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MICRO-CREDENTIALS WITHIN EHEA

Background study

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Content

Abbreviations

AIT	Athlone Institute of Technology
BFUG	Bologna Follow-up Group
CICAN	Colleges and Institutes Canada
CMF	Common Micro-credential Framework
DCU	Dublin City University
EC	European Commission
ECIU	European Consortium of Innovative Universities
ECTS	European Credit Transfer and Accumulation System
EHEA	European Higher Education Area
ENQA	European Association for Quality Assurance in Higher Education
EQF	European Qualification framework for lifelong learning
ESG	Standards and Guidelines for Quality Assurance in the European Higher Education Area
ETUC	European Trade Union Confederation
EUA	European University Association
EURASHE	European Association of Institutions in Higher Education
HEI	Higher education institution
ILA	Individual Learning Account
NQF	National Qualification framework in higher education
MOOC	Massive Open Online Course
OPC	Open public consultation
QA	Quality assurance
QF-EHEA	Overarching Frameworks of Qualification of the European Higher Education Area
UAS	University of Applied Sciences
UCC	University College Cork
VET	Vocational Education and Training
VH	Dutch association of universities of applied sciences (Dutch: *Vereniging Hogescholen*)
VSNU	Dutch association of universities (Dutch: *Vereniging van Universiteiten*)

1 Introduction

The purpose of this paper is to provide a background on, exchange experiences with, and offer comments on the development, implementation, and review of micro-credentials within the context of national and European qualification frameworks in higher education. The document is intended to serve the discussion and exchange of the National Correspondents for Qualifications Frameworks in European Higher Education Area (EHEA). It delivers insights into various aspects discussed in relation to micro-credentials, their introduction, development and relation to the European tools and instruments including national qualification frameworks (NQFs), the Overarching Frameworks of Qualification of the European Higher Education Area (QF-EHEA), and the European Qualifications Framework for lifelong learning (EQF).

Additionally, the paper provides a state of play containing examples of countries already developing a reflection on the issue, and the (national) challenges and opportunities that come with the development of micro-credentials in the European Higher Education Area (EHEA). Overall, this paper aims to advice EHEA members and the Bologna Follow-Up Group (BFUG) on issues related to the implementation of micro-credentials in relation to the NQFs and the QF-EHEA.

The paper is mainly based on a review of recent studies and statements which analyse the development, implementation, and recognition of micro-credentials. This literature summary is mainly based on the studies and reports published by the European Commission, the OECD, and the Erasmus+ programme co-funded MICROBOL ("Micro-credentials linked to the Bologna Key Commitments") project, as well as statements published under the European Commission's Open Public Consultation for micro-credentials. It also provides three country-level case studies that analyse the recent practices in the designing and offering of micro-credentials. The paper investigates the following cases:

- Finland
- Ireland
- Netherlands

Following the on-going discussions and consultations on micro-credentials at European and national levels, there still seem to be a number of questions and issues to be addressed. While the emerging definitions seem to narrow down the concept of micro-credentials, issues related to trust, recognition and integration with formal qualifications remain still open to some extent. The European Commission communication expected in the late 2021, early 2022 might bring some answers. Yet as many stakeholders point out, finding suitable solution within a wide concept of life-long learning, using existing or modified tools and develop thorough understanding and capacity for full release of micro-credentials potential for individual and professional development of European citizens may need some pilot experiments, joint learning, as well as potential formal embedding. However, all parties recognise the great potential of micro-credentials for future learning.

2 Literature review and statements

This summary provides an overview of the existing studies on micro-credentials within the EHEA, and focuses especially on the definition, purpose and recognition of micro-credentials, and any statements as to how they fit into European and national qualification frameworks. In the past few years, several organisations and working groups have investigated micro-credentials, its development and impacts. The purpose of this chapter is to provide a summary of the highlights in these studies, rather than a

comprehensive report of the work. More background information on the main studies used, can be found in the annex.

2.1 Defining micro-credentials

While micro-credentials are increasingly developing across the world, there is no standard international or European definition for the term yet. Micro-credentials have both been viewed as a standalone type of alternative credentials, and as an umbrella term for alternative credentials, such as digital badges, nanodegrees, massive open online courses (MOOCs) and certificates (OECD, 2020). These developments have been brought on by the dual focus on upskilling and reskilling the labour force, and meeting the demand for more flexible learning pathways (European Commission, 2020a, 2020b; MICROBOL, 2020).

Currently, in the European Higher Education Area (EHEA), micro-credentials are commonly understood as short learning courses, which may be delivered face-to-face, online and in blended (or hybrid) format (European Commission, 2020a; OECD, 2020). Other more defining specifications, such as the mode of delivery, size, volume of work, accreditation, and quality assurance standard, can vary (MICROBOL, 2020). Because of this variance, and to allow for flexibility, any working definitions that have been established are often left intentionally broad.

With the goal to harmonise the understanding and acceptance of micro-credentials, while harnessing and expanding on its potential, the European Commission included a European approach to micro-credentials as one of its priorities in the development of a European Education Area by 2025.

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

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

Figure 1. European Commission definition (2020)

In December 2020, the European Commission (EC) published the final report on micro-credentials in higher education as an output of its established consultation group that came together on three occasions between May and September 2020. In this report, the EC came out with the working definition as defined in . This definition is the only one included in the body of text as it is the most recent and has been built on already existing definitions. Definitions from other organisations and projects can be found in Annex II.

The EC's definition itself remains concise and broad, and leaves room for the micro-credential provider to decide upon the size and length of the learning experience, its provision and storage infrastructure, among other. Especially, in terms of size of the credentials, the definition was left broad. The 'micro' part in micro-credentials implies that the credential is small (MICROBOL, 2020, p. 9). In fact, not many definitions specify the specific size of micro-credentials, with one example of an exception being the New Zealand Qualification Authority. In New Zealand, a micro-credential will have to have a size from

5 to 40 credits (see Figure 6). The European MOOC Consortium (n.d.) uses a total of 100-150 workload hours (4 to 6 ECTS) in their Common Micro-Credentials Framework.

Taking these existing parameters into consideration, the European Commission aimed to keep the definition flexible in this context to allow for "larger sizes of learning units, to meet the different national, institutional and sectoral practices and contexts. The consultation group justified this flexibility with the necessity to allow for innovations and experimentations with different sizes of micro- credentials in Europe" (2020a, p. 17). While implying a minimum of 1 ECTS credit, and with an upper limit of 'less than a degree' in the report (European Commission, 2020a, p. 16).

Nevertheless, the EC's definition contains key characteristics for the uptake of micro-credentials such as quality assurance, qualification frameworks, the use of credits and portability and stackability. However, as SME United (2021, p. 7) point out: "the current definition is more inspired by the specific case of higher education, and is less representative of education offered in the framework of VET [(Vocational Education and Training)]".

The OECD reworking paper on alternative credentials (OECD, 2020) differentiates "alternative credentials" according to their position within qualification context, having the embedded model which may integrate the credential "*ex ante* by design into another qualification programme, with course content and assessments used in lieu of locally developed content and assessment" of the academic programme. On the other hand, "alternatively, qualification awarding bodies may take alternative credentials into account *ex post* in the recognition of prior learning (and academic credits) into another qualification programmes."

The Erasmus+ Programme co-funded MICROBOL project, which focuses on whether, and how, the existing Bologna tools can be used, or adapted, to aid the implementation of micro-credentials, makes stronger references in their definition (see Figure 3) to already existing structures like the Lisbon Recognition Convention, the QF-EHEA and the NQF, the European Credit Transfer and Accumulation System (ECTS) and the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG). With that, it is similar to the statements made in the later published European University Association's (EUA) policy input for the EC's Open Public Consultation (OPC) on micro-credentials, stating: "any future approach to micro-credentials should aim to increase clarity and transparency and build on the existing EHEA tools", naming the ECTS, ESG, qualification frameworks, the Lisbon Recognition Convention, and the Diploma Supplement. In agreement, and providing a business perspective, EUROCHAMBRES (2021) state that the use of policy instruments is essential in ensuring the quality and relevance of training and courses, and thus requires the involvement of business associations whose members are directly impacted by the quality of the courses and training provided.

A table on the criteria and quality standards for alternative credentials in seven organisations and initiatives from all over the globe[1], found in the 2020 OECD working paper, shows the intended learning outcomes, qualifications and form of assessment as formally required or recommended across all these organisations. Also, while the accreditation or recognition is included as a criterion in four out of the seven organisations, the verification of the learner identity was included by five, and

[1] The table in the OECD study compares criteria and quality standards as indicated by various authorities, platforms and projects, e.g. New Zealand Qualifications Authority, European MOOC Consortium, German Forum for Higher Education in Digital Age, US Council of HE Accreditation …. (OECD, 2020)

the option for stackability, labour market outcomes and transparency only by one organisation (OECD, 2020, p. 34).

The element of learner identity was also mentioned by the Groningen Declaration in their statement into the EC's OPC on micro-credentials. According to the Groningen Declaration, to allow for "micro-credentials to become widely accepted, there needs to be a mechanism […] to validate the credential recipient's identity and credential to ensure quality assurance and enable and promote recognition" (2021, p. 2). More development on the theme of quality assurance and frameworks can be found further down in the document.

2.2 Why micro-credentials, for who and by whom?

Reskilling and upskilling are two of the most mentioned terms in position papers, statements and studies as one of the main drivers for the use of micro-credentials (CICAN, 2021; ESU, 2021; ETUC, n.d.; ETUCE, 2021; EUA, 2021; European Commission, 2020a, 2020b; MICROBOL, 2020; OECD, 2020) – upskilling and reskilling of the labour market being one of the biggest challenges according to results from a recent EUROCHAMBRES Economic Surveys (EUROCHAMBRES, 2021). Unsurprisingly, the European initiative for a framework and European approach is warmly welcomed by the world of work. The European Commission and Member States can count on business as a partner to make skills training provision relevant to the changing labour market needs and for access to training (SME United, Business Europe & SGI Europe, 2021, p. 3).

In the same position papers, statements and studies, the need for a streamlined approach to micro-credentials and its growing presence has been attributed to the recent changes and impacts on the European workforce, like the COVID-19 pandemic, digitalisation and recent sustainable developments. These factors, alongside European priorities to open up education to a more diverse group of learners and promoting individualised and flexible lifelong learning initiatives, among other factors, made for an increase of popularity of micro-credentials within education institutions.

In April 2021(b), the European Association of Institutions in Higher Education (EURASHE) conducted a survey on micro-credentials among its members – representatives of HEIs and other stakeholders in the field of higher education. The survey results showed that the main target groups for micro-credentials within HEIs are perceived to be employees from the "partnering" companies (67%, N=184) and prospective students (66%), followed by alumni (41%) and current students (41%). Up- and reskilling has been far the most perceived objective (88 % of respondents), the further key objectives – enhanced access to higher education, resp. acquisition of specific academic knowledge and competences were seen of less importance (both ca 52 % of responses).

And while HEIs (and employers) may use micro-credentials as a tool to increase their visibility (OECD, 2020, p. 21), if developed with a low entry barrier, these more flexible and less time-consuming micro-credentials can help reach new learners, including those from disadvantaged backgrounds (European Commission, 2020a). Besides this forecast advantage, micro-credentials can facilitate the recognition and value of all the knowledge and skills acquired outside of formal education (ESU, 2021; Lifelong Learning Platform, 2021), also by extending it to non-formal education providers and civil society as a third sector and stakeholder (Lifelong Learning Platform, 2021). Thus, supporting possibilities for the (automatic) recognition of formal, informal, and non-formal learning opportunities acquired by lifelong learners are emphasised by various stakeholders (ESU, 2021; EURASHE, 2021a). As OECD point out (2020), there is also an important role of private providers, large companies offering their in-house training programmes, but also those from private or non-governmental sector who "view the expansion of alternative credentials as an opportunity to enlarge their businesses and activities." This

does not exclude partnership and co-operation in design, delivery or certification with higher education institutions.

2.3 Use of regulatory tools and instruments

The European Commission final report on European approach to micro-credentials (EC, 2020a) addressing proper introduction and implementation of micro-credentials underlines importance of transparency tools related to transparency of qualifications and relevant frameworks, quality assurance in higher education, credits for achieved learning (ECTS), recognition including recognition of prior learning and life-long learning and career management (Europass). Further on a need for common and transparent definition, list of critical information elements describing micro-credentials, portability – issuing, storage and sharing of micro-credentials and platform solutions for the provision and promotion of courses leading to micro-credentials are added as further building blocks to alignment to national qualifications frameworks, quality assurance standards and recognition for further studies and/or employment purposes.

Also, the Erasmus+ funded MICROBOL project (see Annex II) has been mapping and analysing a feasibility and relevance of use of the EHEA tools for the micro-credentials purposes.

Similar recommendations can be found in the OECD working paper on alternative credentials (OECD, 2020, p. 35) proposing that with a growing market for alternative credentials market grows, "governments may consider establishing quality frameworks for these programmes, both to protect consumers who have invested their own money and to provide a sufficient assurance of quality to support accountable public spending." However, respecting the character and advantages of such learning provisions, the regulations should allow for necessary flexibility, innovation and responsiveness to employers' and students' needs.

While the reports emphasise the importance of existing tools, they do not provide a single answer as regards their immediate use or need of further adaption to specifics of micro-credentials. The following chapters provide some insights as regards specific tools, but show also different views of different stakeholders and expert groups. The E4 group (ENQA, ESU, EUA, EURASHE, 2020) published a statement regarding suitability of existing provisions in quality assurance from the position of the ESG authors, yet have also declared openness to consider necessary revisions and adjustments based on gather experience and evidence. Some stakeholders (EUA, 2021) also refer to the wider context and need to consider further development and tools within the complex life-long learning agenda and demand for enhanced flexibility where micro-credentials play an important, yet not exclusive role. Also, the MICROBOL project report (2020) refers to short-cycle higher education programmes, yet also other programmes falling outside of the QF-EHEA structure (diploma programmes, post-graduate certificates…) and proposes a coherent and complex approach to various learning provisions offered by higher education institutions where "the procedures and recommendations referring to the short cycle and the programmes that fall outside the QF-EHEA structure could set a useful precedent".

2.4 Qualification frameworks

The qualifications frameworks – although considered as a crucial block for development – have been less mentioned in the reports and documents in comparison to other tools. There is definitely a tendency to call for more flexible and open systems, the EC report (2020a) refers to opening of "national qualifications frameworks to other forms than full qualifications, in particular those with high relevance for the labour market". There have been various concerns about role and stackability of micro-credentials substituting formal qualifications in statements for the EC open public

consultation. This issue has been addressed both by representation of higher education institutions (EUA, 2021; EURASHE, 2021), trade unions, as well as employers – where SMEunited (2021) are concerned especially about risks for VET programmes and qualifications.

According to ETUCE (2021, p. 1) there is a need to "differentiate between formal initial education, which provides skills and competences for life, and specific profession-related further learning which happens periodically" (ETUCE, 2021, p. 1). The European Students' Union (ESU) argues that micro-credentials came forward out of the need to rethink and recognise future skills and competences through the flexibilization of education (2021). This raises the question on how and where to place micro-credentials, in all its shapes and sizes, in the current recognition and quality assurance processes which are so critical in creating trust among learners, providers and employers.

In Autumn 2020, MICROBOL project disseminated a survey among BFUG members as well as nominated representatives in the MICROBOL working groups, focusing on the applicability of micro-credentials to the existing qualification frameworks, among five other dimensions. The survey results showed that in the majority of countries, there is no reference to micro-credentials in their National Qualifications Framework (NQF). However, it was widely agreed that any reference to micro-credentials in the NQF would support the transparency and recognition of micro-credentials internationally (MICROBOL, 2021).

Nevertheless, a reference to micro-credentials in the NQF and EQF does also pose some challenges, for instance as micro-credentials may vary in size within institutions and a country, but also whether they are credit-bearing or not. The MICROBOL survey results suggest that a micro-credential certificate or supplement which includes the specifics of these elements can help create a better understanding of the micro-credential in question (MICROBOL, 2021, p. 7).

While some members of the European Commission's micro-credentials expert group suggest that a reference to micro-credentials in the EQF is a necessity, others state that this is not in keeping with the current EQF Recommendation, which reserves EQF referencing for national qualifications frameworks or systems. Therefore, the group proposes member states to consider adapting the NQF to enable the inclusion of micro-credentials (European Commission, 2020a, p. 14). Still, further clarification is needed for micro-credentials provided by non-formal education providers, but also for those provided by the VET sector (SMEunited, 2021, p. 7).

In this regard, EUROCHAMBRES (2021) and SMEunited (2021) argue that a submission to a (future) European micro-credentials framework should be a voluntary option for the provider. This would be particularly applicable for courses which do not require an assessment to complete. Rather than causing excessive regulation, a framework should support the provision of training and relevant stakeholders must be involved in the quality assurance procedures to ensure trust in the quality of the provided training (EUROCHAMBRES, 2021). The latter statement is echoed by ETUC (2021): it is "important to develop European standards, which address minimum requirements, on micro-credentials and a trusted list of providers […] at member state level, [and that] trade unions should play a strong role in monitoring and deciding which training provider is put on the registry of training opportunities". In addition to this, SMEunited et al. (2021) call for flexibility within the different national settings (such as the NQFs) to take a flexible approach to training provision, "[taking] into account the need of enterprises and workers[, and] the role that employers and social partners jointly play in the governance of training systems, both in systems in which they have the lead role as well as in others" (2021, p. 2).

The EC final report on the approach to micro-credentials (EC, 2020a) also proposes a roadmap for further action regarding micro-credentials. As regards qualifications frameworks the proposal is still rather open proposing exploring further feasibility and discussion on integration of micro-credentials into national qualifications frameworks in next 2 years (2021 – 2022) and regular consultation with relevant structures including those of EHEA, members states, stakeholders. This might be followed by relevant adaptation of qualifications frameworks in later stages (2023 – 2024).

From this perspective, the case of New Zealand Qualifications Authority (NZQA), quoted in OECD working paper (OECD, 2020) might serve the discussion. This government agency responsible for qualifications is reported to set a micro-credential as a training scheme with specified aims, objectives, content and assessment practices leading to a certified set of skills and knowledge. While the intention is to avoid duplicity with the existing, accredited learning offer the demand from the labour market or community plays an important role. The scope is between 5 and 40 credits, up to the equivalent of one third of full study workload. The NZQA is expected to review and if meeting the quality standards approve the micro-credentials offered by higher education institutions, Yet also covering such credentials offered outside of New Zealand and offered by other providers than higher education institutions.

2.5 Recognition, trust and quality assurance

The first step in the recognition of micro-credentials is a creation of a common understanding, hence the need for a commonly shared definition. To build trust in micro-credentials, it is essential to have transparency over the quality of the credentials and their content (European Commission, 2020a). Quality assurance processes such as those driven by the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG, 2015) within higher education, should ensure this trust and transparency. The ESG should cover all micro-credentials offered by higher education institutions, according to Tück (2019, as found in European Commission, 2020a, p. 14). However, as the ESG provide flexible standards and guidelines for quality, and its implementation varies across the EHEA, the higher education institutions hold, in the end, primary responsibility for the quality of the micro-credentials they offer (MICROBOL, 2020, p. 38). In this, they can expect assistance from national quality assurance agencies in the development of quality assurance (QA) policies, and also in building understanding among stakeholders (ENQA, EUA, EURASHE & ESU, 2020; MICROBOL, 2020).

The way a micro-credential can be quality assured is very dependent on how they are built up and how quality assurance processes are organised within a country or a higher education institution. Micro-credentials can be credit-bearing, e.g. by being awarded with ECTS upon completion, or non-credit-bearing, e.g. a certificate based on prior experiential learning. Additionally, there is also the matter of internal and external quality assurance, which can focus on different criteria for the quality assurance of certification.

The analytical report written by NESET (European Commission, 2020b) concluded that all credit-bearing and stackable courses should be a part of the internal quality assurance procedures at HEIs. This, because credits already represent a sense of the workload and learning outcomes of a credential, which are already implemented in existing assessment processes.

The Dutch organisation for internationalisation in education, Nuffic, states that it is necessary for national QA agencies to include credit-bearing and stackable courses in their external review procedures for HEIs (2019). However, MICROBOL reckons that while external QA can be either on institutional level (with the focus on assessing the effectiveness of institutional quality systems) or on programme-level (considering the content of study and modes of delivery), “micro-credentials will

most likely not be covered by any external quality assurance, unless they are offered as part of a larger study programme" (2020, p. 38).

Also not unimportantly, in every country employers and social partners play a role in design and delivery of training, as well as in aspects of careers advice, guidance and the promotion of training opportunities (SMEunited et al., 2021). With this statement, SMEunited et al. is reiterating the shared interest and responsibility for training among employers and trade unions (2021).

So, in conclusion of this topic, there are two questions listed below which are part of a set of questions raised by the MICROBOL project on the quality assurance of micro-credentials:

- To what extent are the ESG standards on internal and external quality assurance applicable to all the providers (besides HEIs)? What are the limitations of applying the ESG for providers other than HEIs?
- What should be the role of external quality assurance in assuring the quality of micro-credentials? Should it be different depending on the provider? If so, how? (MICROBOL, 2021, p. 39)

2.6 Stackability

In some papers (EUA, 2021; EURASHE, 2021), it was affirmed it is important, or even necessary, to allow for the 'stacking' of micro-credentials into a larger certificate – without "[substituting] formal qualifications as [micro-credentials'] learning outcomes and volume of learning are much smaller" (EUA, 2021). Such statement was shared by other organisations as they stress that micro-credentials should not undermine present formal qualifications (EUROCHAMBRES, 2021), nor should they be confused with partial or full qualifications as they can be useful in addition to full qualifications placed within the NQFs (ETUCE, 2021). According to a joint statement by ETUC & ETUCE: "micro-credentials […] should have a value at national and European level only when they are part of full qualifications, which are referenced in the European Qualification Framework (EQF), and have a level in the respective National Qualification Frameworks (NQF), based on assessment and defined learning outcomes and curriculum of micro-credentials. " (ETUC & ETUCE, 2020, p. 4).

In June 2021, the MICROBOL working group on QF and ECTS discussed the challenges with quality assurance in the context of 'stacking' micro-credentials and as a stand-alone or part of a full degree programme. In their conclusion, the working group found that the decision as to whether to include all micro-credentials or only a selected group of them into the NQF is to be had at national level (MICROBOL Working Group on QF and ECTS, 2021, p. 6). With this recommendation it also recognises that there will also have to be a principle of openness and flexibility of the NQF to ensure the micro-credentials' recognition, quality and transparency (MICROBOL Working Group on QF and ECTS, 2021).

Finally, besides openness and transparency within the NQF and EQF towards micro-credentials, the concept would also benefit from shared comprehensive guidelines and common principles and framework, alongside with a list of trusted providers, to foster an optimal development and implementation of micro-credentials and to facilitate the trust, recognition and QA processes at national and European level (EURASHE 2021; MICROBOL Working Group on QF and ECTS, 2021).

3 Opportunities and challenges

Based on previous overview a simple list of potential opportunities and challenges may serve further discussion.

3.1 Opportunities

All actors appreciate the potential which micro-credentials bring to enhanced, flexible learning whether within a structure of formal, academic programme, addressing specific competences or serving the life-long learning purposes including up- and reskilling in the view of uncertainty about future skills, requirements and their fast-changing character.

A number of stakeholders see the discussion on micro-credentials within a wider context of life-long learning, but also see the opportunity of strengthening links between higher education, vocational education and training and the world of work. While this aspect has been strongly voiced by employers, institutions of professional higher education, it is important to keep in mind other potential objectives of learning for personal or societal development, a role which micro-credentials may play in non-governmental sector and voluntary activities.

Flexibility, transparency, yet also stackability have been see as a great opportunity making micro-credentials attractive for various groups of learns, including those coming from various disadvantaged groups. This may lead to further opening of higher education to various local, regional or specifically-profiled communities, addressing the important role of serving the society.

The European Commission initiative brought a strong impulse to the development, probably even further enhanced by the pandemics, but also other initiatives including European university alliances with their high ambitions of shared learning capacity and integration of academic communities within the alliances.

An initiative focused on common European standard allows one to link badges acquired from different places using the international Europass within Lifelong Learning, opens new dimension for portability of credentials.

3.2 Challenges

There seem to be two groups of concerns as regards introduction of micro-credentials:

- The conceptual considering the role which micro-credentials and other provisions may play in relation to formal qualifications, scope to which these qualifications might be substituted by stackable units. Also the concerns about attention paid to micro-credentials as the most visible element, while the solution might call for more complex solution covering other forms of flexible and life-long learning and learning opportunities within higher education.
- The arrangements for introduction, implementation and development of micro-credentials in relevant regulatory, transparency tools which would not endanger necessary trust based on transparency, quality and recognition while not introducing too heavy burden removing the main benefit of such learning provision – flexibility, innovativeness and focus on clear objectives.

The challenges of implementing the concept in national legislation, framework, as well as institutional policies, harmonisation at European level, together with necessary capacity for much wider introduction of various flexible learning provisions are further issues following the clarification of the above shown challenges.

4 Case studies

This chapter provides some insights into the practical experience of three countries who have advanced in the micro-credentials agenda. In some of the cases, the terms digital badges and edubadges have replaced micro-credentials, as this is the term used in the specific country and which may be viewed as an equivalent or element of micro-credentials.

4.1 Finland

In Finland, different education institutions and training providers have already been applying the use of digital badges in their learning processes, and trainers in vocational teaching programmes have been the first focus group piloting digital open badge-driven learning (Brauer, 2020, pp. 147-148).

Already in 2014, a joint venture by two schools of professional teacher education, Oulu University of Applied Sciences and HAMK University of Applied Sciences, with Finnish VET provider Omia, resulted in a co-created Learning Online Professional Development Programme: a gamified, open badge-based massive open online course (MOOC). Its aim was to support VET teachers in applying new technologies and strategies in teaching and learning practices. Over the years, the Learning Online project has evolved and grew into an open-access education setting accessible to anyone, and it has succeeded in developing the use of open badges as an accreditation of teachers' ICT skills (Brauer, 2020, p. 149).

The national project WORKPEDA (2018-2020, Work-integrated Pedagogy in Higher Education, *TYÖPEDA* in Finnish), founded by the Finnish Ministry of Education and Culture, is another example of the pilots taking place in Finland that focus on the validation of prior learning in higher education. The project looks into application of digital badges and the creation of operational models for the development of students' working-life skills with an educational approach, among other (TYÖPEDA, n.d.).

Another example shows the use of badges in the world of work; the Chips for Game Skills project (2018-2020). This project focussed on the needs of the gaming industry and the development of small courses based on this analysis, trying to bring together education institutions in multidisciplinary game projects and joint courses. Working together with a number of Finnish HEIs and a VET institution[2], the project's goal was to create a digital badge system specifically for the Finnish game industry, which involved deconstructing the entire game industry into individual competencies. Eventually, the project partners were able to carefully create a map of key competences for game educators and professionals across Finland, which can be found here: www.kumu.io/gamebadges/gamebadges (Osaamisen pelimerkit, 2020).

4.2 Ireland

Ireland is one of the forerunners in the implementation of micro-credentials in some of its higher education institutions. Dublin City University (DCU) is one of the first universities to offer a micro-credentials course. The online micro-credential in business and management, FinTech – Financial Innovation, was co-created by the DCU Business school and facilitated by the online platform FutureLearn. The online 5 ECTS postgraduate level micro-credential covers 10 weeks of 4 thematic courses, is rewarded with a Certificate of Completion from DCU, and falls under the Common Micro-credential Framework (CMF).

[2] Metropolia UAS, Amiedu, Haaga-Helia UAS, Laurea UAS, Oulu UAS and Tampere UAS.

The CMF is a framework developed by the European MOOC Consortium consisting of FutureLearn (UK), FUN (France), Miríada (Spain and IberoAmerica), eduOpen (Italy), and OpenupEd/the European Association of Distance Teaching Universities (EADTU), and uses the EQF and other national qualification frameworks for all courses that award academic credit. To fall under the CMF, the CMF has set criteria that the micro-credential will have to meet in terms of the total workload, EQF level, ECTS adaptability, assessment, ID verification at the point of assessment, and course transcripts.

In cooperation with the European Consortium of Innovative Universities (ECIU), DCU also launched a free, three-week online MOOC *Higher Education 4.0: Certifying your Future* in March 2021. This MOOC was aimed at educators and employers interested in micro-credentials and challenging their traditional views on the future of higher education (DCU, 2021).

In May 2020, the Athlone Institute of Technology (AIT) set up a digital badge working group in charge of producing guideline documents and templates for badge applications, reviewing the process for applications, and organising workshops for staff to help with the badge application process.

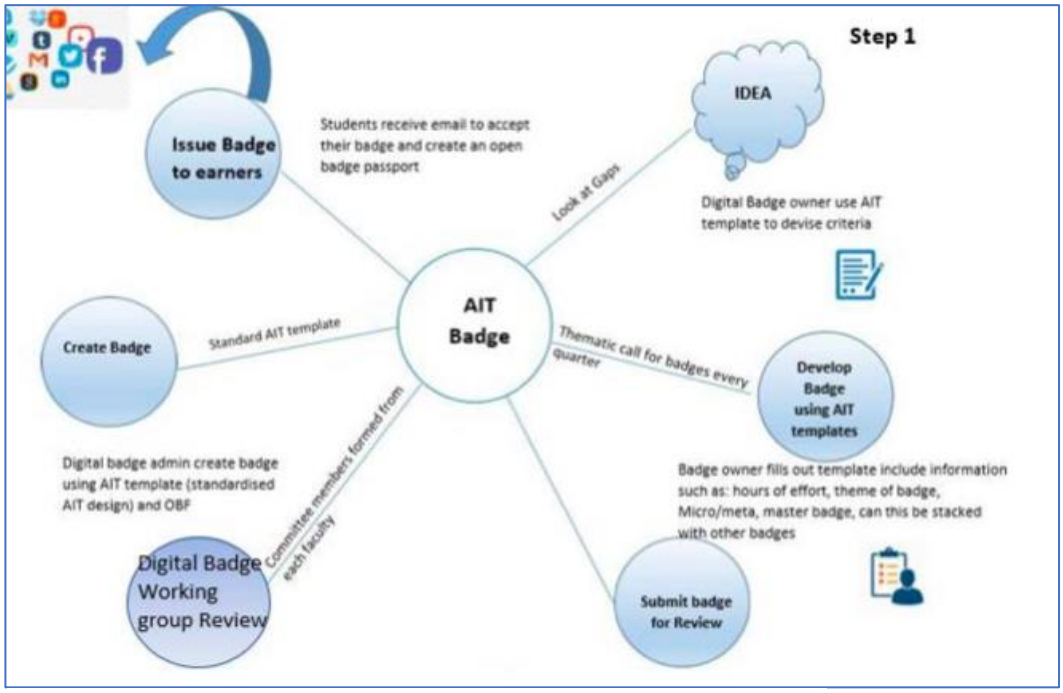

Figure 2. AIT Digital Badge Approval Process (AIT, 2020).

In September 2020, AIT standardised its digital badge approval system (see Figure 2), which lays down all the steps from the concept of a badge course to the issuing of the badge to the learners. this system was approved by its Academic Standards and Quality board, the same year (AIT, 2020; National Forum for Teaching and Learning, n.d.). Additionally, an AIT Digital Badge logo was produced.

This development was set out as part of the institution's Learning Enhancement Project 'Digital Badges and Micro-credentials' and followed the methodology put in place in University College Cork (UCC) (AIT, 2020; UCC, n.d.). AIT aims to set out the second phase of the projects to ensure the development of digital badges within the institution and beyond.

4.3 The Netherlands

SURF is an organisation in the Netherlands which supports and works together with education institutions on ICT services for education and research. One of the projects SURF worked on was

Edubadges. The project was set up following the publication of SURFnet's White Paper on open badges and micro-credentialing in 2016. This White Paper played with three scenarios for digital badges in education: micro-credentials (accredited), badges for informal education (not accredited) and badges as gamification elements (both accredited and non-accredited) (SURF, 2016). In order to test the scenarios, a proof of concept was set up to experiment with the technical infrastructure developed by SURF for the creation, distribution, receiving and accreditation of edubadges. Nine HEIs then experimented with the creation and issuing of edubadges from September 2017 to May 2018.

The proof of concept's lessons learned report showed the improvement points for the badge provider, the learner and the infrastructure. Whereas for the latter two, the improvement points were mainly to do with the technical infrastructure, the report suggested that the badge provider will have to have a clear idea of who issues the badges, that education opportunities are made flexible, and that the provider will need to develop a badge strategy and think of how they fit into the traditional education structure (SURF, 2018).

From October 2018 to the summer of 2019, 16 HEIs[3] tested a pilot that was improved on the basis of the proof of concept and further detailed discussions with a number of HEIs. One of these improvements was the inclusion of badge strategies within the HEIs (SURF, 2020). Examples of strategies are applications for certain target groups, disciplines, extracurricular activities, staff, entry-level prerequisites, interinstitutional frameworks, and differentiating between badge phases and trajectories.

The edubadges that are currently registered in the database of www.edubadges.nl are issued by HEIs either as a part of a degree or as a stand-alone. Either way, the learner is required to already be registered at the providing HEI.

Together with the Dutch association of universities (in Dutch: *Vereniging van Universiteiten*, VSNU) and the Dutch association of universities of applied sciences (in Dutch: *Vereniging Hogescholen,* VH), SURF forms the programme team and steering group for the Acceleration Plan for Educational Innovation with ICT (in Dutch: *Versnellingsplan Onderwijsinnovatie met ICT*) (Versnellingsplan, n.d.).

The Acceleration Plan launched in 2019 and consists of eight zones. One of the zones is that of 'Flexibility in education' which includes the pilot micro-credentials and is, with 17 participating HEIs, the biggest pillar in the acceleration plan (Vereniging Hogescholen, 2020). The developments within this plan are currently ongoing and no results have yet been published.

[3] The 16 HEIs are: Rotterdam UAS (*Hogeschool Rotterdam*), University of Utrecht (*Universiteit Utrecht*), Eindhoven (*TU Eindhoven*), Erasmus University Rotterdam (*Erasmus Universiteit Rotterdam*)/Rotterdam School of Management, Hanze University Groningen (*Hanzehogeschool Groningen*), Deltion College, University of Twente (*Universiteit Twente*), Amsterdam UAS (*Hogeschool van Amsterdam*), NHL Stendes UAS (*NHL Stenden Hogeschoo*l), Wageningen University and Research (*Wageningen Universiteit*), Windesheim UAS (*Hogeschool Windesheim*), Vrije Universiteit Amsterdam, University of Maastricht (*Universiteit Maastricht*), Avans, Tilburg University (*Universiteit van Tilburg*), and Albeda

5 Issues for the Correspondents on National Qualifications Frameworks

The main focus of the group of correspondents on National Qualification Frameworks lays logically with these frameworks, their developments, integration of various learning provisions. As stated above, one of the challenges is capacity building and exchange of experience. Therefore, the participants are invited to share their views and experience from national, as well as European activities on following issues.

a. What is the current state of national discussion on micro-credentials and their reflection in the national qualifications framework in your country or organisation? What seem to be the main drivers and issue of such debate?
b. What are your views on necessity of having specific approaches to micro-credentials within the EHEA tools (qualifications frameworks, recognition, quality assurance)? Do you think there should be different approaches to micro-credentials offered by formal providers (higher education institutions, resp. VET schools) and to those delivered by non-formal providers (private companies, international institutions, …)?
c. Capacity building, awareness and coherent implementation seem to be among the key challenges. Which priorities do you see as regards capacity building in your country, both at system and institutional level? What steps have been foreseen or planned?
d. European harmonisation, cooperation and support is often mentioned as necessity for full implementation of micro-credentials including their role in European mobility of learners and manpower. What would you view to be main issues and actions preferred at European (either EU or – better – EHEA) level?

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7 Annex I - Background of main studies

7.1 European Commission

In spring 2020, the European Commission formed a micro-credentials higher education consultation group consisting of experts in the field of European higher education and quality assurance agencies from all over Europe. The consultation group came together virtually three times between May and September 2020 and contributed to a final consultation report which included a proposed European definition, common characteristics, and a roadmap of action, published in December 2020.

Also in December 2020, the European Commission published an analytical report of the practices and commonalities in offering micro-credentials in European higher education. This report was written by NESET, an advisory network of experts working on the social dimension of education and training, initiated by the European Commission's Directorate-General for Education and Culture.

The publishing of these reports was followed by an open public consultation (OPC), open from April to July 2021, aimed at collecting ideas for a further development of a common definition for micro-credentials, European Union quality and transparency standards, and the next steps to be taken. Finally, all these inputs will feed into the EC's preparation of a Council Recommendation on micro-credentials for lifelong learning and employability by the end of 2021. Not all contributions of key stakeholders to the open public consultation have been available publicly and the EC have been still working on their summary and analysis, therefore only some of those available publicly or shared by their authors have been referred to in the previous text.

7.2 MICROBOL project

The Erasmus+ programme funded MICROBOL project has focused on feasibility and suitability of the existing Bologna tools for the implementation of micro-credentials, possible direction for any suitable adaptation. The project partnership consists of the Flemish Ministry of Education and Training, the Finnish Ministry of Education and Culture, the Italian Information Centre of Academic Mobility and Equivalence (CIMEA), the European Association for Quality Assurance in Higher Education (ENQA), European University Association (EUA) and the European Quality Assurance Register (EQAR, associated partner).

In September 2020, the MICROBOL project published its desk research report which examines the status of micro-credentials in the context of the EHEA based on information from existing projects, studies and publications, and discusses how the existing EHEA tools can be used to accommodate micro-credentials. From October to December 2020, MICROBOL sent out a survey to BFUG countries and chosen representatives. The report with the results was published in February 2021. In June 2021, the working group on qualification frameworks published their output document.

In December 2021, the project aims to publish their proposed common European Framework for micro-credentials, which will have been led by the Flemish Ministry of Education and Training in close cooperation with experts and project partners

8 Annex II - Definitions of micro-credentials

8.1 MICROBOL project definition

A micro-credential is a small volume of learning certified by a credential. In the EHEA context, it can be offered by higher education institutions or recognised by them using recognition procedures in line with the Lisbon Recognition Convention or recognition of prior learning, where applicable. A micro-credential is designed to provide the learner with specific knowledge, skills or competences that respond to societal, personal, cultural or labour market needs. Micro-credentials have explicitly defined learning outcomes at a QF-EHEA/NQF level, an indication of associated workload in ECTS credits, assessment methods and criteria, and are subject to quality assurance in line with the ESG.

Figure 3. MICROBOL definition (MICROBOL, 2020)

8.2 OECD definition

Alternative credentials are credentials that are not recognised as standalone formal educational qualifications by relevant national education authorities.

Figure 4. OECD definition (OECD, 2020).

8.3 Colleges and Institutes Canada definition

A micro-credential is a certification of assessed competencies that is additional, alternate, complementary to, or a component of a formal qualification.

Guiding Principles

- Micro-credentials can be a complement to traditional credentials (certificate, diploma, degree or post-graduate certificate) or stand alone.
- Micro-credentials are subject to a robust and rigorous quality assurance process.
- Micro-credentials should represent competencies identified by employers/industry sectors to meet employer needs.
- Micro-credentials may provide clear and seamless pathways across different credentials (both non-credit and credit) and may be stackable.
- Micro-credentials are based on assessed proficiency of a competency, not on time spent learning.
- Micro-credentials are secure, trackable, portable and competency is documented in students' academic records.
- Micro-credentials are to follow institutional approval processes.

Figure 5. CICAN definition (CICAN, 2021)

8.4 New Zealand Qualification Authority definition

A micro-credential certifies achievement of a coherent set of skills and knowledge; and is specified by a statement of purpose, learning outcomes, and strong evidence of need by industry, employers, iwi and/or the community.

They are smaller than a qualification and focus on skill development opportunities not currently catered for in the regulated tertiary education system.

At a minimum, micro-credentials will be subject to the same requirements as training schemes or assessment standards and will also be required to:

- be 5–40 credits in size
- have strong evidence of need from employers, industry and/or community
- not duplicate current quality assured learning approved by NZQA
- be reviewed annually to confirm they continue to meet their intended purpose.

Figure 6. New Zealand Qualification Authority definition (n.d.)