military, and more. This data is a dependable and powerful source for systems, web and mobile applications, and other tools. The data is available via API.

The power of the CTDL comes from the fact that every term has a semantic meaning and from using a model based on specifications for the semantic web. This means that the CTDL is designed to include terms for linking data. The CTDL's linked data structure allows questions such as how much a credential costs, how long it takes to earn it, requirements for enrollment, courses required, transfer value, preparation for other credentials, jobs it prepares people for, career options, outcomes, and more to be answered.

The [Credential Finder](#) uses language models for search purposes. The application, available online, serves as a demo for providing custom products for third parties who would like to build their credential finding applications.

6. Empirical Research Report

In order to better understand how adult education in the V4 countries functions, an extensive qualitative interview survey was conducted. The objectives of the survey were to identify skill needs and approaches to soft skills, typical target groups in adult education systems, and the motivations of learners, educators, enterprises, and government bodies. A further aim of the interviews was to find out whether adult education stakeholders use digital tools to support appropriate choices in adult education and what their attitudes towards such tools are, and whether and how they would be willing to collaborate on a tool that is being developed within the project. We also used this opportunity to establish contact with individuals and institutions with the potential to contribute to the project, especially in the pilot phase of the project outputs.

The great advantage of qualitative interviews is that they can uncover developments/challenges which may fly under the radar of large quantitative surveys. The qualitative approach means that no generalised conclusions can be drawn. Instead, we attempted to uncover some aspects of the complex landscape of adult learning (with specific reference to soft skills) and how it is being promoted, especially in enterprises and to the public. This report provides an analytical summary of the main findings of our research, their context, and the possibilities of their practical application for the purposes of our project.

6.1. Methodology

In April and May 2023, 42 in-depth interviews were conducted in all 4 participating countries: Hungary, Poland, the Czech Republic, and the Slovak Republic. The target group included adult education experts representing enterprises, adult education providers, public/governmental institutions (mainly public employment services), and national and international institutions, as well as independent experts in the field of adult education. The interviewees included 18 company representatives, 15 representatives of public institutions - including PES, 7 representatives of educators – enterprises providing education for business, and 4 international adult education experts. Some respondents have experience or are currently active in more than one role and could therefore be classified in more than one category. All were assured that the information they provided would be published anonymously, with no link to their identity or institution. The interviews were conducted in person or online, depending on the preference and availability of the interviewees and the interviewer teams.

To conduct the interviews, a semi-structured interview guide was prepared, based on key interview topics, with the possibility of elaborating on related topics and questions. A modified version was prepared for international experts, as their specific role did not cover all the areas of the regular interview. (See Annex)

In line with the conceptual approach of the D-ILA in the V4 project (see chapter 3.4), the respondents were specifically asked not only about soft skills, but also about three other concepts that are related to soft skills and are considered to be highly relevant in the context of the D-ILA project: ICT skills, language skills, and green skills.

To ensure the quality of the interviews, an online training session was organised to prepare interviewers from all participating teams. It contained information on how to select respondents, use the interview guide, conduct interviews, and record interview information. Given the qualitative nature of the in-depth interviews, there was no requirement to ask all the questions in detail, instead the interviewers were free to explore the topics where the respondent was able to provide the most valuable information with respect to the interview goals and, on the other hand, skip some less exploitable topics in the particular interview, taking into account the time constraints of the respondent.

The memos of the interviews were taken in the form of written notes recording the relevant responses. The notes were translated into English in order to ensure a consistent analysis. The information gathered was evaluated according to the key themes. In doing so, we focused on recording both the most common and typical responses, however, we did not omit unique but insightful responses and those that provided relevant context.

At the analysis stage, where relevant, the responses were categorised either by country, or by stakeholder group (enterprises, educators, public representatives or PES). This method provided additional insights into their different perspectives on the issue. The evaluation below summarises the result of the analysis of the research and therefore reflects the opinions and experiences of the respondents, not necessarily those of the project team.

6.2. Summary and recommendations

The participating countries share a lack of a systemic approach to adult education. There is a rather well-established sector of private training institutions everywhere (although there are notable differences between countries), but other than private (for-profit) providers, who are generally not dominant in the field of soft skills, these types of courses are not very accessible to individuals. There is often a lack of a system for searching the full database of courses, providers, and other information on adult education. There is also a lack of a system for quality assurance and the labelling of courses and adult education providers, as well as a lack of service and counselling for those interested in learning.

The accessibility and barriers to adult education described here reflect individual perceptions. Some of these perceptions may be based on misconceptions, but they remain relevant causes/determinants of behaviour. It could also be described as an opinion and a set of concrete experiences from representatives of key stakeholders in the field of adult education and in different countries. These experiences are valid, valuable, and representative of the types of experience and ways of functioning of adult education in the V4 countries. A more comprehensive view of the issue of adult education in Central and Eastern European countries was provided by an ETF expert, who pointed out that from their experience with these countries, and also on the basis of statistics, there is a typical pattern

influencing participation in adult education. Usually, these groups of individuals participate in adult education:

- 1) individuals living in cities and developed regions (urban residents)
- 2) individuals with mostly traditional work contracts (employees)
- 3) individuals with higher levels of education (university graduates).

From this perspective, non-privileged groups can be identified as those residing in smaller settlements and non-industrial areas, those with disadvantaged employment contracts and irregular working hours, and individuals with educational qualifications below university level. These groups often face challenges in accessing and participating in adult education, which requires special attention and support to ensure inclusivity in the educational landscape.

Acknowledging these barriers and the importance of addressing the needs of non-privileged groups is essential in promoting equal opportunities and enhancing the overall shape of the adult education sector in the V4 countries and the broader CEE region.

From the perspective of our project, organisations and individuals who currently lack services and resources can be viewed as an opportunity. Our project's outcome/tool can partially fill this gap and contribute to improving the accessibility of adult education. By addressing the needs of those who face barriers to accessing education, we can contribute to shaping a more inclusive and comprehensive adult education sector.

The situation in adult education seems to vary considerably when looking at different types of training providers:

- 1) **Employers** have the capacity to offer the necessary training, but the effectiveness of identifying training needs varies. Generally, larger multinational enterprises, with access to shared knowledge and software tools to track the training and development needs of individual employees, are better able to do this. Our tool, as a *“data-driven approach to adult learning”*, is likely to be of greater interest to SMEs.
- 2) **Private individuals** have diverse options for understanding their educational needs. Professionals, managers, and those with higher levels of education tend to have a better understanding of their training needs and are relatively adept at finding and funding suitable training opportunities themselves. They may also seek guidance from career counsellors or recruitment agencies. This group also benefits from a wider range of training options, particularly those available in English. Employers also offer education to these groups.

However, the situation is less favourable for those with lower educational qualifications, limited English proficiency, or who are unemployed, disabled, or otherwise disadvantaged. They often face financial constraints and struggle to afford educational expenses. While private education providers are willing to offer training to this group, public employment services primarily address their training and counselling needs.

Especially for the latter group, it would be more advantageous to use the tool with the assistance of public employment services, or to prepare very explicit and simple instructions, instructional videos and, last but not least, to optimise the user environment as simply as possible. For more educated and oriented users, there should be, for example, an option for enhanced data entry about themselves and their educational goals and preferences.

- 3) **The State** plays various roles in adult education. As an employer, it is responsible for the training of its own employees. This entails complying with statutory requirements for further training, such as those applicable in the healthcare sector, as well as complying with career regulations within the civil service and ministries. In addition, the state acts as a provider of training to the general public through public employment services. These services provide guidance on pursuing adult education and assist individuals in selecting suitable educational paths. They also provide educational opportunities through retraining programmes and other courses. Typically, these programmes are (co)funded to ensure affordability for citizens. The main target groups for this type of education are the unemployed, individuals with a low level of education, individuals with various disabilities (including health-related impairments), etc.

An example from the Czech Labour Offices demonstrates that certain state service institutions could benefit from using tools to facilitate the selection of adult education opportunities. Despite having access to an information system called "OKsystem", which contains comprehensive data about registered jobseekers, the Czech Labour Offices do not use any software to match individuals with appropriate training opportunities. This presents an opportunity for our project's outcomes to make a positive impact.

A positive for the development of adult education is the growing awareness of the need for adult education and the development of soft skills, and the ability of private enterprises to organise the necessary training.

Respondents provided a wide range of insights into **how enterprises manage the decision-making processes related to training selection for their employees**. Employers (managers) typically have the final say, although employees also have their say. The key issue here is the commitment to soft skills training at management level, their awareness/experience/opinion on whether soft skills training pays off or not (i.e. the effectiveness of the training). This implies an important issue of measurement, which includes (a) **measuring the quality/quality assurance of the training**, and (b) **measuring the efficiency**. The efficiency of the training is company-/job- specific, as even high-quality training may not be "the right choice" for the specific situation. Enterprises often lack tools and processes to measure the effectiveness of training.

Respondents spontaneously commented on soft skills as such and pointed out the **specific characteristics** that need to be taken into account when applying data-driven approaches:

- **Soft skills are difficult to categorise and measure** (including problems of generalisation and levelling). They are much more "elusive" than hard skills.
- **Soft skills are often mixed with personal characteristics and attitudes** (or even values). This means that they may not be easy to change/develop as it involves changing one's personality in some cases.
- **Soft skills are more difficult to teach/learn than hard skills**. The teachers/trainers must have the soft skills themselves. It was emphasised that the quality of the trainers plays a key role.

A valuable outcome in this context is the recognition of the need to use less vague terms (such as transversal competences) and to provide an extended operationalisation of soft skills.

In relation to the above, two important **current challenges** emerged which shape the way respondents think about soft skills development now and in the near future:

- (1) **Efficient soft skills training is crucial.** Though very common and widespread, soft skills training is often not seen as efficient/well targeted as hard skills training. Employers do not have the adequate skills/tools to assess soft skills needs and to tailor training to the individual conditions of participants. Many soft skills needs are subtle, complex, individual, and difficult to identify, while the employees frequently receive somewhat standardised/generalised training that may miss the point.
- (2) **AI development may require changing our approach to soft skills.** Although there is not yet a clear idea of how the concept/approach will be transformed, there was a strong opinion among experts that some rethinking would be necessary. Soft skills and ICT skills could be merged to a large extent. This also has many implications for training schemes. In the future, there will be AI-based tutorials, educational services, and consulting. The AI may replace or amend some of the soft skills. Soft skills to work with and develop the AI systems would become crucial (e.g. critical thinking, evaluation/verification of information, ability to ask the right questions), while other skills may become less important (e.g. literacy/grammar, basic programming).

Soft skills are generally seen as crucial for the current and future labour market. It was not easy for respondents to assess which of them are the most important. It was frequently stated that they are all interlinked and/or that they depended heavily on the context (e.g. on nature of the job). Nevertheless, in summarising the responses, certain soft skills consistently emerged as **the most important**, namely:

- Teamwork and communication
- Ability to learn
- Adaptability/flexibility
- Problem solving/critical thinking

Two prominent strong trends (“hot topics”) have emerged, demonstrating a changing societal landscape that highlights new skill requirements:

- (1) **Diversity and inclusion skills.** There is a need for employees to have the awareness and skills to communicate and work in an environment of rising cultural, linguistic, and other diversity, which is seen as an inevitable development and a condition that enterprises are already experiencing in practice (especially in relation to increasing multinationalism and multiculturalism). Also, skills related to gender issues were mentioned as important, in connection with attitudes: behaviour that overcomes stereotypes that some work is “male” work and some is “female” work.
- (2) **The well-being and mental health** of employees is receiving much more attention. The enterprises involved are seeing an increase in levels of stress related problems among their employees. As a result, the skills to manage stress and to take care of one’s own well-being are seen as increasingly important. Opinions were expressed that the wellness related activities (such as yoga, education taken up as part of leisure activities, etc.) should be offered not only as a benefit but as a necessity to maintain good mental health and adequate work performance.

Respondents' views on the importance of **ICT skills** were unanimous. ICT skills are absolutely crucial for the current labour market and will be even more so in the future. The need to develop them is universal, but there are big differences among various groups. One particular group – the manual (low-skilled) workers received mixed assessments. Many opinions suggest that they need (or will need) ICT skills as the technologies permeate their work. Nevertheless, there is also some evidence from the

data suggesting that the respondents themselves do not report the need to upskill in this area. This may mean that they are either unaware of the need for such skills or that they do not currently need ICT skills in their work.

In general, respondents identified the following as the **most important ICT skills**:

- ICT/Internet Security
- skills related to databases and networks
- web and multimedia development including graphic design
- AI
- programming
- Microsoft Office: **may** be automatically expected for any job – may be a serious employability issue if an individual lacks this skill

An **emerging trend** was also identified pointing to the **need for ICT skills to be complex, interlinked, and combined with other soft skills**, especially cognitive skills – to be able to formulate assignments, evaluate the information with critical thinking, validate results, develop and use new tools such as AI, which will be a key factor in reshaping the ICT skills landscape in the future.

In the area of language skills, **English language** was reported as absolutely essential, overshadowing the role of other foreign languages. Nevertheless, the situation in practice is more complex. There are many jobs, where English is advertised as a requirement but is not really needed in practice, leading to employee dissatisfaction. The growing role and improving quality of automatic translators may also reduce the importance of languages in the future.

On more than one occasion, concerns were expressed about the difficulty of conceptualising or dealing with **green skills** training. Green skills are difficult to measure and their training is often not considered effective/viable as separate training. The single **most important concrete green skill** that emerged from the interviews was the ability to apply **energy efficiency (or energy awareness)**.

In terms of the skill needs of different **occupational groups**, there was one unifying element: the need for ICT skills appropriate to the group, as digital technologies permeate all types of jobs.

There were varying opinions about the soft skills training for **manual workers**. On the one hand, teamwork and communication were seen as necessary for them, on the other hand, several enterprises expressed the opinion that manual workers do not need soft skills training, only the hard skills development. In line with this, there was a comment about on-the-job training being typical and regarded as sufficient for this group. This reflects the different roles of the stakeholders (and thus the different objectives of adult education in general) in relation to society, as non-company respondents (especially from the public sector) emphasised several times the importance of soft skills training, specifically for low-skilled individuals, who tend to be excluded from training in enterprises.

For **administrative workers**, keeping up with ICT developments was seen as the most important, along with management and organisational skills, including a broader/systemic understanding of in-company processes.

For **service workers**, social competences such as communication, assertiveness and conflict resolution skills, and mental hygiene were considered essential.

In the case of **specialists**, a more sophisticated understanding of ICT is expected compared to other occupational groups, as well as the need to combine it with work involving information and critical thinking. In terms of social skills, interdisciplinary communication outside of their narrow specialisation was emphasised.

For **managers**, the enterprises provided the most information of all occupational groups, reflecting the fact that this group routinely receives soft skills training and enterprises have a good overview of it. They identified the following skills as crucial for managers: Leadership and managerial skills, interpersonal skills, cooperation and communication skills, creative thinking and constructive problem solving etc. Representatives of public institutions and educators added an important aspect of the need to develop democratic management approaches.

The majority of enterprises reported that **professional training is provided more often than soft skills training**. Most of these were businesses whose activities were closely related to various types of technology. Top management/head office, middle management and sales/customer service are the departments most often regarded as the primary target group for soft skills training in enterprises. It was noted that the demand for soft skills training is cost sensitive and therefore employers usually target only selected groups of employees. *If the ILAs were in place, employers would be more likely to support their employees and allow them to attend soft skills training.*

Foreign languages and **ICT** seem to be the most common soft skills training in terms of the content. This applies for enterprises as well as for the PES (CZ), where driving licence training is also very common (CZ, PL). In addition, enterprises also provide training in **social skills** such as communication, teamwork, conflict management, etc. Nevertheless, other soft skills training is also quite common.

Enterprises perform **training needs analysis**, but they are **not systematic** and are based on **individual personal or managerial assessment**. SMEs usually do not develop their own training, although they may join forces with universities or vocational training centres. The following approaches to training needs analysis were identified:

- Usually, there is no systematic, unified in-company system of determining training needs, but individual development/training plans are created.
- Training needs are derived from the strategic (or more general) objectives of the enterprise.
- Enterprises employ various internal and external applications and tools to support their training initiatives (e.g. 180/360° feedback questionnaires, SAP training module etc.)
- Training is closely embedded in the company's practice with managers themselves training their employees, or there is a specialised staff who organises training.
- Skills forecasting tools are not commonly used, enterprises tend to concentrate on their current or ad hoc needs.
- Training providers (what they offer) helps to shape the training selection.

A different role for **trainers** reflected different approaches to the training courses' development. The following were mentioned:

- Training enterprises perform market research that may vary from sophisticated to more informal.
- The learning needs of the client (usually the institution, but also individuals) are the primary guideline when developing their courses.
- Eligibility for public funding is an important criterion for training providers.

The exact process of identifying the training needs of their clients was not specified in detail by the trainers. As far as the PES experts are concerned, they usually rely on individual interviews with their clients and no sophisticated data-driven approaches were reported.

Taking into consideration a few insightful comments from other respondents that neither individuals nor their employers may be able to define their training needs well (especially in the field of soft skills), there is a **possible threat of inefficiency** here. It seems that in many cases the training provider relies on the instructions of the client company (“the client knows what they want”) while at the same time the company may rely to some extent on the provider, expecting them to effectively address the issues of their employees (“the trainer knows what they are doing”). In the end, the mismatched training proves inefficient, leading to frustration for the employer, employees, and provider alike, as reported by a significant number of respondents (see above). The role of **proper matching and in-depth training needs analysis is crucial** here.

The most common barriers identified during interviews with **individual participants** could be summarised as follows:

- **Time constraints:** Lack of time is a significant barrier. Adults, especially employees, often have busy schedules and find it difficult to make time for training. Balancing work, family responsibilities, and personal life makes it challenging for individuals to engage in adult education. Additionally, limited staffing within enterprises can also contribute to a lack of time available for employees to participate in training.
- **Financial constraints:** For both employees and employers, financial constraints can impede participation in training. Training programmes are often the first to be cut when a company faces profitability issues.
- **Problems on the employer's side:** Factors such as company size, management attitudes, and a lack of human resources can create barriers to training. Decision-makers may not be convinced of the value and monetary benefits of investing in soft skills training.
- **Lack of information:** Many interviewees cited a lack of information and awareness regarding available training opportunities and their potential benefits. Insufficient information leads to a lack of interest and motivation to participate in training programmes.
- **Lack of motivation:** Various barriers relate to individuals' motivation to engage in training. Some individuals may believe they already possess sufficient knowledge and skills or have had negative experiences with ineffective training or poor training choices. Others may view training primarily as a social occasion and be sceptical about the benefits of soft skills training.

- **Personal and family reasons:** Difficult personal circumstances and family responsibilities can reduce an individuals' motivation to pursue adult education. However, older age groups may be more motivated due to the fear of job loss and the desire to stay up to date.
- **Infrastructural barriers:** Transport and housing challenges pose significant obstacles, particularly for individuals with lower skills, low social status, poor economic circumstances, the unemployed, and mothers. Expensive housing in urban areas and limited public transport networks outside the cities or in geographically remote areas hinder mobility and access to training opportunities. Additionally, the lack of adequate childcare facilities can be a barrier.
- **Low qualification:** Factors that usually correlate with low qualifications, such as low self-confidence, lack of knowledge about labour market trends, inadequate language and IT skills, limited mobility, and physical fatigue can impede participation.
- **Lack of educational culture, public awareness:** Insufficient promotion and dissemination of information about training programmes and a lack of social value of adult education contribute to people overlooking the potential benefits of adult education.

Addressing these barriers requires a comprehensive approach, including increased awareness, improved access to information, tailored support for disadvantaged groups, and a proactive educational culture that emphasises the importance of lifelong learning. Community support plays a vital role in addressing the needs of the vulnerable groups, including the provision of basic skills training, ongoing mentoring, communication, and community engagement.

The decision process of **matching learners and courses** is not a single step process. There is a hierarchy of decision steps: some factors are regarded as the most important, and others play a secondary role. Different respondents present a different hierarchy of decision-making factors. This reflects the role of each stakeholder in society. Representatives of public institutions emphasised the non-discriminatory approach to education, which is seen as everybody's right or as a way to improve an individual's participation in society and well-being. The "life story" of candidates, their personal "dreams" and their motivations play a key role in this context. On the other hand, enterprises more often emphasise the practical aspects of job performance and what is needed to improve and seek career steps for employees that are beneficial for the company.

Among the **measurable characteristics** of learners that are the most important for making a good decision about the training to be recommended to them, the following are reported as the most important:

- **Job/profession/position in the company** (content of the work the candidate actually or will need to perform in the future) – may include previous work history, department in the company and the level of the position (junior/middle/senior).
- **Previous level of skills/competences** – level of expertise and work experience, previous courses taken, discrepancy between the initial skill level and the requirements of the specific job position. The existing skills level is more important than the formal qualifications.
- **Educational attainment** – may include initial education and qualifications.

In addition, the **other (“soft”) characteristics**, which are not easily measurable and require more sophisticated methods to assess, play a key role, according to many respondents even more crucial than the demographic characteristics:

- **Individual preferences** of the person (goals, ambitions, “dream job”, aspirations etc.) The profession is important, but the personal choice is crucial – e.g. whether the person looks for training in line with their current position, or whether they want to progress in their career or change their current job. Professional guidance and help with matching may be needed as not everybody is clearly aware of these personal inclinations.
- **Attitude to education** (inner motivations) – either to the education in general or to the specific course offered. Without individual commitment, education will not be effective.
- **Learning ability** – the potential to learn
 1. Learning style
 2. "Cognitive fitness" (are they used to learning or have not learned for a long time?)
 3. Ability to put the knowledge and skills learned into practice

In relation to the data model development, the results imply some **important questions/suggestions** to consider:

- **The general purpose of the training** is a very important factor. From this point of view, significantly different training recommendations can be made for the same individual. The questions here are e.g.: Who should benefit most from the training – the individual/the company/society? Often these interests coincide, but sometimes they do not (e.g. the questions of whether manual workers need soft skills training or not). Whose criteria should prevail (an employee/the employer/the State)?
- **Should the learner’s role be more active or passive?** This concerns not only the choice of training as such, but also identifying the individual’s skills needs/gaps. It was commented that in some cases the candidates are not able to realistically evaluate their own skill level (or even their future ambitions). Enterprises may also struggle to define their employees’ skill needs well. There is considerable scope for professional help and quality tools.
- **Can assigning training according to demographic characteristics be negatively discriminatory?** Closely related to the universal societal goals were comments highlighting the risk of excluding certain demographic groups from training when applying these criteria in the model. The example of age was illustrative: if age is used as a criterion, is there risk that we limit access to training for some groups who would need it? Or, on the contrary, does it represent a potential to help especially those who need it most?
- **Profession** appears to be the most important factor for training recommendation, but a more complex approach is needed. The time/intention aspect needs to be taken into account: is the training intended to improve an individual's performance in their current job, or to qualify them for a position one step higher on the career ladder in the same profession? Or is the goal to transfer to a different profession?
- How (if at all) should the **key factors that do not concern learners** be incorporated in the model? E.g. the quality/suitability of training, labour market characteristics in the given region.

- The model can be developed into an **application for capturing the learning process**: *“An attractive, simple, and clear application where you could create your own mini-project to track your own progress could be helpful.”*
- **Dividing learners into groups according to their needs**, not according to demographic characteristics, may be advisable.
- A **targeted approach** was strongly recommended in order to limit the otherwise very wide scope of the adult education landscape – e.g. to people who have difficulties with orientation. In the previous texts, we have addressed the question of choosing an appropriate group of adults to use our tool on several occasions.
- **We should consider how to adapt the model to at least some groups that are disadvantaged in adult learning.** These may include non-privileged groups such as those residing in smaller settlements and non-industrial areas, those with disadvantaged employment contracts and irregular working hours, and those with educational qualifications below university level. Family life and stages in the life cycle could be taken into account, as they may strongly influence the choice of a particular form of adult education, field of study, appropriate length and form of training, time of day and budget, and need for childcare. The situation of parents and carers is even worse. Information about the appropriate form and duration of learning with information about childcare could be helpful. At least some of this information about courses could be included in our model to make it possible to search for them. For other vulnerable groups, other support could be envisaged, such as special learning methods for older people, and mentoring and accompaniment for the socially disadvantaged. It would be realistic for our project to consider the learning needs and capabilities of older people when describing and selecting appropriate courses (length, learning methods etc).
- It is very challenging to correctly **identify learning needs**, and often even enterprises with professional HR and training departments fail to do so; individuals have an even harder time identifying their learning needs. Our model could, among other things, help users to clarify their own learning needs by filling in basic information about their education, profession, experience or other personal interests and characteristics. However, this would be a positive side effect and is more likely a possible follow-up project.
- More problematic is the approach of state institutions, especially labour offices, whose courses are usually aimed at lower qualification levels and are not always up-to-date and relevant to current labour market needs. **Offering these institutions with a tool to facilitate the selection of training or retraining possibilities for a given individual could help to broaden the clientele of the labour offices to include the better educated and, at the same time, adjust the range of services for these individuals - as part of promoting lifelong learning.** At the same time, however, this would first require an increase in the amount of funding and training offered to the better educated. In the Czech Republic, for example, this is being done by the Ministry of Labour and Social Affairs by making courses available to the entire working (and unemployed) population with significant subsidies, supported by EU funding in the National recovery plan (the so-called e-shop of courses at <https://www.mpsv.cz/web/cz/jsem-v-kurzu>). However, this wide range of courses is limited in duration, and it is not clear whether it will be sustainable in the future.

- Most of the countries surveyed suffer from a lack of basic comprehensive information and guidance tools, which hinders the faster expansion of adult participation in education. A tool that advises them on finding and selecting an appropriate education and learning pathway would be a step towards improving access to education. **Linking the tool to the education offer**, with a search engine for suitable education or at least with a valid list of links to partial databases of adult education opportunities, would be beneficial. The tool would thus contribute even more to the accessibility of adult education.
- An unmet **need for counselling** is strongly evident from the survey. Especially in socially vulnerable groups, among individuals with lower qualifications, the need is very high as they are less able to understand which training or skills would help them get a better job. Interconnecting our model/instrument with counsellors would be of great advantage, especially for socially and educationally disadvantaged individuals, but also for the rest of the adult population.

7. Exploring the application possibilities of Artificial Intelligence (AI)

The goal of this chapter of the feasibility study is to assess the possibility of using Artificial Intelligence (AI) to support digital ILAs. The information gathered in the previous chapters of the feasibility study will be used here.

7.1. Analysis of the potential for the application of AI

In this chapter, we analyse the general application possibilities of AI.

7.1.1. What is AI?

AI is a general-purpose technology that can be used to automate processes, analyse data, and support human decision-making. AI refers to the field of computer science and technology that aims to create intelligent machines capable of simulating human cognitive functions. While there isn't a universally accepted definition of AI, various sources in the literature provide useful perspectives on the topic.

Definition	Source
"Artificial Intelligence is the science and engineering of making intelligent machines, especially intelligent computer programmes" (Nilsson, 1998, p. 14).	Nilsson, N. J. (1998). Artificial Intelligence: A New Synthesis. Morgan Kaufmann Publishers.
"AI is the study and design of intelligent agents, where an intelligent agent is a system that perceives its environment and takes actions that maximise its chances of achieving its goals" (Russell & Norvig, 2016, p. 2).	Russell, S. J., & Norvig, P. (2016). Artificial Intelligence: A Modern Approach (3rd ed.). Pearson.
"Artificial Intelligence is the branch of computer science that is concerned with the automation of intelligent behaviour" (Luger, 2009, p. 2).	Luger, G. F. (2009). Artificial Intelligence: Structures and Strategies for Complex Problem Solving (6th ed.). Pearson.
"AI is the development of computer systems that can perform tasks that would require human intelligence if	Poole, D., Mackworth, A., & Goebel, R. (1998). Computational Intelligence: A

performed by a human" (Poole, Mackworth, & Goebel, 1998, p. 1).	Logical Approach. Oxford University Press.
"AI is the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings" (Haugeland, 1985, p. 5).	Haugeland, J. (1985). Artificial Intelligence: The Very Idea. MIT Press.

These definitions reflect the core concept of AI, which involves the development and use of machines that exhibit "intelligent" behaviour, such as perception, reasoning, learning, and problem-solving capabilities, typically similar human cognitive functions. The umbrella term 'Artificial Intelligence' may refer to various technologies, such as¹⁴³:

- **Machine Learning (ML):** Machine learning is a fundamental technology in AI that enables computers to learn from data without explicit programming. It encompasses a range of algorithms and approaches.
- **Neural Networks:** Neural networks are computational models inspired by the structure and function of the human brain. They are widely used in deep learning and have shown remarkable success in various applications.
- **Natural Language Processing (NLP):** NLP focuses on enabling computers to understand and process human language. It involves techniques such as language modelling, text classification, and sentiment analysis.
- **Reinforcement Learning:** Reinforcement learning involves training agents to make a series of decisions in an environment to maximise a reward signal. It is commonly used in applications such as game playing, robotics, and optimization.
- **Knowledge Representation and Reasoning:** AI systems often employ formal representations to organise and process knowledge. These representations can include logic, ontologies, semantic networks or probabilistic graphical models to enable reasoning and decision-making.
- **Computer Vision:** Computer vision involves enabling machines to understand and interpret visual information from images or video. It encompasses tasks such as image recognition, object detection, and image segmentation.
- **Expert Systems:** Expert systems are AI systems that mimic human expertise in a specific domain. They use rules, heuristics, and knowledge representation to make decisions or solve problems.
- **Robotics:** Robotics combines AI with physical systems to create autonomous machines capable of interacting with the environment. AI techniques are used for perception, decision-making, and control in robots.

¹⁴³ Mitchell, T. M. (1997). Machine Learning. McGraw-Hill; Haykin, S. (1999). Neural Networks: A Comprehensive Foundation. Prentice Hall; Jurafsky, D., & Martin, J. H. (2020). Speech and Language Processing (3rd ed.). Pearson; Szeliski, R. (2010). Computer Vision: Algorithms and Applications. Springer; Jackson, P. (1998). Introduction to Expert Systems (3rd ed.). Addison-Wesley; Siciliano, B., & Khatib, O. (2008). Springer Handbook of Robotics. Springer.

Of the above groups of technologies or fields of AI development, the last three¹⁴⁴ seem to be irrelevant in terms of applications for ILAs. The remaining ones; machine learning, neural networks, NLP, reinforced learning, and knowledge representation and reasoning, can be used in different combinations for a wide variety of purposes that can be linked with funding adult learning, supporting learners' choice of training etc.

7.1.2. What are the potential uses of AI for ILAs?

The application of AI should address some of the challenges related to the implementation of ILAs in Member States. The challenges cannot be solved by the application of AI itself, some of them are of a political or financial nature, others have no obvious solution that could be automated, yet this group of technologies can be used to provide at least partial solutions. The table below proposes a working list of challenges with comments on the application of AI:

Challenges in ILAs implementation	Short description	Comments on AI application
Funding and Sustainability	Adequate funding is crucial for ILAs to provide meaningful learning opportunities to individuals. Sustaining the financial support required to maintain ILAs can be challenging, especially if there are limited resources or competing priorities.	Optimisation of resource allocation is needed to make better use of limited resources. AI could help in recommending relevant and high-quality training. AI can also suggest optimal prioritisation of limited resources. One of the key variables affecting the cost of training is the number of participants. AI could be used to identify larger groups of learners with similar needs and/or interests and lead to the formulation of a bulk request (tender?) for tailored training for a group.
Access and Equity	It is essential to address barriers such as digital literacy and access to technology to ensure that ILAs and the training offered are accessible to learners from diverse backgrounds and socio-economic statuses.	Collecting data on sources of limitations, e.g. related to distance or time availability of training. Potentially, AI could be used to assess training based on the prerequisites such as educational attainment, level of digital skills, etc., which would help address the challenges of access and equity.
Quality Assurance	Maintaining the quality of learning experiences funded using ILAs can be challenging. There is a need to	AI could be used to support the assessment of quality assurance using machine learning. For example, by:

¹⁴⁴ However, computer vision and expert systems could be used. Firstly, to process some types of documents, such as CV's, computer vision is often an easier solution. Because CVs come in different formats and structure, parsing may be a complicated and difficult task. Instead, a text document is treated as an image, OCR (Optical Character Recognition) is used to extract content and layout analysis allows for identification of blocks of text. Secondly, although large expert systems have diminished in popularity in the '90, the expert systems are often embedded in various algorithms (e.g. matching) as well as in knowledge representation and reasoning (e.g. knowledge graphs).

	<p>ensure that the available learning resources, courses, and programmes funded using ILAs meet established quality standards and are relevant to learners' needs.</p>	<ul style="list-style-type: none"> - Providing an initial assessment of quality assurance compliance with established standards (based on a comparison of a set of practice descriptions and the standards) - Developing fraud detection mechanisms based on patterns of training provision, pricing or course description - Providing feedback to training providers and learners while learning (improved training and learning quality = quality assurance)
<p>Personalization and Customization</p>	<p>Providing personalised and adaptive learning pathways that cater to diverse learning styles and preferences can be a complex challenge.</p>	<p>Tailoring learning experiences to individual learners' needs requires a robust technological infrastructure, knowledge representation, and sophisticated AI systems.</p> <p>An example of this could be the collection of data that enables the identification of learning needs and styles, and the matching of these with the content and type of training and/or other development services.</p>
<p>Motivation and Engagement</p>	<p>Maintaining learner motivation and engagement is crucial for successful ILAs. Designing learning experiences that are engaging, interactive, and aligned with learners' interests can be challenging, as learner engagement can decline over time.</p>	<p>Being able to recommend training or learning of appropriate size and difficulty for a specific learner (important factors for sustained engagement and motivation) could be one of the areas of AI application in relation to ILAs. Another possibility is to present the learning opportunities / development services in a context that would provide additional motivation (e.g. showing possible workplace / labour market applications of a given training). Finally, AI can be used in the learning process to optimise the learners' focus, by regulating the pace of learning, personalising the learning content etc.</p>

The above-mentioned uses of AI provide a broad picture of application opportunities, leading to the conclusion that many of the challenges can be addressed by using AI to profile and match learners and training provisions. This would require the use of NLP (as this would mostly be text based), as well as other AI related technologies.

7.2. Proposed applications of AI for the D-ILA V4 project

In the course of the analysis, specific narrower applications of AI were identified in the context of the D-ILA V4 project. These include the following:

7.2.1. Profiling

What is profiling?

Profiling in general refers to the practice of collecting and analysing data about individuals or groups of individuals to create detailed representations of their characteristics, behaviours, preferences, and interests. This process typically involves gathering information from various sources, such as online activities, social media interactions, browsing history, purchasing behaviour, and demographic data. Profiling is commonly used by organisations, including businesses and service providers, to better understand their target audience or customer base. By analysing user profiles, enterprises can gain insights into consumers' needs and preferences, enabling them to tailor their products, services, and marketing strategies accordingly.

The information used for profiling can be both explicit and implicit. Explicit data is provided voluntarily by users themselves, for example through surveys or registration forms, while implicit data is collected through passive means, such as tracking online behaviour or analysing patterns in user interactions. Significant user profiling raises ethical considerations and privacy concerns.

Profiling in the context of ILAs

In the case of ILAs, profiling can refer to individual learners as well as training content or training providers. Profiling can be seen as the transformation of a variety of natural language descriptions of objects into a more unified and machine-readable/machine-understandable representation.

Therefore, the starting point is the identification of the object of profiling (a person, a company, a course) and the data, such as: a CV, a survey response, a course description (etc.). The data can be structured (as in a CV, course description) or unstructured (survey responses on training feedback), it may also contain descriptions of various granularity and/or style.

The possible types and sources of data have been discussed in previous chapters. The data needs to be collected (e.g. provided by users, retrieved from a database via an API) and, in most cases, structured (which may require the use of various techniques related to document upload, structuring, text lemmatisation, entity recognition, entity resolution). The value of AI techniques in this context lies in the ability to automatically or semi-automatically structure the data. For example, NLP can help to disambiguate words, machine learning can be used to develop a mechanism for automatically identifying phrases that describe a skill, a technology, job position etc.

As a result of this process, profiles of the individuals, enterprises and other objects are created, which can be further used for providing a better recommendation, a match with another object or for improving the understanding of the processes in the company and the implementation of improvements (e.g. which learners choose what, what are the deficits in the training offer, which training providers receive good feedback, etc.).

Profiling learners

Profiling learners means collecting information about individuals to build a picture of their interests, previous experiences, capabilities etc., which can be used to make recommendations about interesting learning opportunities/development services.

The following sources of information can potentially be used to profile learners:

- Personal surveys, tests, diagnostic tools on interests and learning needs submitted by the learner

- Previous learning and work experience provided by the learner (e.g. CV upload, digital badges backpack, work and educational experience survey or by allowing access to specific social media accounts data e.g. LinkedIn)
- Career/Professional Development Plans submitted by the learner or another person (these are often developed with the aid of professional counsellor)
- History of learner choices funded with the ILAs mechanism
- Personal data from public databases concerning learning achievements (if such databases exist in a particular country and the user consents to the accessing and use of such data by the organisation running ILAs)

The collected data on learners may need to be supplemented. An example of this could be an indication of a specific work experience on a CV, which is meaningless to a machine without an indication of a sector (e.g. banking, construction), tasks (e.g. bricklaying, risk assessment of clients), and skills (e.g. data analysis, teamwork organisation, budgeting) related to this position. Another example could be linking an indicated education (e.g. a BA in Finance and Accounting at SGH Warsaw School of Economics) with the related programme data (e.g. learning outcomes, course list).

Profiling training offer/development services and training providers

The assumption of ILAs is that profiles of development services/training provision will be embedded in a database, so there would be no need to create a profile. However, it is possible that some process of profiling (adding information about objects from another source and/or structuring data) will also need to be applied.

It is possible that the information collected in an existing database may not include all relevant fields for some purposes, such as recommending courses to learners. Examples of such data fields are:

- Sector indication
- Feedback on the course from previous learners
- List of individuals or general characteristics of learners who have taken the course
- Related interests/keywords

It may also be the case that the data is drawn from more than one database, with a different structure, data granularity and/or style of descriptions. In this case, a profile may be understood as a standardised (or at least identically structured) representation of objects from various sources.

7.2.2. Recommendations based on content matching

Data about learners and training provision can be matched using various mechanisms based on content matching. Because of the way they work, they are sometimes called similarity algorithms. Matching algorithms are computational methods used to pair or match entities from different sets based on specific criteria or similarity measures. These algorithms aim to identify and establish meaningful connections or relationships between items in the sets, often with the goal of optimising compatibility or achieving desired results. These algorithms can use various measures of similarity and textual representation.

Box **XX**. Text representation, similarity measures, and vector space models

Text representation refers to the process of transforming textual data into numerical vectors that can be manipulated and analysed using mathematical techniques. It allows us to represent textual data in a format that can be used by various machine learning and statistical algorithms.

Similarity measures, also known as similarity metrics or distance metrics, are mathematical techniques used to quantify the similarity or dissimilarity between two objects or sets of data.

Similarity measures play a crucial role in various fields including information retrieval, data mining, pattern recognition, and recommendation systems. They help assess the similarity, proximity or correlation between objects based on their characteristics or features.

Vector space models represent text as vectors in a high-dimensional space, where each dimension corresponds to a unique feature or term. The values in the vector capture the presence, frequency or weight of the corresponding feature in the text.

Similarity matching can yield spectacular results, but it is a very case-specific task. In other words, one needs to try various combinations of text representations and similarity measures to fine-tune the results. The basic methods are listed below.

Examples of text representation techniques are:

- **Bag-of-Words (BoW):** The Bag-of-Words representation represents text as a collection of individual words or terms, ignoring grammar and word order. It creates a vector where each dimension corresponds to a unique word in the corpus and the value represents the frequency or presence of that word in the text. BoW is simple and effective but lacks contextual information.
- **Term Frequency-Inverse Document Frequency (TF-IDF):** TF-IDF represents text by considering the importance of words in a document relative to the entire corpus. It calculates a weight for each term based on its frequency in the document (TF) and its inverse document frequency (IDF) across the corpus. TF-IDF is commonly used to down-weight frequently occurring words and highlight important terms.
- **Word Embeddings:** Word embeddings represent words as dense vector representations in a continuous vector space. They capture semantic relationships and contextual information. Popular word embedding models include Word2Vec, GloVe, and FastText. Pre-trained word embeddings are often used, where words are represented by vectors learned from large corpora.
- **Sentence and Document Embeddings:** Sentence and document embeddings aim to represent entire sentences or documents as fixed length vectors. Models such as Doc2Vec, Universal Sentence Encoder, and BERT (Bidirectional Encoder Representations from Transformers) can generate embeddings that capture the meaning and context of the text.

Examples of similarity measures are:

- **Cosine Similarity:** Cosine similarity measures the angle between two vectors representing the content. It calculates the cosine of the angle (in n-dimensional space), which indicates the similarity between the vectors. It is often used to compare text documents, where each document is represented as a vector of term frequencies or TF-IDF values.
- **Jaccard Similarity:** Jaccard similarity compares the intersection and union of sets to determine similarity. It is commonly used to compare sets of items or binary data. In the context of

content matching, Jaccard similarity can be used to compare sets of words, tags or features associated with the content.

- **Edit Distance:** Edit distance, also known as Levenshtein distance, measures the minimum number of edits (insertions, deletions, or substitutions) required to transform one string of characters into another. It is useful for comparing strings of text and assessing their similarity based on the number of modifications needed to match.
- **Euclidean Distance:** Euclidean distance calculates the straight-line distance between two points in a multidimensional space. It is commonly used in feature-based matching, where content is represented as feature vectors. The smaller the Euclidean distance between two vectors, the greater their similarity.
- **Longest Common Subsequence (LCS):** LCS measures the length of the longest subsequence shared by two sequences. It is frequently used to compare sequences of characters or words. In content matching, it can be used to measure the similarity between two texts based on the longest shared sequence of words.

There are also some more complex architectures of neural networks used in deep learning for various tasks, including natural language processing, computer vision, and sequence modelling:

- **Convolutional Neural Networks (CNN):** CNN-based approaches can process text at the word or character level. Word-level CNNs apply convolutional filters over word embeddings to capture local patterns, while character-level CNNs operate directly on character sequences to learn representations from character-level information.
- **Recurrent Neural Networks (RNNs):** RNNs are designed to handle sequential data, making them suitable for NLP tasks. They process text by capturing dependencies between words in a sequence. Models such as Long Short-Term Memory (LSTM) and Gated Recurrent Unit (GRU) are commonly used in NLP tasks, for example sentiment analysis, machine translation, and text generation.
- **Transformer Models:** Transformer models, such as BERT, GPT (Generative Pre-trained Transformer), and RoBERTa, have revolutionised NLP. They employ self-learning mechanisms to capture contextual relationships between words and achieve state-of-the-art performance in a variety of tasks, including question answering, language translation, and text classification.

Special cases of content matching

One of the approaches to content-based matching would be to develop custom representation models, for example tag sets, or using a domain ontology. In this approach, two data sets are tagged or mapped onto the ontology and matched based on the commonality of tags/objects in the ontology. This approach requires the careful selection of tag sets or an ontology that are appropriate for the domain and the purpose of matching. It is not uncommon for both tags and ontologies to be developed manually or semi-manually.

Another special case is when user profiling is done with the intention of matching, in which case the profile format may be developed in a way that facilitates content matching – for example, by ensuring a common structure (or structural elements) of the profiles and/or by using controlled vocabulary sets.

7.2.3. Recommendations based on exploration and text prompt

In many cases, finding an object in a sufficiently large database is difficult. For this reason, text search mechanisms, especially semantic search, have been developed as another way of helping to search by providing an understandable set of categories that users can use to navigate a database.

Semantic search is an advanced search technique that aims to understand the meaning behind user queries and the content of documents to provide more accurate and contextually relevant search results. It goes beyond simple keyword matching to consider the context and relationships between words and concepts. The mechanism of semantic search is similar to the content matching, except that the search term here is one of the objects. It would typically require a general language model to interpret the user input. This method can also rely on ontologies and tag sets, which in most cases would be used as an additional layer.

7.2.4. Recommendations based on collaborative filtering

Collaborative filtering is a technique used in recommendation systems to provide personalised recommendations by leveraging the collective knowledge and preferences of a group of users. It is based on the assumption that users who have similar preferences in the past will have similar preferences in the future.

In collaborative filtering, the system analyses the historical behaviour, interactions or ratings of a group of users to identify patterns and make recommendations. There are two main types of collaborative filtering:

- User-based collaborative filtering: This approach identifies users with similar tastes or preferences to a target user and recommends items that these similar users have liked or interacted with. It finds users with comparable item ratings or behaviour and suggests items that the target user has not yet experienced.
- Item-based collaborative filtering: In this approach, the system looks for similarities between items based on how users have rated or interacted with them. If users have shown a preference for one item, the system recommends similar items based on the assumption that users will continue to have similar preferences for similar items.

Both user-based and item-based collaborative filtering methods rely on the construction of a similarity matrix or model that quantifies the similarity between users or items. This similarity information is then used to generate recommendations for users.

Collaborative filtering has several advantages. It does not require explicit knowledge or information about the items being recommended. It can provide personalised recommendations even for niche or less popular items. It can adapt to changing user preferences over time.

However, collaborative filtering also has some limitations. It relies heavily on the availability of user data and suffers from the cold start problem for new users or items. It may face challenges when dealing with sparse data or when users have limited interaction history. It can result in a "bubble effect" where users are only exposed to recommendations within their existing preferences and miss out on discovering new items or diverse content. Because of these limitations, collaborative filtering is not recommended for high stakes situations.

7.3. Limitations in AI use for ILAs

There are ethical and legal limitations to the use of AI in the context of ILAs. Especially when it comes to recommending learning opportunities, there are several issues that need to be considered:

Privacy: AI systems often rely on collecting and analysing large amounts of user data to make personalised recommendations. It is essential that this data is handled with the utmost care, ensuring that individuals' privacy is protected and their personal information is not misused or shared without consent. It should be noted that, according to some interpretations, even collecting data on job offers may be subject to GDPR regulations.

Bias and fairness: AI algorithms can unintentionally perpetuate biases present in the training data, leading to unfair recommendations. For example, if the system is trained on data that is biased against certain groups based on race, gender or socio-economic status, it may reinforce these biases in its recommendations. Developers must be careful to identify and address biases in AI models to ensure fair and equitable recommendations. It is an agreed ideology in the EU that there should be equal opportunities for all users, regardless of their background or characteristics.

Accountability: When AI is used to recommend learning, it is essential to establish clear lines of accountability. Developers, educators, and administrators must take responsibility for the recommendations generated by AI systems and ensure that they are consistent with educational goals and ethical standards. If issues arise, there should be mechanisms in place to address and rectify them promptly.

Transparency: Users should have a clear understanding of how AI systems make recommendations and what factors influence those recommendations. The inner workings of AI algorithms should be as transparent and explainable as possible, allowing users to make informed decisions about their learning choices. Black-box AI systems that make recommendations without clear explanations can lead to mistrust and hinder user autonomy.

Human oversight: While AI can enhance learning recommendations, it is crucial to maintain human oversight throughout the process. Educators and professionals should play an active role in reviewing, validating, and augmenting AI-generated recommendations. Human judgement and expertise are essential to ensure the appropriateness, quality, and relevance of learning recommendations.

Informed consent: Users should have the opportunity to provide informed consent for their data to be used in AI-based learning recommendation systems. They should also be able to opt out or customise their preferences regarding the recommendations they receive. Transparent communication about the use of data and the purpose of AI recommendations is vital to building trust with users.

These considerations have led to the Artificial Intelligence Act (AI Act) currently being drafted in the EU. Under the proposed legislation, use of AI to support high-stakes decisions (educational choices) will be subject to regulation. The high-risk category includes AI systems used in critical infrastructure such as transportation, healthcare, and energy, as well as AI systems used in areas such as law enforcement, employment, and **education and vocational training**.

High-risk AI systems are subject to specific obligations and requirements to ensure compliance with safety, accuracy, and non-discrimination standards. This includes the use of high-quality data, transparent and accurate information for users, appropriate human oversight, and safeguards against bias and discrimination. High-risk AI systems also need to undergo a conformity assessment before they can be placed on the market or used. This assessment involves examining the AI system's compliance with regulatory requirements, including the preparation of technical documentation, risk management, and evaluation of system behaviour. Providers of high-risk AI systems are required to maintain detailed technical documentation demonstrating compliance with the AI Act. This documentation should include information on the system's functionality, its intended use, potential risks, and any mitigation measures implemented.

National competent authorities will be responsible for monitoring and enforcing the AI Act within their respective jurisdictions. They will have the power to carry out inspections, request information, and impose penalties for non-compliance.

Box. XX. The AI Act.

The European Commission's proposed Artificial Intelligence Act aims to establish a comprehensive regulatory framework for AI systems in the European Union. Key aspects and provisions of the proposed regulation include:

- **Scope and Risk Categories:** The regulation applies to AI systems used in various sectors and establishes risk categories based on potential harm, ranging from unacceptable to minimal risk.
- **Prohibited Practices:** The AI Act prohibits certain practices that are considered high-risk and pose a significant threat to the rights, safety, or well-being of individuals. These include AI systems that manipulate behaviour, use subliminal techniques, exploit vulnerabilities, or discriminate on prohibited grounds.
- **Transparency and Traceability:** The Regulation emphasises the importance of transparency, requiring AI systems to provide clear information about their capabilities and limitations. Systems that interact with users and generate or manipulate content must disclose their AI nature.
- **Data and Dataset Requirements:** High-risk AI systems must comply with data and dataset requirements, including quality, relevance, and diversity. They should not rely on biased or discriminatory data, and appropriate measures should be taken to ensure data protection and privacy.
- **Human Oversight and Governance:** The AI Act promotes human oversight and control over high-risk AI systems. It mandates that certain systems have human-in-the-loop mechanisms allowing individuals to make informed decisions and intervene when necessary.
- **Conformity Assessment and Certification:** High-risk AI systems must undergo a conformity assessment process to ensure compliance with regulatory requirements. Certification mechanisms will be established for specific AI applications.
- **Market Surveillance and Supervision:** The Regulation outlines the roles and responsibilities of market surveillance authorities and competent national supervisory authorities to enforce compliance with the AI Act.

The Artificial Intelligence Act is subject to the legislative process and its content may change as it undergoes scrutiny, amendments, and possible adoption by the European Parliament and the Council of the European Union.

7.4. Cost-benefit analysis of ILAs and analysis of the benefits of the ILA data model

In the context of preparing a feasibility study, a cost-benefit analysis is a systematic process that evaluates the costs and benefits associated with a particular project, investment or decision. It is done to determine whether the potential benefits outweigh the costs, thereby helping stakeholders to make informed decisions about the feasibility and viability of a proposed endeavour. The analysis is expressed in terms of quantifiable measures (i.e. in monetary costs).

In this case, the goal of the analysis is to provide an early assessment of the implementation of a data model and AI-based tools to optimise ILAs, providing an attractive cost-benefit ratio.

A detailed analysis can be found in the background study.

7.4.1. General remarks on the cost-benefit of the project outputs

In economic terms, the project outputs can be seen as a net benefit for countries – providing a set of inputs which offer know-how, lower entry barriers, and reduce the costs of developing certain solutions. As the costs of implementing the project are external to Member States administrations (or other users of the data model, e.g. partner countries, private enterprises), the only possible assessment of the cost-benefit analysis would be that there are only benefits.

There will undoubtedly be future costs associated with the implementation of the data model, but these will be outweighed by the benefits of using the D-ILA V4 project. This line of reasoning can be illustrated as follows.

Box XX. Example of economic reasoning for the cost-benefit analysis of using the data model developed by the D-ILA V4 project.

Project output: “data model” can be used by a Member State to develop its own data model with the cost of the “application of the data model to the national context (policy goals, data ecosystem, etc.)” and the relative benefit of “not having to develop their own data model from scratch” These costs and benefits could be assessed in financial terms (e.g. the number of working days of various professionals) or in less tangible but also quantifiable terms (e.g. increasing the effectiveness of the developed ILA national solution in terms of productivity or employability of the individuals participating in the training).

Source: own work.

Box XX. Example of economic reasoning for the cost-benefit analysis of using the test database developed by the D-ILA V4 project.

Project output: “test database” can be used by data scientists to test various technology stacks and develop their own test data (populated with texts in the original national language)
 with the cost of “conducting tests on various modelling approaches (e.g. some of the options listed in chapter 7.1.)” and the relative benefit of “being able to limit the scope of the tests needed” (because of the know-how about data types and the exemplary results from the D-ILA project)
 with the cost of “collecting their own data from national sources” and the benefit of “being able to use a predefined data model” and “being able to better/faster identify adequate data in the national context”.

Source: own work.

Assessing the costs and benefits of specific design features of a data model would require some practical experience to be gained and therefore is not yet possible at the stage of preparing this feasibility study. The issues that remain unclear can be traced back to specific variants of the structure

of data model, policy goals, and technology stack that will guide the work of the data scientists required for effective AI-supported ILAs.

The goal of this chapter is to gain a clearer understanding of the potential risks, benefits, and trade-offs associated with the implementation/use of the model by stakeholders/model users. This analysis will help inform decision making, facilitate resource allocation, and minimise the likelihood of building an ILA solution that is unlikely to deliver a positive outcome.

7.4.2. Discussion on the topic of cost-benefit analysis

The work on this chapter of the feasibility study started with the fundamental question of what should be the subject of the cost-benefit analysis. The first option was to analyse the development of the data model in the context of the project: how much will it cost and what kind of benefits will it bring? This approach was discarded since most of the costs and benefits of the data model will occur from the time of implementation of the model in a national context. The conclusion is therefore that one has to assert a future state in which there is a data model that is modified for the specific needs and goals of a given country and used in conjunction with technologies associated with AI (as discussed in Chapter 7.1). The assumption is that the functionality of the data model and data-based tools is achieved simultaneously with the implementation of the ILA scheme in general. For this purpose, the baseline scenario is an existing ILA system without implementation of the data model and AI-based tools.

Undoubtedly, every ILA requires a data model to function, but developing a data model which is “AI-ready” seems to be a specific case. The mere implementation of a data model (without AI application) is therefore not subject to this analysis. On the one hand, there is the cost-benefit analysis of ILAs carried out by the European Commission (EC) during the preparation of the Recommendation on ILAs, which already includes the aspect of ‘effective governance’ and ‘guidance’ as necessary elements for the effective implementation of ILAs. These elements, which can be broadly understood as the creation of the enabling framework, may be realised through the use of available data and personal guidance, which would be seen as a complementary and (to some extent) alternative solution to what the D-ILA project proposes. On the other hand, the cost-benefit analysis provided by the EC is based on factual data on the functioning of systems based on training entitlements – none of which have implemented AI services. It seems more appropriate to assume that the results of the EC cost-benefit analysis should be updated/modified to at least provide an indication of the range of costs and benefits associated with developing a system of digital ILAs.

There are numerous possible implementations of the data model, and various technologies can be used for different purposes. To address this, it is assumed that a reference AI application is selected and used to approximate the possible costs and benefits. The chosen AI application is to identify patterns of training needs (profiling) and match them with the training provision (e.g. via recommendations/proposals or a more effective training provision search).

The choice of profiling and data analysis as the reference application is based on the results of the feasibility study on possible applications of AI for ILAs (Chapter 7.1.). It is also one that has been observed in various settings and is known to be feasible – such actions are currently being undertaken by private enterprises (e.g. learning system management platform providers, e-learning platforms) and corresponding technologies are also being tested in the public domain (e.g. virtual learning assistants, labour market analysis using natural language processing, digitalisation of qualifications registers and training databases).

To stimulate thinking about how relevant this difference may be for the learning domain, it may be useful to consider the impact of data analysis and user profiling in the sales and marketing domain (see Box XX below).

Box. XX. What does profiling and data analysis mean for sales and marketing?

Digital marketing has become a very successful area of business because of the availability of information about customers and the ability to create useful knowledge based on this data. Below are a few examples that provide a general overview of the implications for sales and marketing:

- **Segmenting customers** and **creating targeted marketing campaigns**. Tailoring communication and product offers for specific customer segments increases the likelihood of sales.
- Insight into customer needs and preferences enables the **development of new and improved products or services**. Enterprises can identify gaps in the market and create products that address specific customer segments and needs, resulting in increased sales potential.
- Delivering personalised experiences to customers. Analysing individual preferences and purchase history enables **customised product recommendations, personalised offers, and targeted promotions**, increasing the likelihood of conversion and repeat purchases.
- Understanding customer behaviour and preferences enables enterprises to **build stronger relationships with customers and improve customer retention**. Patterns such as purchase frequency, purchase cycles and identified customer preferences can form the basis of targeted retention strategies (e.g. personalised loyalty programmes or exclusive offers).
- User profiling helps identify **cross-selling and upselling opportunities**. Enterprises can **recommend complementary products or alternatives**, increasing average order value and driving additional sales.

Source: Own work

The dimensions of the cost-benefit analysis that appear to be particularly relevant are: participation in learning, productivity gains, employability, administrative costs.

The chapter first summarises the results of the cost-benefit analysis of the baseline scenario and then goes on to indicate the impact of the implementation of the data model on the costs and benefits.

7.4.3. General remarks on the cost-benefit of the project results

Reference publications on the cost-benefit analysis of individual training entitlements

The cost-benefit analysis of spending on individual training entitlements: how much, on whom (which groups), and with what possible effectiveness can funds be allocated to achieve certain benefits.

This is a key debate for policy makers and has already been analysed extensively in policy and economic papers/reports. The table below shows selected publications on the topic, some of which have been used in the impact assessment report accompanying the EU proposal for the Recommendation on ILAs.

- 1) Messer, D., & Wolter, S. C. (2009). Money matters - Evidence from a large-scale randomised field experiment with vouchers for adult training.
- 2) Schwerdt, G., Messer, D., Woessmann, L., & Wolter, S. C. (2012). The impact of an adult education voucher program: Evidence from a randomized field experiment. *Journal of Public Economics*, 96(7-8), 569-583.

- 3) Hidalgo, D., Oosterbeek, H., & Webbink, D. (2014). The impact of training vouchers on low-skilled workers. *Labour Economics*, 31, 117-128.
- 4) Attanasio, O., Guarín, A., Medina, C., & Meghir, C. (2015). Long term impacts of vouchers for vocational training: Experimental evidence for Colombia (No. w21390). National Bureau of Economic Research.
- 5) Görlitz, K., & Tamm, M. (2016). The returns to voucher-financed training on wages, employment and job tasks. *Economics of Education Review*, 52, 51-62.
- 6) Doerr, A., Fitzenberger, B., Kruppe, T., Paul, M., & Strittmatter, A. (2017). Employment and earnings effects of awarding training vouchers in Germany. *ILR Review*, 70(3), 767-812.
- 7) Harrington, K., Cummins, P. A., & Yamashita, T. (2018). Funding Individual Learning Accounts in the Latter Half of Life: A Comparison of Initiatives in Four Countries. Commission for International Adult Education.
- 8) "Individual Learning Accounts: Pandora's Box or the Key to Lifelong Learning?": OECD. (2021). Individual Learning Accounts: Pandora's Box or the Key to Lifelong Learning? OECD Publishing.
- 9) Cummins, P. A., Harrington, A. K., & Yamashita, T. (2022). Individual Learning Accounts: A comparison of implemented and proposed initiatives. *Adult Learning*, 33(4), 147-157.
- 10) Corazza, E., & Filippucci, F. (2022). Who Profits from Training Subsidies? Evidence from a French Individual Learning Account.
- 11) Bussink, H., & ter Weel, B. (2023). Costs and benefits of an Individual Learning Account (ILA): A simulation analysis for the Netherlands. *Economic Modelling*, 118, 106085.

Although the analysis of the costs and benefits of ILA schemes is not the essence of the D-ILA project, nor the main subject of the data model feasibility study, it is a necessary context. The specific variants of the mode of delivery and allocation of funds for individual training entitlements will have an impact on the costs and benefits associated with the implementation of the data model and the application of AI models in ILA systems.

Due to project limitations, the literature on cost-benefit analysis is not subject to more detailed analysis. It remains an artefact of the preparatory work which is not deleted because it may be found useful to readers of this chapter who wish to look beyond the summarised results of the cost-benefit analysis in the Commission Staff Document accompanying the EU Recommendation on ILAs.

7.4.4. Summary

This chapter focuses on the costs and benefits of using AI to support digital ILAs. The analysis is based on a comparison with a baseline scenario in which no AI is used.

The analysis takes a conservative stance. This means that there is a bias towards underestimating the benefits and overestimating the costs.

The cost-benefit analysis shows that the cost-benefit ratio of implementing a data model for ILAs with AI applications is positive. Implementing the data model is an additional boost to the effectiveness of the training, since it is a solution that aims to improve the match between learners' interests and needs and the training offer.

The costs of implementing the AI services are estimated to be relatively low, so that even if no additional benefits were achieved, the benefits of the ILAs described in the baseline scenario would be sufficient to achieve a positive cost-benefit ratio in the second year.

The D-ILA implementation scenario analysed assumed an increase in the productivity and employability of the learners. A slight premium over the baseline scenario has been assumed. This reflects the fact that the development of a mechanism that would deliver significant gains would

require time and possibly some historical data, but even early developments could be seen as an implementation of mass guidance on training choices (e.g. recommendation system, virtual assistant). The second reason for a conservative estimate of the benefits is that the reference application of AI would not solve some of the fundamental problems related, for example, to learner motivation or training quality (although it is not impossible to derive such benefits in general e.g. fraud detection).

8. Experiences and recommendations

In the summary chapter of the feasibility study, the main findings of the development of the ILA data model are presented and target group specific recommendations for the applicability of the ILA data model are given.

8.1. Findings concerning the development of the ILA data model

This chapter summarises the main conclusions of the feasibility study. In all cases, a brief formulation of the conclusions appears in the title of the section, and they are explained and elaborated in the text of the section.

8.1.1. The action plan and the planned scope of activities indicated in the project proposal are feasible

Based on the feasibility study and ongoing professional consultations, it can be stated that the goal formulated in the application can be implemented according to the original ideas without changes:

- Partnership experts can create a data model for the ILAs.
- The data model can be tested using AI-based solutions.
- The process of creating a data model and its applicability conditions can be explained in the methodological guide.

The analysis of 42 interviews conducted in 4 countries as part of the feasibility study suggests that the resulting products can be used well in practice.

At the same time, it is important to note that the definition of the target group and the field of application play a significantly greater role in the design of the data model than was originally envisaged. The universality of the data model is therefore questioned on the basis of the feasibility study.

8.1.2. There are limitations to the introduction of ILAs

An important conclusion of the feasibility study is that there are limitations to the implementation of the EU concept of ILAs:

- Adult learning systems in the countries studied vary considerably. The differences are not only technical, but also reflect fundamental differences.
- Efforts to introduce ILA schemes also vary. Among the countries studied, there are examples of the full autonomy of learners in terms of training choices. Other ILA schemes regulate the use of funds according to national priorities, e.g. to support specific target groups or skills.
- Differences between countries are also reflected at the data level, which makes interoperability at EU level difficult, therefore, flexible metadata fields and datasets should be defined.

- Some respondents point out that the current adult education systems would benefit from ILA schemes by generating learning opportunities, as adult education organisations do not receive direct funding. Due to the lack of direct funding, adult education organisations may have a counter-interest in the full implementation of ILAs. In other countries the adult education providers do benefit from the ILA concept. They are able to attract more participants, as the participants make use of the ILA financial support.
- During the interviews, most representatives of multinational enterprises claimed that they have their own resources for soft skills training of their employees, which is planned for in the annual budget. Based on this, there are methods for assessing the employees' competences and a methodology for training and matching employees. These are rather "soft" methods such as interviews and questionnaires. Systematic or data-driven schemes are very rare, even in large enterprises.

In summary, without further development of the adult learning systems in each country according to common principles, we see limited possibilities for transferring financial entitlements between countries, which is one of the potentials to be considered in the ILA concept. At the same time, based on the feasibility study, ILA solutions based on country-specific characteristics can be successfully applied as one of the tools to increase the number of participants in adult education.

8.1.3. Full implementation of ILAs leads to paradigm shift

In the feasibility study, we look at the funding solutions for adult education in the countries studied. In our view, the full introduction of the concept of ILAs would lead to a paradigm shift compared to the current situation, i.e. it would fundamentally and substantially change the funding model of adult education by emphasising the individual's role as the recipient of funds for training at the expense of institutions as recipients and, indirectly, of the adult education system itself.

It is important to note that many countries are currently exploring the feasibility of the EU approach. It is far from being decided whether ILAs will be supported as an exclusive funding model or whether it will be introduced in parallel with current funding methods.

Current adult education in the countries studied is characterised by the fact that the methods and sources of funding adult education vary from country to country. A significant proportion of the training is free of charge for the learner or requires a very small contribution. In some countries, state subsidiaries are given directly to training organisations, while enterprises also finance training organisations directly. In the case of fully self-financed training, the adult education services provided by the training organisation are financed directly by the trainee from their own resources and/or training loans. Commercial training organisations providing training for direct remuneration are an integral part of education systems. There are also a number of mixed solutions, for example, a particular enterprise receives state aid for the training of its employees.

According to the EU concept of ILAs, funds for adult learning can be allocated based on the individuals' choice of training. In this case, State, employers', and private resources are concentrated in one place. It is up to citizens to take advantage of the opportunities provided by these resources. An effective guidance system is needed to influence the efficient decision-making of individuals.

It is important to note that the EU concept of ILAs does not exclude the principle that the individual or organisation funding the training should ultimately have a say in the choice of training. This is likely to

be the biggest difference between countries if ILAs are fully implemented. In one case, citizens can spend the amount allocated to them through the ILA scheme in the adult education market without any restrictions. In other cases, the state/company determines the specific training course it can be spent on. (Of course, both solutions can be implemented with the help of an information system).

In practice, various solutions are likely to prevail. For example, there may be a limit on the amount allocated to an ILA which can only be spent on accredited courses. Another solution is for a company to cover part of the training costs for its employees and guide the choice of training for employees from a recommended pool of training courses. The State can also specify target groups for training, such as certain vulnerable groups.

8.1.4. Differences between the ILA data model and company training

Consider that the state or enterprises involved in funding adult education may have an influence on the target group and on the courses chosen by the target group. In this case it is essential to create a data model that reflects the needs of the parties involved. What are these needs?

Some of the data fields may be more useful for the public sector, e.g. policy priorities are often defined in terms of labour market status, demographic, social, and educational characteristics. Other data fields may be more useful for enterprises who have a competence profile of their employees.

The funding logic is also different in the two cases: Adult education courses organised by the public sector and funded through ILAs may include lower qualifications to support low-skilled individuals. The financial contribution may also be limited. Based on the feasibility study, there should also be data series representing individuals where both the participant's own contribution and the corporate subsidy amount to 0 EUR.

Therefore, the data field requirements and edited datasets of the public and corporate sectors in relation to ILAs differ both in terms of target group and soft skills training. This assertion is supported by the interviews conducted.

Based on the feasibility study and the non-profit orientation of the project, it is recommended to develop the model primarily for public systems. However, the model can also be used to a limited extent in the corporate environment (see Chapter 8.2.).

8.1.5. The importance of soft skills training is growing within adult education

Based on the available statistics on adult education, there is no evidence of a breakthrough in soft skills courses and enrolments or in the individuals applying for them. At the same time, our interviewees all emphasised the importance of soft skills in the labour market and predicted that soft skills courses would continue to grow in importance in the near future. They drew attention that the development of soft skills is fundamentally different from the profession-specific approach of adult education:

- Soft skills are usually much more "elusive", i.e. they are more difficult to measure and ascribe a level to, and their use in the short or long term is not obvious. In order to increase the role of soft skills training in adult education, it is necessary to develop methods for measuring and assigning a level to and quantifying the impact of training.

- Soft skills are often mixed with personal characteristics and attitudes (or even values). This means that they are not easy to change or develop, since in some cases they require a change of personality.

Some respondents argued that due to the transversal nature of soft skills (non-discipline-related, widely applicable), the approach based on measurability and impact assessment should be abandoned and citizens should be given the opportunity to develop soft skills regardless of these aspects. They were of the opinion that a less targeted development of soft skills would have indirect social and economic effects.

However, based on the results of the feasibility study, the development of the ILA data model focuses on measurability and the consideration of the impact of training. The main reason for this is that ILAs are a financial solution, so it is advisable to take a financial approach. The interviews confirm this idea: measurability and quantifiability of impacts are to take into account the amount of money available for adult education.

8.1.6. In the ILA data model, positive discrimination is recommended

One of the reasons for creating the ILA data model is the constraint of financial resources. If financial resources were unlimited, everyone would be able to participate in the amount and level of soft skills training that best suits them for the rest of their lives. The ILA data model and similar solutions make it possible to model the range of training that can be undertaken at the individual level, given financial constraints. Conversely, what is the total cost of training allocated to a particular target group, broken down into state, company, and individual costs?

If we take into account the limited financial resources, the methodology for allocating the financial resources automatically arises, which we must also follow when designing the data series of the ILA data model.

In the background studies prepared for the feasibility study, we examined at data level how the adult education systems of each country allocate the available financial resources. Based on the results, it appears that resources are not necessarily allocated in the most appropriate way for social and economic goals in adult education systems. Based on our analysis, the most obvious example is that disadvantaged groups are under-represented in adult education, while participation in adult education is clearly a gateway for them, i.e. it is extremely important from a social point of view. (Actually, this is not a specific statement; a multitude of analyses come to similar conclusions. The EU concept of ILAs also aims to change the current situation and increase the number of participants in adult education according to the criteria of equal opportunities).

Based on the above, it is important to note that in the ILA data model we are not trying to map the characteristics of existing adult education systems. We are working with participant data modelled along social goals. The guideline used in the development of the ILA data model can be interpreted simply as positive discrimination. An example of this is that although the proportion of disadvantaged groups in adult education is relatively low based on real statistical data, they appear in higher numbers in the ILA data model.

8.1.7. Desired data connections can be established between different EU frameworks

One of the most important features of the ILA data model is that it establishes a data link between the existing competences of citizens, the input and output competences of training, and the competence expectations of society and/or enterprises. To achieve this, the soft skills in the ILA data model must be well defined, non-overlapping, and levelled.

The feasibility study will look at various solutions, of which the CEFR seems ideal for establishing a data link. The CEFR and the assessment and development tools based on it can help to define the target foreign language competence level (e.g. job expectations). In comparison, the current level of foreign language competence of citizens can be established. The input level of a training course can be defined, based on which the training can be selected. The learning outcomes of the training can be specified, which must be in line with the objectives set by the CEFR. This method can be used to recommend not only individual courses, but also learning pathways by building courses on top of each other.

The feasibility study presents other EU reference frameworks relevant to soft skills. According to our analysis, the reference frameworks are at very different stages of development, but their common feature is that soft skills are well defined and form a system. It is also important to note that the reference frameworks reflect EU ambitions.

8.1.8. The role of AI should be made transparent

In the feasibility study, we pointed out that advanced AI-based solutions are increasingly able to find and process information sources related to individuals and adult education, and to provide specific training to real people.

Previously, this required basically structured databases that were more or less understandable by humans, so the operation of the AI could be verified. The situation has now changed radically. Many AI algorithms are not transparent, it is not always clear which variables were key for a given result, such operations cannot be tracked and controlled with the involvement of human resources. There is a risk that people and adult education will be paired with the use of AI without human influence and transparency.

The ILA data model can be used to address the above anomaly.

The feasibility study shows that a new, previously hidden application of the ILA data model can be developed. Namely, that the application of AI can take place in 2 phases. In the first phase, the AI is responsible for filling in the ILA data model tables for individuals and training using the widest possible range of unstructured information sources. At this point, it is possible for a human to intervene, check and, if necessary, modify the competences and competence levels established by AI. This ensures transparency and enables intervention. Based on the interviews conducted, we know that the process is similar in enterprises: the manager and the employee discuss the employee's competences profile together and determine the soft skills development needs of the employee based on this. In phase 1, the AI essentially acts as a complex measurement tool.

In phase 2, the ILA data model, which has been verified by stakeholders and modified, if necessary, serves as the sole source of information for the AI. Based on the completed ILA data model, the AI matches participants and courses. This project focuses exclusively on phase 2, as the ILA data model is populated with data by Partnership experts rather than by the AI.

Of course, it is debatable whether AI has really reached the level of development outlined, but in our view it is a fact that rapid development is heading in this direction.

8.2. Recommendations for the applicability of the ILA data model

This chapter summarises the recommendations for the ILA data model's practical application.

8.2.1. Applicability in practice

The ILA data model uses structured data, i.e. data on people and courses that do not exist in reality. This approach was based on the findings of the feasibility study and accompanying discussions with stakeholders (e.g. interviews), which indicated that it would be almost impossible to obtain real-life data on individuals and courses in the context of the project. Real-life personal data would require extensive privacy safeguards and those who hold such databases are restrictive about sharing them. At the same time, real-life course databases are often limited in terms of the data categories available, biased by the purpose of the database, and difficult to optimise for the data model. The non-real data solution has many advantages in terms of project feasibility. One of the most important advantages is that it models a possible future state when the concept of ILAs is already implemented in the field of soft skills training.

The practicality of the ILA data model is ensured by its flexibility. The design of the ILA data model allows for the replacement of the data fields in it according to current expectations, the expansion of the value sets for filling the data fields, the filling of data sets for training AI with real data, and the replacement of test data with real data. With the help of the methodological guide that will be created later as a result of the project, the listed activities can be carried out under real conditions. The necessary data tables and applied AI solutions are fully available to interested parties.

The ILA data model provides opportunities for the customer side (citizen, state, company). The results obtained with the help of the ILA data model ultimately lead to types of training, on the basis of which it is possible to assign specific training to individuals.

In practice, there are two main approaches. In one case, the distribution of the available budget per individual can be modelled, while in the other case, the cost requirements for an optimal training portfolio can be modelled and calculated.

8.2.2. Application cases for the data model

Use cases identified in the ILA data model feasibility study include:

- In the case of publicly funded schemes, a budget is set for adult education. The ILA data model can be used to make the training offer more targeted by uploading the data tables on specific target groups during the planning phase of the project. The ILA data model can be used to determine the characteristics of training in the ILA scheme, e.g. for digital skills. The ILA data model allows organisations to calculate the total cost of a planned programme while testing different ways to match people and courses.
- The data model developed can be used to define training parameters and record learner data. In accordance with a company's policy, an organisation can use a pre-trained AI to assign courses to calculate the costs.

- In career guidance, an AI that has been previously trained with customer-specific data and is part of the ILA data model can be used to make a training offer. Knowing the types of training will help in selecting specific training and enrolment.

8.2.3. Supportive environment

The introduction of the concept of ILAs has implications for adult education as a whole. By providing citizens with a wide range of learning funding options, it also increases the need for citizens to consciously plan their participation in adult education.

The feasibility study points to the need to provide citizens with a wide range of support services in order for them to benefit from the opportunities offered by ILAs. The support system includes self-assessment and measurement tools, career guidance opportunities, publicly available and continuously updated training registers, research that analyses and publishes adult education processes, future projections for adult education, and quality assurance in adult education.

