

European Software  
Skills Alliance.

# European Mobility Programme

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**Report on WP6 Task 6.2**

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Erasmus+ Programme  
of the European Union

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## **Towards a European Mobility Programme, 2024, Final version**

Deliverable D.9: “European Mobility Programme”

*This document is a draft version and is subject to change after review coordinated by the European Education and Culture Executive Agency (EACEA).*

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## **About ESSA**

The European Software Skills Alliance (ESSA) is a four-year transnational project funded under the EU’s Erasmus+ programme. It ensures the skills needs of the rapidly evolving Software sector can be met — today and tomorrow.

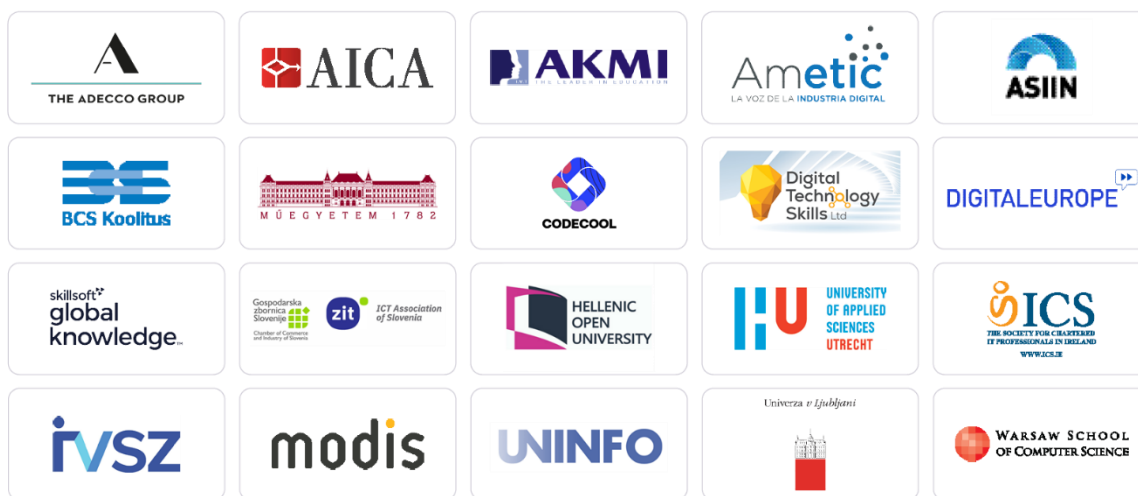
ESSA provides current and future software professionals, learning providers and organisations with software needs with the educational and training instruments they need to meet the demand for software skills in Europe.

ESSA will develop a European Software Skills Strategy and learning programmes for Europe. It will address skill mismatches and shortages by analysing the sector in depth and delivering future-proof curricula and mobility solutions; tailored to the European software sector’s reality and needs.

## Project partners

The ESSA consortium is led by DIGITALEUROPE. It is composed of academic and non-academic partners from the education, training, and software sectors.

**View all project partners:** [ESSA Partners](#) | [ESSA Associated Partners](#)



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## List of abbreviations and acronyms

Abbreviation	Term
<b>CPD</b>	Continuous professional development
<b>e-CF, EN 16234-1</b>	European e-Competence Framework, European Norm 16234 - Part 1: Framework
<b>EC</b>	European Commission
<b>ECTS</b>	European Credit Transfer and Accumulation System
<b>ECVET</b>	European Credit System for Vocational Education and Training
<b>EQAVET</b>	European Quality Assurance in Vocational Education and Training
<b>EQF</b>	European Qualifications Framework
<b>ESCO</b>	European Skills, Competences, Qualifications and Occupations
<b>ESSA</b>	European Software Skills Alliance
<b>EEA</b>	European Education Area
<b>EU</b>	European Union
<b>HE</b>	Higher Education
<b>ICT</b>	Information and Communication Technology
<b>LO</b>	Learning Outcome
<b>LU</b>	Learning Unit
<b>PLO</b>	Programme Learning Outcome
<b>VET</b>	Vocational Education and Training
<b>WP</b>	Work Package

# 1 Executive Summary

## 1.1 Introduction

This report “European Mobility Programme” is a deliverable related to Work Package 6 Sustainability, Task 6.2 of the European Software Skills Alliance. Consistent with the overall approach to Sustainability taken by the partnership, the report provides a transversal project result that practically incorporates, in main parts, key ingredients and outcomes achieved from joined efforts by WP2, 3, 4 and 6.

## 1.2 Objective

The main objective of this report is to provide an overview of the mobility related aspects and activities of the ESSA partnership that have been considered and carried out so far, through the successive stages of the ESSA work programme and with an intensified view in Year 3.

It furthermore aims to report on the first practical experiences of the partners in the short-term implementation of digital mobility in their pilot learning programmes, and closes with a brief outlook on the mobility-dedicated work in the final project year.

## 1.3 Approach

Following brief discussion of the mobility in learning concept — seeing the primary aim of mobility in providing students and/ or teachers with an international learning and/ or teaching experience linked to a formal learning programme at their home institution — and ESSA taken approach to curricula, learning outcomes and EU-level recognition in the Introduction section, the heart of this report is structured by three main sections.

The first main section (chapter 3) provides a brief overview on European instruments and tools that can be used to support Mobility in learning in general and in Software Professional Skills development specifically, across Europe. This means, in particular,

- Mobility practical instruments supplied by the European Union (Erasmus+, Europass, Europass Mobility, European Student Card Initiative, Erasmus without paper),
- ICT and software services relevant European frameworks and standards providing a common European language to the sector, including levels of learning and of workplace proficiency, and thus facilitating shared understandings, definitions, and benchmarking as a basic prerequisite to stakeholder collaboration, agreement and successful mobility implementation (EQF, e-CF, ESCO, ECVET, EQAVET),
- As a key achievement of this project, the ESSA educational means and resources developed by the Alliance to facilitate international collaboration and mobility in professional skills development into Europe’s most demanded software skills and roles, by skilling, up-skilling and re-skilling at EQF levels 4/5, 6 and 7.

The second main section (chapter 4), reports on the methodology elaborated and the practical work performed by the ESSA partners dedicated to mobility in this third Year in context of the ESSA learning Programme Piloting phase (ongoing). This includes,

- Elucidation of the methodology approach taken by the partners,
- Collection of digital mobility methods elaborated by the partnership for short-term implementation,
- Practical implementation of mobility aspects in the ongoing ESSA Learning Programme Pilots.

The third section (chapter 5) gives a short outlook on the final work dedicated to mobility by the ESSA partnership in the project Year 4, focussing on long-term Sustainability. The main activities and action streams identified are,

- Finalising the implementation phase of digital short-term mobility aspects in the ongoing ESSA Learning Programme Pilots,
- Transforming this report into a publicly available "Mobility Guide" that outlines the key principles for using the ESSA educational resources and results in support of learning mobility to the general public in educational institutions of all types (public, private, VET, HE, CPD),
- Capitalising the maturity of ESSA outcomes achieved by elaborating between the partners a European Mobility Programme for software professional skills development., and exploring EU Mobility Programme Funding and new collaboration opportunities for the partnership.

## 1.4 Conclusions

EU existing instruments (among others, Erasmus+ Key Action 1, Europass), together with software sector and skills development relevant European frameworks and standards are basic enablers to achieve mobility in software professional learning context. The ESSA main deliverables developed to provide the European Software Service sector with educational means and resources to skill, up-skill and re-skill students and professionals into in-demand software roles, give significant input and support to planning, implementing and following-up a European Mobility Programme. Practical first implementation of digital mobility aspects with short-term impact in the still ongoing piloting phase provides a valuable test environment. The experiences gained there strengthen the relationships and international collaboration, between the partners and further enhance the common basis of understanding, as a key prerequisite to prepare for long-term mobility beyond the project lifecycle. Particular attention will be paid to these aspects and to the formulation of a European Mobility Programme in the final year of the project.

## 1.5 Use of this document

This report outlines the main results, conclusions, and still ongoing work specifically geared to mobility. This document provides evidence of collaborative efforts in addressing mobility aspects on various levels, from examining existing European mobility schemes and instruments, to how mobility is considered in the main ESSA outcomes, to the testing of



short-term digital mobility in the ongoing ESSA pilot projects, and will conclude with an outlook on future work in ESSA Year 4.

## 2 Introduction

The European Software Skills Alliance's (ESSA) main mission and objective is to provide current and future software professionals, learning providers, and organisations with software skills needs, with the educational and training instruments they need to meet the demand for software skills in Europe — in the short, medium, and long term. To practically reach this purpose, ESSA is designing, implementing, and maintaining an innovative, effective, and sustainable Software Skills Strategy for Europe.<sup>1</sup> It also develops and pilots learning programmes at EQF levels 4/5, 6 and 7, based upon Curricula Guidelines<sup>2</sup> and a set of [Educational Profiles](#) with commonly defined learning outcomes on Programme and Learning Unit level that will ensure the skills needs of the rapidly evolving Software Services Sector can be met. The Alliance is addressing skill mismatches and shortages by analysing the sector in-depth and delivering future-proof software professionals' curricula and learning programmes, learning materials, validation approaches, as well as mobility solutions; tailored to the EU software sector's reality and needs.

Expanding on Hendriks, Ubachs (2022)<sup>3</sup>, the Alliance identifies the core aim of mobility in learning context in providing students and/ or also teachers with an international learning and/ or teaching resp. teaching related (e.g., in context of assessment) experience, linked to a formal learning programme in their home learning providing institution. The mobility is based on an agreement between institutions and a learning agreement, which guarantees the rights of the students.

Furthermore, Hendriks, Ubachs (2022) specify Mobility in Learning Programmes as "implementing international learning experiences within transnational course and curriculum collaboration partnerships based upon the principle of international curriculum and course design, and recognition."<sup>4</sup>

However, the challenge for Skills Alliance projects is to develop effective education and training solutions that are quickly adopted. Traditionally, such rapid adoption can be hindered by factors such as national regulations and slow and complex processes within educational institutions. ESSA's innovative approach lies in not focusing on internationally

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<sup>1</sup> A Software Skills Strategy for Europe. European Software Skills Alliance, Reviewed version, 2024.

<sup>2</sup> How to design Software Professionals' Curricula. From ESSA Software Skills Strategy to Educational Profiles to example curricula. Reviewed version, European Software Skills Alliance, 2024.

<sup>3</sup> Henderikx, Piet, & Ubachs, George (2022). Models and Guidelines for digital collaboration and mobility in European higher education.

<sup>4</sup> Ibid.

standardised curricula and the actual delivery of education and training but rather in ensuring that the same learning outcomes are achieved regardless the curriculum in a specific situation. This means that learning providers do not need to adopt another curriculum or approach; instead, they only need to ensure that learners achieve the defined learning outcomes as defined by the ESSA Educational Profiles designed by the Alliance to prepare for Europe's most demanded software skills and roles. Shifting the focus from standardised curricula to educational profiles, including learning outcomes, makes the uptake easier and more flexible, while facilitating the comparability and recognition of these outcomes.

For an agreement on a Mobility Programme in the context of the ESSA approach, this means that no international curriculum has to be agreed; instead, the focus will be on the mutual recognition of learning outcomes that are commonly agreed by the Alliance.

In ESSA Year 3, the Task 6.2. "European Mobility Programme" provided the ESSA partnership with the opportunity to reflect on Mobility in the European Education Area (EEA) explicitly and to experiment with Mobility aspects in the ESSA learning programmes practical piloting context. The following main sections look in more detail at the joint efforts undertaken this year to address the issue of mobility at different levels. Chapter 3 examines existing European mobility enabling instruments including funding programmes, and elucidates the mobility related value and usage potential of the main ESSA outcomes. Chapter 4 is dedicated to the practical work carried out by the partnership in Year 3, in particular in the context of short-term digital mobility implementation in the ongoing ESSA pilot projects. The report concludes with an outlook on the work in the final project year 4.

## **3 Existing mobility supporting instruments and tools**

### **3.1 Mobility instruments supplied by the EU**

Within the investigation of instruments provided by the European Union that can potentially support Mobility in software professional skills acquisition and recognition across EQF levels 4/5, 6 and 7 (upskilling, reskilling and new skilling), the following were identified: Erasmus+, Europass, Europass Mobility, European Student Card Initiative, and Erasmus Without Paper. The essence of each instrument is displayed in the following sections, and this based directly on the indicated sources from the European Commission.

#### **Mobility projects funding by Erasmus+ Programme**

Under the Erasmus+ Programme key action 1<sup>5</sup>, the European Commission supports organisations active in the fields of training, education and youth to carry out projects promoting *different types of mobility*. A mobility project supported by the Erasmus+ Programme will consist of the following stages:

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<sup>5</sup> <https://erasmus-plus.ec.europa.eu/programme-guide/part-b/key-action-1/what-is-a-mobility-project>

- **Planning** (including defining the learning outcomes, activity formats, development of work programme, schedule of activities)
- **Preparation** (including practical arrangements, selection of participants, set up of agreements with partners and participants, linguistic/intercultural/learning- and task-related preparation of participants before departure);
- **Implementation** of the mobility activities;
- **Follow-up** (including the evaluation of the activities, the validation and formal recognition - where applicable - of the learning outcomes of participants during the activity, as well as the dissemination and use of the project's outcomes).

As stated on the EC dedicated website, the Erasmus+ Programme reinforces the support offered to the participants of mobility activities in improving their foreign language competences before and during their stay abroad, including reinforced linguistic support grant for participants in long term mobility in VET, adult education and school education fields. An Erasmus+ Online Language Support (OLS) service provides the participants in mobility activities with the opportunity to assess their knowledge of languages as well as to follow online language courses to improve their competences.

Another important element of innovation and quality of mobility activities is that Erasmus+ participating organisations have the possibility to organise mobility activities within a broader strategic framework and in the medium term. Through a single grant application, the coordinator of a mobility project will be able to organise several mobility activities, allowing many individuals to go abroad to different countries. As a consequence, under Erasmus+ the applicants will be able to conceive their project in line with the needs of participants, but also according to their internal plans for internationalisation, capacity building and modernisation.

When opting for submitting an application under Erasmus+ flag, applicants can apply for an individual Erasmus accreditation for their organisation, or for an Erasmus accreditation for mobility consortium coordinators. The Erasmus Accreditation plays an important role in ensuring high impact of Key Action 1. Erasmus accreditation is a tool for organisations in vocational education and training (VET), school education and adult education that want to open up to cross-border exchange and cooperation. Award of the Erasmus accreditation confirms that the applicant has set up a plan to implement high quality mobility activities as part of a wider effort to develop their organisation. This plan is called an Erasmus Plan and it is a key part of the application for Erasmus accreditation. »

The advantage lies in the fact that : « Successful applicants for Erasmus accreditation will gain simplified access to Key Action 1 funding opportunities in the form of accredited mobility projects presented in this Guide.<sup>6</sup> The Erasmus Charter for Higher Education, the Erasmus accreditation for higher education mobility consortia and the Erasmus accreditations in the fields of VET, school education, adult education, and youth allow

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<sup>6</sup> Erasmus+2024 Programme Guide [https://erasmus-plus.ec.europa.eu/sites/default/files/2023-11/2024-Erasmus%2BProgramme-Guide\\_EN.pdf](https://erasmus-plus.ec.europa.eu/sites/default/files/2023-11/2024-Erasmus%2BProgramme-Guide_EN.pdf)

organisations to benefit from Key Action 1 on a continuous basis, letting them focus on longer-term objectives and institutional impact.

In the field of education and training and depending on the profile of participants involved, the following types of mobility projects are supported under Key Action 1 of the Erasmus+ Programme:

- Mobility projects for higher education students and staff
- Mobility projects for VET learners and staff
- Mobility projects for school pupils and staff
- Mobility projects for adult education learners and staff<sup>7</sup>

### **Europass and Europass Mobility**

Europass<sup>8</sup> is a popular European Union tool with a website on which users can enter their CV and details of their education and training and create letters of application. The site also provides information on studying and applying for jobs in various European countries. And, most importantly, the site also provides information and a search tool on study or training possibilities and on details about a certain certification or degree.

If students have completed a traineeship or a semester studying in another country, and are looking for an official way to record their experience, Europass Mobility<sup>9</sup> provides a document which can help to showcase skills acquired during that experience in a simple, consistent and understandable manner.

### **European Student Card Initiative**

The European Student Card Initiative (ESCI)<sup>10</sup> is a key element in the European Education Area (EEA) by 2025 to unlock the full potential of the EEA by:

- promoting student mobility and participation in educational and cultural activities,
- making the management of mobility easier, more efficient and greener, and
- promoting a strong European Student Identity

In parallel, the ESCI also supports the objectives of the Digital Education Action Plan 2021-2027, launched in 2020 under the same Education Package as EEA. In this framework, the ESCI plays a key role in simplifying the management of the student mobility through streamlined electronic exchange and verification of student data.

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<sup>7</sup> <https://erasmus-plus.ec.europa.eu/programme-guide/part-b/key-action-1/what-is-a-mobility-project>

<sup>8</sup> <https://europa.eu/europass/en>

<sup>9</sup> <https://europa.eu/europass/en/work-europe/mobility>

<sup>10</sup> <https://erasmus-plus.ec.europa.eu/european-student-card-initiative/about>

## Erasmus Without Paper

Erasmus Without Paper<sup>11</sup> is a digital solution connecting systems in use at HE institutions so they can manage their Erasmus+ mobilities online.

### 3.2 Relevant EU frameworks and standards

In order to ensure sustainability and long-term impact of the European Software Skills Alliance's results, ESSA educational resources are closely aligned with relevant European frameworks, standards and tools, in particular EQF, e-CF, ECVET, ECTS, ESCO, EQAVET. Common agreed frameworks and standards ensure mutual understanding and increase transparency thus are basic mobility enablers. Taking the European Qualifications Framework as the most commonly used and EU-wide adopted example across sectors, countries and stakeholder groups, frameworks provide the common language and reference points that are needed to ensure a common basis, understand each other and reach agreements.

This compliance criterion is applied and consistently implemented in all ESSA provided educational means and resources outlined in the coming section.

### 3.3 The ESSA provided educational means and resources

The ESSA provided educational means and resources, results of the successive ESSA technical work packages, build continuously on each other. First, a comprehensive needs analysis was carried out, which provided a solid basis for the development of the first draft of the European Software Skills Strategy (D.5), subject to annual revision through the introduction of an annual review process, involving 11 countries analysing locally as input to EU-level conclusions. This main output formed the basis to develop the curriculum guidelines and educational profiles for Europe's most demanded software roles at EQF levels 4/5, 6 and 7 (D.7), a framework for recognised qualifications and certifications (D.8) and accreditation standards and criteria (D.20), currently taken further to a Quality Label. These results provided the essential input to the work started in this reporting period (Year 3) by WP4 on learning programmes design, testing and roll-out, leading to the ESSA Learning Programmes and Learning Material (D.10), Testing in Pilots (D.11), Work-based Learning Component (D.12), Train-the-Trainer Programme (D.13), and this report (D.9). All outcomes are draft deliverables under continued internal review process, various of them already published, and will be fully made available in final version via the ESSA resources section at the end of next year:

The figure below shows the key deliverables in overview and how they are building upon each other, embedded in the overall ESSA workflow.

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<sup>11</sup> <https://erasmus-plus.ec.europa.eu/european-student-card-initiative/ewp>

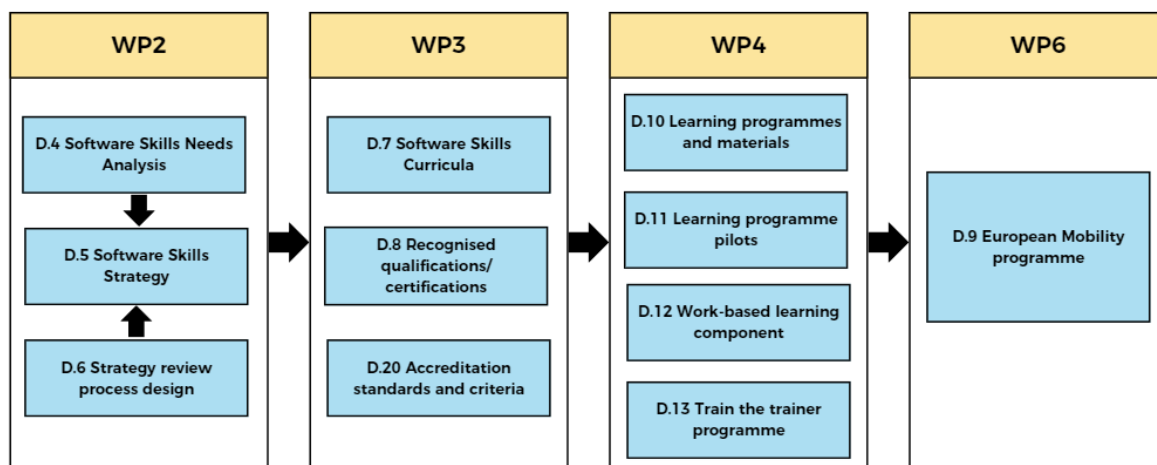


Figure 1. ESSA key deliverables building upon each other in the project workflow

Looking at the key stages of a mobility project as defined by the European Commission (see previous section 3.1), the ESSA educational resources provide input and significant support throughout the entire Mobility Programme project lifecycle, and this in particular to the stages of Planning, Implementation and Follow-up. This is illustrated in below Figure 2.

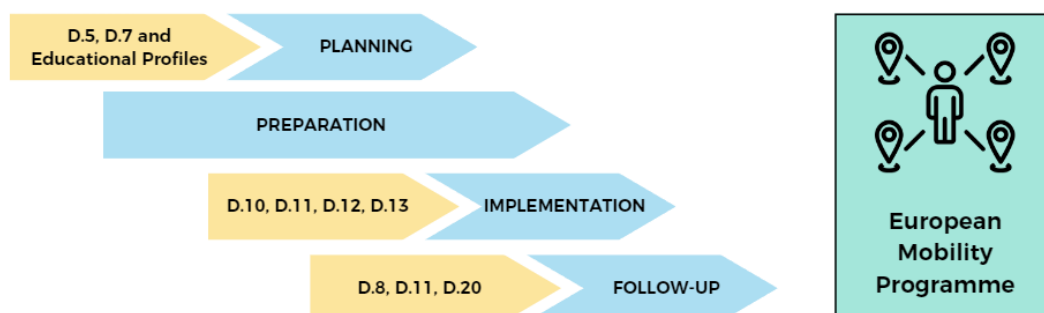


Figure 2. ESSA deliverables supporting European Mobility Programme — Key stages

The ESSA results, which have been achieved over three years and through joint partnership efforts, and will be further tested and improved in year 4, provide in sum a solid, proofed common EU-level base for planning, preparing, implementing, and follow-up of international learning experiences in professional skills development for Europe’s most demanded software roles. More detailed elaboration on value and impact of ESSA outcomes to Mobility in learning and their applying to the specific stages of a European Mobility Programme is provided in [Annex 8.1](#).

## 4 Mobility dedicated work in ESSA Year 3

### 4.1 Methodology

In the third year the ESSA partnership has looked at the practical implementation of mobility into the Alliance’s work streams in the short-, medium- and long-term.

In spring 2023, the pilot partners held a series of workshops on the topic of mobility in ESSA learning programmes, including in their learning pilots starting in autumn.

A first workshop was dedicated to identifying the right scope for Mobility related practical work in the Piloting phase. Within the ESSA Educational Profiles, learning outcomes are specified at Programme and Learning Unit level and commonly agreed by the Alliance, leaving the way of achieving them flexible and to localised curricula and learning activities. Therefore, various entry points and levels of intensity for learning and teaching collaboration agreements between partners exist. In their discussion, the pilot partners concluded that the implementation of long-term mobility in terms of full Educational Profiles, programme learning outcomes and learning unit outcomes is not realistic. Besides of constraints in timing, a better maturity of the recognition principles, planned to be achieved in year 4, would be needed. Nevertheless, the partners agreed that the ESSA pilots provide an ideal environment for identifying and testing mobility aspects in cooperation between partners at the level of learning activities and with short-term impact. The overall approach taken is illustrated in the figure below.

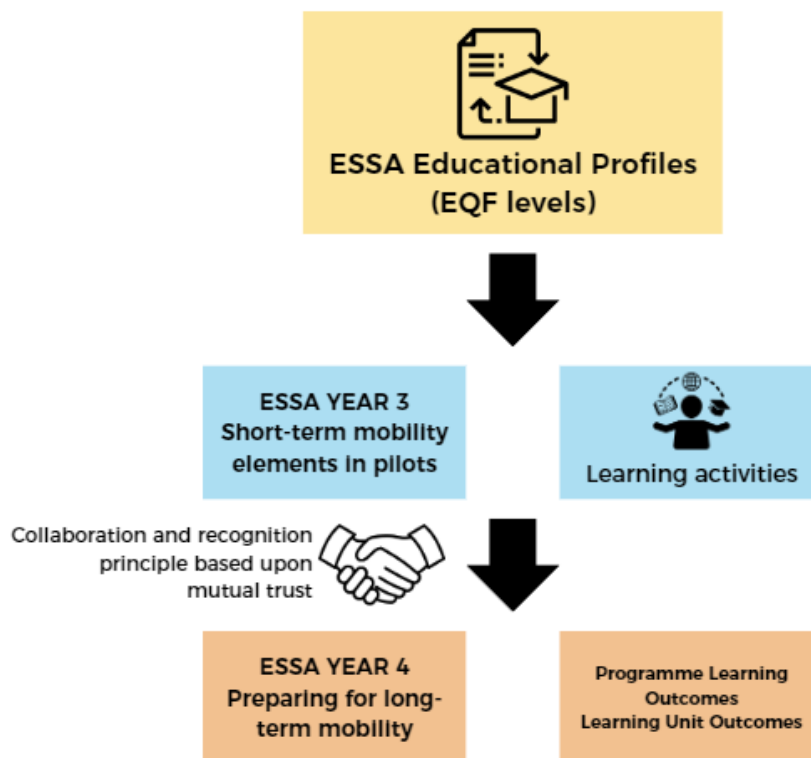


Figure 3. The ESSA Educational Profiles offering entry points for short- and long-term mobility to the ESSA work in Year 3 and Year 4

The partners decided furthermore to fully focus on digital mobility, allowing the ESSA students and teachers involved to gain learning or teaching experiences in another ESSA learning partner institution outside their own country, without physically leaving their home. Three good reasons were identified for the digital mobility approach:

- Accessibility: The opportunities are open to all students participating in the ESSA Learning Programmes without particular cost expenses (e.g. travel, allocation),
- Feasibility & Timing: The activities are easier and more agile to organise within the short timeframe in which the ESSA piloting is performing (12 months).
- Preparing for future (potentially, also physical) mobility: These first experiences, low in costs investment but high in creativity and experiences return, give a good ground for preparing for future action on a broader scale, including physical mobility, e.g., by defining together a European Mobility Programme and/ or joined applications on Erasmus+.

The ESSA Alliance was launched in the middle of the pandemic crisis and had been working remotely for almost 20 months. The partnership had therefore gained solid experience with purely digital collaboration on the international level. Henderikx and Ubachs (2022) outline in their report<sup>12</sup> how digital modes of teaching and learning broaden the potential of international education and mobility, and, following the emergency practices during the Corona crisis, innovative digital approaches are further developed according to current teaching and learning design principles. Likewise, the ESSA piloting partners held a creative workshop on easy methods and innovative approaches to mobility with short-term impact by collaboration between the partners on learning activity level. These were further consolidated and systematised in the follow-up and provided a good basis for further action.

Following collection of methods and looking at the completed piloting planning, the partners started to identify the opportunities of collaboration between the organisations and considering the specific learning programmes. To practically address the process from both demand and supply perspective, the partners started to identify and indicate what their organisation could offer, and also where a particular need or added value was identified to import learning activities from another piloting partner.

The results of these exercises, with the digital mobility component implementation in the pilots still in progress, are provided in the following sub-sections.

## 4.2 Digital mobility methods for short-term implementation

The digital mobility methods collection elaborated by the partners provides a practical tool that can be used for inspiration now and also over time. It is shown in overview in the table below.

n°	Collaboration method	Comments
1	Guest lecture	<ul style="list-style-type: none"> <li>• guest lectures by experts, can be online or f2f</li> </ul>

<sup>12</sup> Henderikx, Piet, & Ubachs, George (2022). Models and Guidelines for digital collaboration and mobility in European higher education.



n°	Collaboration method	Comments
		<ul style="list-style-type: none"> <li>open invitations to students so they can join classes (invite them beforehand; organise with partner)</li> <li>an English run virtual class could open one module/activity to external students from the Consortium</li> </ul>
2	Students from two (or more) piloting partners working together on specific tasks	<ul style="list-style-type: none"> <li>organise a symposium (= students presenting their topics in a more creative way, e.g. poster, ideally interactive and less formal)</li> <li>participate in a challenge (= a problem to solve, can be a competition for a week)</li> <li>share a practical task</li> <li>work on a case study project'</li> <li>f2f, couple of days intense work together</li> <li>possible outcome: formulate a shared final document, presentation or report</li> <li>more WBL activity oriented; the students can really gain knowledge and value from the collaboration</li> <li>how to make it happen: 2 institutions should work together and agree on the activity + assessment's method</li> </ul>
3	Joint project with different roles	<ul style="list-style-type: none"> <li>Students from different organisations working in different roles on an IT project (e.g. frontend, backend, PM, Devops, etc.)</li> </ul>
4	Sharing a couple of classes together	<ul style="list-style-type: none"> <li>synchronised</li> <li>asynchronous: recording of class (only available for couple of weeks)</li> <li>e.g. what is the outcome of WBL in a specific programme?</li> <li>short pre-recorded presentations by students</li> </ul>
5	Mixing part-time and full-time students across organisations	<ul style="list-style-type: none"> <li>identify good composition for mutual benefit to all students</li> </ul>
6	Short extra-curricular activity delivered by external trainer/ professor on specific/innovative topics (e.g., 45 minutes on ChatGPT/AI)	<ul style="list-style-type: none"> <li>opportunity: bring additional knowledge to students on "hot" topics</li> </ul>
7	Virtual learning community	<ul style="list-style-type: none"> <li>synchronous and asynchronous possibility</li> </ul>
8	Hackathons	<ul style="list-style-type: none"> <li>virtual: same day etc.</li> <li>prices always work 😊</li> <li>Mark for the course?</li> <li>Organised by a company, also other kinds of competitions</li> </ul>
9	Students' bazaar competitions	<ul style="list-style-type: none"> <li>Competitions on best ideas</li> <li>See for example <a href="https://bledconference.org/students-bazaar/">https://bledconference.org/students-bazaar/</a> but also IS associations might be willing to collaborate (AIS, IIMA, IFIP etc.).</li> </ul>
10	Internships	<ul style="list-style-type: none"> <li>Large organisations (directly connected, or affiliated partners) offer internship programmes in different countries for students</li> </ul>

n°	Collaboration method	Comments
11	Summer School organized by 2 partners with students of both countries to attend	<ul style="list-style-type: none"> <li>• great chance for knowledge sharing</li> <li>• difficult to organize for a VET in terms of shared curriculum</li> <li>• Challenge: the target group should be the same</li> </ul>
12	Guest lecture providing local practical insights more in general (not focussing on the LO's)	<ul style="list-style-type: none"> <li>• what is going on in the country</li> <li>• educational system</li> <li>• software market insights</li> <li>• how to get a job (e.g. language requirements: speaking English might be enough – or not)</li> </ul>
<b>TRAIN THE TRAINER</b>		
13	Professional development workshops	<ul style="list-style-type: none"> <li>• Faculty/researchers/staff collaborating and learning from each other</li> </ul>
<b>FOR LONG-TERM MOBILITY</b>		
14	Full-fledged exchange in one course with recognition of education.	
15	Traditional students exchange programs	<ul style="list-style-type: none"> <li>• Summer school, etc.</li> </ul>
16	Cultural exchange programs	<ul style="list-style-type: none"> <li>• Non-academic, just to get to know the culture of the other country better, can be tailor-made to certain topics</li> </ul>

Figure 4. The digital mobility methods collection elaborated by the ESSA partners

### 4.3 Short-term digital mobility elements in the ESSA pilots

The pilot phase of the ESSA project involves 320 learners and 80 educational professionals across eight ESSA partner countries (France, Estonia, Greece, Ireland, Italy, Netherlands, Poland, Slovenia) on EQF levels 4/5, 6 and 7 (covering VET, HE and CPD). 14 learning programmes in total are offered by the ESSA piloting partners, and this is taking place from August 2023 to June 2024. The pilot programmes provide an opportunity to test mobility principles with students, teachers and trainees. The pilot implementation is flexible, taking place in various learning approaches, including both public and private, VET institutions, and universities. Following conclusion, an extensive evaluation phase will be carried out together with students and teachers. The results of these experiences will provide important input to the final improvements of all ESSA educational instruments and resources prior to full project delivery.<sup>13</sup>

Following the ESSA overall approach and as outlined before, the pilot programmes are based on the educational profiles and structured around commonly agreed programme learning outcomes (PLO's) and learning unit (LU) outcomes, allowing for curricular

<sup>13</sup> For more detail see: Piloting ESSA Learning Programmes (D.10). The European Software Skills Alliance, 2024

flexibility. As explained in above section 4.1., the piloting partners opted for integrating a digital mobility component with short-term impact on the learning activity level, giving opportunity to share and test international learning experiences in direct collaboration between suitable partners and piloted programmes. The latest state of this work in progress is provided in the table below.

Institution	Country	Programme piloted	EQF	Mobile Learning Activity (LA, offer to partners) — work in progress	Mobility Learning Activity demand/ performed) — work in progress
Addeco Formazione SRL (VET)	Italy	Developer	4/5	Modality: expert lectures on line, in English duration 2 hours each - Mobile LA1: Team Collaboration - Mobile LA2: Project Management - Mobile LA 3: Fundamentals of Cybersecurity	n/a
		Test specialist	4/5	Modality: expert lectures on line, in English duration around 2 hours each - Mobile LA 1: Team Collaboration - Mobile LA 2: Project Management	Planning in progress
BCS Koolitus (VET)	Estonia	Developer	4/5	Online lectures web development basic technologies (HTML, CSS, Javascript) for beginners	Modality: expert lectures on-line, in English duration around 2 hours Mobile LA1: Pascal Ravesteijn, Digital Economy of the Netherlands, Digital Transformation Leadership in Organizations ; NL
DTSL (VET)	Ireland	Developer	4/5	Planning in progress	Planning in progress
Globalknowledge (VET)	France	DevOps Expert	6	Planning in progress	Planning in progress
		Developer	6	Planning in progress	Planning in progress
Globalknowledge (Cloud developer) (VET)	Netherlands	Developer	4/5	Planning in progress	Planning in progress
Hellenic Open	Greece	Solution Designer	7	Planning in progress	Planning in progress

University (HE)		DevOps Expert			
		DevOps Expert	7	Planning in progress	Planning in progress
HU University of Applied Sciences Utrecht (HE)	Netherlands	Developer	6	Students challenge (mini-Hackaton): share a HU-Open ICT challenge with the ESSA partners. Our idea is to let the partners experience for themselves how HU teaching method works - We introduce the 'problem'/challenge and everyone can tackle it themselves. We envision 2 or three sessions: 1 kick-off, 1 knowledge-sharing session (where everyone contributes something) and 1 end session to provide feedback/share each other's solutions with each other.	Guest lecture, online - topic could be related to AI for instance
		DevOps Expert	6		
		Solution Designer	6		
University of Ljubljana (HE)	Slovenia	DevOps Expert	6	On-line Webinar "Software Testing". It is being piloted between March 4th 2024 and March 22nd 2024. Held in Slovene, however, all non-Slovene speaking participants will have the option to use a real-time speech recognition and translation tool developed at Uni Ljubljana.  The training is designed for individuals who want to acquire or upgrade their knowledge in the field of software testing in DevOps environments.	Planning in progress
Warsaw School of Computer Science (HE)	Poland	Developer	7	Planning in progress	Planning in progress

Figure 5. Implementing short-term digital mobility elements in the pilots – work in progress

## 4.4 Recognition principles

As explained before, the ESSA educational resources do not adopt the principle of international curriculum and course design since this classical approach is too rigid to meet the fast-changing needs of a rapidly evolving sector like software services, and would limit the tailoring that is needed to fulfil local needs and specific target groups. The focus is set instead on educational profiles with a set of agreed learning outcomes.

The ESSA learning outcomes specified for each Educational Profile and the proof of achieving these learning outcomes will become a key ingredient to the ESSA recognition principles and mechanisms that are still under work and will be finalised in the Year 4; in the form of professional certifications or micro-credentials which can be showcased by learners through digital badges.

While validation and formal recognition — where applicable — of the learning outcomes of participants during the activity (or at least the identification and documentation of the learning outcomes of participants in a mobility activity)<sup>14</sup>, are key for a long-term mobility implementation, and will be subject of work in year 4, the partners agreed for the recognition of outcomes at the level of learning activities in the piloting phase started in year 3 on the principle of mutual trust.

## 4.5 About practical benefits

There is general agreement that implementing international learning experiences has many benefits to the various target groups. Among these, the following were identified in the ESSA piloting context:

- Increased attractiveness and inspiring experiences for students and teachers,
- Interesting proof of evidence for job seekers towards international employers,
- Interesting insights into the labour market and professional practice of another European country,
- Useful experiences to prepare for physical mobility and future funding opportunities (e.g. Erasmus+ / exchange mobility),
- Deepen transnational collaboration between the alliance partners,
- Practice proof of achieving some ESSA main goals in context.

The evaluation phase of the ESSA pilots, a key step of the ESSA Learning Programme Piloting that will be carried out together with students and teachers by WP4 in Year 4, will further illuminate on the practical impact and benefits achieved by the European Mobility component embedded in the pilots.

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<sup>14</sup> Erasmus+ Programme-Guide 2024 and Erasmus+ Quality standards for courses under Key Action 1 (learning mobility of individuals) at: <https://erasmus-plus.ec.europa.eu/resources-and-tools/quality-standards-key-action-1>

## **5 Preparing for long-term mobility — Outlook Year 4**

### **5.1 Finalising the mobility activities in ESSA piloting phase**

The ESSA learning programme pilot phase is currently underway in our partnership, performed by 9 ESSA partners on EQF levels 4-7 and with 14 programmes in 8 countries in total, with the internal KPI set of implementing 1-2 digital mobility elements on learning activity level per programme. The work on the digital mobility activities will be continued in the next year and following pilot completion, the ESSA partners will systematically analyse the short-term mobility experiences gained. These insights will provide another practical contribution to the final improvement of the ESSA educational resources.

### **5.2 European Mobility Guide for software skills development**

A strategic goal of ESSA is to provide the European software services sector with the educational instruments and resources, that are needed to meet the demand for software skills in Europe — in the short, medium, and long term. In the centre of the ESSA European approach taken to software professional learning is the agreement on a set of learning outcomes that are provided by the Educational Profiles. Broader recognition of these learning outcomes can provide an essential basis to European Mobility in the software learning field. In Year 4, this internal report is planned to be transformed into a publicly available Mobility Guide that gives practical guidance on how to make best use of the ESSA key outcomes in support of mobility in European software professional skills development.

### **5.3 European Mobility Programme with long-term impact**

In order to implement mobility with greater and long-term impact, the ESSA partnership is currently exploring the possibility of developing a mobility programme consisting of a series of interlinked measures and activities. Such a programme will be the result of decisions taken and committed to by the partners. Part of these decisions will be an agreement on the recognition of learning outcomes. In addition, the partners will consider the possibility of defining a mobility programme as part of an Erasmus+ application. As the Blueprint projects, including ESSA, focus on innovative approaches, a large part of this work can focus on digital mobility. Among other relevant aspects to be considered, attention will be paid to the fact that digital mobility is an effective option for teacher/ trainer mobility.

## **6 Conclusions**

EU existing instruments (among others, Erasmus+ Key Action 1, Europass), together with software sector and skills development relevant European frameworks and standards are basic enablers to achieve mobility in software professional learning context. The ESSA main deliverables developed to provide the European Software Service sector with educational means and resources to skill, up-skill and re-skill students and professionals into in-demand software roles, give significant input and support to planning, implementing and following-up a European Mobility Programme. Practical first implementation of digital mobility aspects with short-term impact in the still ongoing piloting phase provides a valuable test environment. The experiences gained there strengthen the relationships and international collaboration between the partners and further enhance the common basis of

understanding, as a key prerequisite to prepare for long-term mobility beyond the project lifecycle. Particular attention will be paid to these aspects and to the formulation of a European Mobility Programme in the final year of the project.

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## 8 Annexes

### 8.1 Annex 1 — ESSA outcomes impact and value to Mobility

Work in progress, for continued finetuning in ESSA Year 4. Even less obvious Deliverables (like D.4, D.5) can help learning institutions to gain market insights and take strategic decisions on learning programme offers and further activities on a higher level.

N°	Title	Target Groups	Executive Summary	Mobility and Mobility Programme Relevance/ value	Relevant to Mobility Programme Phase
D.4	Needs Analysis	All interested in recent labour market insights	The 2021 Needs Analysis draft report sheds light on the most needed software roles and skills in Europe. The conclusions are drawn based on the study of job vacancies, available research on software skills, education and training programmes, labour market reports, and databases. We also collected experts' input about their expectations for the future of software roles, skills, and provision.	Setting the European scene on how a programme meets market needs	1 — PLAN
D.5	A Software Skills Strategy for Europe	Strategic decision makers	The strategy presents perspectives and expert recommendations to skill, upskill, and reskill individuals into high-demand professional software roles. It sets the direction of the work ahead under three important pillars:	Identify key priorities	1 — PLAN

			training, education, and validation.		
D.7	How to design Software Professional Curricula	Curriculum designers, Teachers and Trainers	The report describes how the ESSA role profiles and Software Skills Strategy lead to effective curricula for skilling, upskilling, and reskilling. The report makes evident how the ESSA role profiles are translated into educational profiles that form the basis of European software professional curricula.	providing a common European approach to curricula and learning outcomes, for designing curricula specifications in local context	1 — PLAN
	Educational Profiles	Curriculum designers, Teachers and Trainers	The profiles translate the employers' skills need into educational terms. The competences, skills, and knowledge required to succeed in a software professional role are integrated into a full set of measurable learning outcomes. ESSA makes available nine education profiles to cover five software roles at different qualification levels — ranging from Vocational Education and Training (VET) to Bachelor, to Master.	Providing common agreed learning outcomes for Europe's most demanded software roles and skills	1 — PLAN
D.8	A Certification Framework for Software Professionals	Curriculum designers, Teachers and Trainers,	The report designs a certification framework considering micro-	offering guidance and facilitating EU-level recognition	1 — PLAN 4 — FOLLOW-UP

		Professionals	credentials, and using European standards like the e-CF, EQF and ECTS. By discussing implementation and maintenance of the framework, it is appealing to organisations offering education, training or certifications to uptake the framework and issue digital badges/ certifications based on it.	of the learning programmes, including issuing micro-credentials	
D.10	ESSA Learning Programmes & Material	Teachers and Trainers, Students	The “ESSA Learning Programme” presents the set of educational activities designed and organised to achieve the ESSA learning objectives and accomplish a specific set of tasks. The Programme builds on the ESSA’s <a href="#">educational profiles</a> covering 5 software roles at different qualification levels (EQF 4-7). The contents provided are focused on the presentation of the ESSA Learning programmes and related learning materials designed for each one of the Educational profiles developed within the work of the Alliance.	facilitating the training of π-shaped professionals that will be professionals in their original field as well as software professionals. using educational profiles and corresponding curricula in such a way that local needs can be fulfilled, besides making them generic enough for European wide recognition. supporting flexibility in educational programmes by designing modular programmes.	3 — IMPLEMENT

D.12	Work-based learning component	Teachers and Trainers	Incorporates and promotes work-based learning (WBL) as an internal element in software development education.	Giving inspirations and practical hints for embedding WBL's in software professional learning programmes.	3 — IMPLEMENT
D.13	Train the trainer	Teachers and Trainers	Provides a “guide/ready to use package” including all the useful information trainers, teachers and educators need to deliver the ESSA Learning Programmes provided for each Educational Profile at a specific EQF level.	Fosters the alignment of teachers and trainers with the knowledge, approach, objectives, learning outcomes and materials of the ESSA Learning Programmes.	3 — IMPLEMENT
D.20	<i>Under transformation to Quality Label Accreditation Standards and Criteria for Software Professionals' Education</i>	Strategic decision makers, Teachers and Trainers	The report introduces a QA scheme for the learning programmes in selected software-related areas such as, but not limited to, Software Development, Software Design, and DevOps. The proposed accreditation scheme aims to provide the procedural principles and learning outcome definitions needed to assess whether the study programmes fulfil the requirements of levels 5 to 7 of the European Qualification Framework for	providing guidance on accreditation of the learning programmes in line with European standards and criteria  Quality Label For accreditation of learning programme providers at EQF4-7, promoting inclusiveness and excellence	1 — PLAN 3 — IMPLEMENT 4 — FOLLOW-UP

Lifelong Learning (EQF). The two accreditation documents in the annexes encompass both the general and subject-specific framework standards as well as the procedural guidelines to be applied in the accreditation process of selected ESSA programmes.

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