Europass2 interoperability
Background document

This document was prepared as input for a brainstorming session on interoperability of the new Europass. It presents one of several approaches to interoperability that were discussed during the workshop. The final concept for interoperability in the new Europass is based on input during the workshop.

Deliverable prepared within the framework of the project

'Support for business analysis of Europass2'

Executive summary

Since its very beginning, the Europass framework has always been promoting interoperability, which is understood as the "*ability of information and communication technology systems to interact so as to enable the sharing of information, achieved through agreement by all parties and owners of the information*"[1]. The new Europass will further extend the interoperability possibilities of the current Europass in order to:

- Provide a platform for streamlined exchange of information amongst different actors;

- Increase cooperation amongst online talent platforms, public services, the private sector and education and training institutions; and

- Enhance the services offered to end-users in terms of showcasing their skills, qualifications and experiences, and accessing learning and job opportunities.

To this end, three services have been defined for the open interoperability mechanism of the new Europass framework:

- Re-use information on skills, qualifications and experience;

- Exchange information on learning and job opportunities; and

- Submit and manage learning and job applications.

Europass may support these services in various technical manners. At least two possibilities or paradigms could be possibly considered:

- **Linked open labour market:** labour market data would be published on the Web as open data that could be accessed and indexed by any third party. Any organisation could become publisher of labour market data by simply hosting them on their platform; and

- **Governed data exchange:** labour market data would be exchanged among a group of platforms which meet specific quality assurance metrics. The access is still open to any organisation, but they must first meet given principles, rules and standards.

These possibilities are to be discussed and further developed at the workshop.

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[1] DECISION (EU) 2018/646 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 April 2018 on a common framework for the provision of better services for skills and qualifications (Europass) and repealing Decision No 2241/2004/EC

List of abbreviations

API	Application Programming Interface
CV	Curriculum Vitae
EC	European Commission
ESCO	European Classification of Skills, Competences, Qualifications and Occupations
EU	European Union
EURES	European network of Employment Services
GDPR	General Data Protection Regulation
HR	Human Resources
ICT	Information and Communication Technologies
IT	Information Technology
JV	Job vacancy
MS	Member State
NEET	Not in Employment, Education or Training

Glossary

Unless otherwise mentioned, the definitions provided below were developed by the authors of this publication for the specific purposes of this project.

API endpoint – Unique web address (URL) that is part of an API and represents an actor as one end of a communication channel. Using the endpoint, external actors can perform operations (e.g. retrieve data) enabled by the API.

Competence – Ability to apply learning outcomes adequately in a defined context (education, work, personal or professional development)[2].

Cooperation model – Formal outcome of the cooperation between different actors. The cooperation model defines the terms and conditions for the utilisation of the Skills Cloud and it is formalised through individual agreements.

Digitally-signed credential – Electronic statement which is issued by an awarding body to an individual to confirm and provide proof of her/his learning outcomes.

Document and manage – Functionalities that allow individuals to compile and describe information on their skills, qualifications and experience and to continuously improve and update it.

e-portfolio – Digital dynamic tool that enables individuals to document, display and manage their skills, qualifications and experience throughout the lifespan of their career.

Experience – Knowledge, skills and competences which an individual gained by undertaking an activity for a certain period of time.

Guidance – A continuous process that enables individuals to identify their capacities, skills and interests, through a range of individual and collective activities to make educational, training and occupational decisions and to manage their individual life paths in learning, work and other settings in which those capacities and skills are learned or used[3].

Individual agreement – Formal agreement between actors connected to the Skills Cloud that aims to develop common interoperability solutions and lays down the main terms and conditions for data exchange between the participating actors.

Interoperability – Ability of organisations to interact towards mutually beneficial goals, involving the sharing of information and knowledge between these organisations, through the business processes they support, by means of the exchange of data between their ICT systems[4]. *Technical interoperability* means the ability of information and communication technology systems to interact so as to enable the sharing of information, achieved through agreement by all parties and owners of the information[5].

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[2] Cedefop (2014). Terminology of European education and training policy – A selection of 130 key terms (second edition). Luxembourg: Publications office.
[3] DECISION (EU) 2018/646 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 April 2018 on a common framework for the provision of better services for skills and qualifications (Europass) and repealing Decision No 2241/2004/EC.
[4] European Union (2017). New European Interoperability Framework – Promoting seamless services and data flows for European public administrations. Luxembourg: Publications office
[5] DECISION (EU) 2018/646 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 April 2018 on a common framework for the provision of better services for skills and qualifications (Europass) and repealing Decision No 2241/2004/EC.

Labour market information – Description of the condition of the labour market, past and present, as well as future projections. This information makes clear where work opportunities are increasing or decreasing, what occupations exist, what individuals need to study to become professionals in that occupation, what is required to take up an occupation, how individuals can find a job, change job or progress in a career[6].

Online platform – Web-based application that provides information and tools to *end-users* and allows them to complete specific tasks online[7].

Open standard – Technical standards that have been developed in a collaborative process, and have been published for free use by any interested party[8].

Personal data – Any information relating to an identified or identifiable natural person ('data subject'); an identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person[9].

Personal profile – A comprehensive representation of the skills and qualifications of an individual acquired through work and learning experiences, including through mobility and volunteering.

Provider – Actor of the Skills Cloud that exposes data (e.g. learning and job opportunities) to own API endpoint. Using this endpoint, external actors can perform operations (e.g. retrieve data) enabled by the API.

Qualification – Formal outcome (certificate, diploma or title) of an assessment process which is obtained when a competent body determines that an individual has achieved learning outcomes to given standards and/or possesses the necessary competence to do a job in a specific area of work. A qualification confers official recognition of the value of learning outcomes in the labour market and in education and training. A qualification can be a legal entitlement to practise a trade[10].

Skill – Ability to apply knowledge and use know-how to compete tasks and solve problems[11].

Skills Cloud – Open interoperability mechanism, based on open standards, which ensures the ability of ICT systems to interact to support the sharing of information on skills and qualifications, achieved through agreement by all parties and owners of the information[12].

Skill gap – Situation where an individual does not have the level of skills required to perform her or his job adequately. Skill gaps can be analysed at individual level (using a skills audit), at

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[6] Adapted from Cedefop's Labour market information (LMI) toolkit. Last checked on 18/10/2018 and available at: http://www.cedefop.europa.eu/en/toolkits/resources-guidance/toolkit/what-is-labour-market-information-for-lifelong-guidance.
[7] DECISION (EU) 2018/646 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 April 2018 on a common framework for the provision of better services for skills and qualifications (Europass) and repealing Decision No 2241/2004/EC.
[8] DECISION (EU) 2018/646 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 April 2018 on a common framework for the provision of better services for skills and qualifications (Europass) and repealing Decision No 2241/2004/EC.
[9] REGULATION (EU) 2016/679 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation)
[10] Cedefop (2014). Terminology of European education and training policy – A selection of 130 key terms (second edition). Luxembourg: Publications office
[11] Cedefop (2014). Terminology of European education and training policy – A selection of 130 key terms (second edition). Luxembourg: Publications office.
[12] As defined in the Technical annex of the Request Form of the present contract.

company/sector level, or at regional, national or international levels. Skill gaps can be linked to an insufficient level of qualification; they may also refer to situations where the workforce has the right level of qualification but lacks specific types of skills (such as management skills) or experience required to perform a task or a job adequately.

Store – Functionalities that allow individuals to save their information and documentation in electronic form, such as into their Europass2 account or download it for local storage.

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1. Introduction

The Europass framework was first established in 2004 (Decision no. 2241/2004/EC) to attain transparency of qualifications and competences through a set of documents, which became widely known as 'Europass documents'. In April 2018, this Decision was repealed to be replaced by a new Decision (2018/646) on a common framework for the provision of better services for skills and qualifications that are adapted to current and future needs of users in this new digital era. Besides simplifying, modernising and improving the current offering of tools and documents (e.g. through the creation of interactive tools such as the e-portfolio), the new Europass will foster synergies and exchange of data and information between relevant tools, including those developed by third parties. This is expected to be achieved by means of interoperability.

Considering that one of the main principles and features of the new Europass is to support and ensure technical interoperability and synergies with other tools and services, an open mechanism that enables the exchange of information on skills and qualifications should be set up. Ultimately, this open interoperability mechanism endeavours to reduce unemployment in the European Union by unleashing the full potential of online platforms that hold information on learning and job opportunities and wish to provide better services to their end-users.

The present document describes the objectives and scope of the future Europass2 open interoperability mechanism, along with a proposal of a set of potentials actors that could make use of and/or benefit from it. A suggestion of different approaches for its implementation is also presented to be discussed at an expert workshop in Brussels on 22 January 2019.

2. Europass interoperability

The open interoperability mechanism in the new Europass (hereafter referred to as **Skills Cloud**) is expected to facilitate the mobility of individuals and support the free movement of workers and their integration in the European labour markets.

Currently, **interoperability options with Europass**[13] are open to organisations managing CV databases or platforms in which end-users can create profiles or fill in application forms. These include public employment services, career guidance offices, job portals, recruitment agencies, HR services and education institutions. Any organisation that currently chooses to integrate its system with Europass incurs in no financial costs. Specifically, the current Europass framework offers some interoperability options, such as:

- **Upload a Europass CV:** end-users can create a profile on another platform starting from an existing Europass CV and the common fields are automatically filled in with the corresponding personal data;
- **Post a Europass CV to a job portal:** end-users of the CV online editor can directly publish their CV to different job portals (EURES, Monster, Xing, or CV Library); and
- **Export in Europass format:** end-users can export personal data from other IT systems and produce a formatted Europass CV directly from other platforms.

The existing interoperability options are supported by the current Europass REST API, which also delivers conversion services for the Europass CV, Europass Language Passport and European Skills Passport. Europass2 will build further on the available interoperability options and go beyond simple conversion services encouraging potential actors to actually exchange information.

Europass2 will strive to **connect ICT systems**, in particular online platforms that operate in the labour market and the education and training sector, to **exchange information**, **improve the skills-based match-making in the EU**, as well as **contribute to gathering additional data** to better understand skills demand.

2.1. Scope

The Skills Cloud will build on the current Europass interoperability mechanism to achieve the following **objectives**:

- Providing a platform for streamlined exchange of information amongst different actors;
- Increasing cooperation amongst online talent platforms, public services, businesses, and education and training institutions; and
- Enhancing the services offered to end-users in terms of showcasing their skills, qualifications and experiences, and accessing learning and job opportunities.

The Skills Cloud will be **free-of-charge**, it will not have commercial purposes and it will be **open to any interested actor** (that complies with a set of agreed terms and conditions within the remit of interoperability).

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[13] More information can be found at: https://interop.europass.cedefop.europa.eu/.

This open interoperability mechanism will rely on a strong **cooperative model** which should facilitate stronger interaction between relevant organisations within the labour market and the education and training sector.

The **ownership of the data will lie with the end-users** who will decide with whom and when to grant access to their data. This is particularly important for those platforms that manage profiles of individual end-users, such as what is envisaged for the Europass2 e-portfolio, or others like EURES, Monster or EuroJobs. Given the sensitivity of the data on skills and qualifications from end-users, **data privacy** preferences within the actors' platforms should be compliant with the General Data Protection Regulation (GDPR) currently in force.

Finally, the actors exchanging data through the Skills Cloud (including Europass2 itself) will **not be able to monopolise the use of data**. This means that all actors will have access to the Skills Cloud infrastructure[14] in the same way. This inclusive approach is expected to promote innovation and quality of services offered to end-users within the labour market and the education and training sector.

2.2. Possibilities for implementation

The aforementioned objectives may be achieved in various ways depending on how the cooperation among different actors would be operationalised. Based on the current trends of the labour market, two possibilities/paradigms of how such cooperation could look like can be envisioned and are briefly described below. These possibilities and others are to be further discussed at the workshop.

2.2.1. Linked open labour market

In this paradigm, labour market data would be published on the Web as open data that could be accessed and indexed by any third party. Any organisation could become publisher of labour market data by simply hosting them on their platforms. Third parties would then be able to index these data, republish them and submit their responses to them. To make such environment feasible, several aspects would be covered:

- Publishers would be able to use a clear standard to describe their data in a structured format. These standards would thus be understood by third parties;
- Publishers would indicate lifecycle and restrictions on republication of their data, which would be respected by third parties. Lifecycle may indicate whether a given learning or job opportunity is still available, and restrictions on republication could indicate which countries can learning and job opportunities be republished; and
- Third parties would start establishing registers/indexes of published data so that interested end-users can browse the data in unified manner.

An example of this implementation possibility includes the Schema.org, which supports the publication of structured data in HTML pages which can then be re-used by search engines to provide detailed search results to their end-users.

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[14] Read more about a preliminary proposal for the Skills Cloud infrastructure in annex 1.
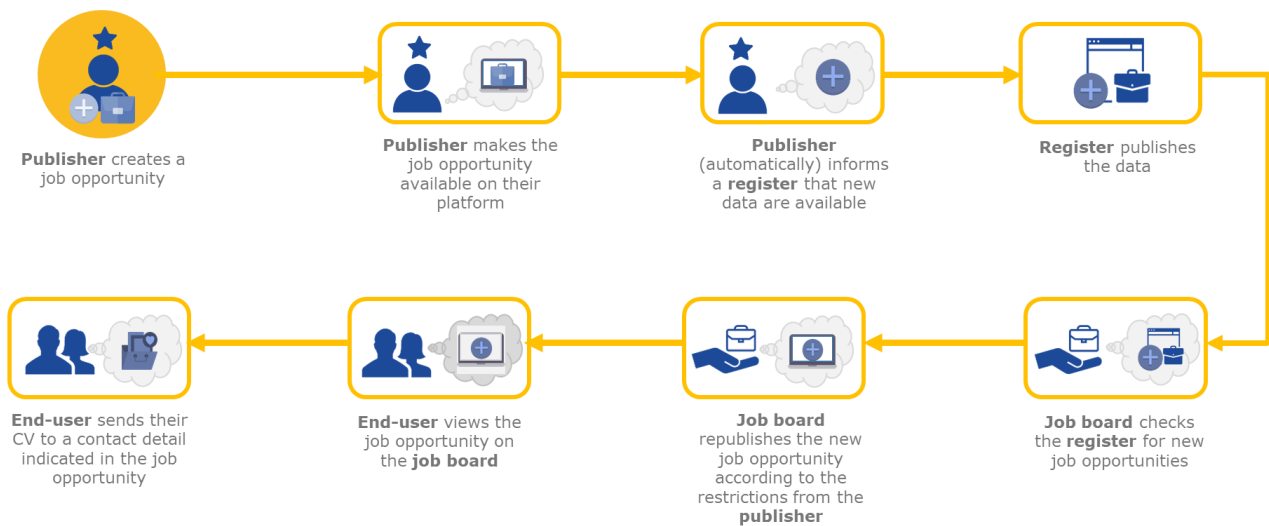
Figure 1.Use case of a linked open labour market

2.2.2. Governed data exchange

In this paradigm, labour market data would be exchanged among a group of platforms which meet specific quality assurance metrics. The access is still open to any organisation, but they must first meet given guiding principles and rules. Platforms that participate can freely exchange labour market data with other participants using common standards. To make such environment feasible, several aspects would be covered:

- Platforms would be able to use a clear standard to describe their data in a structured format. These standards would thus be understood by other participants; and
- Platforms would be able to join the Skills Cloud and their request would be reviewed and approved by a governance body.
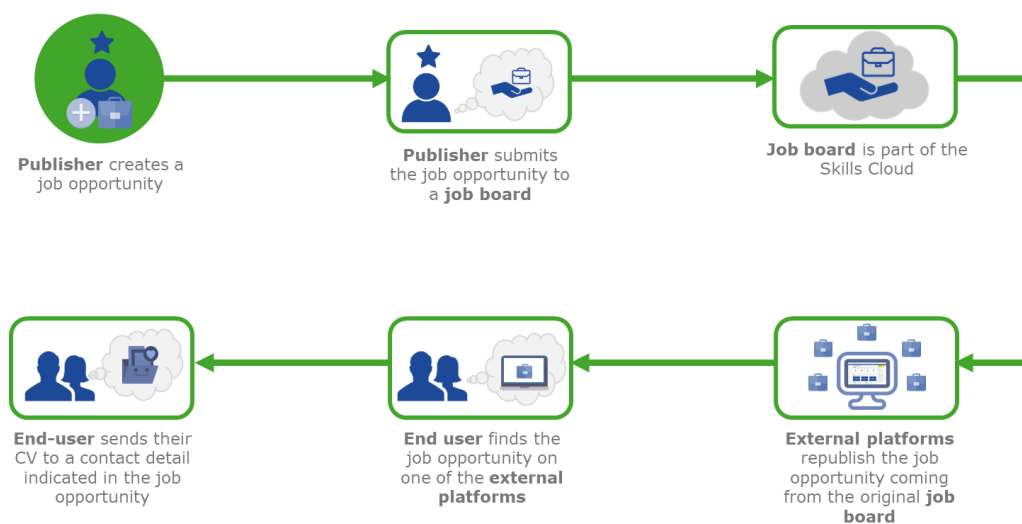

Figure 2. Use case of a governed data exchange

2.3. Main actors

Different actors have been identified which could have distinct roles in the interaction with the Skills Cloud. These are classified into the following categories (see figure below): **participants**, **beneficiaries** and **enablers**.
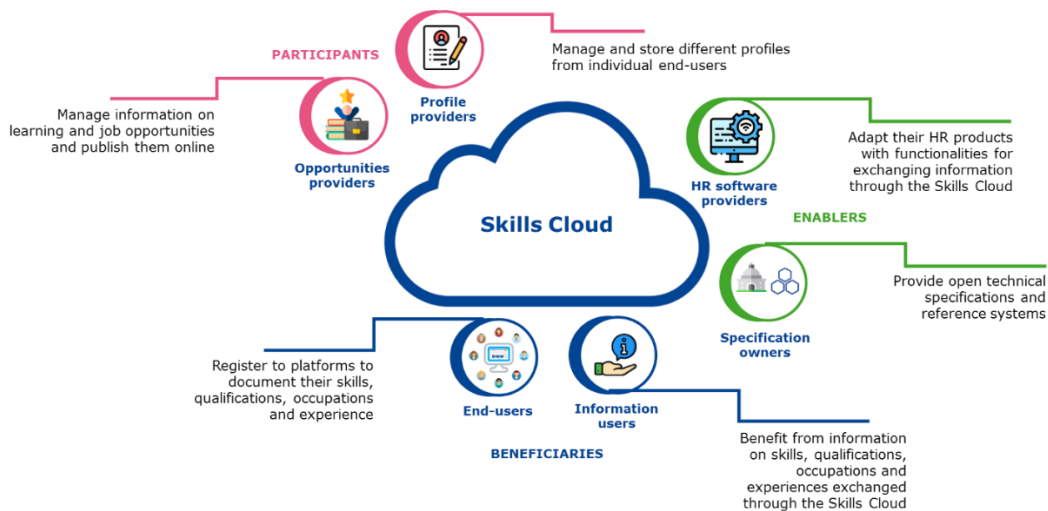

Figure 3. Main actors interacting and/or benefiting from the Skills Cloud

2.3.1. Participants

Participants refer to actors that will directly take part in the exchange of information of the Skills Cloud. They include:

- *Opportunities providers* that manage information on learning and job opportunities and publish them online. These include labour market brokers (e.g. job boards, online talent platforms, temporary work agencies, public and private employment services, EURES), employers (e.g. human resources departments and the European Commission's European Personnel Selection Office) and education and training institutions.

- *Profile providers* that manage and store different profiles of individual *end-users* (e.g. their CVs or e-portfolios)[15].

2.3.2. Beneficiaries

Beneficiaries do not directly exchange information through the Skills Cloud but they indirectly benefit from its existence by utilising the new opportunities and possibilities it provides. They include:

- *End-users* that manage their career and document their skills and learning and work experience in platforms that will connect to and exchange information through the Skills Cloud. These include learners, jobseekers, workers, volunteers and NEET. *Information users* that benefit from information on skills and learning and work experiences exchanged through the Skills Cloud. These include practitioners and organisations that advise individuals on career options, as well as professional associations.

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[15] Different actors can simultaneously have a role of 'opportunities provider' and 'profile provider'. For example, EURES manages both CVs and job vacancies on its platform.

2.3.3.   Enablers

Enablers are those actors that support the development and implementation of the Skills Cloud. They can also provide the necessary infrastructure to enable a seamless exchange of information as well as the resources needed for its development. They include:

- *Specification owners* that will participate in the provision of already existing open technical specifications as well as reference systems that will facilitate interoperability (e.g. ESCO, EURES standards or the Qualifications Metadata Schema).

- *HR software vendors* that may be interested in integrating functionalities for exchanging information through the Skills Cloud in their own HR products.

2.3.4.   European Commission

- The *European Commission* develops governance mechanisms in order to manage the access and participation of individual actors to the Skills Cloud while ensuring the respect of the Skills Cloud's rules and individual agreements.

3. Services

In order to further extend the interoperability possibilities of Europass, **three services** have been defined for the Skills Cloud, including: re-use information on skills, qualifications and experience; exchange information on learning and job opportunities; and submit and manage learning and job applications. These services and their respective functionalities are further described in the following sections.

3.1   Re-use information on qualifications, skills and experience

The Skills Cloud will support the exchange of information on end-users' profiles (e.g. CVs, e-portfolios), including their skills, qualifications and experience. This will enable end-users to re-use their profile information in different platforms of their choice to populate profiles (as long as the actors comply with a set of conditions, including data protection legislation). In practical terms, an end-user will have an option to prefill their profile based on the information they have previously provided on another platform (e.g. an end-user wishes to create a Europass2 profile and re-uses information from her/his EURES profile). During this step, the end-user will grant a one-time access to their information on the previous platform.

This service will specifically translate into the following **functionalities**:

- Re-use information from a previously filled platform to another platform to populate their profile there;
- Grant one-time access to profile information for re-use purposes; and
- Transfer structured information on skills, qualifications and occupations based on used reference semantic assets (e.g. ESCO).

3.2   Exchange information on learning and job opportunities

The Skills Cloud is intended to enable the exchange of information on learning and job opportunities between different actors (e.g. labour market brokers, employers and education and training institutions). In practical terms, learning and job opportunities from one platform will be made available to other actors which, in turn, may decide to showcase them on their own platform.

This service will specifically translate into the following **functionalities**:

- Add/update/remove new learning and job opportunities on the Skills Cloud respective register;
- Import information on learning and job opportunities from different opportunities providers' platforms (information will include a link to the relevant platform);
- Check for updated information in actors' API; and
- Align information on learning and job opportunities from different platforms into own format.

3.3 Submit and manage learning and job applications

The Skills Cloud may also support the submission and management of applications through the platforms of each of the participating actor. In an initial phase, end-users would be able to apply to opportunities directly from the platform where they found it. Consequently, the actor that originally published the opportunity would receive applications from end-users. In the future, the Skills Cloud could allow for the exchange of information on the selection and recruitment process (e.g. changes in status after the submission of an application by an end-user through HR software).

This service will specifically translate into the following **functionalities**:

- *In an initial phase*, send/receive applications (including attachments such as a cover letter or digitally-signed credentials) from the end-users of *actor A* (a profile provider, e.g. Europass2) to *actor B* (an opportunities provider, e.g. everis);

- *In the future*, send a message to an opportunities provider to receive further information about a learning or job opportunity; and

- Exchange information on the status of the application process (following the submission from an application).

4. Cooperation model

A set of principles will work as minimum common criteria that ensure that the Skills Cloud achieves its objectives. These principles must allow the necessary flexibility to account for different models and forms of cooperation.
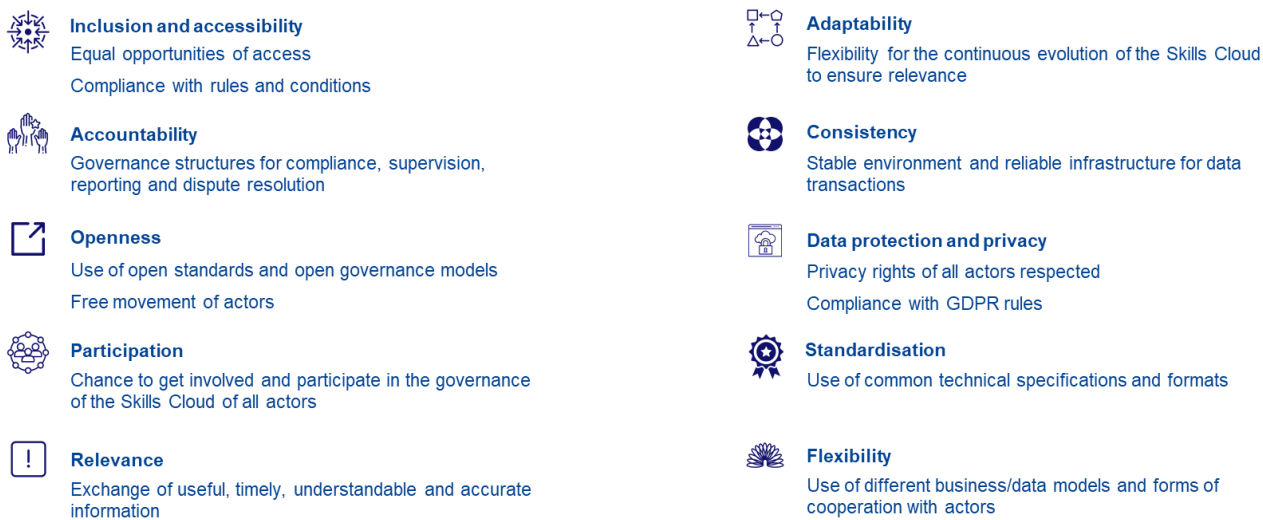
Inclusion and accessibility
Equal opportunities of access
Compliance with rules and conditions

Adaptability
Flexibility for the continuous evolution of the Skills Cloud to ensure relevance

Accountability
Governance structures for compliance, supervision, reporting and dispute resolution

Consistency
Stable environment and reliable infrastructure for data transactions

Openness
Use of open standards and open governance models
Free movement of actors

Data protection and privacy
Privacy rights of all actors respected
Compliance with GDPR rules

Participation
Chance to get involved and participate in the governance of the Skills Cloud of all actors

Standardisation
Use of common technical specifications and formats

Relevance
Exchange of useful, timely, understandable and accurate information

Flexibility
Use of different business/data models and forms of cooperation with actors

Figure 4. Skills Cloud's general principles

5. Modules of data

The participating actors may provide different modules/types of information. Possible modules that the Skills Cloud could support include:

- **Job opportunities** are blocks of information on labour market vacancies that are published in platforms of opportunities providers with a detailed description of available job positions. Job opportunities include, among others, job vacancies, traineeships, internships, volunteer work, or research positions. Associated possible schemata:
  - o Common Information Model: Job Vacancies; and
  - o EURES Job Application and Job Vacancy Data Standard (EURES-JV).

- **Learning opportunities** are blocks of information that contain a detailed description of available options to learn or study. Learning opportunities include, among others, VET courses, seminars, MOOCs or university degrees. Associated possible schemata:
  - o ESCO Qualifications metadata schema; and
  - o LOQ Learning opportunities model.

- **Digitally-signed credentials** are electronic statements which are awarded by qualified bodies to individuals to confirm and provide proof of their learning outcomes achieved in formal, informal and non-formal settings. Digitally-signed credentials include qualifications, course credentials, records of experience, certification of skills and recognition statements. Associated possible schemata:
  - o European Digital Credentials Infrastructure[16] Data Model (based on ESCO Qualifications Metadata Schema).

- **Profiles (portfolios)** document and display *end-users'* skills, qualifications and experience throughout the lifespan of their career and include a comprehensive dataset capturing these dimensions, including evidence-based certificates, self-assessment results, videos, etc. Associated possible schemata:
  - o Common Information model: Curriculum Vitae;
  - o EURES Job Application and Job Vacancy Data Standard (EURES-CV); and
  - o Europass XML Schema: CV.

- **Curriculum vitae (CVs)** can be understood as documents capturing end-users' skills, qualifications and experience in a structured format. Associated possible schemata:
  - o Common Information model: Curriculum Vitae;
  - o EURES Job Application and Job Vacancy Data Standard (EURES-CV); and
  - o Europass XML Schema: CV.

- **Language Passports** enable *end-users* to self-assess their language skills and qualifications. Associated possible schemata:
  - o Europass XML Schema: Language Passport.

- **Cover Letters** enable end-users to introduce themselves to opportunities providers during an application process. Cover letters are complimentary to the information

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[16] Currently being developed within the framework of this project.

included in a CV and focus on presenting end-users' career achievements in relation to an available opportunity. Associated possible schemata:

- o Europass XML Schema: Cover Letter.

- **Applications to learning and job opportunities** put together personal information and a set of documentation to provide proof that an individual meets the requirements set for a specific learning or job opportunity. Applications may include one or several documents attached describing the candidate's skills, qualifications and experience that are relevant for the specific learning or job opportunity. Applications also indicate the status of a given application (e.g. tentative, submitted, and accepted) and any communication which happens between the two parties participating in the exchange (e.g. jobseeker and employer). Associated possible schemata:

  - o HR Open; and
  - o EURES Job Applications and Job Vacancy Data Standard.

- **Statistical data** presents an analysis of the anonymised and aggregated raw data on opportunities, skills, qualifications and occupations collected from Skills Cloud's actors. Associated possible schemata:

  - o Europass statistical API format.

6. Concluding remarks

The Skills Cloud will facilitate interoperability amongst actors within the labour market and the education and learning sector with the ultimate aim of fostering mobility and reducing unemployment in Europe.

Services offered by the Skills Cloud will mainly focus on gathering, managing and re-using information on skills, qualifications, occupations and opportunities. The Skills Cloud will allow for re-using end-users' information, and the management of learning and job applications from different platforms.

Given the amount of information to be exchanged, the success of the Skills Cloud will depend on the **participation of a significant number of actors** that cover the majority of the labour market and the education and training sector. Furthermore, it will depend on building **strong cooperation** amongst participating actors. For this, it matters to take into account the needs of different actors and to clearly communicate them the benefits of the Skills Cloud. Likewise, the use of **open standards** should be paramount to facilitate the growing cooperation with interested actors, allowing them to freely participate in the Skills Cloud.

There is no similar initiative in Europe in terms of scope and services provided, reason why the **Europass2 Skills Cloud can have a strong impact on the way distinct actors in the labour market and in the education and training sector interact**. This open interoperability mechanism is expected to improve the services provided to end-users and enhance the visibility and value of different actors.

7. Food for thought

In preparation for the workshop, a list of questions has been compiled to trigger fruitful discussions:

- Which possibility/paradigm should the Skills Cloud follow for an easy implementation?
- Should the Skills Cloud keep any data?
- For each possibility/paradigm, what efforts would be required from your organization to integrate with the Skills Cloud? What action from European Commission could support your organisation in the minimisation of efforts?
- What would be the impact for your organisation to have access to such open interoperability mechanism?
- In the case of a governed data exchange, which organisation should serve as a governance body of the Skills Cloud?
- What steps should an organisation undergo when they want to access/use the Skills Cloud?