



ANNEX 1

A EUROPEAN APPROACH TO MICRO-CREDENTIALS

BACKGROUND PAPER FOR THE FIRST
MEETING OF THE CONSULTATION GROUP
ON MICRO-CREDENTIALS

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Education and
Training

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1.0 Introduction

This background paper has been drafted in preparation for the first meeting of the Consultation Group on Micro-credentials. The paper introduces major current initiatives on micro-credentials primarily in the EU.

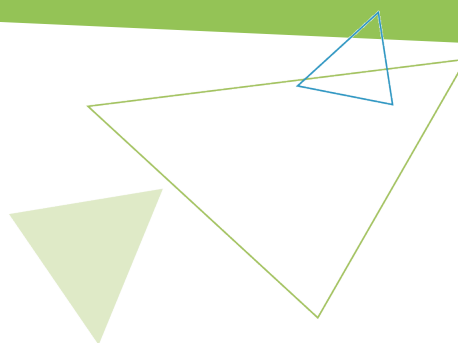
During the first meeting, the intention is for the consultation group to reach a consensus on key terminology and issues at stake regarding the development of a European approach for micro-credentials. More specifically, this paper aims to:

1. contribute to a shared definition and understanding of the core terminology underpinning micro-credentials, and
2. facilitate a first identification of critical building blocks which should be features in a European approach for micro-credentials in higher education in the EU.

Please note:

Throughout the document you will find questions. These are meant to facilitate your preparations for the meeting.

During the meeting there will be no time to discuss all these questions, but you are always welcome to send written input or request a bilateral discussion with DG EAC.



2.0 Policy Background

During the last decade, the higher education sector has world-wide experienced growing demands for employability skills perceived to smooth transitions to labour markets for recent graduates and benefit professionals throughout working life (Suleman, 2016). The changing nature of work is expanding the role of higher education systems in lifelong learning. This is also mirrored in European policies and priorities (Commission, 2019b; HLEG- Employment, 2019a). The envisaged role of the European higher education sector.

European skills forecasts foresee a significant growth in high-skilled occupations (Cedefop, 2018a). In 2019, most EU countries reached and surpassed the European 40% tertiary education attainment target. However, the knowledge and competences acquired through formal education must be updated in a rapidly changing society undergoing environmental, technological, and social transformations.

Innovations in learning pathways and learning environments in higher education institutions are a precondition to better accommodate the needs of a wider range of learners (McGrath, et al., 2016). This does not imply a replacement of traditional degrees, but rather supplementing these with new and shorter forms of provision that fit the needs of working adults. A growing number of **adults**, with a higher education degree or lower, 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 initial formal qualifications and emerging skills needs in the labour market. During COVID19 the value added of flexible alternative credentials has been demonstrated as numerous adults in the workforce have upgraded their skills during lock-down, thereby being in a better position to cope with changes as labour market gradually open up again.

Continuous learning through **alternative credentials** (certificates, digital badges, micro-credentials) is a **means to overcome skills mismatches**, increase the **efficiency** of higher education systems, encourage **innovation in provision**, and thereby reach **new learners**, including those from disadvantaged backgrounds. Higher education institutions are offering alternative credentials, which can help learners acquire new skills, and update their existing skills in changing labour markets. (Katos, et al., 2020).

Higher education institutions play a key role in providing these modular and continuous learning opportunities – a strategic aim, which the European Commission wants to support as part of the implementation of the **European Education Area**.

However, different constraints are currently limiting the potential impact of alternative credentials. There is a lack of common formats and quality assurance measures attached to alternative credentials, and the recognition process is not always reliable. The **EU system level** can play an **enabling role** by designing an **approach for these alternative credentials** linked to the current “**Bologna 3 cycles**” and the **European Qualifications Framework** as well as by agreeing on **common quality assurance** processes, the **levelling**, and the **recognition of micro-credentials**. Moreover, several European universities and European University alliances, like **ECIU**¹ and **YUFE**², aim at developing micro-credentials at a larger scale so that they can offer more flexible learning pathways, technology-enhanced learning, and more inclusive curricula and pedagogy, both for students and professionals. These networks can act as **test beds** and **pave the way** for other higher education institutions to follow.

¹ European Consortium of Innovative Universities, www.eciu.org

² Young Universities for the Future of Europe, www.yufe.eu

In line with Commissioner Mariya Gabriel's mission to “*plan and look at how we can increase the take-up of massive open online courses*” (Leyen, 2019), the **updated Skills Agenda** and the **updated Digital Education Action Plan** will equally look at the improvement of skills and competences as well as the promotion of an access to continuous learning.

A European approach to micro-credentials will help to widen learning opportunities on an unprecedented scale. It can stimulate a larger uptake of micro-credentials, which can ultimately serve social, economic, and pedagogical aims.

But why is this European approach really needed? What are the driving factors, which are calling for action at a European level?

2.1 Joint action is needed – driving factors

A massive increase in different forms of alternative credentials has resulted in a lack of common and shared understanding of what these are, which could in turn result in a ‘jungle of badges of little signalling value’ (Picard, 2018; Barbaras & Philipp, 2016; Chakroun & Keevy, 2018). In 2018 Class Central identified 450 micro-credentials, finding little consistency between them. In 2019 they identified 800+ with COURSERA’s specialisations representing half of them (Class Central, 2020). One response to this emerging market demand has been to trademark the outcomes of the digital learning offer with terms such as **NanoDegree**,³ **MicroMasters**⁴, and **Micro-degrees**⁵ to strengthen the brand value of specific offers (Gallagher, 2019; Gallagher & Oblinger, 2016).

For learners, employers, and labour market authorities, there is limited guidance as to the quality and value of different offers, and this has added to the confusion (MicroHE Consortium, 2019, p. 21; Larsen, 2020; Gallagher & Oblinger, 2016). When the value of different credentials is not clear, students in higher education are discouraged from having their additional learning recognised. Similarly, employers tend not to understand nor be able to assess the quality of alternative micro-credentials as a means to solve their skill demands (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).

Factors relating to the **changing nature of work** contextualise the need to agree on a common definition for micro-credentials. Automation and deeper digital integration are likely to continue to increase demands for higher order cognitive and social skills (Commission, 2019b; Commission, 2019a; OECD, 2017). As a result, more adults will need to reskill and upskill more frequently to be employable, and more flexible responses will be needed to meet the changing skills demands. (Ifenthaler, et al., 2016; Commission, 2019b).

Developments in digital technologies such as artificial intelligence do not solely require specialist skills in data science. In a range of sectors such as health, finance, and advanced manufacturing, there is a growing demand for professionals with advanced hybrid skills as well as digital specialists. The notion of **hybrid skills** entails a **combination of skills** due to a **deeper integration of digital technologies** in areas such as marketing, statistical analysis, and design. The demand for advanced hybrid skills requires innovations in the provision of continuing training, for example in credit bearing credentials in fintech, which was launched through the FutureLearn platform in February, 2020⁶.

³ <https://trademarks.justia.com/862/38/nanodegree-86238526.html>

⁴ <https://trademarks.justia.com/869/61/micromasters-86961017.html>

⁵ <https://trademarks.justia.com/865/00/microdegree-86500818.html>

⁶ <https://www.futurelearn.com/microcredentials/fintech-financial-innovation>

Finally, the current **COVID-19** crisis illustrates the **urgency of creating more transparency** in the continuing education and training offer (EPALE, 2020). There is emerging evidence that the **demand for online learning** has **increased** during the **COVID-19 crisis**. Although the outcomes of COVID-19 are still uncertain, the demand for alternative credentials and their recognition and validation could grow as governments implement measures to kick start their economies. This could accelerate transformations in the labour market (Christensen, 2020).

2.1.1 Who benefits?

But how can professionals - whether they are employees, employers or career guidance counsellors - make informed choices in the vast global offer of alternative credentials available online? At present the **evidence** is **mixed** regarding **who benefits** from enrolment in and completion of micro-credentials.

A recent global empirical study of micro-credentials offered as online MicroMasters and **specialisations** found that the majority of participants who completed courses were from the US, India, and Canada, they were young, and in general well-educated and highly paid (Hollands Fiona & Asiya, 2019). However, a previous global study of MOOC-users challenges some of these assumptions. This global study, which focused on users in three developing economies, found that 80% of the MOOC users were from low- and middle-income populations, and they had basic or intermediary digital skills. About half of the users received a certification. Their main motivation to use MOOCs was to gain job-specific skills (Garrido, et al., 2016).

The mixed findings about users could be a consequence of evolving business models. Around 2012, the provision of MOOCs was based on a free-of-charge business model offered through platforms such as Coursera. More recently the pricing of courses leading to micro-credentials has increased (Picard, 2018). Even though **micro-credentials** are a relatively new phenomenon, there is evidence they can play a strong **complementary role** to higher education degrees by creating **flexible pathways** into tertiary education and by offering attractive solutions to **up-skilling and reskilling** matched to the needs of the labour market⁷.

2.1.2 Micro-credentials – a window of opportunity

All these driving factors offer a window of opportunity for the higher education sector:

- > From an employer and learner perspective, it is essential that the outcomes of continuing learning have a **clear signalling value** and that they are understood and **appreciated** in the labour market.
- > From a **supply perspective**, a growing demand for a more granular and high-quality provision, which also takes into account transversal skills, will require innovations in the provision of continuing education and training. However, such investments could pave the way for a **deeper engagement in lifelong learning** for the European higher education sector and it could **strengthen industry partnerships** (Commission, 2019a; BluSpecs et al, 2019; HLG -EMPL, 2019a; Commission, 2020a; Autor, et al., 2019).
- > From a societal perspective, a flexible provision, which creates pathways into tertiary education, can contribute to **labour market mobility** and **quality of jobs** as skills demands change in a lot of occupations when more routine tasks are automated (Commission, 2019b; Commission, 2019c; OECD, 2017).

The lack of a shared definition is currently perceived as the most substantial barrier to further development and uptake of micro-credentials in the EU according to all stakeholders consulted (Larsen, 2020; MicroHE Consortium, 2019). The ultimate goal of the current consultation process is to develop a sustainable and future-proof approach to the management of micro-credentials in higher education – to meet the diverse demands for lifelong learning across the EU.

⁷ On-line interview with Dr Sean Gallagher, North Eastern University, Insight Centre, the Future of Education, Boston Mass., 14th April.

3.0 Micro-credentials – current status and definitions

3.1 What is a micro-credential? Emerging definitions, Europe

Defining micro-credentials is not just a linguistic challenge (Dowling, 2018).⁸ The massive increase in digital and online learning provision has led a range of both public and private players to deploy different concepts of micro-credentials (such as nano-degrees) to position their brand (Resei, et al., 2019, p. 24). Below, an overview of current proposals for delimiting and defining micro-credentials is presented. As can be seen in the following, there are at present several definitions proposed.

3.1.1 ECIU

Box 1: Micro-credentials – The European Consortium of Innovative Universities (ECIU)

Micro-credentials refer to “certification of learning that can accumulate into a larger credential or a degree, be part of a portfolio that demonstrate individuals’ proof of learning, or have a value in itself.”
Source: <https://www.eciu.org/news/towards-a-european-micro-credentials-initiative>

The ECIU definition in box 1 above emphasises that micro-credentials are certified learning, which can be stand-alone certifications or they can be part of a larger credential and thereby stackable.

3.1.2 MicroHE consortium

The Consortium MicroHE, co-funded under ERASMUS+, proposes a definition of micro-credentials based on a literature review and multi-stakeholder interviews. The definition is shown in box 2 below:

Box 2: Micro-credential, definition by MicroHE

“A micro-credential is a sub-unit of a credential that could accumulate into a larger credential or a degree or be part of a portfolio. Examples are Digital Badges, Verified credentials, MicroMasters, Nanodegrees”. Source: (MicroHE Consortium, 2019)

This definition emphasises that a micro-credential may be documented in different formats including that of a digital badge or a verified credential. This definition indirectly takes into account the fact that not all higher education institutions have digitalised core processes. However, not all digital badges document learning outcomes of a micro-credential (Tátrai, 2019). Therefore, the definition further specifies that micro-credentials should be part of a larger credential or degree, and that learning outcomes may be part of a portfolio. The definition entails internal coherence in the offer in that it specifies that a **micro-credential** can **accumulate** into a larger **credential**. The deployment of portfolios may have implications for recognition and quality assurance processes.

⁸ For a presentation on possible technological configurations see Andy Dowling (2018), ‘Ten Minutes under the Hood’, <https://www.groningendeclaration.org/wp-content/uploads/2018/Presentations/04-18%20Andy%20Dowling%20Ten%20minutes%20under%20the%20Hood%20.pdf>

3.1.3 EADTU- e-SLP project

In the context of the project 'e-SLP' ('European Short Learning Programmes'), the European Association of Distance Teaching Universities (EADTU) has defined the term **short learning programme**, see Box 3. In contrast to the MicroHE-definition above, this definition focuses on the course (the workload of which is expressed as a range of ECTS credits), which can lead to micro-credentials. This definition does not describe a credential itself. Furthermore, it specifies that short programmes involve more than one course, but should focus on one common subject to ensure coherence.

Box 3: Short learning programme, definition by the e-SLP project

"A short learning programme (SLP) is a group of courses with a common subject which are typically part of a larger degree. A short learning programme usually has a volume of 5-30 ECTS points",

see <https://e-slp.eadtu.eu/>

The terminology 'short-learning programme' could potentially be confusing in those systems, which offer a short-cycle higher education degree.

3.1.4 Trends across definitions

The definitions proposed by ECIU, MicroHE, and EADTU all emphasize **coherence in the offer** in that the definitions specify that a **micro-credential** can **accumulate** into a larger **credential**. It is only the definition proposed by the **EADTU** in the eSLP project that refers to the **learning outcome volume** expressed in **ECTS points**. That a course can be part of a larger degree has implications on **stackability**, and this is central to the definitions proposed by both ECIU, MicroHE, and the e-SLP project. **Stackability** means that a sequence of micro-credentials **can be accumulated over time**, has internal coherence, and can provide a full and easy-to-understand picture of what the learner has learned over time (Kazin & Clerkin, 2018; MicroHE Consortium, 2019).

The definition proposed by MicroHE is the only definition, which includes a reference to **portability** such as a digital badge. That micro-credentials are **portable** implies that the learner has the ability to **share and translate credentials** from one context to another and to represent them in different combinations for different audiences (Barbaras & Philipp, 2016). From a **lifelong learning** perspective, both **stackability** and **portability** are central features of a micro-credential.

3.1.5 Responses from members of the Consultation Group on Micro-credentials

The survey addressed to members of the Consultation Group on Micro-credentials undertaken by the European Commission elicited 17 responses. The survey presented a list of potential definitions and characteristics of micro-credentials and asked the members to indicate whether they agreed to each of these characteristics. The responses can be summarised as follows (Larsen, 2020):

The definition, which most respondents agreed with (11 out of 17 respondents), is that micro-credentials are *'documented statements that acknowledge a person's learning outcomes, that are related to small volumes of learning and that for the user are becoming visible in a certificate, badges, or endorsement (issued in a digital or paper format) and could accumulate into a larger credential'*.

Six respondents found that the definition *'micro-credentials are sub-units of a credential or credentials that confer a minimum of 5 ECTS and could accumulate into a larger credential or be part of a portfolio'* fits their understanding, while three respondents agreed with the definition *'micro-credentials are learning activities consisting of more than a single course but less than a full degree'*.

Only one respondent proposed a wider definition, i.e. that *micro-credentials are all kinds of organised learning activities resulting in credits between 5-40*, and none agreed that micro-credentials are *'all kinds of organised learning activities where there is a related credential of greater scope'*. One respondent proposed to use the term 'digital credentialing ecosystem', which is also adopted by UNESCO. The proposed definitions from the Consultation Group show some level of convergence regarding the definitions proposed by the European Consortium of Innovative Universities (ECIU) and the MicroHE Consortium.

3.2 Definitions used outside Europe

One of the broadest definitions of micro-credentials is provided by (Picard, 2018) and shown in box 4 below. This definition builds on the analysis of 450 MOOCs categorised as micro-credentials by the providers themselves:

3.2.1 Picard

Box 4: Micro-credential, definition by Picard

"Any credential that covers more than a single course, but is less than a full degree".

The definition can hardly be considered operational as it cannot be used in recognition or accreditation processes. Moreover, it provides no indication as to quality assurance processes, levelling or documentation of learning outcomes. More than anything, the definition proposed by Picard illustrates the timeliness in coming to a shared definition of micro-credentials and their characteristics.

3.2.2 OECD

The OECD has undertaken a study on alternative credentials, which are defined as credentials that are not recognised as standalone formal educational qualifications by relevant national education authorities. Micro-credentials are a sub-category within this broad scope. The OECD found that there are substantial variations in the duration of alternative credentials ranging from a few hours to some months. With reference to the MicroHE findings, the OECD finds that a definition of micro-credentials is emerging within the European Higher Education Area, see box 5.

Box 5: Micro-credential, definition by OECD

A sub-unit of a credential or credentials, which converses a minimum of 5 ECTS points and could accumulate into a larger credential or be part of a portfolio.

Source: (Katos, et al., 2020)

3.2.3 UNESCO

UNESCO has carried out a comprehensive study of digital credentialing and its implications on learning. It defines micro-credentials as follows in box 6 below:

Box 6: Micro-credential, definition by UNESCO

Micro-credential: “A term that encompasses various forms of credential, including ‘nano-degrees’, ‘micro-masters’, ‘credentials’, ‘certificates’, ‘badges’, ‘licences’ and ‘endorsements’. As their name implies, micro-credentials focus on modules of learning much smaller than those covered in conventional academic awards, which often allow learners to complete the requisite work over a shorter period”. (Chakroun & Keevy, 2018)

The UNESCO definition is broad in order to also encompass learning undertaken at a lower level than higher education. It focuses on small volume as the main characteristic, but the scope of study effort is not specified. It should however, be taken into account that there are no global standard means for comparing academic credits (Karran, 2005). UNESCO acknowledges that micro-credentials should represent more than mere recognition of smaller modules of learning: They must form part of a **digital credentialing ecosystem** which can enable networks of interest through which people can share information about what a learner knows and can do (Chakroun & Keevy, 2018). The latter is also relevant within a European context of higher education collaboration.

Developments in higher education and lifelong learning are increasingly impacted by broader global trends. Thus, the following section presents definitions from outside the EU.

3.2.4 New Zealand Qualification Authority

According to the OECD, **Oceania** adapts a wider definition of micro-credentials.

The New Zealand Qualification Authority definition of a micro-credential is presented in box 7 below:

Box 7: Micro-credential, definition by National Qualification Authority in New Zealand

“At a minimum, micro-credentials will be subject to the same requirements as training schemes or assessment standards and will also be required to have a size from **5 to 40 credits**. It should have **strong evidence of need from employers, industry and/or community**: It must not duplicate current quality assured learning approved by New Zealand National Qualification Authority, and it should be reviewed annually to confirm they continue to meet their intended purpose”.

Source: <https://www.nzqa.govt.nz/providers-partners/approval-accreditation-and-registration/micro-credentials/>

3.2.5 Australia

In **Australia**, 36 out of 42 universities are currently developing or they already offer micro-credentials. At present, there is however not a commonly agreed definition of micro-credentials in the higher education sector in Australia. In the final report, the Australian expert review team adopted the definition proposed by Deakin University in its review of the Australian Qualification Framework. (Expert Panel Review- AQF, 2019). Derived from ISCED, Deakin University in **Australia** defines micro-credentials as seen in box 8 (Oliver, 2019, p. 19). The value of this definition is that it focuses on **recognition** and issuing of a **micro-credential through assessment**, which clearly separates micro-credentials from other forms of credentials which may be based solely on participation, and it indirectly refers to **stackability** by specifying that micro-credentials **can be part of a formal qualification**. Definitions vary between universities in Australia.

Box 8: Definition of micro-credential, Deakin University, Australia

“A micro-credential is a certification of assessed learning that is additional, alternate or complementary to or a component part of a formal qualification” (Oliver, 2019)

Definitions of micro-credentials vary substantially among Australian universities. The definition of micro-credentials by Griffith University is presented in box 9:

Box 9: Definition micro-credentials, Griffith University, Australia

“Micro-credentials certify achievement in a **specific area of study** or **professional development** in a form that is **shareable with peers, employers** and educational **providers**. Established by the University or a third party, Micro-credentials may be **recognised** for the **purpose of admission** and/or for **credit to non-award or award qualifications**. For the purpose of credit, micro-credentials are recognised as prior formal learning.”

Source: <https://www.griffith.edu.au/apply/credit-transfer/micro-credentials>

3.2.6 North America

In **North America**, micro-credentials are typically understood as a learning activity consisting of ‘*more than a single course but less than a full degree*’ (Katos, et al., 2020). Different labels or names for the credentials are used by platform providers such as edX (**‘MicroMasters’**), Udacity (**‘Nanodegree’**), and Coursera (**‘Specialisation’**) (Czerneiewicz, 2018). It should be noted that the Lumina Foundation in 2015 proposed a credentialing framework within the American post-secondary system to help understand and compare the levels and types of knowledge and skills, which underlie degrees, certificates, industry certifications, licenses, badges, and other credentials. (Lumina Foundation, 2015). The credentialing framework initiative is underpinned by efforts to bottom-up identify quality dimensions in a connected system for micro-credentials (American Council on Education, 2016).

The **Canadian** post-secondary education system is a federal system as in the USA. In **Ontario**, the Ministry of Colleges and Universities defines micro-credentials as seen in box 10:

Box 10: Definition of micro-credentials, Ontario, Canada

Micro-credentials certify an individual’s achievements in specific skills and differ from educational credentials such as degrees and diplomas in that they are shorter, can be personalized, and provide distinctive value and relevance to the changing world of work.

Source: <https://www.ecampusontario.ca/>

Micro-credentials issued by Ontarian higher education institutions may be credit-bearing or not-for-credit. The regulatory framework only applies to credit-bearing credentials. (Gooch, 2020, p. 18).

e-Campus-Ontario is currently piloting a framework for the development of a common set of specifications for micro-credentials at the regional level (e-Campus Ontario, 2019).

The definitions quoted above share at least two commonalities:

- > A focus on **volume** in terms of duration or credit;
- > The notion that a micro-credential can be a **component** in a larger credential or a formal degree and as such it is **stackable**.

There is as yet no universally shared definition of 'micro-credential'. A good definition should be clear and free of ambiguity, and it should furthermore provide clear boundaries, which indicate what it is.

QUESTIONS FOR REFLECTION:

- > Which features must be included in the definition of a micro-credential to delimit it from other forms of alternative credentials?
- > Which features should a micro-credential include to serve different purposes and to be of relevance to different target audiences?
- > How can it be ensured that all stakeholders fully understand micro-credentials - recognising that different target audiences may perceive micro-credentials differently?
- > What are the advantages and disadvantages of the different definitions proposed with regard to European target groups for micro-credentials? Should the term micro-credentials be reserved for learning offers, which have specific characteristics such as relevance to labour markets and/ or include a focus on transversal skills to ensure a strong brand for European micro-credentials?

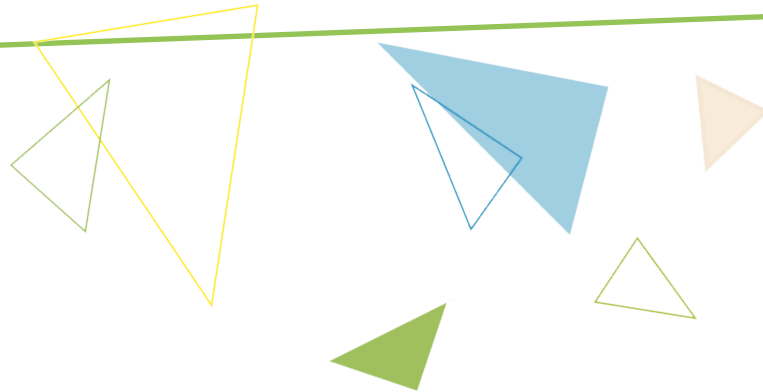
3.3 Challenges and barriers

The variation in definitions mirrors some of the current challenges and barriers to the further development and adoption of micro-credentials:

- > Perceived key barriers relate to **processes of assessment, recognition, and quality assurance** of micro-credentials both at the institutional and system level (MicroHE Consortium, 2019; Larsen, 2020), due to a lack of consistency and standardisation between micro-credentials.
- > The **perceived value added** of micro-credentials among employers is at present negatively impacted, because employers have difficulties assessing the quality of alternative credentials due to the lack of transparency in the variation and range of offers delivered and branded as alternative credentials (Gallagher, 2018).
- > Within higher education institutions one study found that the lack of understanding of perceived value and purpose among the faculty and their perception of an additional workload were barriers to uptake (Stefaniak & Kimberly, 2019).
- > Another set of barriers concerns a **perceived lack of digital solutions for assessment, validation and storage of micro-credentials** and the impact this may have on portability and scaling. Some proposals suggest building on technologies, which are not yet mature in an educational context such as blockchain and the use of artificial intelligence solutions. Moreover, views are mixed regarding the feasibility and potential risks of technology adoption (Kitto, et al., 2020; Larsen, 2020; Digital Credential Consortium, 2020). Whereas there are digital solutions for storage, there is a lack (or perceived lack) of solutions for assessment and validation that assures quality, reliability, efficiency and data protection.
- > **Lack of skills of potential users:** Micro-credentials tend to be provided as blended and online learning. However, studies have found that digital learning tends to favour individuals who possess complex multi-literacy skills typically associated with higher education graduates (Czerneiewicz, 2018; Hollands Fiona & Asiya, 2019). These can be digital skills or other skills related to self-regulated learning.

QUESTIONS FOR REFLECTION

- > What are in your view the main barriers and challenges to the development and recognition of micro-credentials?
- > How can these perceived barriers best be overcome?
- > Are there immediate actions at the institutional level or at the system level in Member States and within the EU that need to be taken as a precondition to further the development and uptake?
- > How could large-scale transnational pilots and initiatives such as the European Universities Initiative be a bottom-up method of identifying solutions to some of the current perceived barriers?
- > How can micro-credentials be a means to contribute to upskilling of high-skilled in the EU whilst at the same time offer pathways to reskilling and up-skilling for individuals which do not have a tertiary qualification to build on?



4.0 Micro-credentials – potential building blocks of a European approach

A shared definition of micro-credentials in the EU is key to further the development and provision of micro-credentials, as discussed in the previous chapter. Transparent and scalable recognition and quality assurance processes can accelerate **uptake** and further the **trust of micro-credentials** in the EU.

At present, a number of tools and experiences are emerging from the collaboration within the EU and the Bologna process (Standards and Guidelines for Quality Assurance in the European Higher Education Area, European Qualifications Framework, European Credit Transfer and Accumulation System, Diploma Supplement, Europass, digitally signed credentials, etc.). These European tools can contribute to transparency in solutions, but they may need to be updated to facilitate integration of micro-credentials in higher education provision.

The range of micro-credential initiatives, which has evolved bottom-up through the collaboration among higher education institutions and employers, demonstrates that the **European higher education sector is in a unique position** to successfully exploit opportunities, which micro-credentials can offer in response to changing learner needs. In the recently announced European Education Area, the European Universities initiative will play a crucial role in supporting more flexible learning pathways and technology-enhanced learning. As previously mentioned, some of these European Universities, such as the European Consortium of Innovative Universities (**ECIU**⁹) and Young Universities of the Future Europe (**YUFE**¹⁰), are already concretely working on how to develop a European approach for micro-credentials. A few interesting lessons are emerging from this work as well as from a number of ERASMUS+ projects. Some of these are referred to later in this chapter.

QUESTIONS FOR REFLECTION

- > How can the experiences and lessons learned from the rich collaboration within the EU and the Bologna process best be taken into account to develop a sustainable roadmap for micro-credentials?
- > Which features of micro-credentials need to be further explored?
- > Which European transparency tools do you consider of most relevance to support the transparency of micro-credentials
- > Which of these tools do you consider fit for accommodating a European approach to micro-credentials?
- > Which of these tools need to be reviewed and how in order to accommodate a European approach to micro-credentials?

4.1 Draft proposal for a European approach for micro-credentials

Box 11 below provides a brief overview of potential building blocks of a European Approach for micro-credentials. It is based on an analysis of the consultation group's contributions to the pre-meeting survey conducted in February 2020 as well as a dialogue with experts in the preparation of this background paper. The following sections provide definitions and a further elaboration of the proposed building blocks as a basis for discussions in the Consultation Group. A more detailed analysis of the survey results is presented in the annex.

⁹ <https://www.ECIU.org>

¹⁰ <https://www.yufe.eu/>

Box 11: Potential Building Blocks, European approach to micro-credentials

- > Common and transparent definition
- > Link to the European Qualification Framework (EQF): defined levels, learning outcomes (please see following section for further elaboration)
- > Quality assurance standards for providers and courses
- > ECTS: defined learning outcomes and workload
- > Recognition: for further studies and/or employment purposes
- > Digital tools: issuing credentials, offering access to micro-credentials, storage of credentials, sharing of credentials, guidance
- > Business model(s) and of engagement of practitioners

4.2 Existing tools in changing lifelong learning contexts

4.2.1 The role of qualifications frameworks

In Europe and globally, **qualifications frameworks have become a currency for recognition of learning** through the award of qualifications and as a means to create mutual zones of trust (Young & Allais, 2013). Over time, qualifications frameworks have evolved (Chakroun & Keevy, 2018). Two different qualifications frameworks coexist at the European level: the **European Qualifications Framework for Lifelong learning (EQF)**, which is defined and further elaborated below, and the **Overarching Framework of Qualifications of the European Higher Education Area (QF-EHEA¹¹)**. (Bologna Working Group, 2005; Commission, 2012). These frameworks are compatible with each other for higher education qualifications.

The **European Qualifications Framework for Lifelong learning (EQF)** (Commission, 2008) indicates 'levels of qualification' based on proficiency of learning in **three domains** of learning outcomes: **knowledge, skills, and autonomy and responsibility**. The **EQF** provides a **common reference framework for qualifications**, which assists in comparing the national qualifications systems, frameworks, and their levels. It is based on **eight levels**. As an **instrument** for the promotion of **lifelong learning**, the EQF is a tool, which covers all types and levels of learning. It encompasses qualifications from general and adult education, vocational education and training, and higher education. It also covers certifications awarded outside of formal education and training systems such as national and international industry-based certification schemes. The eight levels **cover the entire span of qualifications**. Each level should in principle be attainable by way of a variety of education and career paths including informal and non-formal learning (Commission, 2019d).

That the **European Qualifications Framework (EQF)** is a **reference framework for qualifications** implies that it **does not contain qualifications** directly. **Qualifications** are only part of **national qualifications frameworks (NQFs)**, which have been **referenced** to the **European Qualifications Framework (EQF)**. The European Qualifications Framework includes participation from all EU Member States, the three EEA countries, the Western Balkan countries, Turkey, and Switzerland - in total 38 countries.

National education systems may include levels other than those included in the overarching frameworks as long as national frameworks are referenced to the European Qualifications Framework (EQF) and self-certified against the Overarching Framework of Qualifications of the European Higher Education Area (QF-EHEA). For example, while the EQF comprises eight levels, the number of levels in national frameworks currently ranges from seven to twelve (Reference: ECTS Users' Guide, 2015) (Cedefop, 2018b).

¹¹ For the purposes of this paper, the Overarching Framework of Qualifications of the European Higher Education Area (QF-EHEA) is not further elaborated.

The European Qualifications Framework allows for the **referencing of entities smaller than full qualifications** from the national education and training systems. Therefore, it already **provides a basis for the inclusion of micro-credentials if Member States decide to reference these in their national qualifications frameworks**. EQF can be a tool to **indicate the level of micro-credentials**. Furthermore, it is neutral in terms of provision, and its focus is on **outcomes of learning**, which is an **advantage** for **professional courses**. There is a clear tendency in some member states to open national qualifications frameworks to other forms of provision than full qualifications. Among the countries, which have done so, are Austria, Denmark, France, Ireland, Netherlands, Poland, and Sweden.

What can qualifications frameworks bring? Digital technologies are now more widely diffused across the EU. Cloud solutions, cheaper data storage and transmission and more intuitive interfaces hold a potential to **stack micro-credentials** and make them **portable** in models that could be economically attractive for both end-users and society at large, as demonstrated for example by SURF-NL (NL-Surfnet, 2017). 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).

Internationally, countries, which have implemented qualifications frameworks are at different stages of evolution regarding referencing of micro-credentials to their national qualifications frameworks. In New Zealand, the referencing is completed and the National Qualifications Authority manages a micro-credential register. Once developed and approved, a micro-credential becomes part of the national micro-credential register. Micro-credentials are reviewed annually to ensure they are still in demand and relevant to the labour market (National Qualifications Authority, New Zealand, 2018). At present, the majority of micro-credentials in the New Zealand Registry are vocational (National Qualifications Authority, New Zealand, 2020).

In the **USA**, the Lumina Foundation has played a driving role in the evolution of the **not-for-profit Credential Engine**. The initiative was **inspired** by the evolution of the **European qualifications framework for lifelong learning**. (Credential Engine, 2016b). The aim has been to provide a **common description language**, which allows stakeholders to search and compare every type and level of credentials with comprehensive information about content, quality indicators, connections, pathways, outcomes, and value. Most recently, the Midwestern Higher Education Compact and the Credentialing Engine have entered a partnership to support and accelerate transparency across 12 Midwest States (Credential Engine, 2016a).

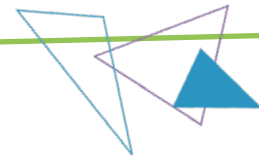
In **Australia**, a review of the **Australian Qualifications Framework (AQF)** was finalised at the end of 2019. The review report elaborates on benefits to be gained from the recognition of shorter forms of credentials within the AQF such as the reputation for quality education provided by Australia's regulated tertiary education sector, increased transparency in provision, and benefits to the users. Initially, the review team concluded that it would be premature to open up for alternative credentials as it would apply to levels other than higher education, and some credentials could cross several levels (Expert Review Team- AQF, 2018). According to professor Peter Noonan, who headed the expert review team, **further discussions on the potentials** of opening up the Australian qualifications framework and the challenges, which have to be solved, are **delayed** due to the effects of **COVID 19**¹². As part of the review of the Australian Qualifications Framework, a research paper on the potentials of micro-credentials was commissioned to Deakin University, and it has since been frequently referred to, also by European stakeholders (Oliver, 2019).

¹² Online consultation with professor Peter Noonan, April 2020

On the one hand, the international trends illustrate how there is a growing need to enable some form of referencing of micro-credentials within the overall education provision. On the other hand, they show that different approaches and processes have occurred, which mirror differences in national education systems.

QUESTIONS FOR REFLECTION

- > What would be the relative advantage of including micro-credentials in the national qualifications frameworks, and what could potential barriers be?
- > How can qualifications frameworks assist in understanding micro-credentials in a situation where the different stakeholders in higher education may have different perspectives of what constitutes the potential value added of micro-credentials?



4.2.2 Quality assurance

The **Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG)** (ENQA et al, 2015) were adopted by the Ministers responsible for **higher education** in 2005, and in 2015 to further improve their usefulness and scope. The ESG is used as a common reference document by higher education institutions and quality assurance agencies for internal and external quality assurance and forms the basis for the quality assurance in higher education. Moreover, the **ESG** is used by the **European Quality Assurance Register**, which is responsible for the register of those quality assurance agencies, which comply with the ESG. The **ESG** provides **guidelines** covering areas, which are vital for **quality provision** and for the **learning environment** of **higher education institutions** of the 48 member countries of the Bologna Process, which includes all EU Member States. In line with the ESG, **all courses offered by accredited higher education institutions must undergo internal quality assurance** by the institution in question. Thus, the **ESG covers micro-credentials**¹³ (Tück, 2019). Separate external quality assurance and accreditation mechanisms for non-degree programmes like MOOCs, short programmes, continuous learning programmes, or different ways of offering (blended learning, online learning etc.) are, however, generally not adopted by accreditation organisations.

A large number of micro-credentials are offered as blended learning or in a digital format. The European Association of Distance Teaching Universities (EADTU) has in the **E-Excellence Project** developed a comprehensive **reference tool for quality assurance** and benchmarking of **online learning**. (Kear, et al., 2016). Apart from the digital format, which may require additional consideration in quality assurance mechanisms, there are other factors, which need to be taken into account in institutional quality assurance processes:

1. Micro-credentials may not generate the same level of revenue as modules in a degree programme, furthermore:
2. Quality assurance processes need to take scalability into account as demands could increase once the benefits of micro-credentials are better understood.

¹³ <https://www.eqar.eu/kb/esg/>

QUESTIONS FOR REFLECTION qualifications and periods of learning.

- > How can quality assurance principles for micro-credentials take into account that they are frequently offered in on-line format or as blended learning?
- > What should be the distinctive features of assessment in case of micro-credentials?
- > How could the quality of the credentials be ensured by the providing institution (through internal quality assurance)?
- > How can the accreditation mechanisms at system level take into account that courses leading to micro-credentials are intended to respond in an agile way to emerging skills needs?
- > Which tools would best support institutions in ensuring the quality of courses leading to micro-credentials?
- > What role should employers have in the quality assurance processes given that it is a priority that micro-credentials contribute to employability?

4.2.3 Credits

The European Credit Transfer and Accumulation System (ECTS) is used by 48 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 and part of the Bologna Process (Commission, n.d.).

ECTS credits express the volume of learning based on the defined learning outcomes and their associated workload. 60 ECTS credits are allocated to the learning outcomes and associated workload of a full-time academic year or its equivalent, which normally comprises a number of educational components to which credits (on the basis of the learning outcomes and workload) are allocated. ECTS credits are generally expressed in whole numbers. Learning outcomes are statements of what the individual knows, understands and is able to do on completion of a learning process. The achievement of learning outcomes has to be assessed through procedures based on clear and transparent criteria. Learning outcomes are attributed to individual educational components and to programmes at a whole. They are also used in European and national qualifications frameworks to describe the level of the individual qualification.

Workload is an estimation of the time the individual typically needs to complete all learning activities such as lectures, seminars, projects, practical work, work placements and individual study required to achieve the defined learning outcomes in formal learning environments. The correspondence of the full-time workload of an academic year to 60 credits is often formalised by national legal provisions. In most cases, workload ranges from 1,500 to 1,800 hours for an academic year, which means that one credit corresponds to 25 to 30 hours of work. It should be recognised that this represents the typical workload and that for individual students the actual time to achieve the learning outcomes will vary.

ECTS could be used in the transcripts or certificates and could thereby **contribute to transparency of learning outcomes** of micro-credentials. This is mirrored in the survey undertaken by the Consultation Group on Micro-credentials. Several mention that the **deployment of ECTS** can contribute to **making the workload** in a micro-credential **visible** as part of a recognition process (Larsen, 2020). Moreover, several experts signal that a minimum of **5 ECTS** could be a good number, whilst **others** mention that there should **not be a limit** in range.

Following the suggestions of the Consultation Group, the allocation of ECTS credits to short courses, which lead to micro-credentials could ensure that the learning outcomes of the course would be defined and clearly described; Furthermore:

- > the learning time required to achieve the ECTS credits would be estimated: 3 and 5 credits seem to be ideal sizes for micro-credentials. The number of learning hours per credit would be based on those formally

stipulated in most higher education systems using ECTS, ranging from 25 to 30 estimated learning hours per credit (i.e. a 5-credit course would involve approximately 125/150 learning hours);

- > the ECTS credits associated with micro-credentials would be a basic element for stacking them in a transparent way on the basis of the outcomes of learning and the work load. They would also facilitate the national and international recognition of the short courses as independent modules or as part of a full qualification.

For this purpose, the 2015 ECTS Users' Guide 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 (EC, 2015).

QUESTIONS FOR REFLECTION

- > How could ECTS be used to describe the learning outcomes and workload related to a micro-credential and could that enable stackability?
- > If so, would you suggest a minimum and/or maximum number of ECTS for a course leading to a micro-credential?

4.2.4 Recognition for further studies or employment purposes

Recognition of prior learning is the most relevant current method for the recognition of micro-credentials for further studies, although practices vary among higher education institutions and member states. The lack of a common understanding of what micro-credentials are seems to impact recognition processes negatively. One result is that learners may not attempt to have micro-credentials recognised. Furthermore, the MicroHE study found that when validation and recognition occur, it often happens on a case-by-case basis (MicroHE Consortium, 2019, p. 12). This makes recognition processes cumbersome and can result in personal biases, which limits the value of micro-credentials' for further learning and in a labour market context.

It is furthermore questionable if current procedures for the recognition of prior learning would be feasible with the potentially high number of micro-credentials to be recognised. On the other hand, robust recognition methods can open up pathways into higher education for learners which can be a motivating factor to engage in lifelong learning, and they can improve the efficiency of higher education provision (Oxford Research, 2020). The survey results of the Consultation Group on Micro-credentials indicate that it is necessary to find solutions at institutional and system levels, nationally and in the EU, in order to facilitate the development and use of micro-credentials (Larsen, 2020).

The **DigiRec** project, which was developed by a number of NARIC centres and coordinated by Nuffic, NL. The consortium has recently published a white paper on **digitalisation of student data** (NUFFIC, NL, 2020a). The paper provides important insights into the potentials of **digitalisation of parts of a recognition process**. The white paper looks into the lifecycle of the credential evaluation process in recognition of foreign qualification. The paper explores how the digitalisation of student data and digitalisation of the evaluation process can support a smooth and fair recognition process in line with the Lisbon Recognition Convention¹⁴. At present processes tend to be paper based, the value added of digitalisation is not just a question of efficiency. Digitalisation of student data and digitalisation in the recognition process can ensure **consistency**, better **data quality processes** and a higher degree of reliability. The paper focusses on input (data received), throughput (processing of data, including evaluation), and output (recognition statement). Findings from the DigiRec project underline how important it is to engage the stakeholders at both institutional and national levels. Moreover, an ongoing **digitalisation of recognition processes** will require **training of staff** in higher education institutions and within the ENIC NARIC network in order to reap the full benefits of digitalisation, and

¹⁴ https://www.coe.int/t/dg4/highereducation/recognition/lrc_EN.asp

in some cases, there could be a need for changes in regulatory processes to allow for digital handling of data. (NUFFIC, NL, 2020a). Processes for 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 (**EDCI**) **will support this** (EC, n.d.).

It has been argued that micro-credentials represent a paradigm shift in higher education due to their focus on demonstrated competence within a limited skills area and underpinned by transversal skills at times (Ehlers, 2018). The MicroHE Consortium found that in a **recruitment process**, micro-credentials may substantiate a job applicant's claims to certain skills – in particular soft skills - but on the other hand, employers indicated that they do not have the time to assess traditional course transcripts (MicroHE Consortium, 2019, p. 28). Research about the uptake and impact of micro-credentials for professional purposes is still limited (Ehlers, 2018). However, a recent American study may provide some insight into emerging trends regarding the **added value** of micro-credentials in an **employment** context. Northeastern University conducted a survey among 750 HR professionals across industries about their perceptions of the value added of micro-credentials in a recruitment situation. The study found an emerging **awareness** about micro-credentials among **HR professionals**, but more than half of the respondents found it **difficult to assess** the full **value** due to the vast offer of different forms of credentials and certifications (Gallagher, 2019). In the ongoing dialogue with industry, Northeastern University has noticed that HR professionals in medium-sized and larger companies increasingly make use of HR analytics with embedded skills taxonomies. If courses leading to micro-credentials are described based on skills taxonomies, it can help employers identify relevant candidates for a job¹⁵. How the outcomes of courses leading to micro-credentials are documented has implications for job applicants. As parts of recruitment processes are increasingly automated, the use of digital badges to document the outcomes of learning risk having a limited value if they contain traditional university transcripts, and matching processes are automated based on skills proxies. Other types of meta data will be needed (descriptors of learning outcomes) (Matkin, 2018, p. 2). The SURF-NET project in the Netherlands has identified the interests of key stakeholders, which potentially can contribute to a common approach to the deployment of badges (NL-Surfnet, 2017) .

If the outcomes of courses delivered as micro-credentials takes into account developments in HR recruitment processes in the pre-selection of candidates, the implications could be that alternative credentials could become a **means for job applicants to stand out** in the recruitment process. It also underlines that skills anticipation could become a critical component in the development of micro-credentials.

4.2.4.1 Tools in recognition processes of online learning

The New Paradigms in Recognition (PARADIGMS) project was designed to formulate **recommendations** to support **ENIC-NARIC centres** which want to **assess the outcomes** of what they call “eclectic learning” such as massive open online courses MOOCs.

In the absence of common practice within the ENIC-NARIC networks on the recognition of MOOC certificates, the **PARADIGMS** project aimed to develop an assessment framework. Seven criteria were identified which should be taken into account when assessing MOOCs, shown in box 12 below:

¹⁵ Dialogue with Dr Sean Gallagher, Northeastern University, April 2020

Box 12: PARADIGM project – assessment framework for MOOCs

- > quality of the study programme;
- > verification of the certificate;
- > level of the study programme;
- > learning outcomes;
- > workload;
- > the way study results are tested;
- > identification of the participant.

The final publication from the project consortium includes a further elaboration of specific characteristics, which a credential evaluator could take into consideration (NUFFIC, 2018a). The Erasmus project **e-Valuate** has developed a **practitioners' guide** for the **recognition of e-learning** with criteria that are identical to the PARADIGMS project (NUFFIC, 2019).

QUESTIONS FOR REFLECTION

- > What are the characteristics of a solution of recognition which takes end-user, institutional, and system needs into account?
- > One of the advantages of micro-credentials often referred to is that they cater for transversal skills linked to employability. How can assessment and recognition processes take this into account?
- > Micro-credentials are associated with relevance to the labour market. How can it be ensured that a micro-credential once launched remains valid without implementing cumbersome and costly assessment procedures?
- > How can digitalisation of the evaluation of the credential recognition process support a fair and smooth recognition at the institutional level and at the system level, what could be the value added, what are the potential barriers, and what would be the steps to overcoming these?
- > How can it be ensured that the outcomes of a course in the form of micro-credentials are easy to assess in a job application process?
- > How can European tools enable recognition of micro-credentials?

4.2.5 Storage and portability of micro-credentials

The European Commission is currently developing the new Europass framework for digitally-signed credentials, the **Europass Digital Credentials Infrastructure** (EDCI). The EDCI will offer 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 their authenticity (Commission, n.d.).

Box 13: New 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, 2018a)

Europass serves a broader purpose regarding lifelong learning at all levels. Furthermore, it provides a **basis for stacking credentials** accumulated over time. 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, 2018a).

4.2.5.1 Other evolving digital solutions for storage and portability

Blockchain applications are still at an early state in the higher education sector. Blockchain technology enables the formation of a distributed record in a decentralised manner where data and related transactions are not under the control of any third party (Yumna, et al., 2019). Internationally, MIT and the University of Melbourne are some of the early adopters using blockchain technology to issue digital credentials, which for example allows students to share verified copies of their qualifications with employers and other third parties in a tamperproof system. The MicroHE consortium has developed **Credentify**. Credentify is a blockchain-based cloud service which enables universities and students to **issue** and **receive micro-credentials** that can **be stacked into ECTS**. It is at present being piloted by four European universities. The consortium is composed of Duale Hochschule Baden-Württemberg (DHBW), Vytauto Didziojo Universitetas (VMU), Tampere University (TAU), two research institutes, Fondazione Politecnico di Milano (FP), Institut Jozef Stefan (JSI), two industrial partners, Knowledge Innovation Centre (KIC) and European Distance and E-Learning Network (EDEN), and a not-for-profit, Knowledge 4 All Foundation Ltd¹⁶. The development of Credentify has occurred in a context of increasing requests from graduate students to recognise learning achieved online and elsewhere. Credentify provides students 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).

The ENIC-NARIC Centre France is also involved in the **Blockchain4edu work group**, 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). Open University UK has developed **Ethereum's Smart Contracts** to document alternative credentials (badges) as an open source solution (Jirgensons & Kapenieks, 2018).

There are mixed views as to the value of blockchain in higher education. Some concerns are that blockchain will require substantial investments in terms of a coherent institutional strategy that can sustain the transformation of institutional processes and training of staff. Other arguments are that the very nature of blockchain can impede making legitimate changes to a student record, for example in the case when a micro credential has an expiration date.

QUESTIONS FOR REFLECTION

- > Which steps and measures should be taken by whom at national and EU levels to ensure the uptake of a user-centred approach to issuing, storage and portability of micro-credentials, taking into account the developments of the Europass Digital Credentials Infrastructure (EDCI)?
- > How can the project experiences which explore the potentials of digital technologies best be taken into account in the development of a European approach to issuing, storage and portability of micro-credentials?
- > What could be a European approach to ensure visibility and transparency of learning outcomes in different user contexts, and what key factors must be taken into account?
- > Could blockchain be a means to overcome challenges regarding a user-centred secure and efficient way of handling the sharing of micro-credentials between European higher education institutions? What are the potential risks and benefits?

¹⁶ <https://credentify.eu/science>

4.2.6 Digital platforms for the provision of micro-credentials

The role of digital platforms in the issuing of alternative credentials has grown as more and more higher education institutions partner up to provide micro-credentials in existing and emerging skills areas such as for example fintech. The platforms have evolved both in terms of partnerships and number of alternative credentials offered. New features have also been added as the use of alternative credentials is growing world-wide and enabled by the technological evolution. The Europass Digital **Credentials** Infrastructure (EDCI) will provide the infrastructure for so that organisations across the EU can use to issue digital credentials. It will enable that certificates from one Member State can be understood and verified in any other in a secure way, and it will enable portability and that learners can take charge of their own credentials (EC, n.d.).¹⁷ Internationally similar trends are seen. Most recently, the Transatlantic Digital Credential Consortium has contributed to the evolution of potential features and functionalities of digital platforms for the provision of micro-credentials and other forms of alternative credentials. They have published a highly elaborated technical paper, which in detail describes and discusses the technical features and design criteria, which allow for learner agency, and which can enable trust (Hamilton, et al., 2020).

Box 14: The Transatlantic Digital Credential Consortium

The **Digital Credentials Consortium** is a transatlantic partnership between European founding partners (Hasso Plattner Institute at the University of Potsdam (DE), Technical University of Munich (DE), Delft University of Technology (NL), and the University of Milano Bicocca.), plus a number of prominent North American university partners such as MIT and Berkeley University. The consortium has explored how to create a trusted, distributed, and shared infrastructure which becomes the standard for issuing, storing, displaying, and verifying digital academic alternative credentials. (Hamilton, et al., 2020)

4.2.6.1 Business model for micro-credentials

The business model for alternative credentials has evolved since the first MOOCs were put online in 2012. (Moore, 2019; Castle, et al., 2019). When the platform COURSERA was launched by researchers, it was based on what co-founder Daphne Koller¹⁸ described as a “*blue ocean strategy*”. The vision was that a new global service for higher education would evolve and lead to a democratisation of higher education, which would draw new audiences to higher education as online learners. The business model was based on making learning materials freely available, and the revenue would stem from those learners who chose to purchase verified certificates and credentials. Monetisation became a key issue when major venture funding rounds started to dry up. The free-of-charge model with a fee for certification then increasingly evolved into part of an academic credit offer. Known generally as MOOC-based degrees, these are seen as ‘the second wave’ of the MOOC narrative (Shah, 2016). In October 2018, edX became the last of the major MOOC providers to announce partnerships with universities to offer fully online professional Master's degrees, five years after Udacity made the first such partnership with Georgia Tech (Reich & Valiente, 2019). As the offer of alternative credentials has increased, and more learners have gone on-line, it has become more complex to search and identify a relevant offer.

¹⁷ See also <https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX%3A32018D0646>

¹⁸ Dialogue with Daphne Koller, World Economic Forum, 2013

4.2.6.2 Guidance

A European approach to micro-credentials will need to integrate guidance services taking into account that micro-credentials may be offered directly by higher education institutions or through existing and emerging platform solutions.

At present, **Eurodesk** is a network of more than **400 national offices** which offer information about *learning opportunities* available in the EU (Commission, n.d.). The evolution of artificial intelligence is likely to provide innovations in guidance services. This can for example entail that job applicants and guidance services more easily can identify emerging skills demands and based on this provide updated and granular information for course developers, job seekers, and employment services. In the USA, this is the case in priority areas such as cyber security (Burning Glass & CompTia, 2020). Trends like these are evolving for example through the collaboration between CEDEFOP and national employment services, and their growing use of real-time labour market analytics (Bredgaard, 2019).

The platform Coursera is currently the digital platform, which has taken the most comprehensive approach to offering some level of user guidance. Since 2017, they have offered a search function which enables users to search its vast course offer through a skills-based search, whether you want to find out if you can learn how to be more resilient to cope with change, or you are looking to acquire very granular skills such as *P-value*, an important concept used in statistical hypothesis testing. Some of the most recent features involve functions to further support user choice and learning progress (COURSERA Blog, 2020):

- > **Personalised Browsing:** Built on machine learning models, this feature ensures learners receive tailored suggestions for the most relevant learning content based on their learning journey so far.
- > **Personalised Homepage:** When logged in, learners can resume a course in one click, see personalised recommendations on courses to pursue next, and view the certificates they have earned.
- > **Smart Review Material:** This machine learning tool helps unblock learners when they fail a quiz. It serves targeted review material recommendations based on the specific questions they missed, providing learners with a structured path to succeed on the next quiz attempt.
- > **Learner Skills Tracking** – This data-driven tool tracks learner skill development, sharing updated competency scores as a learner takes more assessments on Coursera. Through a centralised dashboard, learners can monitor their progress toward career-specific skills and see how their competency scores compare to other professionals on the Coursera platform.

These developments are just one example of how higher education pathways can be opened up through micro-credentials which target specific learning needs and allow for intuitive search functions.

QUESTIONS FOR REFLECTION

- > At present, platforms for micro-credentials tend to be global in nature. To what extent should global developments regarding technical standards and proposals for metadata be taken into account in a European approach to micro-credentials?
- > What type of guidance mechanisms can ensure that micro-credentials become visible as a means of reskilling and upskilling for a diverse group of learners, and how could existing guidance structures evolve taking an increasing digitalisation of learning into consideration?
- > How can European higher education institutions build a strong brand for micro-credentials as the basis for a sustainable business models, and what are the next steps and issues which must be considered?
- > Experiences indicate that the development of alternative credentials takes substantial up-front investments to develop quality provision. Are there ways in which costs can be shared, and what are the relative benefits of shared development models versus licensing of content?
- > Some European experts suggest that the development of quality micro-credentials can be enhanced by shared tools and processes. What would be the nature of such tools and what would be the added value?

- > How can higher education institutions engage higher education teaching staff in developing and using alternative credentials? What are the experiences and the potential drivers and incentives?
- > What could be the way forward to ensure a sustainable European digital infrastructure for micro-credentials which could further enhance co-operation between higher education institutions?

4.2.7 Governance

Alternative credentials as a feature in higher education provision are still at an early stage of development. International experiences show that it is important end users experience that **investments** made by them must **pay off** both financially and in terms of time. From a **user-centred** perspective, the implications are that **trust and readability** should inform the **governance** of measures to ensure transparency in the recognition of micro-credentials at national and EU levels (MicroHE Consortium, 2019). A common understanding and comparable implementation approaches can facilitate trust and readability, but also raise new questions regarding governance at the EU level and nationally. A key concern is that mechanisms to ensure transparency and quality of micro-credentials **must not** be of a nature so they **stifle innovation** and defer institutions from making investments in developments of micro-credentials. Others point out that from an employer perspective accreditation is not a key issue. One of the proposals emerging from the MicroHE interviews of regulatory bodies is that Europe may not need to move towards a single accreditation system, but that a network of systems with a shared dictionary could facilitate European cooperation (MicroHE Consortium, 2019).

QUESTIONS FOR REFLECTION

- > Are there existing policy and regulatory instruments in place or do we need to redefine these? If there is a need for new instruments, which should take the lead and how?
- > What level of regulation would be needed and what governance structures could underpin a common understand and implementation approach?
- > What would be the division of roles and responsibilities between the national level and the EU levels, taking into account that micro-credentials need to meet emerging labour market needs at speed whilst still being transparent and of high quality?
- > How can factors such as transparency in processes and outcomes be taken into account whilst at the same time ensure flexibility in the development and provision of micro-credentials?

4.3 Overview of already existing and comprehensive approaches

4.3.1 Common Micro-Credentials Framework of the European MOOC Consortium

European MOOC platforms launched a Microcredential framework fitting into the European Qualification Framework for Lifelong Learning, which combines learning outcomes in higher education and in professional training. The key criteria are associated to **learning outcomes** and **workload** (4-6 ECTS or 100 to 150 hours) and **level**. A micro-credential should comply with the descriptors of the European Qualifications Framework (levels 6, 7, or 8, with options for Levels 4 and 5, in combination with ECTS) and the equivalent levels in the national qualifications framework of the concerned higher education institution.

The proposed structure for micro-credentials accommodates for adult learners in employment and their need to upgrade skills over time with features such as **stackability** and **personalisation of learning** as seen in box 15 below. The criteria are designed to contribute to **recognition and quality assurance processes**. The framework has gone through a consultation process and will be tested among partners on a voluntary basis. The aim is that the standard will be administered by the European Association of Distance Teaching Universities (EADTU) on behalf of the platforms (currently FutureLearn, FUN, MiriadaX, EduOpen, EADTU) (EPALE, 2019).

Box 15: Aims and principles of the framework proposed by the MOOC Consortium

- > Operates a reliable method of ID-verification at the point of assessment which complies with the university's policies and/or is widely adopted across the platforms.
- > Provides a transcript (certificate supplement) which sets out the course content, learning outcomes, total study hours, EQF level, and number of credit points (ECTS) earned.
- > Enables courses under the CMF to be recognised towards formal qualifications (EQF).
- > Enables stackability in higher education provision to support personalisation of learning.
- > The CMF will comply with Europass formats. It will include a certificate supplement in order to complete the Europass portfolio with a reference to the EQF level and the size of the course.
- > Source: (European MOOC Consortium, 2019a)

The e-SLP project EADTU proposes as a criterion that micro-credentials should be designed as building blocks leading eventually to a formal degree, and recognition processes should be aligned accordingly. They underline flexibility, scalability, and relevance to labour markets. The principles do not take into account that micro-credentials offered in an online and blended format have implications on quality assurance, which has some different dimensions than in face-to-face education.

4.3.2 ECIU

The European University Alliance ECIU published a proposal for a **European framework for micro-credentials** (The European Consortium of Innovative Universities, 2020). The proposal puts forward the following guiding principles to better define and develop a common European terminology for the credible and sustainable investment in new recognition models:

1. "Micro-credentials require a **common definition** supporting both credit and non-credit recognition pathways. European **quality assurance guidelines** for micro-credentials are needed to define standards and support institutional best practices.
2. Micro-credentials need to adhere to an **agreed ECTS credit value** when intended to be credit-bearing. They should be aligned with and **fully embedded within the European Qualifications Framework**. Authentication and recognition challenges need to be addressed.
3. **Society engagement** is needed to identify, understand and help shape perceptions of the value, credibility, recognition and currency of micro-credentials. Developing micro-credentials is an open process where universities and society work together. Questions regarding ownership and financing need to be addressed. Universities are academic independent and in control of the quality assurance.
4. Suitable **open technical platforms and systems** are needed for sustainability and to help manage new credit and recognition models. Micro-credentials need to be brought together in a Learner's Wallet (as developed by the ECIU University).
5. **Commitment from policy makers, institutions and initiative leaders** are needed to support major system-level educational innovations".

While the proposal of the MOOC consortium mainly focuses on the internal institutional processes, the ECIU addresses institutional, system, and societal issues which need to be addressed to ensure a coherent and sustainable European approach for micro-credentials.

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6.0 Annex: Analysis of survey to members of consultation group

This summary recapitulates the views expressed in the survey on:

- > elements in a European approach to micro-credentials;
- > the definition of micro-credentials;
- > obstacles to adopting a European framework for micro-credentials; and
- > elements that should be included in a European framework.

Potential components for a micro-credential reference framework

Elements of a European micro-degree framework	Number of respondents agreeing that the elements should be part of a European micro-degree framework
Transparent definition	14
Processes and criteria for validation and recognition ¹⁹	10
European quality assurance standards	10
Storage and portability among different types of education providers (VET, HE, social partners)	6
Criteria for accumulation to larger credential ²⁰	10
Including micro-credentials in the European Qualifications Framework	9
Use of ECTS Points	Mixed views as to whether the deployment of ECTS points is part of the reference framework solution or could be a barrier to uptake
Digital infrastructures	5
Integration in European and national guidance services	5

6.1 Definition of micro-credentials

The definition most respondents agree with (11 out of 17 respondents) is that micro-credentials are *'Documented statements that acknowledge a person's learning outcomes, that are related to small volumes of learning and that for the user are becoming visible in a certificate, badges, or endorsement (issued in a digital or paper format) and could accumulate into a larger credential'*.

Six respondents find that the definition *'Micro-credentials are sub-units of a credential or credentials that confer a minimum of 5 ECTS and could accumulate into a larger credential or be part of a portfolio'* fit with their understanding while three respondents agree with the definitions *'Micro-credentials are learning activities consisting of more than a single course but less than a full degree'*.

The less concrete definitions of micro-credentials are less in line with the view of micro-credentials from the respondents. Only one agrees with the definition *'Micro-credentials are all kinds of organized learning activities*

¹⁹ Currently perceived also as a barrier to uptake

²⁰ Seven respondents point to the limited flexibility in opening-up curricula to micro-degrees, mirroring the proposal that the reference framework must include criteria for accumulation to a larger degree **within existing curricula**.

resulting in credits between 5-40' and none have agreed that micro-credentials are 'All kinds of organized learning activities where there is a related credential of greater scope'.

One respondent points to another possible definition on micro-credentials: *'Micro-credentials focus on modules of learning much smaller than those covered in conventional academic awards, which often allow learners to complete the requisite work over a shorter period. In their most developed form, micro-credentials represent more than mere recognition of smaller modules of learning. They form part of a digital credentialing ecosystem, made possible by digital communications technologies establishing networks of interest through which people can share information about what a learner knows and can do. (Milligan and Kennedy, in James, R., French, S. and Kelly, P. 2017. Visions for Australian Tertiary Education. Melbourne, Vic., Centre for the Study of Higher Education, University of Melbourne.'* Another respondent gave their own definition of micro-credentials:

1. *'Could refer to any amount of learning outcomes (typically smaller than a full degree but I see no point why not to apply this concept also to eventual degree-like chunks of learning that may be equivalent to a degree in size except not accredited as one), i.e. we would not prefer to limit this by ECTS range. Even a half-day course may be considered a micro-credential if it meets the other requirements.*
2. *A coherent qualification, i.e. not any five random courses put together. Should make a greater sense of what specifically is the holder capable of (either in terms of job-related tasks or in relation to further learning - e.g. calculus basics necessary for further study in engineering fields).*
3. *Should be described in the terms of learning outcomes and preferably also ECTS.*
4. *May accumulate to a larger credential but this need not to apply to all micro-credentials.*
5. *Both micro-credentials understood as 'chunks of learning' (=units, course sets, defined through learning outcomes) or as 'documents of those' (certificates, badges, endorsements... either digital or not) are relevant to us.'*

6.2 Main obstacles at system level for wider use of micro-credentials.

For most respondents (10 out of 17) the main obstacle at a system level is the *'Complexity of the micro-credential offerings (for example too many different providers, different courses, quick turnover of the life-cycle of a course)'*. Five respondents see the *'Lack of digital solution for validation, recognition, storage'* and *'Resistance from other stakeholders (for example QA agencies, recognition authorities)'* as the main obstacles for system level wider use of micro-credentials. In comments many respondents highlight that the lack of an agreed-upon definition, structure, and common language for micro-credentials is truly the main solution to many of the listed obstacles in the survey:

'The main concern is the complexity of the micro-credentials offerings, due to all the reasons stated above (too many different providers, variety of courses, short life-cycle of courses). The main way to mitigate the problem is to 'lock' each course with specific teaching outcomes, which in turn should be placed in a broader set of teaching outcomes, so that the notion of 'micro' could fit as a piece into larger sets of groups of teaching outcomes. In this way also the allocation of credits will be more accurate and acceptable.'

Table 1 in the annex summarises the main obstacles at system level.

6.3 Main obstacles for universities to develop short learning courses with micro-credentials.

The main obstacle for universities is seen by the respondents as the *'Recognition of micro-credentials within existing curricula'*. Seven out of 17 respondents point to this as a main obstacle, as they see a limited flexibility in opening-up curricula to micro-credentials. Next is *'quality assurance constraints'*, seen as a main obstacle by 7 respondents. Respondents expand their concern by highlighting that the lack of a common understanding

of the concept of micro-credentials has inhibited quality assurance, while the short life-cycle of the courses discourages the allocation of person-power to their development. Two other main concerns are a '*Lack of funding support*' and '*Lack of adequately trained teaching staff*'.

Table 2 in the annex summarises the main obstacles for universities.

6.4 Proposed elements of a European micro-credential framework

The table below summarises the elements that respondents find should be in a European micro-credential framework. One response under 'other' includes a recommendation on other studies on micro-credentials and that the approach should include a clear link with learning outcomes/competencies. The responses reflect a need to ensure a transparent definition of micro-credentials to be aligned and integrated into other related EU initiatives and with a possibility to accumulate micro-credentials into a larger credential (vertical and horizontal stackability).

Elements of a European micro-credentials framework	Number of respondents agreeing that the elements should be part of a European micro-credentials framework
Transparent definition	14
European quality standards	10
Ensuring portability across the EU	11
Ensuring portability among different types of education providers (VET, HE, social partners)	6
Criteria for accumulation to larger credential	10
Including micro-credentials in the European Qualifications Framework	9
Integration in European and national guidance services	5
Other	1

Note: 17 respondents

6.5 Good practices identified by group members

Among the good practice examples provided by the members of the consultation group are:

- > **Corship** (www.corship.eu), which is co-developed by academic and industry partners.
- > The Erasmus+ project **E-Valuate** providing discussions and recommendations on quality assurance and recognition of micro-credentials: <https://www.nuffic.nl/en/subjects/e-evaluate/>
- > **The system of 'credit contracts' & 'credit certificates' in the Flemish higher education legislation and system** (students can subscribe at the HEI for a number of credits through a credit contract and receive credit certificates after passing the course(s)/obtaining the credits)
- > **The New Zealand Qualifications framework.** The New Zealand Qualifications Authority has introduced a micro-credential system as part of New Zealand's regulated education and training system. The service, provided by the New Zealand Qualifications Authority, allows for short courses to receive between five and 40 credit points on the country's qualifications framework, as it looks to prepare education and training for the future of work. As part of the platform, a service will be available for those outside the education space to have their skills and training programmes receive equivalence statements. This will enable in-house professional development from large corporations and MOOCs to carry NZQA recognition. NZQA will issue equivalence statements showing credit value and will set up a service to evaluate micro-credentials from international and non-tertiary New Zealand institutions.

- > **Micro-credentials at Deakin University.** Deakin University offers Professional Practice Credentials and stand-alone credentials which are aligned with the Australian Qualifications Framework (AQF) and professional or industry accreditation frameworks, that warrant achievement of key employability outcomes. The credentials are issued for professionals who already have expertise in the field based on qualitative evidence - including video testimony – through Deakin University’s digital platform. These credentials have proven attractive to companies looking for bespoke assessment and recognition of critical workplace skills, and many of these credentials are awarded on a stand-alone basis to warrant workplace outcomes. All the Professional Practice Credentials bear the insignia of the Deakin University, are assessed by academic and industry leaders, and must be based on evidence of achievement rather than participation. The management of all Deakin Professional Practice Credentials is through the university’s separate commercial entity, DeakinCo. While most of its credential candidates are currently in corporate cohorts, the university plans to increase engagement with individual candidates, particularly its own students. For example, the university envisages that some students may be interested in earning a stand-alone credential in Innovation, Communication or Teamwork in addition to completing their traditional bachelor’s or master’s degree as a way to differentiate themselves and stand out to employers.
- > **EdX MicroMaster system** developed for university partners. MicroMasters from a wide range of topics such as Supply Chain Management or Artificial Intelligence can either only be taken on their own or additionally count towards a full master’s at universities such as MIT. A MicroMasters programme credential is a professional and academic credential for online learners from anywhere in the world. This credential is valuable in and of itself. Additionally, credential-holders can then apply for an accelerated, on campus, master’s degree program at MIT or other universities. All MicroMasters programme credential holders are also considered affiliates of the MIT Alumni Association.
- > **SURF** (the Netherlands) pilot project on edu-badges and micro-credentialing, which involves 17 higher education institutions.
- > The launch of a **Common Microcredential Framework** (CMF) by the European MOOC Consortium (EMC)
- > Two of the **European University Alliances** (ECIU and YUFE) that work on offering micro-credentials.
- > **OpenClassrooms online platform** offering top quality, education-to-employment programs and career coaching services for students worldwide.
- > **Open badges platform.** Bestr²¹ is the digital credentialing platform operated by Cineca in Italy. Cineca is a non-profit consortium made up of 70 Italian universities, eight Italian research institutes, and the Italian Ministry of Education. The project managers collaborate with universities in Italy to develop badges as proof of competence for academic achievement. The universities use them to strengthen the commitment of their students, especially for those courses that are not a compulsory part of a programme, such as courses on social and communication skills development and sustainable development goals Badges can now be stored on a blockchain.
- > **Entrepreneurial Skills Pass** - a certification program for the evaluation of entrepreneurial competence; skills and behaviour.
- > **I&E** (innovation and entrepreneurship) online modules on a variety of topics within the EIT Digital Master.
- > **School Program I&E Minor** (Digital Transformation; Intra-preneurship; Ethics and Sustainability; Green)

²¹ <https://bestr.it/about>

Table 1: Main obstacles at system level for wider use of micro-credentials.

Main obstacle	Number of respondents agreeing with this obstacle	Comments ²² : What are the main concern?
Resistance at higher education institution level (for example concerns related to institutional autonomy)	3	'Lack of understanding for the potential of micro-credentials incl. fear of change, competition, and quality assurance. It will require raising administrative efforts for approving, recognising, evaluating, validating micro-credentials.' 'Some may also fear universities will be treated and replaced by private educational institutions or the big university players (ivy league) from US & UK' '... and they [universities] indeed have something to fear, because these private providers have quite some financial power and are very agile. They are very fast in targeting exactly what the learners need. Higher education institutions may not be that smooth to catch up with them. There are different ways to mitigate this fear: - If we come to an agreement that micro-credentials are the future and should be in place even if the usual higher education is disrupted, there would be the need to find clear demarcation lines between what higher educations do and what the private providers do. - If we think that classical higher education should not be disrupted too much, since we see societal value in it even if it perhaps does not always respond to the needs of the labour market, then the common framework may actually work as a tool to safeguard higher education institutions from the disruption brought about by micro-credentials.' 'Overcoming regulatory and quality assurance conservative systems and structures could be a main obstacle. One good way to overcome this to create an EU-wide space to pilot this through a certification process as an international/ EU certificate which could later on be scaled through the national systems mainstream'
Resistance from other stakeholders (for example QA agencies, recognition authorities)	5	'Lack of understanding for the potential of micro-credentials. Existing frameworks do not fit to the new reality of credentials, offers, etc.' 'For a micro- credential to be accepted (recognised) the micro-credential: 1. has to follow the same quality standards as the quality standard applied to the HE institution's degree courses; Solution: formulate explicitly the quality requirements of the HE's degree course, make it public, and investigate whether the conditions set in those standards are obeyed by the Micro-credential provider. 2. has to fit into one or another degree course as a sub-unit (module) thereof. (Industrial example: standards set for the supply chain members in the automotive industry). Solution: careful design of the short learning course keeping in mind that it should fit into a larger (probably degree) course as a module, or in case the micro-credential came from non-formal open learning, a careful investigation of where it fits.' 'There need to be ready answers to questions such as definition, characteristics and QA, as all are essential for building trust and enabling academics to assess

²² Comments have been shortened in order to ease readability of the table and some comments have been omitted if they did not add further to the analysis.

		whether this is a transient fad or a powerful tool they will feel compelled to add to their educational arsenal. If the above is well accepted, getting the tone of such communication right will be key. Micro-credentials are often portrayed as serving labour market needs, which doesn't necessarily do them full justice.'
Complexity of the micro-credentials offerings (for example too many different providers, different courses, quick turnover of the life-cycle of a course)	10	'If we consider the online offer of micro-credentials, it shows completely different definitions from one platform to the other. This situation is clearly analysed in the 2018 survey from Class Central: Analysis of 450 MOOC-Based Micro-credentials Reveals Many Options but Little Consistency' (https://www.classcentral.com/report/moocs-microcredentials-analysis-2018/) 'The complexity of micro-credential offerings is a fact. The micro-credentials, however, can be classified or clustered, and the features of each class can be taken into account when thinking about potential value and use of the micro-credential.' 'Lack of trust and demand from employers as well as learners themselves. To overcome this, the system has to be well-communicated, easy-to-understand and transparent. Including employer representatives in the development process could help as well. The major source of resistance at HEIs is driven by a fear that awarding students micro-credentials during their studies will reduce their motivation to complete full degrees and thus deepen the dropout problem. Insecurity related to public aid regulations - We would need to develop a public funding framework for LLL and micro-credentials but we are not sure what are the limitations in relation to aid provision and other aspects, in particular in relation to Council Regulation (EU) 2015/1589.'
Lack of digital solution for validation, recognition, storage	5	'I just wanted to say that this is not a big problem. Digital solutions can be found. Many of them are already there. In some cases, they are not even necessary. The key thing for the framework will be to agree on the principles, and not on the digital solutions.'
Financial constraints	3	'Indeed, some of the universities are wealthier and can develop new short learning courses easier. They also have more funding for the digital solutions. The Commission could provide some funding for this from Erasmus+, as it already does.'
Other	4	'In Poland, micro-credentials are still a new form of education, used very rarely. The labour market honours mainly university diplomas, treating micro-credentials as training, giving not so much qualifications but additional competences.'²³ 'Another difficulty will be to understand how micro-credentials will fit into the Bologna and other tools currently used in the European higher education area, like qualifications frameworks, ECTS, ESG, etc. This difficulty can be overcome only through the intensive discussion among the national policy makers, higher education institutions and other stakeholders (QA agencies, the Commission, etc.). If there is a common framework for micro-credentials, the Commission will need to make sure that it respects national and institutional differences across Europe. This will not be an easy task.'²⁴

Table 2: Main obstacles for universities to develop short learning courses with micro-credentials

Main obstacle	Number of respondents agreeing with this obstacle	Comments ²⁵ : What are the main concern?
High costs	2	‘it may be costly to develop a new short learning course. However, universities could also provide short learning courses that are actually already parts of the existing study programmes. Then they would not need to develop a new course, they will only need to create a system to provide credentials for a single course, which would be cheaper.’
Lack of funding support	6	‘Currently with the exception of the Common European Framework for MOOCs there is little or no clear definition or understanding of what is meant by micro-credentials. The lack of such a framework for both vertical and horizontal micro-credentials is inhibiting universities from investing further in the area with any degree of confidence.’ ‘Modularising of subjects of degree courses is an extra effort, needs extra funding.’
Language barrier	0	
Lack of demand	3	‘Perhaps, the problem is not so much a natural lack of demand, but rather the lack of demand resulting from the fact that it is not so common to do short learning courses in higher education institutions, and much more common to study for a full degree. The common micro-credentials framework and generally more buzz about this stemming from the policy discussion would show the learners and institutions, and the stakeholder community, that this is relevant and something worth doing. Perhaps the first students at Coursera also felt awkward, since no one knew this Coursera thing and they did not know if their credentials will be taken seriously. However, as Coursera gained momentum, and millions of people started using it, employers did not have any other way but only to signal that they will consider these qualifications in job assessments. The same would happen with micro-credentials. The policy makers and higher education institutions (especially) have to provide a momentum and micro-credentials will take off.’
Lack of adequately trained teaching staff	5	‘The short courses to be awarded by micro-credentials should be self-contained. To design self-contained courses the teaching staff needs to be trained. Solution: Such training should be part of the teacher further training.’ ‘A short remark to point out the scope of the question seems unnecessarily narrow: micro-credentials can do more than enabling just short learning courses! Depending on whether we are taking about new educational formats or embedding micro-credentials in existing ones (or a combination of both) the answers will vary slightly.’ ‘Resistance from teaching body to be exposed to new formats, to be pushed to use online formats while not feeling comfortable with them etc.’ ‘I understand micro-credentials as a closed form of education which is a coherent educational item. It is difficult to plan and create this kind of courses for university staff who are only responsible for their share of the curriculum in first or second degree studies.’

²⁵ Comments have been shortened in order to ease readability of the table and some comments have been omitted if they did not add further to the analysis.

Lack of technical staff to develop short courses (often based on digital provision)	4	'The development of a framework that aligns with or is fully embedded in the European Qualifications Framework will greatly mitigate the current lack of definition and misinformation concerning micro-credentials. That said, it will be important to clearly distinguish between credit bearing stackable credentials (vertical lifelong learning) and those available for personal interest and general career development (horizontal life-wide learning). A related concern and one that will only grow is a suitable platform for managing and issuing micro-credentials. There are a number of such platforms at various stages of maturity and projects that review their strengths and weakness and produces an institutional guide might be a useful mitigation.' 'Lack of technical staff will surely be a problem for many universities which want to build an on-line course and digital credentials. Universities will need, for example, people who would record the lectures, programmers, who can code a digital credential. This is doable but will require considerable finance.'
Quality assurance constraints	7	'The main concern is that the recognition of the micro-credentials is still not adequately standardised. Also, the short life-cycle of the courses discourages the allocation of person-power to their development.' 'Due to the fact that micro-credentials are very rare at Polish universities and in the Polish educational system we do not have a system for evaluating these courses and forms.'
Proper assessment of acquired competences of course participants	1	'In order to ease recognition, the assessment in flexible open non-formal learning leading to awarding of micro-credentials should follow the same standards (adapted to the feature of open learning) as the assessment in formal education. Recommendations (developed in course of the Open Educational Passport project https://www.oepass.eu/):' > All assessment should be quality assured and documented to help future recognition of the micro-certificate > use the assessment method most appropriate to the task they intend to assess, and combine them to assess each element of the learning outcome; > automatic grading (machine grading) although popular because of its simplicity, should be carefully designed. It might be less appropriate to assess creative tasks; > assessing learning diaries, practical application assignments, essays require interference of instructor.'
Recognition of micro-credentials within existing curricula	8	'Combining short learning courses and traditional, larger courses in the standard curricula.' 'Recognition at present is mostly based on agreements between the learning provider of the micro-credentialed competence and the HE institution accepting the micro-credential. Limited flexibility in opening-up the curricula to micro-credentials.'
Other	3	'I believe that a clear definition and adequate support from platform providers would probably encourage universities to develop micro-credentials. Moreover, these micro-credentials are especially relevant for continuous professional development (need to upskill / reskill) and they will be a new income for universities.' 'Lack of general approved concepts on micro-credentials and societal acceptance.' 'Lack of motivation for HEIs and their staff in general. Lifelong learning is on the periphery of traditional university mission. Investing resources into course/credential development and provision brings little revenue as well as reputation to the institution. As a result, it is more pragmatic for a HEI to spend scarce resources on research (which brings both prestige and profit through grant money and performance-based funding) and teaching in traditional courses (which is less profitable but still at the core of the university mission). Thus, we consider financial stimuli important to get this off the ground.'

A European approach to micro-credentials – Background paper for the first meeting of the consultation group on micro-credentials – Annex 1

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