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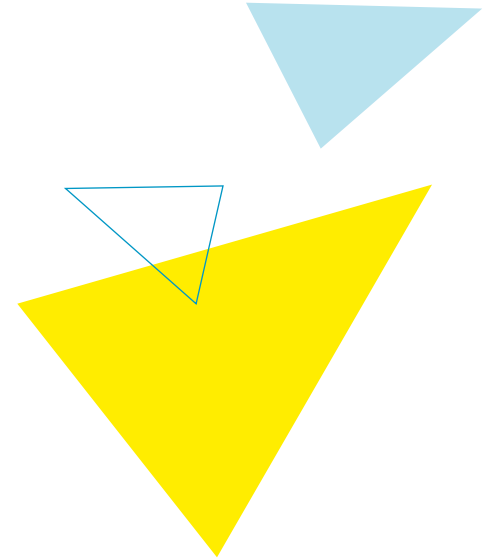
A EUROPEAN APPROACH TO MICRO-CREDENTIALS

**OUTPUT OF THE MICRO-CREDENTIALS
HIGHER EDUCATION CONSULTATION GROUP**

December 2020

Education and
Training





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1.0 Foreword

In November 2017, the EU institutions formally proclaimed the European Pillar of Social Rights. Its first principle is that 'Every one has the right to quality and inclusive education, training and life-long learning in order to maintain and acquire skills that enable them to participate fully in society and manage successfully transitions in the labour market'. At the same time, the European Commission came forward with an ambitious vision for a European Education Area by 2025. This resulted in Heads of State and Government, meeting at the European Council of December 2017 calling on Member States, the Council and the Commission to take work forward on a number of priorities that are essential for achieving the European Education Area.

Ever since, their political commitment has been to harness education and training as drivers for job creation, economic growth and improved social cohesion, in addition to personal development. Building on this vision, Commission President von der Leyen stated in her [political guidelines](#) her intention to make the European Education Area a reality by 2025. 'We need to bring down barriers to learning and improve access to quality education. We need to enable learners to move more easily between education systems in different countries. And we need to change the culture of education towards lifelong learning that enriches us all.'

As we underlined in our [Communication on achieving the European Education Area by 2025](#), adopted on 30 September 2020, our education systems need to adapt to strengthen their key role in supporting lifelong learning and reaching out to a more diverse student body. Similarly, our recently updated Digital Education Action Plan highlights the need for high-quality digital learning content to boost the relevance, quality and inclusiveness of European education and training. This includes

the use of digital technology to provide flexible and accessible learning opportunities. We announced in our [European Skills Agenda](#), that we would 'work towards the development of a European Approach to micro-credentials, to help widen learning opportunities and strengthen the role of higher education and vocational education and training institutions in lifelong learning by providing more flexible and modular learning opportunities'.

In this context, I very much welcome the [Rome Bologna communiqué](#) adopted on 19 November 2020 by the 49 ministers responsible for higher education, in which they identify a potential to democratise knowledge and to sustain lifelong learning through micro-credentials.

Short-term learning opportunities leading to micro-credentials can help to substantially widen learning and skills development opportunities, and further shape the lifelong learning dimension in higher education. A European approach to micro-credentials will allow higher education institutions to offer such courses on a larger scale and in a comparable manner throughout Europe, ensuring agreed quality standards, and facilitating their recognition and portability across the EU. This is also a key action of the [European Skills Agenda](#), which targets not only higher education but also vocational education and training providers, research organisations, industry, social partners, Chambers of Commerce, Industry or Crafts, and civil society organisations.

As learners and professionals increasingly seek a wider variety of knowledge and skills on demand, higher education institutions will need to be ready to offer such continuous learning opportunities, together with other education and training institutions and with the private sector. However, the use of micro-credentials is important, not only to complement one's professional competences but also to stimulate the innovation

our learners deserve. By allowing the access to shorter, more flexible credentials, we can reach out to more target groups, including learners with fewer opportunities.

I welcome this report, which sets out the results of the hard work of the expert group I set up to help formulate the role of higher education in a European approach to micro-credentials. The group brought together experts and practitioners working in national authorities, quality assurance agencies, higher education institutions and other relevant stakeholders, representing different expertise from all parts of Europe. The group has contributed to establishing a common definition for micro-credentials, the common characteristics of a European micro-credentials framework, and a roadmap of actions to ensure the take-up, validation and recognition of such courses.

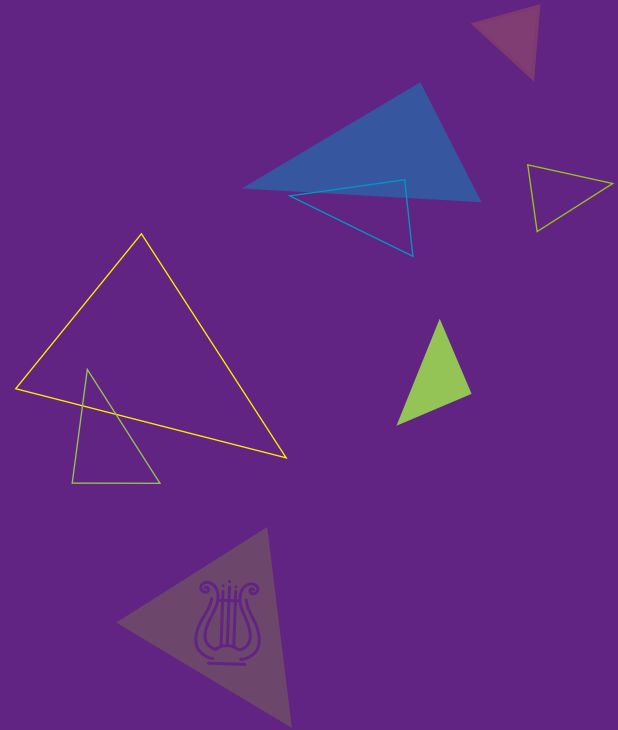
These outputs will form an excellent basis for wider consultations that I will organise next year, together with Commissioner Schmit, covering all sectors of education and training. This will feed into a proposal for a Council Recommendation on micro-credentials for lifelong learning and employability by the end of 2021.

In a world that is ever changing and constantly challenged, our Member States' education and training systems are increasingly having to adapt. I wish to support them in their endeavours. Only by working together can we overcome and thrive.



Mariya Gabriel

Commissioner for Innovation, Research, Culture, Education and Youth



2.0 Introducing a European approach to micro-credentials

2.1 Introduction

Developing a European approach to micro-credentials is a joint agenda from Commissioner Mariya Gabriel, responsible for innovation, research, culture, education and youth, and Commissioner Nicolas Schmit, responsible for jobs and social rights. This joint initiative was announced in the European Skills Agenda, published on 1 July 2020, as one of its 12 flagship actions to support the quality, transparency and uptake of micro-credentials across the EU (Commission, 2020a). It was further elaborated in the Communication on achieving the European Education Area by 2025, published on 30 September 2020. The Communication emphasises the key role of higher education in supporting lifelong learning and reaching out to a more diverse group of learners (Commission, 2020b).

Increasingly rapid advances in technology and the labour market require graduates and professionals in the workforce to be familiar with state-of-the-art knowledge, and to possess the skills and competences needed to make full use of technological and non-technological know-how. Content-laden degrees are not always effective for adult learners in today's fast-paced environment and employees also need 'just-in-time' skills development that is immediately applicable. This trend is likely to accelerate with the economic crisis triggered by the COVID-19 pandemic.

A European approach to micro-credentials will increase personalised learning opportunities for all. It will help widen learning opportunities and strengthen the role of higher education and vocational education and training (VET) institutions in promoting lifelong learning by providing more flexible and modular learning opportunities. While it requires a change in mindsets, culture and structures, it also opens up new opportunities for

the higher education sector. Micro-credentials are useful not only for professionals, but can also complement the curriculum for students at bachelor, master and doctoral levels. A growing number of adults, with or without a higher education degree, will need to reskill and upskill through more flexible alternatives than a full degree in order to overcome the gap between the learning outcomes of their initial formal qualifications and emerging skills needs in the labour market. The need for more flexible and inclusive learning paths will increase as the student population is becoming more diverse and the learning needs more dynamic.

While a growing number of higher education institutions, including those involved in the Erasmus+ European Universities initiative, are already working on the development of these micro-credentials, a common definition and a common approach on their validation and recognition is lacking (Commission, 2019a). In this context, the Commission aims at filling this gap by presenting a proposal for a Council Recommendation in 2021 to build trust in micro-credentials across Europe and aims at having all the necessary steps in place by 2025 for their wider use, portability and recognition (Commission, 2020c).

For this purpose, the European Commission established an ad-hoc consultation group with experts on higher education from various European countries to propose a common definition and recommendations for a European approach to the development and uptake of micro-credentials in Europe. The group was composed of practitioners working at national authorities, in quality assurance agencies, higher education institutions and other relevant stakeholders from higher education. Guest speakers were invited to the different meetings to share their particular experience and input. This group held three virtual meetings between 26 May and 17 September 2020.

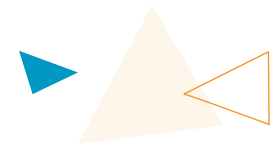
For each meeting, background papers were prepared based on a deep analysis of the state of the art for each specific topic, presenting the latest progress made by EU-funded projects and other international organisations. Small group discussions between the experts enabled further progress, building on what had already been developed. This report consolidates the outcomes of these rich discussions, and proposes recommendations on the way forward, with a particular focus on higher education.

The European approach to micro-credentials will have a wider scope than higher education, addressing micro-credentials in all fields of education and training as well as the labour market. The outcomes of the consultation group presented in this report will be a starting point for a wider consultation process with stakeholders from all fields and across all Member States in the coming year. The outcomes will feed into a Council Recommendation on micro-credentials for lifelong learning and employability to be presented at the end of 2021.

2.2 Need to act now

Mainstreaming the usage of micro-credentials is important not only from an economic point of view, as there is a clear urgency to better fulfil labour market needs, but also for the societal mission of education. It can complement the more traditional ways of learning and teaching to best prepare learners for active citizenship, and support higher education institutions to fulfil their public responsibility. Educational innovation can also be stimulated through micro-credentials, as they provide avenues for a better accessibility of new types of learners to acquire high-level skills.





Urgent need for short learning experiences to acquire targeted competences and skills

The path to economic recovery after the COVID-19 pandemic and successful green and digital transitions will require that Europeans acquire new skills. A growing number of people seek to update their skills through flexible alternatives to full or partial qualifications in order to address their current education and training needs caused by fast-changing knowledge-development and labour market demands. Estimates indicate that half of all jobs will undergo substantial changes due to automation within the next 10 years, with the result that the current workforce, regardless of their initial qualifications, will need to update their skills (World Economic Forum, 2020).

The demand for short learning options and their recognition and validation is likely to further increase as a means to a sustainable recovery from the COVID-19 crisis. Since the start of the COVID-19 crisis, there was an unprecedented surge in demand for online learning, including for short, tailored courses (Cedefop, 2020a).

However, the growing number of diverse alternative credentials has led to increasing concerns about their value, reinforced by an absence of shared understanding of what a micro-credential is – despite different attempts at coining a definition¹. The lack of a commonly agreed definition and the diversity of formats raise questions on the quality, recognition, transparency and portability of micro-credentials between and within countries, education and training sectors, and on the labour market. These constraints limit the value and impact of micro-credentials, leading to limited trust that prevents their wider acceptance and uptake that would support the objectives of reskilling and upskilling, flexible lifelong learning and mobility.

Urgent need for learning and training to be more learner-centred and accessible for all

To accommodate these changes, learning pathways at VET and training institutions should open up to more personalised pathways, and become more flexible and modular to better adapt to the needs of a wider range of learners. There is a need to ensure that a more diverse group of learners have access to flexible opportunities to deepening, broadening and updating competences (or knowledge and skills) throughout life, and at all stages of their career.

Micro-credentials allow for a targeted acquisition of skills and competences while not replacing traditional qualifications. In 2019, the EU surpassed the 40% tertiary education attainment target in most EU countries (at least for women, but not for men). However, the knowledge and competences acquired through formal education and training must be adapted to a fast-changing society. High quality, innovative and learner-centred education and training would be further enhanced with the flexibility that micro-credentials can offer. Continuous learning recognised through micro-credentials can fill existing and emerging skills gaps. Micro-credentials would facilitate inclusion in lifelong learning by reaching new learners, including those from disadvantaged backgrounds. With a low entry barrier, micro-credentials could be the initial step for learners who might traditionally have been discouraged to enter the education system; they can also be the means to enable more fluid learning pathways, thereby realising the vision of lifelong learning.

High-quality, innovative and learner-centred education and training provision offered by universities and other education and training organisations can be enhanced through the flexibility that micro-credentials can offer individuals throughout

life. Micro-credentials offer higher education and training institutions new opportunities aligned with their societal mission. Moreover, they can increase the efficiency of education and training systems and spur innovations in lifelong learning, also benefiting disadvantaged groups, like migrants and refugees. Micro-credentials can contribute to a sustainable post-pandemic recovery and can widen learning opportunities on a hitherto unprecedented scale. Larger uptake of micro-credentials could enable social, economic and pedagogical innovation.

Urgent need for ensuring trust, recognition, validation and portability of these short learning experiences, through micro-credentials

Short learning courses and experiences are rapidly being developed across Europe and globally by a wide variety of public and private stakeholders in response to the need for more flexible, learner-centred forms of provision of education and training for lifelong learning.

Currently, different constraints limit the impact of these short learning experiences. The diversity of the offer from a range of providers, such as higher education institutions, VET providers, companies, trade unions, industry bodies, private providers and NGOs, raises questions on how to ensure their transparency, quality, recognition, and portability between countries and sectors. There is a lack of standardisation; quality assurance approaches differ and are not always sufficiently transparent; and recognition processes are not always sufficiently harmonised. Demand for credentials that certify the outcomes of these short learning experiences is thus increasing. This is what is called 'micro-credentials'.² Nevertheless, the value of these micro-credentials is often not well understood due to a lack of standards for quality and transparency in such a diverse landscape (MicroHE Consortium, 2019).

The establishment of standards is key to facilitating individuals, education and training providers, employers and policy-makers to understand the value of these credentials and their contribution to lifelong learning, mobility and employability in a European labour market context.

Increased transparency is needed to ensure trust in the value of micro-credentials by learners themselves, education and training providers and employers. It would also facilitate geographical and sectoral mobility for both learning and employment purposes. By supporting the portability and recognition of micro-credentials across borders, individuals will find it easier to expand employment opportunities beyond the national labour market or engage in further learning. Employers will find it easier to understand the skills and qualifications of mobile learners and workers and thereby be more open for wider recruitment strategies.

Strong experience and instruments are available to act now

The enhancement of lifelong learning is at the core of the strategy for many of the Erasmus+ European Universities alliances. Micro-credentials are, in that respect, perceived as a strategic means to enhance partnerships with the surrounding ecosystems. The 41 alliances, involving more than 284 higher education institutions across all parts of Europe, aim at creating European inter-university campuses. They will offer both joint (physical, virtual, blended) courses and common teaching units integrated in the curricula of all the member universities. Such initiatives will provide learners of all ages with the opportunity to obtain micro-credentials, awarded after the completion of short courses or modules. The European Universities alliances will act as role models for the wider higher education sector in Europe.

The development of micro-credentials can also build on existing EU and European Higher Education Area (EHEA) transparency and quality assurance tools. These are key for the recognition of micro-credentials within and across borders. These tools and processes will enable micro-credentials to be issued based on quality-assured learning, and that credentials (micro-credentials) can be issued to the learner following an assessment of learning outcomes. Micro-credentials may be for credit or not for credit, and they may be stacked. More specifically, transparency tools and processes relate to:

- > the transparency of qualifications (European Qualifications Framework and the Qualifications Framework of the European Higher Education Area) (Commission, 2017a; EHEA, 2005);
- > quality assurance in higher education (Standards and Guidelines for Quality Assurance in the European Higher Education Area) and in VET (EQAVET) (ENQA, 2012; Commission 2009a; Commission, 2020e);
- > credits for achieved learning (European Credit Transfer and Accumulation System);
- > recognition (Lisbon Recognition Convention and the Diploma Supplement, as well as the Council Recommendation on promoting automatic mutual recognition of higher education and upper secondary education and training qualifications and the outcomes of learning periods abroad (The Council of Europe, 1997; Commission, 1999; Commission, 2018b);

- > recognition of prior learning and validation of non-formal and informal learning (Commission, 2012a);
- > lifelong learning and career management (Europass) (Commission, 2018a).

In addition to national tools and infrastructure, the Europass Digital Credentials Infrastructure (EDCI) will support the issuing, sharing and storage of all forms of learning achievements in a digital format, including micro-credentials, and will link to the European Student Card Initiative (EVERIS, 2018; Commission, 2019d).

A European approach would aim at ensuring a shared understanding, as well as a transparent and common definition of what micro-credentials are, in order to promote trust in micro-credentials across countries and educational and economic sectors. It is important that a common approach is sought at this point, thus avoiding multiple interpretations of what micro-credentials are and establishing how micro-credentials relate to National Qualification Frameworks, national qualification systems and current certificates and diplomas.

Box 1: A vision for micro-credentials for 2030

In 2030, European citizens will be able to start their learning pathways into and through higher education at any stage in their lifetime. On top of the qualifications already achieved, micro-credentials will provide learners with rich opportunities to diversify their learning and improve their education by taking shorter courses. These micro-credentials can be linked thematically and be based on the expertise gained. Their alignment to standardised descriptors (e.g. for professional profiles, skills taxonomies, education level, type of evidence, etc.) will ensure that they are equally understood and recognised by employers, educational establishments across sectors, geographic areas and the wider society. Through this, micro-credentials will play a major role in encouraging and realising lifelong learning and a society of learning, which – through critical reflection of societal and business processes – will create better lives and better opportunities for all.

2.3 Key objectives

The objective of the European approach to micro-credentials is to facilitate their validation, recognition and portability, and to foster a larger uptake to support individual learners to gain and update their knowledge, skills and competences in any subject area, at all stages of their career and in any learning environment.

The consultation group had the mandate to jointly develop a **report** with a proposal for:

- > a **shared definition** of micro-credentials, common to all the sectors;
- > **common characteristics** of a European approach to micro-credentials;
- > a **roadmap of actions** to be taken at EU level, in full respect of subsidiarity, by national authorities, by higher education institutions and other relevant stakeholders, to facilitate the uptake, validation and recognition of micro-credentials.

The main objective of the consultation group was to explore how such a European approach to micro-credentials could be elaborated within the higher education sector in Europe.

A European approach will, however, look at micro-credentials and their development in all sectors of education and training. The output of this expert group is part of a wider consultation that includes a series of meetings and webinars with stakeholders from different education and training sectors, as well as labour market actors. These include, among others: the Advisory Committee for Vocational Training, the European Qualifications Framework Advisory Group, Public Employment Services representatives, representatives from the VET and adult education sectors, and recognition authorities, e.g. the National Academic Recognition Information Centres (NARICs).



3.0 Definition and terminology

3.1 Definition

Globally, a range of actors has already responded to the need for more flexible forms of provision of education and lifelong learning. Hence, there is, at the time of this report, a diverse supply of alternative credentials, at times with specific brand names such as NanoDegrees, MicroMasters, Micro-degrees, etc. (Class Central, 2020). Despite different attempts at coining a definition, the growing number of alternative credentials raises questions about what they are and what their real value is. The lack of a shared definition can hamper the value of micro-credentials as a means of proof of a person's skills and competences, whether for recruitment purposes or further learning. In addition, students in higher education are discouraged from attempting to get recognition for learning outside the formal curriculum (MicroHE Consortium, 2019). These factors explain why the absence of a common definition for micro-credentials is perceived as the biggest barrier to further uptake by members of the consultation group on micro-credentials (Larsen, 2020).

A shared and transparent definition of micro-credentials is key to further the development and uptake of micro-credentials as a trusted skills currency. The consultation group have, during their work, concluded that **a shared definition must be valid across sectors of education and the world of work**, and it must mirror the societal mission of higher education institutions.

The proposed definition has emerged through an analysis of existing definitions³, and through intensive discussions during and between meetings in the consultation group. The definition has been formulated to encompass key characteristics for the uptake of micro-credentials, which include quality assurance,

referencing to qualifications frameworks and the use of credits (where applicable) and measures to ensure portability and stackability.

Box 2: Definition

A micro-credential is a proof of the learning outcomes that a learner has acquired following a short learning experience. These learning outcomes have been assessed against transparent standards.

The proof is contained in a certified document that lists the name of the holder, the achieved learning outcomes, the assessment method, the awarding body and, where applicable, the qualifications framework level and the credits gained. Micro-credentials are owned by the learner, can be shared, are portable and may be combined into larger credentials or qualifications. They are underpinned by quality assurance following agreed standards.



4.0 The framework and building blocks



Micro-credentials are just one element in a broader system of qualifications and credentials for lifelong learning. **A number of tools and standards have already emerged from the collaboration within the EU and the Bologna Process.** The group had extensive discussions about **how the existing European tools can be deployed and potentially adapted to support quality, transparency, portability and comparability of micro-credentials in the EU**, and to support Member States' initiatives in the field of micro-credentials.

For a European approach to create real added value, it must take into account the actions of other key stakeholders in the field, in particular national governments and higher education institutions (Orr, et al., 2020, p. 63). The European Commission's actions should work in synergy with national policies and strategies and practices in higher education institutions.

In addition, further outcomes are emerging from Erasmus+ projects that are relevant to different dimensions of uptake. A key conclusion from the consultation group meetings is that the existing European tools, designed to contribute to transparency, can in principle allow for the recognition and inclusion of micro-credentials in higher education provision. However, the MICROBOL project, co-funded by the Erasmus+ programme, will explore whether there is a need for **further adaptation of the European tools** to facilitate this integration. The relevance of the individual European tools for micro-credentials will be further elaborated in the following sections.

A European approach to micro-credentials should consist of a number of key building blocks. These contribute to improving the transparency and portability of micro-credentials, easing recognition processes and enhancing uptake. Box 3 provides an overview of **the key building blocks of a European approach to micro-credentials as proposed by the consul-**

tation group and extensively discussed during meetings. The proposal includes how these building blocks are linked with other European initiatives for qualifications and credentials. The list of building blocks is based on an analysis of the consultation group's contributions to the pre-meeting survey conducted in February 2020, dialogues with experts in preparation for the first meeting of the consultation group and discussions during the following consultation group meetings.

Box 3: Building blocks of a European approach to micro-credentials

- A common and transparent definition
- A defined list of critical information elements to describe micro-credentials
- Alignment to National Qualifications Frameworks (NQFs) and the European Qualifications Framework (EQF): defined levels, standards for describing learning outcomes
- Quality assurance standards
- Defined credits: European Credit Transfer and Accumulation System (ECTS), defined learning outcomes and notional workload
- Recognition: for further studies and/or employment purposes
- Portability: issuing, storage and sharing of micro-credentials
- Platform solutions for the provision and promotion of courses leading to micro-credentials
- Incentives to stimulate the uptake of micro-credentials

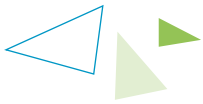
The following sections provide a further elaboration of these building blocks.

4.1 Proposed EU standard for constitutive elements of micro-credentials

The basis for trust in micro-credentials, similar to qualifications leading to a degree, is transparency in terms of what they represent. This includes information about the learning outcomes achieved and how they were assessed and quality assured. Micro-credentials, and the certificates delivered upon completion should, be clearly identified as such and, unquestionably, differentiated from a full degree such as a bachelor, master or doctoral degree.

While the Diploma Supplement provides the most crucial information about higher education degrees for international recognition purposes, there is currently no standardised way of describing micro-credentials. Orr et al. find that the reasons for a shortage of understanding of micro-credentials and insufficient trust in them are due to a lack of transparency. The variability of information makes it difficult for learners, employers, higher education institutions and quality assurance agencies to understand the value and content of micro-credentials and to compare them. The result is a lack of recognition of micro-credentials, whether for further learning purposes or in a labour market context.

A key recommendation of experts in the consultation group and invited speakers was to agree on a list of critical information elements⁴ that any micro-credential must provide. This list of critical information elements would constitute a **EU standard on micro-credentials**. This was also proposed by the Network of Experts working on the Social dimension of Education



and Training (NESET) background report prepared by Orr et al (Orr, et al., 2020, p. 8). This could ensure the transparency of micro-credentials at all levels of education and training in the context of lifelong learning. Such an EU standard would contain varied information about learning outcomes, quality assurance and assessment.

In terms of access and use, it is proposed in the NESET report (Orr, et al., 2020, p. 64) that

...critical information elements must be **described in an easily accessible and intuitive place**, so that employers, quality assurance agencies, higher education institutions, learners and other interested stakeholders can access the information for their purposes. It would be sensible to **develop a common supplement⁵ for micro-credentials⁶**, which would provide information on these critical items.

Issuers should ensure that these elements are addressed. This is further elaborated through the findings of the OEPass project, which has identified a list of constitutive elements⁷ to serve as content indicators of a credential (The Oepass Consortium, n.d.). The elements of this list partly overlap with the elements suggested in the NESET report. If a micro-credential is issued within the Europass Digital Credentials Infrastructure, it will contain these elements as they are included in the data model; where other digital platforms are used these elements should be included.

In addition to the information items proposed in the NESET report (Orr, et al., 2020), the New Paradigms in Recognition' (PARADIGMS) project⁸, which was launched to support European Network of Information Centres in the European Region (ENIC)-NARIC centres on how to assess the outcomes of eclectic learning, such as massive open online courses (MOOCs),

formulated seven criteria, which are part of the criteria proposed in the NESET report⁹. A presentation given by a member of the MicroHE Consortium highlighted the need for additional information items regarding the content of a micro-credential, and which is particularly relevant for micro-credentials that are interdisciplinary. It was recommended to detail the relevant thematic area – using International Standard Classification of Education level F (ISCED-F) or similar – for each micro-credential. This would increase transparency and address the challenge in that a set of learning outcomes may be expressed at different qualification levels depending on the thematic area in which they are taught.

Moreover, the above elements are underpinned by Annex VI of the EQF Recommendation, which comprises 'Elements for data fields for the electronic publication of information on qualifications with an EQF level' (Commission, 2017a). The elements proposed form the basis for the data model of the Europass Digital Credentials Infrastructure (Commission, 2019c).

Taking into account the rich contributions and discussions, the following key points have emerged from the discussions in the consultation group:



Box 4: Key points from consultation group discussions about critical information items

- No matter what type of institution issues micro-credentials, **transparency of learning outcomes is crucial** for a good understanding of the micro-credential.
- The group agreed that it would be beneficial to **set up a European standard for content description**, i.e. a list of constitutive information elements for micro-credentials. If micro-credentials are issued as digital credentials, they will contain such information elements, in line with Annex VI of the EQF Recommendation on 'Elements for data fields for the electronic publication of information on qualifications with an EQF level'.
- Micro-credentials, and the certificates delivered upon completion, should be clearly identified as such, and unquestionably differentiated from a full degree such as a bachelor, master or doctoral degree.
- European rules for the sharing of information items should allow for flexibility at national and at institutional level. On the other hand, information items should provide sufficient information to users.
- This information should offer **verifiable, free and secure access to data, as well as being available over time**, in order to support transparency and recognition.

Group discussions and contributions from European projects and studies resulted in the following proposal for a European standard of constitutive information elements that European micro-credentials should contain. Elements marked with an asterisk (*) are optional.

Box 5: Proposed EU Standard of constitutive elements of micro-credentials

- > Identification of **the learner**
- > **Title** of the micro-credential
- > **Country/region of the issuer**
- > **Awarding body**
- > **Date** of issuing
- > **Notional workload needed to achieve the learning outcomes** (in ECTS, wherever possible)
- > **Level (and cycle, if applicable) of the learning experience leading to the micro-credential** (EQF and/or national qualifications framework; Overarching Framework of Qualifications of the European Education Area)
- > **Learning outcomes**
- > **Form of participation in the learning activity** (online, onsite or blended, volunteering, work experience)
- > **Prerequisites*** needed to enrol in the learning activity
- > **Type of assessment** (testing, application of a skill, portfolio, recognition of prior learning, etc.)
- > **Supervision and identity verification during assessment*** (unsupervised with no identity verification, supervised with no identity verification, supervised online or onsite with identity verification)
- > **Quality assurance** of the credential and, where relevant, of the learning content

- > **Grade achieved***
- > **Integration/stackability options*** (standalone, independent micro-credential / integrated, stackable towards another credential)
- > **Further information***

4.2 The role of qualifications frameworks

At the European level, two different qualifications frameworks coexist, with a different purpose: the European Qualifications Framework (EQF) for Lifelong learning as revised in 2017, and the Overarching Framework of Qualifications of the European Higher Education Area (QF-EHEA¹⁰) (Bologna Working Group, 2005; Commission, 2012b). These frameworks are fully compatible with each other and they have over time enabled the creation of mutual zones of trust by providing a translation tool to make national qualifications easier to understand and compare (Young & Allais, 2013). The EQF is a reference framework for qualifications based on level descriptors for learning outcomes, applicable to all levels of qualifications. Therefore, it already provides a potential basis for the inclusion of micro-credentials if Member States wish to include these in their national qualification frameworks, as the EQF can be a referencing tool to indicate the level of micro-credentials. Furthermore, it is comprehensive in terms of provision as it is based on outcomes of learning. Over time, qualifications frameworks have evolved (Chakroun & Keevy, 2018, p.7). One **trend among several Member States** is that they are **opening up national qualifications frameworks to other forms of provision than full qualifications offered by formal education and training establishments**. Among the countries that have

done so are Austria, Denmark, France, Ireland, Netherlands, Poland, Finland and Sweden, in particular for qualifications with high relevance for the labour market.

What can qualifications frameworks bring? Digital technologies are now more widely diffused across the EU. However, the uptake and accumulation of micro-credentials into larger credentials hinge on **learning outcomes being understood and comparable in a transparent way, which can be enabled by qualifications frameworks** (MicroHE Consortium, 2019, p. 33). When referencing a micro-credential to a qualification level, one challenge was highlighted by the group: the same set of learning outcomes may be expressed at different qualification levels, depending on the thematic area in which they are taught. ‘Introductory Japanese’ may for instance be taught at level 7 in international logistics, but also at level 3 in a Japanese language course. Though the learning outcomes of the two courses are the same, they are taught at different qualification levels, because the context in which the courses are taught frames the qualification level at which the learning outcomes can be placed. Qualifications frameworks can be used to describe learning outcomes, but these may need to be put into context by referencing to the credential’s thematic area (please also refer to section 3.1) The use of ISCED fields can contribute to a universal measure for learning outcomes (Camilleri, 2018b).

Internationally, the inclusion of micro-credentials in national qualifications frameworks is at an early stage. On one hand, the international trends illustrate the **need to enable some form of referencing of micro-credentials within the overall education and training provision**. On the other hand, they show that different approaches and processes have occurred, which mirror differences in national education systems.

Box 6: Key points about the role of qualifications frameworks

- While some members of the group suggested that micro-credentials should be linked directly to the EQF, others indicated that this is not in accordance with the current EQF Recommendation, which reserves EQF referencing for national qualifications frameworks or systems. Other members of the consultation group suggested aligning micro-credentials with NQFs and the EQF. Based on the discussions, the consultation group proposed that Member States could consider **adapting national qualifications frameworks** to enable the inclusion of micro-credentials.
- At the same time, the consultation group recognised that this is an evolving process that needs to be sensitive to differences in national circumstances. Some national qualifications frameworks do not permit inclusion of non-formal qualifications. The consultation group therefore suggested differentiating two types of micro-credentials:
 - **Type 1:** Micro-credentials that are issued by formal education institutions and can be aligned with the EQF (through NQFs) and ECTS (or other credit systems). For these, standards can be identified more easily, based on the current higher education transparency tools (EQF, ECTS, the Standards and Guidelines for Quality Assurance in the European Higher Education Area [ESG], etc.), or eventually through their adaptation.
 - **Type 2:** Micro-credentials issued by non-formal education providers. The consultation group did not have sufficient time to discuss this type in depth. Further discussion is needed, across education sectors, to identify standards for these micro-credentials.

4.3 Quality assurance

A lack of transparency is one of the main barriers for seamless recognition of micro-credentials; another is trust in them, as highlighted in several presentations and discussions, as well as in the NESET report (Orr, et al., 2020). To build trust, it is important to have full transparency over two main characteristics of micro-credentials: the quality of the credential itself (the envelope, i.e. authenticity, and the technology behind it) and the learning experience (the content)¹¹. A third element where full transparency is necessary is the provider: trust in the provider of the credential is a crucial element for trusting the credential itself.

In the higher education sector, this transparency and trust are ensured by quality assurance processes. In line with the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG), all courses offered by higher education institutions must undergo internal quality assurance by the institution in question. In addition, either each course or the higher education institution as a whole is required to undergo periodic external quality assurance (e.g. accreditation, audit, review). **Thus, the ESG generally covers quality assurance of micro-credentials issued by higher education institutions¹²** (Tück, 2019).

It is key in this regard to distinguish between programme-based accreditation/external quality assurance and institution-based accreditation/external quality assurance. In some higher education systems, institutional accreditation or audit standards already explicitly refer to micro-credentials or similar offerings; in other systems, these are not or only implicitly addressed. In systems where separate external quality assurance takes place at programme level, accreditation mechanisms for non-degree programmes like MOOCs, short programmes, continuous learn-

ing programmes or different ways of delivery (blended learning, online learning etc.) are, in general, not yet adopted by quality assurance agencies. Very few quality assurance agencies provide specific accreditation or certification processes for non-degree programmes.

Those national approaches to external quality assurance, which are based on programme accreditation, may not be sufficiently responsive to emerging needs. National or agency regulations may therefore need to be reviewed in order to fully cover micro-credentials within existing ESG-based quality assurance systems, as concluded by the consultation group. In the case of micro-credentials that are not issued by higher education institutions, other tools may be needed to build the necessary trust. The group has not touched upon the quality assurance of micro-credentials provided in the secondary education, VET and adult learning sectors; however, existing quality assurance systems in these sectors could also provide the necessary basis for trust. As regards providers outside the formal education and training system, quality assurance is also essential. These providers may be also evaluated by a quality assurance agency registered at the European Quality Assurance Register for Higher Education (EQAR), based on the ESG. The consultation group suggested considering the **establishment of a register of trusted issuers at a European level**, which have in place a documented process for external quality assurance. Two models could be envisaged:

- one model inspired by the principles of DEQAR, the Database of External Quality Assurance Reports¹³. The database is developed by stakeholders and coordinated by EQAR. It gives access to reports and decisions on higher education institutions/programmes externally reviewed against the ESG by an EQAR-registered agency;
- the second, a Europass accreditation database of trusted issuers (Camilleri, 2018b).

However, during the discussions and through presentations it became clear that other mechanisms could also be considered. The consultation group concluded that this topic should be further explored with national authorities in charge of qualifications and/or qualifications frameworks and other stakeholders.

The NESET report states that, in general, **the current European standards and key elements for formal recognition and quality assurance in higher education can and should be applicable** to any new forms of learning, certification and credentialing (Orr, et al., 2020, p. 10). However, they recommend **reviewing and supplementing the existing criteria and measures for quality assurance**, in order to take appropriate account of digitalisation in teaching and learning, and to ensure security and transparency for all learner groups. Micro-credentials can be offered in a face-to face format or as blended or online learning. With regard to online or blended learning the NESET report concludes that it

...is crucial that quality assurance of online learning activities, which are credit-bearing, is extended to cover the virtual learning environment, the pedagogical quality of online provision and the availability of online student support, which are often criticised as lacking when considering online learning.' (Orr, et al., 2020, p. 32)

In the E-Excellence Project, the European Association of Distance Teaching Universities (EADTU) has developed a comprehensive reference tool for quality assurance and benchmarking of online learning (EADTU, 2016). It will however be important to look further into the quality assurance of digital learning offers as practices. Numerous studies have shown that digital and blended learning typically raise specific quality assurance questions.¹⁴

Box 7: Key points from consultation group discussions about quality assurance

- Higher education institutions (HEIs) that are externally quality assured in line with the ESG should be regarded as **trusted providers** of micro-credentials. The DEQAR CONNECT project aims to ensure that these are listed in the Database for Quality Assurance Results (DEQAR)¹⁵ and promote the digital exchange of information on quality assurance.
- When delivered by **higher education institutions**, the same quality assurance principles should be applied to micro-credentials as to **higher education degrees**.
 - The Erasmus+ MICROBOL project is set to examine if and how the **Bologna tools** can support the uptake of micro-credentials and whether there is a need for adjustment.
 - For **micro-credentials delivered online**, the comprehensive reference tool for quality assurance and benchmarking of online learning developed by EADTU in the context of the E-Excellence Project (EADTU, 2016) could serve as a reference document.
 - Similar to the **ENQA** 'considerations for internal and external quality assurance in an online and blended learning environment', further explanation might be needed on how the ESG could be operationalised in the context of micro-credentials (Huertas, et al., 2016).
- When micro-credentials are issued by a non-higher education provider, including providers outside the formal education and training system, quality assurance is also essential. The ESG could, in principle, be used in

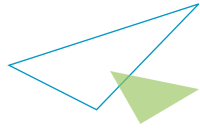


this area, as there is nothing in the standards that is 'exclusive' to higher education. At the same time, there are also other ways of ensuring their quality. This is an area where further discussion and cooperation is needed, with non-higher education providers and stakeholders. Furthermore, some members of the consultation group pointed to the need to ensure a level playing field for quality assurance for all providers.

- For example, modules included into the provision of a higher education institution that are developed by providers who are not themselves part of the formal education system could be regarded as 'trusted', as the internal quality assurance arrangements of the higher education institution in question should cover these.

The group has not discussed the quality assurance of micro-credentials provided in the secondary education, VET or adult learning sector. Quality assurance in these sectors is different, but still trusted. Annex IV of the EQF recommendation lists quality principles for qualifications from all sectors, which should be respected.





4.4 Credits

The European Credit Transfer and Accumulation System (ECTS) is used by 49 countries within the European Higher Education Area. From the perspective of higher education, the ECTS is a recognised mechanism to make the learning outcomes and the estimated workload of a course visible.

ECTS is suitable for micro-credentials, as it is based on learning outcomes and makes learning measurable. ECTS could be used in the transcripts or certificates for micro-credentials, and could thereby contribute to their transparency. ECTS is currently primarily used within the field of higher education, but its use could be expanded to other sectors.¹⁶ Even if ECTS is not used, a similar logic could be applied. The survey to members of the consultation group on micro-credentials prior to the first meeting confirmed the suitability of ECTS. Several members agreed that the deployment of ECTS can contribute to making the learning outcomes in a micro-credential visible as part of a recognition process (Larsen, 2020). Other credit systems might also be used, but the advantage of ECTS is that it is very widely used in Europe. When micro-credentials use another credit-system, it is important that users understand how to translate that to ECTS¹⁷, in line with Annex V of the EQF Recommendation.

Results from the survey further indicated a shared opinion that using ECTS credits as a measure of the volume of micro-credentials would be a **basic element that could allow micro-credentials to become stackable in a transparent way** and based on learning outcomes and the workload. This could also facilitate the national and international recognition of short courses as independent modules or potentially as part of a full qualification. For this purpose, the 2015 ECTS Users'

Guide (EC, 2015) already provides indications on the use of credits for stand-alone modules, but the guide could be complemented by more details on this specific use.

Opinions in the consultation group have differed regarding the range of ECTS credits in defining the workload of micro-credentials. The example of the European **MOOC Consortium**¹⁸ was shared. Their 'Common Micro-credential Framework'¹⁹ suggests that micro-credentials should be based on a notional workload of 100-150 hours (including revision for, and completion of, the summative assessment). This equals 4-6 ECTS credits. Others argued that even 1 ECTS credit could be accepted for the workload of micro-credentials. On the other end of the possible scale, 60 or 90 ECTS credits were mentioned, the latter of which would already be very close to the size of the short-cycle qualification.

Some group members were however hesitant about limiting micro-credentials to a certain number of ECTS credits, arguing that it could limit educational innovation and flexibility. This notion was also shared in the report by (Orr, et al., 2020, p. 9).

In the second meeting of the consultation group, **stackability** of micro-credentials was discussed. The MicroHE consortium has developed Credentify²⁰, a blockchain-based cloud service, which enables higher education institutions and students to issue and receive micro-credentials that can be stacked using ECTS. The development of Credentify has occurred in a context of increasing requests from graduate students for recognition of learning achieved online and not through their university. Credentify provides students with the opportunity to get credentials from multiple universities recognised as part of their studies, and it supports portability and storage of digital

student data. One of the advantages of Credentify is that it offers a standard format for documenting micro-credentials in terms of ECTS, using existing recognition tools (Knowledge4all, 2018).

Some concerns were raised regarding a scenario in which micro-credentials could be stackable to such an extent that it could potentially lead to requirements for the issuing of a degree. The underpinning argument is that a university degree constitutes a coherent whole, a logical composition of modules, which cannot be achieved by stacking modules that might not consider a specific learning pathway, mutual dependency and coherence.

Box 8: Key points from consultation discussions about credits

- The group recommended that the European approach to micro-credentials be linked with ECTS as far as possible. **Wherever possible, micro-credentials should use ECTS.**
- The group discussed the notional volume of learning leading to micro-credentials or whether there is a need to set a fixed level of volume, e.g. in terms of a range of ECTS credits. The main reason for not setting a range is to allow flexibility for issuers, while the advantage of a defined credit range would be to make it easier to compare micro-credentials..
- Overall conclusions are to allow for maximum flexibility. This could imply a minimum of 1 ECTS credit with an upper limit of 'less than a full degree'. Some suggested a typical range could potentially be between 1 and 6 ECTS credits for a single micro-





credential. They could be combined to provide enough flexibility for larger sizes of learning units, to meet the different national, institutional and sectoral practices and contexts. The consultation group justified this flexibility with the necessity to allow for innovations and experimentations with different sizes of micro-credentials in Europe.

> The group discussed the possibility of combining micro-credentials into a macro-credential. This would be more voluminous than the single credential, being composed of a number of internally coherent micro-credentials relating to a specific topic or field. However, the group could not formulate conclusions on this and recommended further discussions and analysis.

> Though several group members were positive about allowing the stacking of micro-credentials and saw ECTS as a suitable tool for supporting this, the consultation group warned against allowing for the combination of several micro-credentials to automatically make up a full degree.

4.5 Recognition for further studies or employment purposes

Academic recognition is the process used when a qualification is regarded as providing access to a study programme. The EU Council Recommendation on promoting automatic mutual recognition of higher education and upper secondary education, training qualifications and the outcomes of learning periods abroad calls for automatic mutual recognition for the purpose of further learning without having to go through a separate recognition procedure, under certain circumstances, both at the

level of full qualifications and at the level of periods of study (Commission, 2018b).

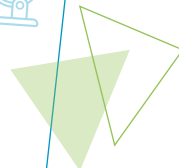
The Lisbon Recognition Convention, ratified by 26 EU Member States (ETS no 165), refers to degrees, diplomas or certificates issued by competent authorities, based on the successful completion of a higher education programme (Commission, 2018b). These degrees, diplomas or certificates shall be recognised for the purpose of access to higher education studies, academic titles or in certain cases to the labour market, unless substantial difference can be shown. Periods of study completed shall be recognised towards the completion of a higher education degree, unless substantial difference can be shown.

In academic recognition procedures, the key actors, depending on the situation in Member States, are ENIC/NARIC centres, ministries and higher education institutions. The Lisbon Recognition Convention applies to their processes. A recent project suggests that in academic recognition procedures, the competent authorities should look at the following key elements: quality, learning outcomes, level, workload and profile. These must be clearly described.



The e-Valuate project (NUFFIC, 2019a, p. 12) has further defined the following seven criteria for the recognition of e-learning:

- > quality of the course/module;
- > authenticity of the credential (verification of the certificate);
- > level of the course;
- > learning outcomes;
- > workload;
- > ways of assessment;
- > identification of the learner.



All these elements contribute to transparency, which is the basis for recognition as it creates the necessary trust that underpins recognition decisions. If transparency is ensured, micro-credentials will be more smoothly recognised. Integration with existing tools, as described in the above chapters, will help provide a better recognition process for micro-credentials. The EU standard on constitutive elements for micro-credentials, as described in Box 5, is in line with the seven criteria of the e-Valuate project. This information needs to be available over time. In an interinstitutional context, micro-credentials could be easier or even automatic within 'trusted partnerships', where higher education institutions have worked together already.

The end result of recognition may be, for academic purposes:

- > to provide alternative access to higher education;
- > give exemptions towards a full degree acquired in a traditional way;
- > ensure stackability.



For employment purposes it may:

- > general advice to employers in the process of recruitment;
- > one step in a procedure before competent authorities assess the access and rights to practice in a regulated profession.



The consultation group observed that the challenges concerning recognition of micro-credentials are no different from the general challenges in recognition. Consistent terminology in describing learning outcomes will help make such an assessment. The lack of a common definition for micro-credentials poses an additional challenge. The result could be that learners are hesitant to seek recognition of micro-credentials that they acquired outside their formal full degrees. Experience shows that learners seeking exemption from certain parts of a curriculum based on claiming recognition of studies outside of the curricula may face challenges (MicroHE Consortium 2019).

The consultation group agreed that recognition of prior learning and experience (also called validation) is the most relevant procedure that allows for the recognition of non-formal and informal learning. Micro-credentials often fall down in this procedure at higher education institutions. Practices for these vary widely across higher education institutions and across Member States. Currently, arrangements for recognition of prior learning and experience allow the award of a full formal qualification through recognition of prior learning and experience procedures in 18 EU Member States, while 19 Member States allow for the award of partial qualifications (Cedefop, 2018a)²¹. While lack of familiarity with the concept causes some difficulties, the main problem is that the learning outcomes-based process may not always be standardised. There is also a lack of trust and willingness of institutions to recognise learning from other institutions, providers or contexts. Therefore, recognition of prior learning and experience currently often happens on a case-by-case basis. As the offer and uptake of micro-credentials increases, the current time and resource-intensive procedures for recognition of prior learning and experience would not be able to satisfy the increased demand. Moreover, the funding context of these procedures differs widely in the Member States, and is regarded as a resource- and time-intensive process. Further consultations will be needed in this area in order to facilitate the smoother recognition of micro-credentials in the higher education context.

From an employment perspective, the experience is that employers do not always understand what category of certificates/qualifications micro-credentials represent. The result is that in a recruitment situation a micro-credential may not substantiate a job applicant's claims to certain skills (MicroHE Consortium, 2019, p. 28).

There are limited data that analyse how employers interpret and value alternative credentials, and factors that may impact their perceptions. A survey study from Northeastern University in the USA concludes that micro-credentials at present are largely functioning in the labour market as supplements to traditional degrees, but that employers in general have a low level of awareness of what micro-credentials are (Gallagher, 2018). However, the study also concludes that perceptions of alternative credentials, including those offered online, is in a flux when it comes to hiring, in particular in sectors which are highly technology intensive. Employers' understanding of micro-credentials could be enhanced by describing learning outcomes based on skills taxonomies in ways that can enable the outcomes to be understood, also in cases where HR analytics tools are used in the initial scanning of applicants resumes (Gallaher, 2019). In Europe there are still limited data on the uptake and impact of micro-credentials from the perspective of different learner groups (Ehlers, 2018).

Recognition processes underpinned by digital means is an emerging field of research and practice. The consultation group sees potential in this for the recognition of micro-credentials. Such practices are already in place at some universities, where courses that have previously been recognised by the institution will automatically be recognised for other learners who seek recognition for those particular courses. Learners who wish to take a course to obtain a micro-credential could be informed in advance about recognition prospects. The EMREX network and its initiatives can serve as a building block for user-centred recognition solutions, with a focus on electronic transfer of student data.²²



Other solutions presented and discussed in papers and during meetings is the European Student Card Initiative, in particular a core component of the initiative, the Erasmus Without Paper Network, coordinated by the European University Foundation, (European University Foundation, 2019 b). The network allows for the fully digitalised management of credit mobility and exchange of mobility data, including learning outcomes between the sending and receiving higher education institution. The network can also allow for the automated transfer of grades using the outputs of the EGRACONS project. Furthermore, the DigiRec project, developed by NARIC centres, provides important insights into the potentials of digitalisation parts of a recognition process, by exploring how the digitalisation of both the student data and the evaluation process can support recognition (NUFFIC, NL, 2020a). The value added of digitalisation is not just a question of efficiency. One of the findings of the DigiRec project is that digitalisation of student data in the recognition process can ensure consistency, and better data quality. Though digitalisation holds great potential, one of the conclusions of the project is that it is paramount to engage stakeholders at both institutional and national levels, and to train staff in higher education institutions and within the ENIC-NARIC network in the use of digital solutions. In some cases there could also be a need to adapt regulations to allow for the digital handling of data (NUFFIC, NL, 2020a). Processes for the digitalisation of student data and elements in the recognition process should be seen as part of a wider digital infrastructure. The Europass digital credentials infrastructures and the European Student Card Initiative can support this.


The European Credit Clearinghouse for Opening up Education (ECCOE) project proposes a standardised Learning Passport based on the Diploma Supplement and Annex VI of the EQF (ECCOE Consortium, 2019; Commission, 2017b; Commission,

2019d). Its aim is to further streamline minimum requirements for micro-credentials by addressing student assessment and identity, which are critical for open education, and by exploring the use of and requirements for **metadata**.

For credit mobility in general, Erasmus learning agreements provide a template for recognition. Building on this, ECCOE will pilot a semi-automated bilateral agreement for micro-credentials (**EADTU, 2020**). Currently, such solutions hold the potential to be scaled up for both virtual and physical mobility in higher education, but the bigger picture, including data storage and data flows, needs to be carefully assessed.

Box 9: Key points from consultation group discussions about recognition

- Standard recognition procedures that are used for the recognition of foreign qualifications and learning periods abroad can be used as a starting point **when dealing with micro-credentials issued by formal education providers**.
- Transparency and trust are the basis for recognition in general, and this is also the case for micro-credentials. The criteria used by ENIC/NARIC centres, as well as the above-described constitutive elements of micro-credentials (see Box 5, the EU standard for constitutive elements) would ensure more transparency.
- Micro-credentials issued by non-formal education providers (e.g. private providers of labour market-relevant training) can be recognised by way of **recognition of prior learning and experience**.

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- Yet, procedures for the recognition of prior learning and experience need to be adapted for the purpose, as the current time and resource-intensive procedures for recognition of prior learning and experience would not be able to satisfy a substantially increased demand.
 - Some examples were mentioned, which indicate that recognition of micro-credentials could be easier or even automatic within 'trusted partnerships', where higher education institutions have worked together already. The group highlighted the need for a more **standardised approach**, moving from bilateral and case-by-case processes, as a precondition for a scalable solution for micro-credentials.
 - The European approach to micro-credentials and its building blocks should **support quick and more scalable recognition** processes, especially when underpinned by digital solutions.
 - Processes for the digitalisation of student data and elements in the recognition process should be seen as part of a wider digital infrastructure. The Europass Digital Credentials Infrastructure (EDCI) and the European Student Card Initiative, including existing services such as EMREX, can support this, as well as a number of ongoing projects in this domain. Standardised metadata and interoperability of the different tools are indispensable (see section 4.6 below in this chapter).



4.6 Portability: issuing, storage and sharing of micro-credentials

As already noted, micro-credentials may currently be issued in various formats (on paper or in a digital form, stored locally or using a cloud solution). Looking ahead, a digital format for micro-credentials is essential to enable easy storage, sharing and the portability of micro-credentials. This would be beneficial not only for the learners, but also for educational institutions and the world of work. It would also facilitate recognition but this does not imply that the provision of courses leading to micro-credentials will have to be based on digital delivery.

On 1 July 2020, the European Commission launched the new Europass portal, which includes a Digital Credentials Infrastructure. Currently in a piloting phase, it offers free tools for institutions across the EU to issue credentials as well as diplomas and certificates at all levels, in a tamper-proof, digital format with automatic verification of authenticity (Commission, 2020d). The implementation of the infrastructure will allow organisations to issue qualifications, apprenticeships or certificates in an efficient and secure, trustworthy and fraud-resistant digital infrastructure. With this solution in place, learners, employers, education and training providers and other authorised bodies have a simple and trustworthy way of verifying the validity and authenticity of digital credentials.

Box 10: Europass definition of digitally-signed credentials

'Digitally-signed credentials are electronic documents 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. They may often be referred to as 'digital certificates' as well.' (Commission, 2018d).

Europass serves a broader purpose regarding lifelong learning at all levels. Furthermore, it provides a basis for stacking credentials accumulated over time and from different institutions. It is built on a single data model, which can describe all forms of learning outcomes including micro-credentials (Open badge network, 2016). This is a key to resolving some of the barriers identified by stakeholders (Commission, 2018c).

Several promising digital solutions for the digital storage, portability, sharing and exchange of micro-credentials, such as blockchain and badges, are emerging. The blockchain technology enables the portability, sharing and exchange, and verification of credentials and learners' ownership of their data in a secure manner without the control of any third party.

Universities in Germany, the Netherlands and Italy have adopted the Blockcerts standard, which was initially designed by MIT Media Lab. In Italy universities have started notarising degrees on a public Blockchain, based on the Blockcerts standard, in a solution called BESTR (Cherubini, 2019). Blockcerts allows a university to issue a digital certificate and sign it with its own digital keys. As such, the digital certificate is notarised in the blockchain and owned by an individual²³. The ENIC-NARIC centre in Italy launched Diplome in April 2019, the first use of blockchain technology applied to recognition of qualifications, and will in October 2020 award the first micro-credential for credential evaluators in higher education together with the Università Europea of Rome. The ENIC-NARIC Centre in France is involved in the Blockchain4Edu workgroup, led by the digital education department (the French Ministry of Education), which studies the introduction of blockchain technology in Europe. This method of digital storage can enable learner records to be verified securely and will meet the European Union recommendations (#Blockchain4Edu, 2018).

At present a European blockchain services infrastructure is under development, and the testing of the infrastructure in different application areas is foreseen. The development and lessons emerging from this effort should also be taken into account at European-level discussions on potential shared digital infrastructures for micro-credentials (CEF Digital, 2019).

Discussions confirmed the view that digital infrastructures for micro-credentials should build on open standards and data models. They should support interoperability to allow for data exchange and offer the potential of a comprehensive digital infrastructure. Initially it could, for example, bring together the Europass Digital Credentials Infrastructure and the European Skills, Competences, Qualifications and Occupations (ESCO) classification. As solutions evolve, open standards, data models and interoperability will be key for the seamless access of users and could build a European ecosystem for micro-credentials, as suggested by some group members.

Box 11: Key points from consultation group discussions about storage, data exchange and portability, and data standards

- > **Learners should own their own credential data**, rather than the issuing institution. In line with the General Data Protection Regulation (GDPR), it is up to the learner to decide with whom they wish to share their data.
- > The infrastructure for storing data should be based on **open standards and data models to allow for interoperability and the seamless exchange of data**.
- > **Metadata** should be available in an **open, portable format**. European standards for sharing metadata

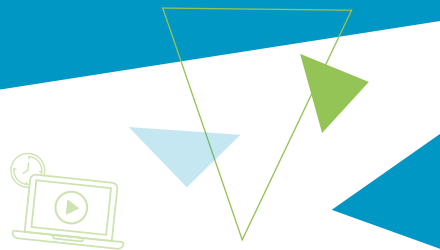
should include only the basics, to allow for flexibility at national and institutional levels.

- > The **Europass Digital Credentials Infrastructure (EDCI)** may provide a **suitable infrastructure that can be applied to micro-credentials**. The Europass Learning Model supports the awarding of a wide range of digitally-signed credentials, including – but not limited to – qualifications with NQF and/or EQF levels. The model itself is designed to support the issuing and stacking of micro-credentials, although the infrastructure needs further development before the technical tools and templates are ready to make this practicable.
- > The group saw some potential benefits in **blockchain infrastructure**, while some participants expressed concern about a perceived lack of maturity regarding the use of blockchain for educational purposes.
- > European efforts concerning infrastructures in support of portability, exchange and sharing of data and the recognition of micro-credentials should be further discussed by policy-makers in Member States and higher education institutions, focusing on the strategic aspects and considering both investment needs and legislative implications.

4.7 Platform solutions

Globally, the role of digital platforms has gained traction in the provision of courses leading to micro-credentials developed by higher education institutions. The global platforms tend to also include other forms of credentials, for example those provided by the big IT companies such as IBM and Microsoft. The ‘platformisation’ of higher education, as some have called it, is driven by a complex interplay between technical architectures, pressures on existing business models and revenue streams, opportunities to create mass user activity and the ability to scale without the same level of costs as face-to face education would require (Shapiro, 2020). However, it should be taken into account that these dynamics mirror the fact that the evolution of platforms at present is dominated by actors in the USA, where rising study costs accelerated the platform evolution and the development of alternative credentials. This is reflected in the underpinning business models, which are both for-profit, such as Coursera and Udacity, and not-for-profit, such as edX.

These underlying drivers are important to understand, as the drivers in Europe differ to some extent. European higher education institutions are predominately public, while the university infrastructures in North America are more mixed, and whether private or public, the costs to study are high. However, other countries are taking actions to support opportunities to scale the outreach and uptake of micro-credentials through digital infrastructures. In June 2020, the Australian Government announced the launch of a national platform and marketplace for micro-credentials with an initial investment. It will initially encompass 54 providers and a total of 344 online courses, and is part of Australia’s strategy for post-pandemic recovery (Chanthadavong, 2020).



The group discussions about platform solutions strongly highlighted the need for support services so that micro-credentials can be an inclusive solution for skills development, underpinning lifelong learning as a public good, based on European values. Similarly, ensuring **sustainability and equity in solutions** has also been stressed as further direction of developments in Europe.

Some suggested that funding for a potential platform infrastructure should be based on government funding, aligned with the societal mission of higher education institutions. Others believed that this could mean too much dependence from public funding, thus impacting sustainability. International developments show that platforms are developed over time and require substantial technical experimentation. The post-pandemic recovery could also lead to less public funding for education. Ireland, on the other hand, is investing massively in the development of micro-credentials, following the example of Australia.

Others brought forward the notion that a platform solution could also be based on an eco-system approach. This could entail a cloud-based application interface (API) solution with open standards, which could over time integrate new services and solutions. This should enable university alliances, Member States or other actors to build their own solutions, but at the same time ensure interoperability for data exchange between platform providers. From a funding perspective it could enable development in partnerships based on a public-private cooperation, with micro-credentials as the linking bridge. Another option could be a European meta-platform, in the form of adding micro-credentials to the learning opportunities section of Europass, as suggested by some members of the consultation group. Such a platform should not be a simple course-list repository.

Discussions showed that European solutions for micro-credentials can only have a real impact if they respond to both the developments of other university-based platforms, such as Coursera and edX, and global tech players like Google and Airbnb, which have more recently positioned themselves in the education sector.²⁴⁻²⁵ The group said that regardless of the models adopted, there is a range of issues related to ownership, costs and potential revenue streams, which must be addressed as part of the consultation processes. The question of standards for learning platforms is an emerging field, which is also impacted by global players such as Microsoft, LinkedIn, Salesforce, etc., some of which have developed components based on open standards, for example regarding secure distributed access. It was therefore suggested by members of the group that **data governance and standard setting from a technical perspective are critical to sustainability**, and could be supported by forming a European Standards Committee with the relevant stakeholders.



Box 12: Key points about digital infrastructures and the potential for platform solutions

- > Different scenarios were discussed and proposed with regard to platform-based infrastructures. Some participants would support the development of a European meta-platform. Member States, individual higher education institutions, European Universities alliances or other actors could further build applications and infrastructures on that basis. Others argued for the use of solutions already in place.
- > The scenarios proposed also have implications in funding models, which span from funding through public-private partnerships to a proposal for a fully publicly funded solution, similar to Australia.
- > Whichever model and approach may be followed, further discussions are needed to clarify financial sustainability or the question of ownership in case of joint development of micro-credentials. Courses leading to micro-credentials provided through the different platforms could be published in 'find a course' in Europass.
- > It is important to explore ways at the European level to ensure interoperability between these platforms and Europass. Interoperability should allow alignment with the Europass learning model (the model to publish learning opportunities and qualifications in Europass should be ensured).



4.8 Incentives to stimulate the uptake of micro-credentials

The two main aspects to consider concerning the uptake of micro-credentials are the supply and the demand side. The consultation group discussed financial and non-financial incentives for both aspects.

At present, national discussions on how to support the supply of micro-credentials are at different stages of development. In the Netherlands, for example, national discussions, underpinned by pilot initiatives, are taking place with higher education institutions and other stakeholders on how micro-credentials can be introduced as part of the higher education system (NETH-ER, 2020).²⁶ In Ireland, a survey was conducted among employers to understand their perceptions of micro-credentials, and the government has recently committed substantial funding to the development of micro-credentials. In Finland, the parliamentary reform on continuous learning, the reform of the higher education system and also the European University Initiative frame discussions on micro-credentials. In Spain and France, previous experiences with MOOCs are considered to accelerate developments and the uptake of micro-credentials, including face-to-face and blended formats. In Lithuania, the European Universities Initiative has paved the way for political discussions about micro-credentials, and in Belgium (Flanders) a survey undertaken in the context of the Microbol project is opening up a wider discussion, which could likely be a stimulus to further engagement in micro-credentials²⁷. Interviews with members of European Universities alliances show that the initiative is kick-starting new conversations and strengthening existing collaborations. This has been further accelerated by the impact of COVID-19, both in terms of access to reskilling and upskilling opportunities and in the context of virtual mobility. A common

conclusion is that a shared definition of micro-credentials is essential to taking decisions about and promoting micro-credentials at all levels.

A common theme emerging from discussions and interviews conducted with higher education institutions is that **sustainability of funding is critical to ensure a lasting approach** to the development and provision of micro-credentials. As discussed in section 3.7, there are different views as to funding models, which to some extent also mirror the differences regarding funding and policy frameworks.

Another key conclusion among the members of the consultation group is that funding is one side of the equation to a sustainable European approach to micro-credentials; another side of the equation concerns **institutional strategies**. Member States have different policies on lifelong learning and further education, which may have an impact on institutional priorities. Discussions and interviews also highlight that the organisational structures of institutions with relatively autonomous faculties can hamper the evolution of an overall institutional strategy with clear targets, allocated resources and incentives. If a comprehensive strategy is not developed and communicated throughout an institution, there is an imminent risk that developments of micro-credentials will at best occur in pockets of innovation and risk being supply-led. An emerging question is how to motivate staff to engage in the development and provision of micro-credentials.

Discussions also focused on the issue of **institutional engagement in micro-credentials** being a matter of institutional culture. The creation of units cutting across university faculties that are strategically supported by the university chancellor and the board can function as a sort of *middleware*, which can stimulate an institutional momentum and drive a cultural

change based on a top-down dynamic but involving bottom-up processes. Moreover, such units also tend to play a central role in building external partnerships, which are perceived as critical to ensuring the responsiveness of micro-credentials. Partnerships with private players can be a way to reduce financial risks or constraints regarding a lack of specific expertise in a field, and can create the basis for initiating a pilot project to test and better understand market needs. Other suggestions involve forming boards with external partners to focus on real market demands.

Another issue discussed was how to ensure that the demand for upskilling and reskilling is channelled to the most appropriate learning option, and how to ensure **equity** of learners. Currently, solid data and proper metrics are sparse regarding access to and completion of the platform-based provision of micro-credentials.²⁸ However, emerging findings are that in advanced economies it tends to be high-skilled 40 to 50-year-old employees in higher-end professional occupations who benefit from and complete micro-credentials. However, members of the consultation group with experience in platform-based provision highlighted that not all users register for a micro-credential in order to complete all elements of it. Findings are, moreover, that user behaviour changes according to whether it is a for-free or a fee-based course paid by the user or the employer, or as part of active labour market policies.

One option to support equity would be to embed mentoring in the offer, or to build on close cooperation with stakeholders that represent users who may have challenges to make full use of digital opportunities. Another option is already used by all existing platforms: the systematic use of experimentation with delivery formats, pedagogical models, embedded services, outreach and partnering approaches, and learning through data generated by the user. A particular issue concerns users

with disabilities. Though research in the field is an evolving topic, there are different conceptualisations of the issues:

- > **digital design for accessibility:** An accessible design would typically build on guidelines, taking into account the nature of the disability without necessarily involving the end user;
- > **digital design for inclusiveness:** Digital design for inclusiveness will, on the other hand, look at the diversity of experience that may exclude a person from using an interface effectively; it may involve the end user in that process and then consider other user groups who could benefit from the same solution without necessarily having a disability.²⁹

Guidance services would enable learners to fully benefit from more personalised lifelong learning pathways and make informed decisions about their educational journey. Career guidance helps people of any age to manage their careers and their educational, training and occupational choices. Effective career guidance is underpinned by the skills assessment of the individual. There are guidance services available at different levels: guidance provided by the employer, and local and national employment offices.


As suggested in one of the presentations made during the consultation meetings, quality assurance needs to cover different aspects of **learner support and guidance** in the case of micro-credentials. The notion is also included in the Standards and Guidelines for Quality Assurance in the European Higher Education Area. Moreover, career guidance becomes central for stackability. Learners might need more counselling on how to combine different

micro-credentials to improve employment prospects. Moreover, strategic career guidance could support the aims of inclusiveness in lifelong learning: individuals with lower levels of qualifications are more likely to need career guidance and are more at risk of losing their jobs due to automation (Commission, 2019b). The European Skills Agenda (Commission, 2020a) proposes innovation in **skills intelligence**, building on the experience of Cedefop, the European Centre for the Development of Vocational Training, and their initiative **to use real time labour market analytics to monitor emerging skills demands** based on real time analysis of job advertisements (Bredgaard, 2019).³⁰ A European-wide solution is foreseen with a piloting period and a tendering, which was launched before the summer of 2020.

The evolution of artificial intelligence is likely to provide innovations in guidance services. Experiences from the USA, Singapore and Australia and from emerging initiatives in the Nordic countries show that such solutions can be embedded as visualised data, which are easy to understand for end users and which can augment the quality of guidance, whether for educational or labour market purposes. Coursera, for example, has implemented an AI-based search function that makes searches for courses more intuitive and based on everyday language. Users may also get recommendations for further learning, based on their learning record.

Box 13: Key points on incentives

- > In many Member States, the **European Universities Initiative** and the **impact of COVID-19** have created a **momentum** to encourage policy debates about micro-credentials and dialogue with the higher education sector and other stakeholders about opportunities. An **agreed definition** and the involvement of **external stakeholders** may further stimulate discussions.
- > Additional funding will be needed to expand the development and provision of micro-credentials across Member States. **Different funding models could be foreseen**, mirroring to some extent the differences across Member States, depending on their funding models for higher education and the relative role lifelong learning plays in these.
- > The relative prominence of lifelong learning in national policies will likely impact institutional priorities regarding their commitment to further education through micro-credentials. It is a common view among the members of the consultation group that **micro-credentials** need to be **underpinned by a comprehensive strategy with clear targets, operational plans and allocated resources**, which must be clearly communicated throughout an institution and shared with external stakeholders to instigate a cultural change.
- > Partnerships with labour market actors, including social partners and companies themselves are seen as key to the development of micro-credentials. They can reduce investment requirements and risks for individual institutions and ensure dialogue occurs around needs and priorities. External partners can contribute with expertise, and can be seen as a way forward to the uptake and promotion of micro-credentials.

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- ...
- **The motivation and support of staff** to engage in the development and provision of micro-credentials is perceived to be a key aspect. Clear and transparent career pathways and building on teaching excellence in terms of staff promotion can serve as main incentives.
 - Equity is seen as being key to success, and should be understood from the perspective of end users. Lessons emerging from existing platforms such as FUN or KIRON show that learner motivation to register for a course leading to a micro-credential will not always be with a view to completion. User needs are much more complex.
 - With regard to equity in access and opportunity, different solutions are proposed, such as embedding mentoring and guidance. It is also strongly recommended that the design and implementation process involve relevant organisations that represent groups with particular needs.

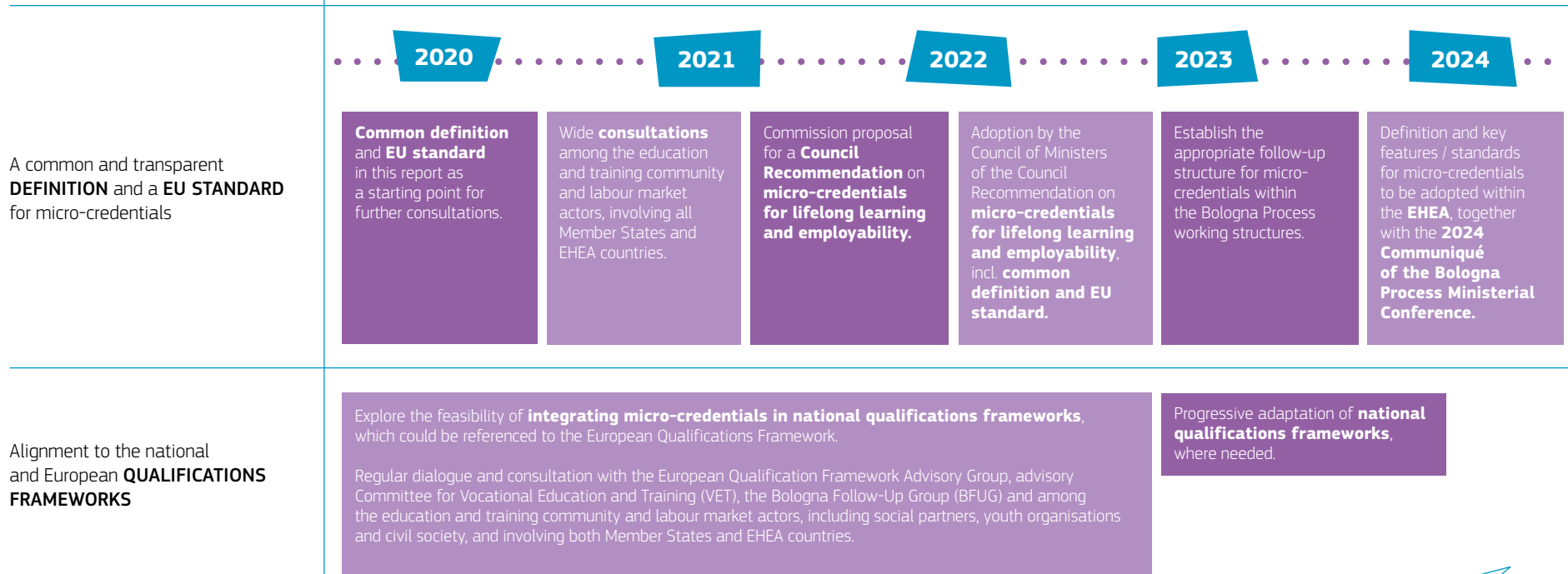
5.0 Roadmap of actions



This Roadmap puts forward suggestions for actions and timing needed on a European and national level to develop and implement a European Approach to micro-credentials. It reflects the views of the members of the consultation group and is intended to feed into the work of the Commission on the European approach to micro-credentials as announced in the European Skills Agenda, the European Education Area and the Digital Education Action Plan communications. The suggested actions focus mainly on the higher education field, as per mandate of the group, but do also address elements of a broader scope of a European approach to micro-credentials.

BUILDING BLOCKS

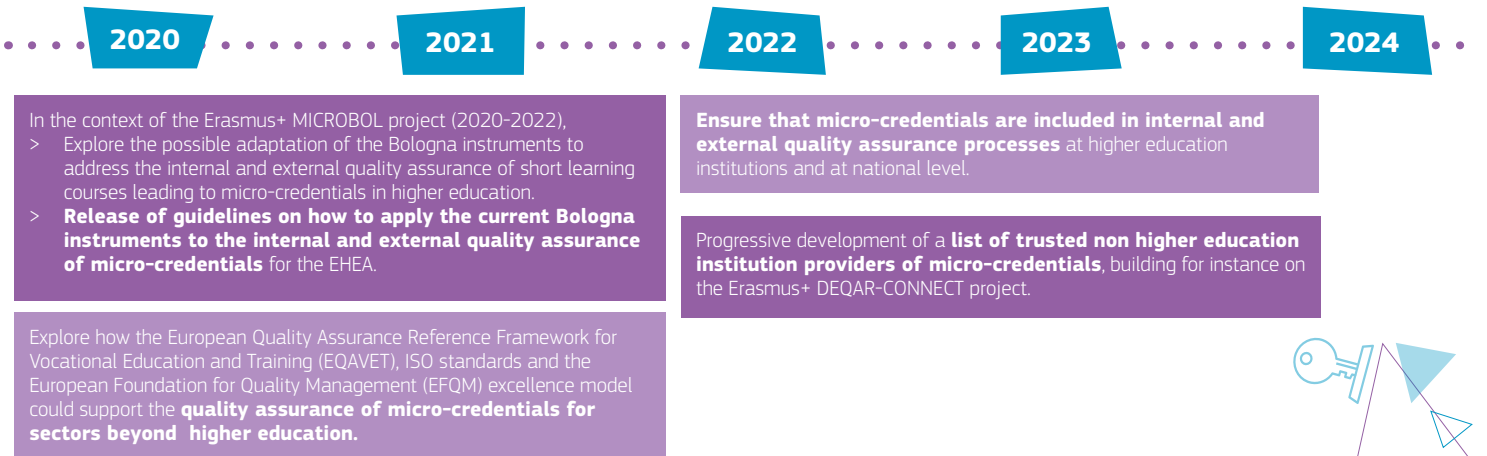
TIMELINES and DELIVERABLES



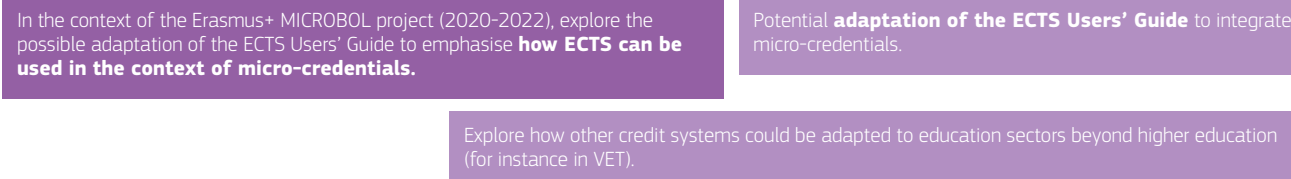
BUILDING BLOCKS

TIMELINES and DELIVERABLES

QUALITY ASSURANCE standards for short learning courses



European Credit Transfer and Accumulation System (ECTS)


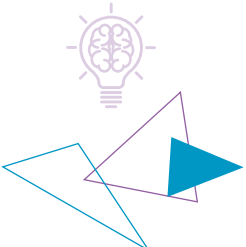


RECOGNITION



BUILDING BLOCKS

TIMELINES and DELIVERABLES

	
STORAGE and PORTABILITY	<p data-bbox="588 261 1539 336">Further development of EUROPASS, in particular the Europass Digital Credentials Infrastructure, for the issuing, sharing and storage of micro-credentials.</p> <p data-bbox="588 342 1786 417">Foster the availability of metadata in open formats and the interoperability between various infrastructures, including between the European Student Card initiative and Europass.</p>
LIFELONG LEARNING	<p data-bbox="748 441 1786 493">Ensuring better permeability between education and training sectors through the application of micro-credentials.</p> <p data-bbox="748 499 1786 574">Fostering the availability of recognition of prior learning and validation of informal and non-formal learning options, which are scalable to higher numbers of applicants.</p> <p data-bbox="748 580 1786 655">Enhance comprehensive guidance services, including online access, which are underpinned by real-time labour market data to ensure informed learner choice.</p>
NATIONAL LEVEL ACTIONS	<p data-bbox="748 674 1786 749">Consultations at national level about the above-mentioned aspects of micro-credentials, involving all relevant national stakeholders.</p> <p data-bbox="748 756 1786 807">Preparing or adjusting the national regulatory framework.</p> <p data-bbox="748 814 1786 888">Piloting of actions based on national/regional needs. Exploring and ensuring the availability of adequate funding, including by EU funding schemes.</p>
UPTAKE by higher education institutions, VET and other education and training institutions	<div data-bbox="466 944 711 1191">  </div> <p data-bbox="748 919 1786 994">EU support through the Erasmus+ programme and Structural Funds for higher education, VET and other education and training institutions and training providers for the uptake of micro-credentials, with a special focus on academia-business cooperation in their development.</p> <p data-bbox="748 1013 1786 1088">Support the development of sustainable business models for the provision of quality assured micro-credentials by regular consultation with Public Employment Services, social partners, private partners and industry representatives.</p> <p data-bbox="748 1094 1786 1169">Peer learning activities at European and national levels, within education and training sectors, across sectors and with the world of work.</p>



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Footnotes

- 1 Please refer to the Background report on micro-credentials for a wider coverage on definitions in the annex.
- 2 At times other terms are used such as micro-degrees and nanodegrees.
- 3 For a further discussion, please see the background report prepared for the meeting of 26 May (in the annex).
- 4 Other initiatives and programmes address these information items as metadata, criteria for recognition and content indicators for the 'micro-credentials envelope'.
- 5 The group reflected on the recommendation from Orr et al (2020), and though they agreed with the suggested elements of the proposed supplement, they did not support the use of the term 'supplement', since the elements might be included into the (digital) micro-credential itself. Instead the term 'constitutive elements of micro-credentials' was proposed.
- 6 Please refer to the Erasmus project: MicroHE, which is developing a recognition framework for micro-credentials and in that context has proposed the concept of a 'module supplement' modelled on the diploma supplement and the credit outline for a single ECTS.
- 7 Learning outcomes, quality of learning, level (ISCED, European Skills, Competences, Qualifications and Occupations [ESCO] relations), assessment of learning outcome, workload of learning, identity of the learner and identity and reputation of the issuer (Camilleri & Florian Rampelt, 2018a).
- 8 <https://www.nuffic.nl/sites/default/files/2020-08/oops-a-mooc.pdf>
- 9 The seven criteria are quality of the study programme, verification of the certificate, level of the study programme, learning outcomes, workload, the way study results are tested and identification of the participant.
- 10 For the purposes of this paper, the Overarching Framework of Qualifications of the European Higher Education Area (QF-EHEA) is not further elaborated.
- 11 OEPASS project.
- 12 <https://www.eqar.eu/kb/esq/>
- 13 <https://www.eqar.eu/qa-results/search/by-institution/>; a project supported by Erasmus+
- 14 For further elaboration please refer to the background report in the annex.
- 15 In relation to the DEQAR CONNECT project it is important to note that participation is voluntary for the listed agencies and there is no guarantee that they will submit data (even if it does look like the large majority of them is planning to do so). Another disclaimer is that in cases where there is programme accreditation, the database will have reports of accredited programmes in it. It is however uncertain whether these will address micro-credentials offered by these HEIs.
- 16 While this might be more feasible in certain sectors, this could cause more challenges in others.
- 17 Micro-credentials awarded in the VET area or by private bodies are not always subject to a credit system. ECTS have been used primarily within higher education, whilst the European Credit System for Vocational Education and Training (ECVET) was proposed in 2009 to be used in the field of VET. The recent proposal for a Council Recommendation on vocational education and training (VET) for sustainable competitiveness, social fairness and resilience from July 2020, however, does state that in practice, ECTS is used also for post-secondary and tertiary VET. The proposed recommendation also states that the credit points introduced by the 2009 ECVET Recommendation will be discontinued, due to the very low uptake and no evidence of added value (Commission, 2020e). Some adaptations may be needed in order for ECTS to work in the field of VET.
- 18 <https://emc.eadtu.eu/>
- 19 <https://emc.eadtu.eu/cmf-awarded-programmes>
- 20 <https://credentify.eu/>
- 21 See European inventory, CEDEFOP (2020), European inventory on validation of non-formal and informal learning 2018. Final synthesis report. https://cumulus.cedefop.europa.eu/files/vetelib/2019/european_inventory_validation_2018_synthesis.pdf
- 22 <https://w3c-ccg.github.io/meetings/2020-03-02-vc-education/>
- 23 <https://blog.bestr.it/en/2019/06/13/blockcerts-bestr-faq>
- 24 <https://www.businessinsider.com/google-careers-certificate-program-changed-game-universities-should-pay-attention-2020-9?r=US&IR=T>
- 25 See Hamilton, K. D., Pongratz, H. & Schmidt, P., 2020. *Building the digital credential infrastructure for the future*, s.l.: MIT for a transatlantic functional specification of a platform solution for micro-credentials.
- 26 NETH-ER (2020). Position paper. Learning Europe, the European Higher Education Area.
- 27 See also the scoping note on the third meeting, Financial and non-financial incentives by Hanne Shapiro for further examples of experiences to build on.
- 28 See background report in Annex for further details.
- 29 <https://www.toptal.com/designers/ui/inclusive-design-infographic>
- 30 See also https://www.cedefop.europa.eu/da/publications-and-resources/country-reports?search=landscape+online+job+vacancies&year=All&theme=All&items_per_page=50 for country specific reports.

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