European Commission

ANNEX 2

A EUROPEAN APPROACH TO MICRO-CREDENTIALS

INSTITUTIONAL INCENTIVES TO DEVELOP AND OFFER MICRO-CREDENTIALS IN THE EU

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Education and Training

This publication was finalised in May 2020 and prepared by Hanne Shapiro Futures, Tine Andersen and Kristine Nedergaard Larsen under contract No 1000245 (awarded under Framework Contract EAC 02-2019), led by the Danish Technological Institute.

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1.0 Introduction

This scoping note has been prepared for the third meeting of a European Consultation Group, which was formed by the European Commission with a view to developing a European approach to micro-credentials[1]. The theme for the third meeting, which took place the 16th and the 17th of September, was focused on **financial and non-financial drivers and enablers to support the development and uptake of micro-credentials**. In the preparation of the background report and during the first two consultation meetings, some issues have emerged which may act as push and pull factors in the development and uptake of micro-credentials in Europe:

- From the outset, the Consultation Group has emphasised that micro-credentials must be aligned to the societal mission of higher education institutions, and that micro-credentials are complementary to the degree structure, with benefits to be accrued by adults and students alike. In the USA, which currently dominates the global provision of micro-credentials, the development of micro-credentials has to a large degree been driven by the growing costs of higher education, and it has fed into a debate whether micro-credentials could lead to the unbundling of university degrees (Gallaher, 2019; Edsurge, 2020).
- In the EU, lifelong learning is a renewed strategic priority accelerated by digitalisation and greening of the economy. Stakeholders interviewed[2] in Europe and globally point to the value of the European tools and processes, which have evolved as part of the European collaboration in education and training. The general view is that these tools and processes constitute systemic enablers that can support European collaboration on micro-credentials, and Europe in that respect has a unique advantage because European collaboration is seen as the way forward to agreeing on a common definition of micro-credentials, common standards, and approaches to quality assurance - and key to stimulating uptake (Usher, 2020). Moreover, institutional representatives interviewed see the European Universities Alliances as a strategic investment which can become a catalyst for reconceptualising lifelong learning and the societal role of universities in actively shaping a sustainable future.
- It is estimated that unemployment across the European Union will increase to 9% by the end of 2020 (European Data Portal, 2020), with elderly workers, youth, recent graduates, and the self-employed being particularly vulnerable to the impact of the pandemic (ILO, 2020). The impact of the COVID-19 crisis is already evident in the labour market in the EU: in 2020 Q2, employment had the sharpest decline ever observed between two successive quarters since 1995.[3] During COVID-19, digitalisation and automation have accelerated across sectors of the economy to cut costs and to adapt operations and services to more a volatile business environment (Business.com, 2020). The digital trends also encompass new AI[4] enabled *talent platforms*, which companies such as Unilever, Schneider Electrics and INFOSYS have implemented to ensure more efficient recruitment, skills development, and skills utilisation during COVID-19 (Financial Times, 2020). In this changing context, micro-credentials can function as *signals of employability* and they can be the means to more effective upskilling and reskilling for new job roles in post-pandemic labour markets (Inside Higher Ed, 2020).
- Perceptions among interviewed stakeholders are that **micro-credentials have gained a new momentum** in recent months - but it is also recognised that the micro-credentials landscape is still highly diverse, and the lack of transparency could hamper the engagement in micro-credentials, and the awareness of their potentials among policy makers, higher education institutions, and potential users (Beirne, et al., 2020).

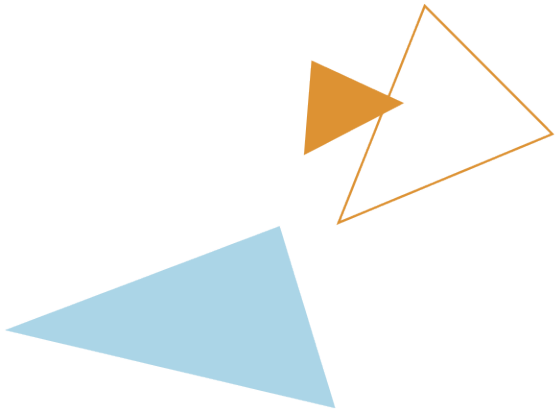
[1] https://microcredentials.eu/wp-content/uploads/sites/20/2020/08/V.-DebiaisSainton-Microbol.pdf

[2] A series of interviews were undertaken with senior level higher education institutions' representatives involved in the strategic development of their institutions, in different European countries (including institutions involved in European Universities Alliances) and a few in the USA.

[3] As reported by DG EMPL statistical data team in August 2020.

[4] AI= artificial intelligence

- The outcomes of the micro-credentials consultation group initiated by the European Commission are seen as a lever to overcome challenges relating to transparency and portability by creating a common European approach to micro-credentials building on achievements already made as part of the Bologna process, and by facilitating further consultations and dialogues about the development and uptake, encompassing central issues such as:
  - **financial and non-financial drivers (at national and institutional level),**
  - **the cooperation needed between the different actors, and the evolution of dynamic eco-systems, and**
  - **the role of digital platforms in the issuing of micro-credentials.**



2.0 Financial and non-financial drivers to support micro-credentials

2.1 Shaping the future of higher education - the role of micro-credentials

Members of the Consultation Group and interviewed stakeholders underline that the key feature of a sustainable **European approach** for **micro-credentials** should be that it is **aligned to the broader societal mission of higher education** institutions.

The consultation group and stakeholders interviewed underline the importance of **coherent user cases** underpinning the promotion of micro-credentials and as a key to designing user centred learning environments. Faculties are unlikely to engage in the development, launch and mainstreaming of micro-credentials if the provision is not an **institutional strategic priority.** Moreover, institutional strategies need to be operationalised **involving staff in a priority setting**, and underpinned by coherent and **transparent quantitative and qualitative targets;** if not, the risks are that micro-credentials will not become mainstream and a key feature in universities' societal engagement (Tierney & Lanford, 2016; Brennan, et al., 2014). Current university strategies differ regarding lifelong learning. The **University of Wageningen** is just one example of a higher education institution that at an early stage chose to invest strategically in **MicroMasters** through the platform edX. The initiative was fuelled by an intention to strategically position the University of Wageningen in a **global emerging bio-economy**, and a subsequent need to upskill professionals (Bood, 2016).

Likewise, members of European Universities Alliances tend to see micro-credentials within a broader scope than incremental improvements in the existing provision of continuing education and training. They underline that that their strategic focus on micro-credentials is influenced by rapid changes in the labour market, and micro-credentials may offer wider opportunities for labour market mobility, for example for people in their mid-life careers, for people with outdated qualifications, or for the unemployed or those at risk of unemployment. However, it is a common theme that micro-credentials for up-skilling and re-skilling are underpinned by broader perspectives on **cultural identity** and **active citizenship**, which are seen as a key to coping with higher levels of uncertainty.

2.2 The role of funding models in higher education

In recent months we have seen the increase in digitally enabled remote working and structural changes in labour markets, which may pave the way for **digitally enabled lifelong learning** (Cedefop, 2020); **yet the majority of public funding is still allocated to ordinary degree programmes**.

Developments in the funding of higher education systems in Europe differ substantially across the 33 systems monitored in the last decade. Three main patterns emerge with variations within each group. One group of countries shows a sustained growth in funding; a second group shows improving patterns since the financial crisis; and finally, a third group of countries has experienced decline during the past decade. The EUA Observatory for Public Funding of Higher Education finds that few countries invest at a rate that allows them to preserve the student/teacher ratio (Pruvot, et al., 2020). In some Member States, personal competence accounts, grant schemes, and training funds stipulated in collective agreements are available for some groups in the workforce. While some companies see investments in the skills of their workforce as a key to innovation and competitiveness and a strategic priority on par with investments in ICT and equipment, the overall picture still shows major variations (Eurostat, 2020).

More recently, the effects of the COVID-19 pandemic highlight the urgency of prioritising **sustainable funding for lifelong learning to enable a green and inclusive transformation** of our societies as advocated by the European Economic and Social Committee. (European Economic and Social Committee, 2020). As such, the development and uptake of micro-credentials across the EU are engrained in a deeper **strategic discussion about the shaping of the future of higher education** and its societal role in the realisation of a dynamic and equitable lifelong learning provision and a sustainable recovery in a post-pandemic world (Science Businesss, 2020).

The OECD found that at present there are few national funding schemes in place for alternative credentials. Moreover, governments do not seem to authorise higher education loan and grant schemes designed to support the acquisition of academic qualifications to be extended to alternative credentials (Kato, et al., 2020, p. 32). Interviews with higher education institutional representatives point in the same direction. Higher education institutions do not dispose of sufficient funds to develop micro-credentials at the scale, breadth and depth needed to have a systemic effect. National funding schemes differ across Member States, and very few of them are targeted towards developing short courses which could be the basis for micro-credentials.

Stakeholders indicate that **financial incentives can kick-start the development of micro-credentials in an academic environment**, in particular if the funds provide leverage to experiment with new approaches and concepts as well as with new models of collaboration with external partners and internally. In HEIs interviewed where micro-credentials are embedded in institutional strategies, several stakeholders highlight that the **uncertainty of the future financing of higher education impacted by the pandemic** needs to be taken into account, and it most likely can only be addressed through a European approach. The views are that the development and provision of micro-credentials that support learner journeys in an equitable way comes at a cost**.**

Strategic decisions have to be made regarding the role of micro-credentials. **Micro-credentials** may serve as **an add-on to the existing provision** of continuing education and training and mobility schemes. They may be offered face-to -face or they may evolve into blended or online forms of provision as part of a **wider digitally enabled transformation of lifelong learning**. In other sectors of the economy, digital transformation has created considerable interest from researchers looking into the impact of **digital transformation** on **business model innovation**. The business model concept basically comprises the four dimensions below:

- The user/ learner community (who)
- The value proposition (what)
- The value network - the organisation of processes, partners and resources to create value (how)
- The revenue streams and cost structures (financial sustainability)

Although the concept of a ***business model*** is relatively new in a European higher education context, it offers universities a lens for **exploring drivers of change** and fully considering learner perspectives in a **changing landscape of knowledge creation.** Moreover, a business model perspective can be a means for universities to analyse opportunities and risks emerging from increased digitalisation and data as knowledge assets, and on that basis developing a robust, forward looking strategy. In particular for the new European Universities Alliances, such a strategy process can lay the foundation for **engaging** with internal and external **stakeholders** and for joint prioritisation of future actions (Rof, et al., 2020; Posselt, et al., 2018).

Looking ahead, a sound strategy process can be a way to kick-start dialogue in the Member States about the development, provision, and uptake of micro-credentials can be a catalyst for job creation, up-skilling and reskilling in a post-COVID-19 economic recovery. Importantly, Member States should act speedily in order to build incentives and create financial means for higher education institutions to pursue the development of micro-credentials. It should be taken into account that micro-credentials could also be a means of more effectively and at scale diffusing research and innovation efforts adapted to wider target audiences.

2.3 Further drivers at the system level

Institutional representatives underline that the **diversity of regulatory frameworks for higher education** in the Member States is a factor that must be thoroughly considered as part of a sustainable European approach to micro-credentials. Some regulatory issues that could have an impact on uptake are well known, for example whether accreditation takes place at the institutional or at the programme level. However, as mentioned by one institutional stakeholder, there are likely other regulatory questions that may only be fully captured through systematic experimentation to fully understand the impact of variations in regulatory frameworks among Member States, and how they potentially could be addressed.

Some interviewees suggest **that level 5 of the European Qualifications Framework could represent a window of opportunity for the development of micro-credentials** for skilled professionals with a vocational qualification and a need to upgrade their skills in a specific topic. The demand for upskilling professionals with a vocational qualification is a pressing concern in many Member States, and micro-credentials offered at level 5 could improve the attractiveness of vocational education. In countries where lifelong learning is still an emerging priority, the provision of professional skills tends to be associated with private providers, leading to a rift between the scientific/academic- and the skills-based private provision, which can only be addressed through collaboration and partnerships which will likely require incentives.

The interviews indicate that prior experiences with MOOCs and system-wide models for public-private cooperation on skills upgrading at the tertiary level have created innovation capabilities that can be further explored and accelerated through the European University Alliances, the European Knowledge and Innovation Communities (KICs), and other European higher education networks.

Public-private cooperation on micro-credentials and the world of work can be a means to stimulate both technological and non-technological innovation capabilities in the workforce, and can drive integrative work organisation practices. Higher education representatives interviewed emphasise the need for an ongoing dialogue to fully understand the complex set of drivers that shape skills demand. They see micro-credentials as an opportunity to create a closer alignment between company innovation and upskilling and re-skilling of the workforce through pedagogical practices which emphasise that the acquisition of topic specific skills go hand-in-hand with broader capabilities such as problem solving, cooperation, and communication, which are skills that are conducive to innovation (Toner, 2011).

2.4 Experiences to build on

Micro-credentials are not necessarily innovations in themselves, but they can drive an innovation agenda in higher education, as MOOCs[5] have previously done. MOOCs are innovative approaches to higher education that have also led to the uptake of micro-credentials. However, micro-credentials may be provided in many different formats, MOOCs being just one of these. A YUFE representative highlights that some countries and higher education institutions may have an advantage in that they at an early stage engaged in MOOC development and provision, as is the case in Spain. This has contributed to pedagogical innovations in the development and provision of short courses of applied learning to adult learners, and has contributed to innovations in flexible online education including quality dimensions of teaching and learning in an online environment. Moreover, it has given the institutions insights into new user groups and their needs, which will be

[5] MOOCs- Massive open online courses

relevant for the future provision of micro-credentials whether they are offered in a face-to-face, blended, or online format.

- In 2018 about 80 Spanish universities offered free education content. This has since become an engine of innovation in higher education in Spain, and has led to the establishment of the MOOC platform MiridaX.
- Some of the policy enablers, which vary across Member States, could pave the way for the development and uptake of micro-credentials. In France, a member of one of the European University Alliances believes that apart from their previous online experiences through the MOOC platform FUN (France Université Numerique), recent years' policies to decentralise access to advanced knowledge and the personal learning account can be seen as enablers.
- In Germany, the joint project "e-CULT - e-learners and teachers" involves 13 universities and two associations in Lower Saxony. The focus of the project, which is funded by the Federal Ministry of Education and Research in Germany, is to explore success factors in digitally enabled networks (Brunner, et al., 2019, p. 60). Lessons learned can be of value in the wider European collaboration in the European University Alliances.
- The Irish Skillnet, a business support agency of the Government of Ireland comprising 70 learning networks, has the mandate to advance the competitiveness, productivity, and innovation of businesses operating in Ireland, through enterprise-led workforce development. Since its foundation in 1999 it has stimulated a network-based approach to the identification of skills needs and skills upgrading regionally and in industries. Since 2011, specific funding has been in place for upskilling at an advanced level through the Springboard initiative and closely aligned to innovation policies of the Irish economy.
- Springboard Ireland[6] was founded in 2011 as part of the government Jobs Initiative. It complements the core state-funded education and training system and provides free or 90%-funded upskilling and reskilling at the tertiary level and based on identified skills needs. As the employment situation improved, the objectives of Springboard evolved into the development of the talent base in Ireland in key growth sectors of the economy. The most recent call, the *Human Capital Initiative*, will also respond to the targets outlined in the National Skills Strategy, Technology Skills 2022, and other government strategies. It will seek to promote innovative and responsive models of programme provision enabled by the Irish national qualifications framework, which includes non-major qualifications in the form of shorter, targeted provisions. The aim is to enable the higher education system to respond rapidly to changes in both skills requirements and technology.

In response to COVID-19, the Irish government has recently launched an extensive upskilling initiative for displaced workers as well as a targeted SME initiative to support upskilling in topics relating to climate and digitalisation (Skillnet Ireland, 2020). Over the summer, a national survey on the potentials of micro credentials has been launched, seeking the views of Irish employers, employees, and other stakeholders on the current and future potential of micro-credentials (National Institute for Digital Learning, 2020). Moreover, an initiative has been launched to build digital capabilities across Irish universities, coordinated by the Irish University Association (Flynn, 2019). In Finland there is a similar initiative for the improvement of the digital capabilities of higher education institutions, and in Denmark funds were allocated by the government to increase the digital teaching skills among university staff (Uddannelses og Forskningsministeriet, 2020).

There are a range of other Member State initiatives that have the potential to act as catalysts for **a sustainable development and uptake of micro-credentials in Europe**, such as the Edubadge project coordinated by Surfnet in the Netherlands (NL-Surfnet, 2017):

[6] https://hea.ie/skills-engagement/springboard/

- In Italy, experiences have been collected on how **blockchain** can provide a secure structure for management and sharing of university transcripts based on the public Blockcerts standard and on Cineca's platform Bestr (Cherubini, 2019)**.**
- In Croatia, the University of Zagreb's computing centre plays an enabling role in the **development of a digital infrastructure** for higher education in support of a lifelong learning strategy, with the provision of micro-credentials foreseen (Softic, 2019).

Other examples are the European MOOC consortium founding partners, the five leading MOOC platforms in Europe[7]. At the sectoral level, the Irish Skillnet in the agro-food sector, *Taste4 Success*, has deployed digital badges for non-accredited learning, and although digital badges are still not well understood, the views of the employers and employees indicate that digital badges can play an important role in making learning in non-accredited education and training visible and understood (Taste4Success Skillnet & UCC, 2019). **Micro-credentials** can be a driver for wider **societal transformations** such as greening of the economy, because they can make green skills visible in the labour market in ways that are understood and recognised by employers, leading to more **effective matching processes**.

2.5 Micro-credentials - engagement of higher education staff

The engagement of staff in the development of micro-credentials is crucial to scaling and mainstreaming. Yet it is often heard that one of the biggest barriers to a wider uptake of micro-credentials is that excellence in teaching plays a limited role in academic promotion. Some Member States have recently seen a professionalisation of further education offered by higher education institutions as it has gained more prominence in institutional strategies. **Situating micro-credentials in the knowledge triangle at a local, regional, national, or sector levels** can be a **means to engage staff** in the development and provision of micro-credentials.

The advent of data-driven **open science** and open publishing has stimulated a closer **integration of research, education, and innovation**. For example, the current project AgriLink[8] has the goal of stimulating transition towards more sustainable agriculture (Ubachs, 2019). This project illustrates how open models of collaboration can create an impetus for the design of a rich learning and innovation environment enabled by digital technologies and of relevance to a sustainable European way forward for the development and uptake of micro-credentials. **Micro-credentials** can as such be a way of engaging wider groups in research and innovation outcomes, which can **reinforce the knowledge triangle** and the **societal role of European universities.**

However, some institutional representatives suggest that as the **development and uptake of micro-credentials** becomes more prominent in institutional strategies, professors may refrain from engagement in micro-credentials because doing so would require them - in addition to being teachers and researchers - to undertake and master a variety of other roles such as "writer, director, actor, and producer". One way to overcome this is to **define professional roles** and **suppor**t these with **training and development opportunities** according to the interests and capabilities of staff members across faculties, but without creating a level of specialisation so that teaching and research are no longer connected in terms of professional roles. Professionalisation of roles must be underpinned by a holistic view of **attractive academic career pathways** (Winthers, 2013; Gaustad & Paoli, 2017).

[7] https://emc.eadtu.eu/partners
[8] https://www.agrilink2020.eu/

Several **informants suggest** that a key to **motivation of staff** is **promotion principles** that emphasise **teaching excellence as well as research quality** (European University Association, 2019). Alto University in Finland has developed a highly transparent tenure promotion framework as the basis for evaluating staff performance. Performance is defined in three dimensions which have equal weight; research and/or artistic and professional work, teaching, and service, and this is underpinned by professional competence development (Aalto University, n.d.).

Building on these experiences, different policy choices emerge such as:

- Creating institutions or distributed centres of excellence, which function as beacons shaping systemic innovation;
- Stimulating public-private cooperation around societal priority areas such as greening of the economy, digitalisation, sustainability (social and economic).
- Shifting the ground rules and institutional incentives for lifelong learning provision and/or demand;
- Encouraging public-private partnerships for lifelong learning and innovation, which in turn could develop into rich ecosystems;
- Funding experimental programmes with the aim of driving system change;
- Leaving it to the institutions and their strategic planning and resources.

3.0 Reinforced cooperation between different actors

Interviews with institutional representatives illustrate how the engagement in micro-credentials on one hand is defined by explicit institutional strategies and visions of the future of higher education, while **their realisation** depends on the engagement of ambitious, **networked, and forward-looking professionals** and their **interaction** with the wider **society**. In that sense, the development and uptake of micro-credentials will most likely occur through a **mixture of top-down and bottom-up strategies**. One of the topics frequently raised by institutional representatives is the need to build strong p**artnerships** to fully **understand demands** and underpinning dynamics, as the **relevance of micro-credentials** is key to a sustainable approach. Faculty members may be part of a European network through which they are exposed to the opportunities of micro-credentials. Pilots can be a way to start small, by choosing a department as the piloting entity or by selecting a topic which can stimulate **cross-department innovation**. Due to COVID-19, interviewees emphasise that they see the European Universities Alliances and their collaboration on micro-credentials as a strategic opportunity to reconceptualise lifelong learning and how knowledge is created and shared to solve societal challenges aligned to universities' broader mission. For this reason, systematic experimentation is needed as it has implications for the very role of universities in society.

Some universities have **relevant organisational units** independent of the faculty structure. Examples include centres for university-business cooperation, innovation centres, or similar units set up to act as catalysts for futures thinking and change (Aoun, 2017). At Dublin City University, the **National Institute for Digital Learning** has such a function, and the same is the case for **the computing department at the University of Zagreb**.

From an organisational innovation perspective, units like this become *organisational middleware* between the executive level and faculties. This way they stimulate inter-faculty collaboration, which according to several informants is not a strategic priority and practice in all institutions.

Interviewed stakeholders acknowledge that the **Erasmus+ Program** is a catalyst for innovation with an initiative such as the **European Universities Alliances**. It allows higher education institutions to explore new forms of lifelong learning engagement and to learn from each other in ways that can enable innovation and at a level of scale and scope that otherwise would not be possible. There is broad recognition that European programme funding is needed to stimulate the development of micro-credentials within the EU. On the other hand, informants agree that European funds cannot in the long run serve as the sole basis for a sustainable approach to the development and uptake of micro-credentials.

Concerns of institutional representatives are reinforced by Deloitte's findings in its Global Human Capital Trends report 2020 (Deloitte, 2020). Although the pandemic has highlighted that **investment in employees' long-term resilience** in addition to specific skills needs is paramount to building organisational capabilities to navigate in uncertainty, only 17% of the Deloitte survey respondents believe that their organisation can anticipate the skills their organisations will need in three years. Moreover, **84%** of respondents agree that continual reinvention of the workforce through lifelong learning is of importance for their development, yet **only 16% of respondents expect their organisation to make a significant investment increase** in this area over the next three years (Deloitte, 2020). Substantial efforts are therefore still needed to **build sustainable partnerships for lifelong learning**. A member of the UNA Europa University Alliance suggests that a European approach to micro-credentials should encompass distinct design considerations such as curriculum being challenge-based and inter-disciplinary, and that this could be translated into quality guidelines addressing content and pedagogy as a means to build a distinct European profile of micro-credentials. This could also motivate staff, who potentially could be concerned about the impact of micro-credentials on the

ordinary provision and its brand (Spackman, et al., 2019). It could also be an element in an internal governance of lifelong learning provision and quality and alignment to the institutional brand.

The European University Alliance ECIU has chosen to build its strategy on the Sustainable Development Goal no. 11 - making cities and human settlements safe, resilient, and sustainable. To reinforce this strategy, it bases its pedagogical practice **on complex real-life challenges** linked to sustainability issues. Societal stakeholders have been invited to submit authentic challenges to structure the curriculum of ECIU university's current development of micro-credentials (ECIU University, 2020).

The University Alliance YUFE has from the outset wished to establish a European University to increase mobility schemes for students and staff as part of an inclusive higher education, and a virtual mobility offer is underway as one of its first initiatives. Although the skills agenda may have strengthened interest in micro-credentials, it underlines that European **universities** have a mission and a **wider role** to play both at the regional level and by stimulating **active democratic participation** and **European citizenship and engagement in European culture** through active learning of European languages and history.

Box 1: EIT Food competence framework

EIT Food, one of the knowledge communities in the European Institute of Technology (EIT), has developed a competence framework to support professional development in a sustainable European food system comprising all stages of a professional career and different job roles. **The competence framework** includes **technological aspects of sustainable food systems** such as technology- and data management as well as transversal key competences such as entrepreneurship, problem solving, and communication. The framework is developed within the EIT Food Advance programmes for certificate courses, which are underpinned by **two sets of standards to comply with both industry and academic demands**. One is the European academic standards for certificates and diplomas, and the other for individual certification as specified in ISO17024.

Source: "Advancing careers in the food system". EIT FOOD, https://www.eitfood.eu/education/projects/professional-development-framework

Partnerships such as the EIT Food competence framework once more reinforce the need for closer cooperation between academia and the world of business, especially when it comes to the dimension of lifelong learning. By building on common goals such as supporting skills attainment for professional development, the two sectors can reinforce each other's strengths and facilitate the delivery of tools, frameworks, and micro-credentials that create a real value-added.

For higher education institutions that are part of the European Universities Alliances at the forefront of innovation in higher education, the partnerships can serve as internal catalysts for awareness-raising and engagement of faculties and external partners. Apart from providing an incentive to explore and develop **common tools and approaches**, a coordinated approach can spur the development of a **rich ecosystem,** which in turn can enhance institutional capabilities and outreach. Moreover, the relative investment and potential risks for individual institutions are reduced by combining efforts. In addition, a coordinated approach to the development and provision of micro-credentials can **stimulate educational excellence and innovation,** drawing on the specific strengths and capabilities of each institution and to the benefit of learners and the wider societies.

Dialogues with members of the European Universities Alliances and the Knowledge and Innovation Communities illustrate that micro-credentials are a growing strategic institutional priority enabled by European policy frameworks. Stakeholders underline that micro-credentials can be perceived as incremental improvements in a traditional model of delivery of education and training, but the general view is that **a**

sustainable approach to micro-credentials could entail a transformation of lifelong learning and knowledge creation which will impact the future of higher education and its role in society. One emerging finding is the strategic emphasis on the importance of distinct innovative pedagogical practices, as expressed by members of European Universities Alliances[9] and EIT Food[10]. A main theme is a focus on **learning by collaboratively solving complex genuine challenges** of **value** to **companies, citizens,** and **regional** and **local economies**. This in itself could lead to a renewed and stronger role of universities in European societies, and potentially represents a sustainable European approach that also could contribute to building a distinct European brand for micro-credentials.

The **sourcing of authentic challenges from company partners**, which is a current practice, can be further enhanced by making use of **labour market intelligence** to identify **emerging skills needs** that may not yet have become an issue in the production systems and services of partner companies. CEDEFOP's initiative regarding the deployment of real-time labour market data to enhance the skills intelligence within the EU can potentially be used to inform institutions' priorities regarding the development of micro-credentials which meet labour market needs for reskilling and upskilling as the economy transforms. Solid labour market intelligence can also enhance collaboration with external stakeholders on skills needs. One of the members of the **UNA Europa** university alliance suggests that **external collaboration** should be embedded in the **governance of micro-credential development**. This would entail that external partners with deep insights in the nature of skills demands within an industry form a board which can both assist in identifying emerging skills needs and assess the relevance of new proposals from faculty members.

The scope of the innovation ambition expressed in the interviews conducted underlines why it would be **premature to define a business model up front** for micro-credentials, but that it should be a theme **underpinning collaborative efforts** as well as in the cooperation with the European Commission. Some of the interviewed stakeholders indicated that they are at present in an exploratory phase, including in regard to extending partnerships, and therefore a variety of approaches to sustainability can be envisaged. Members of University Alliances emphasise the need to develop a shared vision for the University Alliances, which may encompass other joint activities than the development and provision of micro-credentials. A shared vision is the basis for a common approach to outreach and communication with potential external partners, including employers and learners, and internally in member institutions. The view is that this is the **key to co-shaping the value** and "**currency" of micro-credentials.** As such, a common strategic orientation of the University Alliances is perceived as a precondition to a sustainable approach to micro-credentials.

[9] https://ec.europa.eu/education/education-in-the-eu/european-education-area/european-universities-initiative_en

[10] EIT Food – European Institute of Technology-Food (knowledge and innovation community) www.eitfood.eu

4.0 The role of digital platforms for online provision

Currently, the provision of micro-credentials is dominated by global platforms[11] which typically represent numerous providers across the world and based on online provision. Some operate on a not-for-profit basis such as EdX, whilst others, for example Udacity, operate a for-profit business model, and still others, for example Coursera, utilise a mixed model. However, micro-credentials may also be offered as blended learning or as face-to-face provision. The **choice and design of models** of provision, whether not-for-profit or for-profit, will likely have an **impact on revenue streams** and the **socio-economic profile and size of target audiences**. Equitable access and participation will impose requirements on the learning environment, taking the point of departure in **learner journeys**. Experiences from Carnegie Mellon University show that the development of digital educational tools informed by learning science can lead to improved instructional designs and ways to iteratively improve educational practice and learning outcomes, whether the result of face-to face education or blended or online learning (Carnegie Mellon University, 2020). Moreover, the potential impact can be immense in the evolving ecosystems of lifelong learning, as is the case of Carnegie Mellon. In 2019 the university decided to give away a large portion of its learning science tools and source code which it developed.

Table 1: Analysis of the business model of current dominant platform providers:

Name	Description	Year of foundation and operational model	Estimated learners 2019
Udemy	An open marketplace through which anyone can create and take courses. It offers a large variety of topics with about 150,000 courses ranging from technology skills to entertainment. Udemy's business model of is based on charging instructors a fee for a course sale made on its platform, but posting courses in the platform is free. The fee may range from 3% to 75%, depending upon how the user was acquired. When learners enrol in a course through paid marketing channels such as Facebook or YouTube, Udemy will take up to a 75% cut of each course sale. Courses are non-accredited. In addition, Udemy charges a yearly subscription fee that gives businesses and employees access to platform content. NORDEA is an example of a Nordic business customer within the finance sector.	Founded 2010, for profit	30 million
Coursera	A platform that offers university-style courses provided by universities or organizations worldwide. In 2019, Coursera offered more than 3,800 courses and had 50 million registered learners across the world. The business model of Coursera is based on charging learners for attending and completing its accredited online courses as well as degrees (BA and MA). The price for subscription ranges between USD39 to USD89. Coursera PLUS gives access to over 3000 courses	Founded 2012, for profit	40 million

[11] The core of a platform business model is that value is created by facilitating exchanges between two or more independent groups often consumers and producers. platforms harness and create large, scalable networks of users and resources that can be accessed on demand. Platforms create communities and markets with network effects that allow users to interact and transact.

Name	Description	Year of foundation and operational model	Estimated learners 2019
	USD 399 pr year (2019). Coursera MasterTrach Certificates are condensed versions of a traditional Master's degree. They are called specialisations. They are normally modularised and consist of internally coherent courses typically (5_6) which at the end typically are completed with a Capstone project, offering the learner opportunity to apply what they have learned to their working context. In addition, Coursera makes money by charging a subscription fee to companies and other organisations depending upon the size of the company or organisation. Company services include various AI-based analytics tools so that a company across premises for example can track learner progress. Coursera generated about $140 million in 2018. More recently, Coursera has started testing a monthly subscription model with a fee of USD59 per month (Class Central).		
edX	A platform that offers university-style courses and provides both accredited and non-accredited courses. The initial investment l t by Harvard and MIT amounts to USD 60 million. In 2019, EdX offered 2650 courses of which 292 were micro-credentials and 10 Master's degrees. In 2019, the platform launched more than 400 new courses. The micro-credentials include four types of credentials: MicroMasters, Xseries, professional certifications, and professional education. In some instances, industry certifications, for example Microsoft certifications, may form part of an EdX micro-credential. In 2019, edX announced a paywall for graded assignments. Under this policy, graded assignments will be available to learners who purchase verified certificates. The learners who don't pay will only be able to access the content for a limited amount of time. In 2016, the revenues made were USD 54 million, but edX consistently spends more than its revenues. The changes introduced with the firewall to nudge students to opt for the paid track over the free track were designed to increase revenue and recuperate costs while still maintaining a non-profit business model.	Founded 2012, not for profit	24 million
FutureLearn	A platform that offers a range of course topics including healthcare, business development, training of trainers, and digitalisation such as fintech, but also in traditional liberal arts topics such as history. Courses are offered as micro-credentials, degrees for-free, and non-accredited short courses. FutureLearn generated about £8.2 million in 2018. In 2019, FutureLearn received £50M ($65M) in funding and launched Unlimited, an annual subscription for its entire catalogue. In 2019 the platform offered 883 courses in total. FutureLearn introduced in 2019 three micro-credentials which tie in with the European Common Micro-credentials Framework. These micro-credentials are single courses of 10-12 weeks which confer university credits (from The Open University) towards a degree or can be used as a stand-alone certificate. Two are postgraduate. The other is undergraduate level. Micro-credentials cost between US$600 and $900. FutureLearn also has a series of 2-8 courses called Programs. Most also have a final assessment. Final assessments are often tutor-marked and cannot be joined for free. The individual courses may be joined for free, but learners are required to pay a fee if they want a certificate or credit. Besides these, FutureLearn offers 18 Graduate/Postgraduate Certificates and a Graduate Diploma.	Founded in 2012 as a for-profit arm of Open University. In 2019, SEEK, Australia's biggest job matching platform became equal shareholders. Open University and SEEK each own 50% of the platform.	10 million

Udacity	A platform that mainly provides courses in the IT field to teach skills needed by employees. Udacity generated about USD 90 million in 2019, and it offered 40 unique nano-degrees with 1.5 million registered learners. Udacity was the first platform to trademark their provision with the term Nanodegree. In 2019, Udacity changed its monetisation model, effectively doubling its Nanodegree prices. Nanodegrees used to cost a flat fee - a fixed amount to access a Nanodegree for a given number of months. But in May 2019, Udacity switched to a subscription model: you pay $399 per month to access a Nanodegree. By Udacity's own account, most Nanodegrees take between three and four months to complete. This translates into an effective cost of between $1,200 and $1,600 per Nanodegree — about twice what they used to cost in early 2019. Udacity has continued to tweak its pricing model. As of October 2019, instead of paying $399 for one-month access, learners may pay upfront for several months and get a discount. So Udacity replaced flat fees with subscriptions, only to bring flat fees back six months later. Experimentations with the business model occurred parallel to hiring more mentors, offering learner support not only through chatrooms, but on a one-to-one basis to increase completion rates. To address the issue of speed-to-market, nanodegrees are now developed by smaller, leaner content-creation teams capable of producing nanodegrees more quickly and at a fraction of their previous cost. This new approach has allowed Udacity to speed up Nanodegrees rollout. Udacity released 14 new Nanodegrees in 2019 (5 more than in 2018). With the new development model, they still maintain a strong industry orientation as part of their brand. In 2019, Udacity announced four scholarship programmes which offered learners free enrolment in a nanodegree programme.	Founded in 2011, for profit	8 million

Sources: (Class Central, 2020; Valesquez, et al., 2020; Productmint, 2020)

If micro-credentials are to be offered in an online or blended format, open technical standards are key to ensuring interoperability to allow for either integration or connectivity through ecosystems. This could allow for new software-based scalable solutions, for example in connection with recognition or in the form of intuitive machine-learning enabled search for courses, as is the case with the Coursera platform. In a platform- based or digital environment the take-up of micro-credentials can be promoted via **meta-standards for digital credentials** and through potentially peer-reviewed endorsements. This is also key to enabling that micro-credentials can be stackable and offer personalised learning pathways should a learner decide to follow courses from more than one institution.

Globally, the role of digital platforms has gained traction in the provision of micro-credentials developed by higher education institutions. The global platforms tend to also include other forms of credentials, for example provided by the big IT companies such as IBM and Microsoft. The ***platformisation* of higher education**, as some have called it, is driven by a complex interplay between technical architectures, pressures on existing business models and revenue streams, and **opportunities to create mass user activity and the ability to scale without the same level of costs as face-to face education would require**. However, it should be taken into account that these dynamics mirror that the evolution of *platforms* at present is dominated by the USA, which was also raised as an issue in discussions. The costs of studying in the US at a university, also the public universities, has increased massively in recent years, which has accelerated the platform evolution and the development and provision of alternative credentials, and was particularly at an early stage seen by some institutions as a way to democratise access to higher education. These underlying drivers and differences in these are important to understand, as the drivers in Europe to some extent differ.

In June 2020, the Australian government announced the launch of a national platform and marketplace for micro credentials with an initial investment. It will initially encompass 54 providers and a total of 344 online courses, and it is part of Australia's strategy for post-pandemic recovery (ZDNet, 2020). The **OpenCreds framework** was adopted after intensive consultations to provide a common structure for the delivery of micro-credentials across higher education, vocational education and industry. The framework makes it possible for providers to offer short and stackable courses ranging from 2.5 hours to 150 hours of learning that lead to credit in a formal qualification, are recognised by industry and with a high-quality learning experience. To accelerate the growth of a marketplace for micro-credentials, the company behind the OpenCreds framework and Open Universities of Australia have decided to jointly fund the development and design costs for up to 30 **Open Creds** through the creation of the **Open Micro-credential Development Grant** that is valued at AUS$ 750.000 (StockHead, 2020).

A European **sustainable approach to micro-credentials** with uptake and provision of micro-credentials at scale will require **digital infrastructures** and the digitalisation of institutional processes, while building on already existing infrastructures to fully support the diversity of learner needs, to open up pathways, and to ensure equity in a digital or blended learning space. The European Commission could support that the diversity of learners is taken into account by setting the conditions for funding - i.e. supporting proposals that work with agreed standards. It is particularly important that open standards for digital learning infrastructures are supported, as some technological components may quickly be outdated. **Open standards** are therefore key to ensuring **interoperability** as technologies evolve, and a European approach must entail links to existing infrastructures and governance structures in education and lifelong learning, building on transparency in the offer to stimulate trust in micro-credentials. As the offer of micro-credentials further develops it is likely that peer-reviewed and data-enhanced solutions will evolve based on data on the outcomes of participation (Callahan & Petronio, 2018) in addition to formal quality assurance solutions.

Over time, institutions may choose to standardise processes to ease access for learners by creating a **single gateway** to their course offer to ensure a coherent engagement strategy with learners.

- Institutions may for example choose to **spin off their offer as a subsidiary**. This has for example been the case with Edubits offered by the New Zealand Otago Polytechnic (Preasant, 2020).
- In the wider Toronto region in Canada, E-campus Ontario is a network of colleges and universities in Ontario funded by the Government of Ontario to be the centre of excellence in online technologies and online learning.

Digital infrastructures will be needed whether micro-credentials are offered face-to-face, online, or in a blended format, in order to be able to get a full overview of the offer and to support sharing and portability of micro-credentials. This will require investments up front, which could have implications on business models. A number of business models emerge from the MOOC literature such as supplementing the existing offer to attract new learner groups, partnerships with enterprises, foundation funding, subscription services, *freemium* models (charge for additional services such as assessment and certification), and government- and regional funding (Farrow, 2019). However, these models are not directly applicable because micro-credentials may be offered with different integrated levels of learner support, and the models have not been analysed with a view to sustainability.

Micro-credentials may be offered in other formats than as blended or online learning; they only need to be certified digitally. At present however, the global provision of micro-credentials is primarily offered in an online format and the infrastructures are in general characterised by a limited learner support, although Coursera has more recently implemented AI-enabled tools to support learners in making informed choices about course participation by offering more intuitive skills-based searches.

Although research on participation patterns and outcomes is still scarce, the emerging data on patterns of participation and benefits suggest that in more advanced economies it tends to be the well-educated and employed professionals who benefit the most from the provision of online micro-credentials (Hollands Fiona & Asiya, 2019). However, international research suggests that if **micro-credentials** offered online are to **increase equity**, then the **design of the digital learner space** should take its point of departure in the **learner journeys** and the **diversit**y in these, with **tools and mechanisms** which can **support and guide new learner groups in each stage of the journey** regardless of their employment situation. If digitally enabled, learner data coupled to research findings in learner science can continuously improve learner experience and learner outcomes. **Funding and substantial expertise will be needed to develop digitally inclusive learning spaces, which in turn can lead to new digitally enabled ecosystems**. Some institutional representatives foresee that the European Commission could support the evolution of an **API-based digital infrastructure** based on **open standards**, on top of which European University Alliances and other institutional players could **develop their ecosystems** for digital services and solutions.

In this context, micro-credentials offered in online and blended formats can potentially further enhance out-reach and participation in lifelong learning, thus stimulating inclusion rather than perpetuating the patterns identified above. It is however also recognised that this will require embedded support mechanisms which are not present in the current global platforms.

The European approach to micro-credentials entails that they may be provided in face-to-face, in blended, or in online formats. Such **hybrid learning spaces** could evolve as a means to support diversity and inclusion, and the views are that learner centricity will lead to innovations in the **conceptualisation of lifelong learning** and how **knowledge is co-created and shared** which differ from the current global provision of alternative credentials. One consequence is also that a European approach will likely not entail a single, uniform business model, but will instead stimulate **design thinking** as a means to drive **learner-centric solutions.**

5.0 Conclusions

In many Member States there are experiences from previous national and European collaboration on the provision of online learning in the form of MOOCs. They have not only led to innovations in delivery formats, but also in pedagogical practices in order to meet new learner groups. As such these experiences have a wider value that is relevant to future developments of micro-credentials regardless of delivery formats. Tools have been developed through the ERASMUS programme, for example relating to badges and to recognition, which can contribute to the evolution of a European approach to micro-credentials. Moreover, the **institutional collaboration** among higher education institutions which has evolved through the **Bologna process** has created a level of **trust among institutions**, which is a critical **asset** for the development of a **shared vision** and a common approach to micro-credentials. All of these experiences are recognised by the interviewed institutional representatives as building blocks to a sustainable European strategy for micro-credentials.

Likewise, interviews point to **national policy enablers** such as the Irish Skillnet initiative, the French personal training account (Compte personnel de formation),[12] and the Italian university experiences with blockchain (BESTR Blog, 2019).

Interviews highlight that **institutional investments in micro-credentials** are driven by institutions which strategically **put a premium on shaping the future of higher education** and which have processes, incentives, modes of collaboration, and metrics in place in support of this, and this is furthered in the way staff is recruited, promoted, and developed. **Strategic choices will have to be made**, according to all interviewed institutional stakeholders. Micro-credentials in the European lifelong learning space could result in **incremental improvements** in the existing delivery models, **or** they could contribute to a **transformation and re-envisioning of lifelong learning** and how knowledge is created, shared, and certified to the benefit of labour markets, enterprise creation and innovation, and civic engagement.

Several reflections emerge from interviews with members of the European University Alliances and the Knowledge and Innovation Communities under the European Institute of Technology, which potentially can feed into a sustainable European approach to micro-credentials:

- **Micro-credentials** should be **aligned** to the wider **societal mission of universities** as a distinct feature of a European sustainable approach to micro-credentials. Although there are some lessons emerging on not-for-profit and for-profit business models in the area of micro-credentials, the evidence is sparse. The interviewees therefore conclude that **systematic experimentation will be needed** to **explore and assess user cases** and different **approaches to sustainability in scaling** the development and provision of **micro-credentials.** Moreover, an experimental approach can allow exploration into emerging concepts for collaborative learning, knowledge creation, and knowledge sharing through problem solving. This can potentially drive innovation and civic engagement in novel ways at the local and regional level. The role of data in improving teaching and learning processes and learning outcomes is also brought forward as an innovation driver.
- A distinct pedagogical approach to courses leading to **micro-credentials** building on **inter-disciplinarity and solving authentic challenges** and collaboration can enable a **unique profile of European micro-credentials**. Quality guidelines on the pedagogical design of courses leading to micro-credentials can be of value to institutions which are new to such pedagogical practices.

[12] https://www.moncompteformation.gouv.fr/espace-prive/html/#/

- It is a common reflection among the members of the consultation group and institutional representatives interviewed there will be a need to review and **potentially revise national regulations,** so that learners can fully benefit from micro-credentials and to stimulate European collaboration. The views are that **European collaboration** on the development and provision of **micro-credentials will help identify whether there are potential regulatory barriers to uptake.** It is likely that barriers cannot fully be identified at present, as micro-credentials are an emerging field. Revision of national and European regulatory frameworks should therefore occur in close dialogue with stakeholders and emerge from practice.
- There is a general agreement that a European **sustainable approach to micro-credentials** with uptake and provision of micro-credentials at scale embraces the societal mission of universities. The views are that sufficient scale and outreach will require **digital infrastructures** and digitalisation of institutional processes, while building on already existing infrastructure with the aim of **supporting the diversity of learner journeys** in a digital or blended learning space.
- There are opportunities to integrate visualised and easy-to-understand **data about skills and labour market intelligence** emerging from CEDEFOP's research and development efforts[13]. Solutions developed can **assist learners in making informed choices** about course offers in areas with growing skills demands in ways that can support equity of opportunity. Labour market intelligence can also **assist institutions in prioritising the development and provision of micro-credentials** which are aligned with the societal mission of European universities, a key priority brought forward by institutional representatives.
- The interviews underline that current European efforts in micro-credentials are founded in ambitious visions. However, high quality micro-credentials and underpinning structures to support learning and collaboration come at a cost. **External funding** is considered to be key to ensuring a **sustainable approach to micro-credentials** in Europe **underpinned by a vision of the societal role of universities**. Although specific national and European grants and pilot schemes are appreciated, such schemes risk leading to short-term orientation to meet specific programme targets. **Achieving a systemic impact of micro-credentials** will require a strategic approach to investment at the European, national and local levels. Funding instruments such as those supported via the Erasmus+ programme can be catalysts, but a strategic funding framework will be required to support the transformation agenda of higher education. Collaboration on micro-credentials could subsequently become a response to upskilling and civic engagement and promote innovation-driven revitalisation of European economies and societies post-COVID-19.

[13] https://www.cedefop.europa.eu/en/events-and-projects/events/real-time-labour-market-information-and-skill-requirements

6.0 Questions for further reflection on 16 September

Group 1: Financial and non-financial drivers

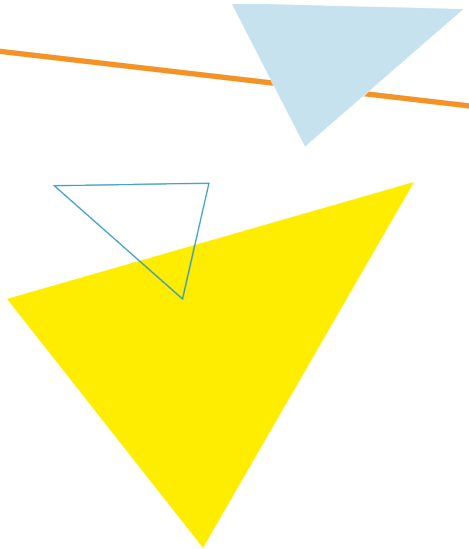
- What are the best ways forward to engage Member States' authorities in the development and implementation of a European approach to micro-credentials? What is the value added which should be communicated and discussed?
- What role can national or European funding play in strategic decisions regarding micro-credentials? How could pilot funding create a solid basis for strategy formulation and implementation?

Group 2: Reinforced cooperation between different actors

- What are the most important measures and steps at institutional level to ensure a sustainable approach to the development and uptake of micro-credentials?
- How can we foster deeper cooperation between higher education and the private sector to ensure quality of the micro-credentials offered by academic and non-academic providers?

Group 3: Digital platforms for issuing micro-credentials

- What are the characteristics of sustainable platforms to offer courses that lead to micro-credentials that can support the diversity of learner needs and ensure equity in a digital or blended learning space?
- What would be needed to foster the inter-operability of various platforms?



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Directorate-General for Education, Youth, Sport and Culture
Directorate B — Youth, Education and Erasmus+
Unit B.1 — Higher Education
E-mail: EAC-UNITE-B1@ec.europa.eu
European Commission
B-1049 Brussels

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