Challenges and Opportunities of Micro-Credentials in Europe

Briefing Paper on the Award, Recognition, Portability and Accreditation of Micro-Credentials:
an Investigation through Interviews with Key Stakeholders & Decision Makers

This analysis is the report from an investigation aimed to identify the main methodological and operational challenges in recognising micro-credentials, both for purposes of academic recognitions as well as for employment, in order to create a Recognition-Framework for Micro-Credentials in the Higher Education context.

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Supporting Future Learning Excellence through Micro-Credentialing in Higher Education

This analysis is the report from an investigation aimed to identify the main methodological and operational challenges in recognising micro-credentials, both for purposes of academic recognitions as well as for employment, in order to create a Recognition-Framework for Micro-Credentials in the Higher Education context.

Coordinators of this work: *Fondazione Politecnico di Milano (FPM - Italy), Duale Hochschule Baden-Württemberg (DHBW - Germany)*

Participants: *Knowledge for All (K4A - UK), Tampere University (TAU - Finland), Vytauto Didziojo Universitetas (VMU - Lithuania), European Distance Education Network (EDEN - UK)*

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Premise

This investigation on *"Challenges and opportunities of Micro-Credentials in Europe"* **has been carried out within the EU funded Erasmus+ international project MicroHE, "Supporting Learning Excellence through Micro-Credentialing in Higher Education"** that aims to provide the most comprehensive policy analysis yet conducted of the impact of modularisation, unbundling and micro-credentialing in European Higher Education

To find out more about the project see the last paragraphs of this briefing paper and the MicroHE website: https://microcredentials.eu/

Aim of this investigation

This investigation's main purpose is to create a **briefing paper that will identify the main methodological and operational challenges in recognising micro-credentials, both for purposes of academic recognitions as well as for employment. It is based upon a set of interviews with key stakeholders (students, institutions, governments and employers) at regional, national and European levels and identify the areas in which current European recognition instruments fall short.**

This allows the MicroHE project to either:
- A. **provide better explanations on how to use those instruments in the context of micro-credentials;**
- B. **suggest optimizations to the instruments supporting micro-credential provision.**

In a few words, we wanted to learn about challenges in recognising Micro-Credentials and the suitability of our proposed solutions in the form of a Credit/Module Supplement and an accompanying Users' Guide.

Interviews methodology

Period

The analysis has been carried through a set of interviews done in a period of time spanning **from July 2019 up to November 2019.**

Target

The target interviewees were split in four different categories:

A. **Students** (ca. 10 interviews with a diversity of countries represented;
B. **Teachers** (from Universities/HE institutions or other HE professionals): ca. 10 interviews with a diversity of countries represented;
C. **Employers** (such as recruiters, CEOs, etc…): ca. 10 interviews with a diversity of countries represented)
D. **Regulators** (such as decision makers, from governments/ministries/accreditation agencies): ca. 10 interviews with a diversity of countries/levels represented.

Each partner aimed for 8 interviews, 2 from each group (students, HEI representatives, employers, regulators).

The project team members involved them through:

● personal/professional contacts;
● career services of the partnership universities;
● other professionals involved in one or more of MicroHE related projects.

Numbers

Interviews were carried in the partnership countries by the institutions of the MicroHE partnership:[1]

● by Fondazione Politecnico di Milano: **9** interviews
● by Knowledge for All - K4A: **5** interviews
● by Duale Hochschule Baden-Württemberg: **7** interviews
● by Tampere University of Technology (TAU): **8** interviews
● by Vytauto Didziojo Universitetas (VMU): **8** interviews
● by European Distance Education Network (EDEN): **9** interviews

The total is **46.**
Divided per countries (as most partners targeted international samples):

● **Finland: 9** interviews (8 by TAU, 1 by EDEN)
● **France: 1** interview (by K4A)
● **Germany**: **8** interviews (7 by DHBW, 1 by K4A)
● **Hungary: 3** (by EDEN)

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[1] See here: https://microcredentials.eu/partners/

- **Ireland: 1** (by EDEN)
- **Italy**: **9** interviews (by 8 FPM, 1 EDEN
- **Lithuania: 8** interviews (by VMU)
- **Portugal: 1** (by EDEN)
- **Slovenia: 3** interviews (by K4A)
- **Spain: 1** interview (by FPM)
- **Sweden: 2** (by EDEN)

Anonymity

Although most of the interviewees didn't have any issue in having their names explicitly mentioned in this paper, some preferred to be kept anonymous. **Our decision is therefore to not mention any name, but to refer to them in the quotes as, for instance, [Employer, Germany].**

Means

Interviews have been carried in one-to-one settings, in most cases face to face, but also by phone or video-conferencing systems. The average length of each interview is estimated in about 45' to 1 hour.

List of MicroHE team interviewers

The interviewers are all project managers and researchers of the MicroHE partnership institutions.

- **Matteo Uggeri, Laura Barlassina** and **Stefano Menon** - Fondazione Politecnico di Milano (Italy);
- **Davor Orlic - K4A**
- **Jochen Ehrenreich, Raimund Hudak - DHBW**
- **Elena Trepulé - VMU**
- **Ira Sood - TAU**
- **Kinga Szokolay, Andras Szucs - EDEN**

Authors of the report

The writing of this report was then conducted by **Matteo Uggeri** and **Laura Barlassina** of Fondazione Politecnico di Milano, then peer reviewed by the whole project team.

Results

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As a general finding, the project team members directly involved in this analysis reported the experience of the interviews as a formative and fruitful conversation between the interviewer and the interviewee. In many cases the team members reported how this dialogue became more a mutual exchange of information and not a one-way interview.

All interviews went smoothly, and **the interviewers gathered a useful and diverse set of information that was first collected in the form of rough minutes in each partner's own language, then assembled in a set of 6 Summary Reports, one per partner. Fondazione Politecnico di Milano, as a leader of this specific project Intellectual Output, provided an Overall Summary Report, that is actually the document you are now reading.**

Micro-credential: still a barely known or foggy term

A very general impression is that, apart from some experts in the field of educational policies (so the fourth of our interviewees category), **most people not have a clear idea, or have very little knowledge of what the term micro-credential might mean.** In most cases, especially when dealing with students and employers (so those who are not working for institutionalised educational entities), the term is totally unknown. **Nevertheless, when described in the way MicroHE proposes its set of definitions, the interviewees understand quite quickly its meaning and often even its potential.**

The MicroHE micro-credentials proposed definition

For the record, this is the way we introduced the basic concepts after having heard each interviewee's definition, for the purposes of the MicroHE project:

Proposed definitions by *MicroHE*

Educational credential — **is a documented statement that acknowledges a person's learning outcomes.**

Micro-credential — **is a sub-unit of a credential that could accumulate into a larger credential or degree or be part of a portfolio.** Examples are: Verified Certificates, Digital Badges, MicroMasters, Nanodegrees.

Short learning programme (SLPs) or short degree programme — **is a group of courses with a common subject** which are typically part of a larger degree. A short learning programme usually has between 5 and 30 ECTS.

MicroHE - Erasmus+ project

In each interviewee category, **we had some few exceptions of very experienced people on the subject,** but this can be also roughly related to the fact that, as mentioned above, part of the interviewees are acquaintances and direct contacts of the MicroHE team members.

But the familiarity with the concept and its related potential varies among the four categories. The following part of this report will present the results for each, and then describe some overall conclusion.

Students

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Common understanding

Very few students know the term micro-credentials, but most of them clearly understand their potential and the benefits they could offer.

As said, there is a lot of confusion and misunderstanding when it comes to the term micro-credential among almost everyone. However, students seem to be the closest to the actual idea among all stakeholders, since they are the ones facing the real life scenarios where they feel the need for micro-credentials.
Most students think micro-credentials are a way to acquire more competencies and in some cases competencies that are not offered (or poorly offered) by the institutions they are enrolled in without having to partake in full-length degree programmes.

We collected interesting definitions when we asked them their own view on micro-credentials. Here are some of them:

"A certificate of gained new skills and knowledge" (Lithuania)

"A digital proof of an attended course/event or obtained skill, which can be given not only by accredited institutions." (Hungary)

"Acknowledgment of non-formal educational or practical experiences, which supplement your studies." (Slovenia)

"A proof of the knowledge acquired or of the skills developed concerning a well-defined area of some applied sciences. Documentation of the learning programme, definition of the learning outcomes and

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3 Photo by Geralt - CC- https://pixabay.com/it/photos/studenti-imparare-libri-vai-3982520/

accreditation of the issuing institution guarantees the credibility of the micro-credential. A micro-credential can be recognised as part of further studies without passing an exam." (Hungary)

"An internet course (10-40 hours), mainly with videos and small quizzes at the end of each section to test your understanding. In the end you will receive a certification." (Germany)

They all share a general understanding of what micro-credentials are, but highlight different aspects of them, and these quotes are interesting material when confronting the other interviewees definitions that we'll report in the next paragraphs.

Recognition and portability

As declared before, this report is not meant to provide statistics, as the sample is very small and the goal is oriented to provide the overall perception of the knowledge about micro-credentials and their potential. Said this, we can declare that a very small number (about 3) of the students we spoke with had experiences with micro-credentials, and even less tried to make them recognised by their universities, where none succeeded in the attempt.

Those who made some short course declared that **since universities are strict with their requirements, which usually do not allow recognizing or validating micro-credentials, the students don't think of asking to somehow accept their gained ones.** Earning a micro-credential makes less sense for them for the same reason.

Experiences excerpts

It seemed that the students opted for the additional courses since their university did not offer those particular courses. The most extreme case collected are the followings:

1. A student (Finland) tried all avenues possible in the traditional university pathway before opting for the course outside university, for e.g.: he checked all the universities in the country for similar courses, ultimately he found one but the university expected him to register for an entire master's degree programme to get access to that one single course.
2. A student (Italy) had wanted to make a changeover of field of study within the same faculty. After having attended the first year of Interior Design, she then moved to Product Design, so she had to ask for the validation of the exams. Four of the exams already taken were not validated despite the similarity of the themes. One subject, for instance, was divided into three sub-modules (each run by a different professor) and, due to the slight difference of only one of these modules, she had to take the entire exam again once she entered in Product Design.

These are strange anecdotes, but significant stories to be shared when focusing on the usefulness of micro-credentials, within the same country or even the same university or faculty!

Recognition as an additional feature: the focus is on quality and access

We can also state that **the recognition is generally perceived as an 'additional feature', that can be nice to have, but not necessary. Overall students want to have the ability to access quality content from outside sources (another institution or online) either to develop personal interests and /or hobbies or for advancement in their workplaces.**[4] Although they would appreciate credentials for it, they are also okay to

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[4] We need to underline that most of our interviewed students already have workplace experience as employees.

do it just to attain a certain competency depending upon the context. **The most relevant aspect for them is access, so here is an evident connection with the Open Education principles.[5]**

Students also considered the quality and depth of the short courses when going for Open Education sources. They can find courses that are more up to date with the latest developments and can be personalized to their schedules and capability.

In general, they think that SLPs/micro-credentials can offer them, in comparison to traditional 'long' degree learning paths:

- **More focused content**
- **More practical learning experiences**
- **More updated information**
- **More personalised learning**
- **More open access to knowledge**
- **More flexibility in planning the studies**

Expectations on Active Learning and Flexibility

When asked what they expected from their university regarding micro-credentials, they resignedly state that they do not expect anything, but would like to get recognition when entering a degree program.

Several students mentioned the need for more flexibility in terms of planning their studies, which they felt could be achieved if there were a provision for something like micro-credentials. They also expressed ideas about having micro-credentials for courses that were more interactive in nature, and indeed this confirms the powerful connection to the Active Learning subject.[6]
Most importantly, they want universities to model their courses in a similar manner to the courses offered by online platforms.
Having a separate page on the diploma that is devoted to micro-credentials earned during their degree programme was also suggested.

Provision

It's clear now how **students like their universities to adopt a micro-credentials strategy, offering more SLPs.** Not just their own universities, but **students expect all universities to have that strategy** as it is fair to students who want to enrol in a small course or programme instead of a traditional large degree. An interesting finding is that **this is especially useful in today's environment where most students have part time or full time jobs along with their studies.**

> *I would be willing to pay extra for having this opportunity of getting micro-credentials to move from one university to another more easily! (Student, Finland)*

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[5] "Open education is education without academic admission requirements and is typically offered online. Open education broadens access to the learning and training traditionally offered through formal education systems. The qualifier "open" refers to the elimination of barriers that can preclude both opportunities and recognition for participation in institution-based learning. One aspect of openness or "opening up" education is the development and adoption of open educational resources.
Institutional practices that seek to eliminate barriers to entry, for example, would not have academic admission requirements." - from Wikipedia [December 2019 - https://en.wikipedia.org/wiki/Open_education].
[6] See also the eLene4Life "Transnational Analysis on Innovative Higher Education Learning Models on Soft Skills", by Mirela Mazalu et al., 2019 - http://elene4life.eu/project-outputs/trans-analysis-he/

Motivations

Student would also appreciate if the participation at a conference would be acknowledged, since this would serve as motivation to attend.

Examples of open and short learning experience that students exploit include badges earned in non-university contexts, workshops, even YouTube video-based courses, Wikipedia, Canvas…

Nowadays students (and not only, we're talking in terms of a real life-long-learning perspective) need practical knowledge focused on updated competencies required by the labour market, or just strongly connected to their own personal needs, as hobbies or side-careers.

Focused competencies mostly related to in depth and practical knowledge about a certain topic are what they need.

Transversal study paths

A very interesting finding is the suggestion from some students concerning the need/desire to learn along certain 'paths' that have no direct connection to what the universities can offer.

> *I'm very passionate about the subject of the study of [physical] materials. I first thought of doing Materials Engineering to deepen the subject, but after reading a book on the processing of materials for art, I realized how certain topics are transversal and can therefore be touched by several different degree courses, so I opted for a degree in design at the moment. Actually, the point is that I don't know if I want to become an engineer or a designer, or even an artist. Actually it is not even that important, as my passion is for materials. (Student, Italy)*

It would therefore be useful for students to have the opportunity to attend (and have certified) individual courses within different universities to build their own path based on their interests, that might be transversal to structured university courses.

When talking of complementary subjects, as an example, one student (Hungary) who was enrolled in a master's degree business programme wanted to develop Design and User Interface skills, which he could not do in his programme, so he searched for such courses, thought those kind of competencies could be covered under micro-credentials as well.

A Slovenian student was curious in particular about Erasmus exchange students and international summer schools or additional language courses. She wanted to know if non-formal learning and practical experience can be expected to be issued in the form of micro-credentials, and be recognised by EU policies.

Assessment and certification

Certification and assessment of learning opportunities offered by SLPs or other forms of education is a debated topic: some think that it is nearly useless, because it is not recognised by universities. **The demand for practical, focused, updated and high quality learning is crucial, but its certification is perceived as optional. The acquired skill is far more important than the certification.**

> *It would be okay to just learn something without a certificate if I actually developed a noteworthy skill (Student, Finland)*

In general, some student stress that, if you start to work in a new area, it's useful to prove your knowledge in that, in lack of direct experience. But, in very logical terms, interviewees admit that, if the assessment is acknowledged by institutions and employers, it's useful.

Creative outputs and portfolios against certification

In general, students feel interested in having a personal portfolio of all their learning achievements, but they see its use quite limited, as they are aware of the fact that most universities are not recognising it.

Among the provided examples, **the creative field has notable peculiarities, as portfolios or actually any real product (eg. a software, an illustration, an infographic, a video game…) is more significant than any certificate. It's the evidence of someone's ability in doing something.[7]**

> *In case of a project methodology like building a website or the first app of your life, certification is not important, because the product you do is the learning outcome, and at the same time, it is the proof of your knowledge. Language is similar from this point of view… if you want to be a journalist, better show how you write articles than a certification that you're able to do it. (Student, Hungary)*

On the other hand, if your (creative or not) studies concern a composed field, like in the music industry, where you face recording, touring, booking an artist etc., and your experience does not yet cover all the fields, certification (and so micro-credentials) can be useful.

Accreditation

Concerning accreditation, we can say that the answers were divided, while some students thought accreditation for any amount of learning is crucial, the other ones were interested in acquiring the skill rather than any official evidence of it.

> *If a course crosses a certain threshold of time needed to devote to it, then accreditation is necessary. (Student, Finland)*

They all declare that also stackability is important, but only after having been explained what we mean on that, as it's a complex concept.

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[7] See also the Regulators chapter, where we'll report similar findings from the government and the university side.

Universities and HE institutions

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Common understanding

The answers we collected from this group are more varied than the ones from the students. This is also due to the heterogeneity of the group, that included teachers of different ages and subjects.

Obviously, in the academic system, more people are aware of the term, but the definitions given vary consistently. Here we can report a few examples:

"A stackable credential which is smaller than a credit." (Lithuania)

"The smallest obtainable unit. Something that can't be decomposed in anything less, if it would be less then you wouldn't be able to give any credits." (France)

"Any formal and often informal recognition" (Spain)

"A sub-unit of learning that can be stacked up with other sub-units of learning to form a credential and which allows the learner to 'step on, step up, and step out' from their study depending on their objectives and personal circumstances." (Ireland)

"A credential very focused on specific, short and contextualized learning path, part of a larger context." (Sweden)

"The formalization of a competence in something." (Italy)

"Recognition of certificates of participation from anywhere." (Germany)

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8 Photo by Wikidata - CC - https://www.wikidata.org/wiki/Q392904.

Approximately, we can state that there is really no common understanding, and **the interviewee are often convinced that a micro-credential is less than an ECTS credit**, which is not what we meant within the MicroHE partnership.

It's interesting to note how **some of the interviewees** (we'll discover this also in the Regulators and Employers category) **relate the 'micro' to the competences/soft skills**.

However, most of the interviewees agree on the MicoHE proposed definitions, while a few mentioned the badges as the first 'thing' they have in mind when mentioning micro-credentials.

Most are aware of the fact that recognition and validation are at the moment relevant essentially (or only) in the international student mobility system.

As an example of the whole process, we can report this quote from one of the interviewees:

> *"Before going abroad, our students sign a learning agreement with the international office, for which they consult the course director (me). Often, they discover during their stay abroad that they better take other courses than planned in the learning agreement. We try to recognize as much as possible, because in our dual system, the student really should finish with a bachelor's degree after 6 semesters. Extending the length of the studies due to a stay abroad is not an option. " (Course Director, Germany)*

Recognition and portability

When asked about how often students ask for recognition of outside learning as ECTS credits towards a degree, the interviewees replied in different ways, but in general is 'seldom', with a few exceptions. Only one from a Swedish university said that this happens very often.

> *"It is difficult to say how frequently, but after each admission, there are several students who bring their academic records and ask to recognise them." (Lithuania)*

> *"Commonly done especially in MBA studies." (Finland)*

> *"2-3 times per year in total, so not that much." (France)*

> *"So far it is not very popular nor recommended by us that our students should use micro-credentials to deepen their knowledge and improve their skills. We are planning an initiative as part of our strategy to extend our learning programmes in IT, that will include micro-credentials. Especially in study programmes like IT with a wide range of learning opportunities, we have to open up our institution and recommend to our students MOOCs in areas where they want to become specialists, e.g. IT security." (Germany)*

When asked to teachers, they often declare that they cannot take the decision on this, so they tend to direct the students to the official bodies within the university that is in charge for this. And this also varies from country to country and case by case.

The recognition decision can be therefore taken by very diverse entities, but we have to underline that most of the interviewees are teachers, and they are not directly involved in this process. So in most cases they had a foggy idea on this, very uncertain.

As a pure example, we mention here some of the answers on who takes this recognition decision:

"Head of the program/ Committee and the teacher of similar subject" (Lithuania);

"On a case by case basis by mostly professors, study officers or programme coordinators. There is no clearly defined process" (Finland);

"The jury for the masters' programme, the doctoral school board" (France)

"At faculty level" (Sweden)

"At department level" (Ireland)

"Vice-rectorate for teaching" (Spain)

"The course director" (Germany)

"The teacher of the course" (Italy)

The latter one was done by a teacher of a Master Programme at a private online only university, so he underlined the fact that recognition, for such universities, is an extremely important issue, as one of the goals of the university is to attract and welcome as many students as possible.

An interesting case is again the private and fully online Spanish university, that provided very specific online courses for teachers and militaries of South american countries (Ecuador in particular), that need very specific certifications defined at government level. These are mentioned as the only cases of explicit requests of such kind.

This university also provides "Titulos proprios" (sort of "Own credits"), which differs from both degrees, bachelors, PHD. These cover 6 ECTS, and are made fully online. Most are teacher training courses, like one offered by the Spanish online university UNIR.[9]

Methodological and operational challenges

When asked about the challenges in adopting micro-credentials, most of the interviewees agreed in a set of issues that can be listed as follows:

- Bundled pre-designed learning programmes, hard to be sliced in sub-units;

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[9] "Curso de Adaptación al Grado de Trabajo Social para Diplomados" - [UNIR website - December 2019 - https://www.unir.net/ciencias-sociales/curso-adaptacion-trabajo-social-diplomados/549200001479/]

- Differences in course descriptions such as learning outcomes, especially when very similar courses are compared;
- Lack of trust between different institutions;
- Learning hours and outcomes misuration;[10]
- Identity verification;
- Assessment of process and methods;
- Huge administrative challenge in changing the rules and regulations in the whole EU system (as we'll also see in the chapter on regulators).

All of the interviewees agreed that the challenges may differ from credential to credential.
HE representative are also aware of the point of views of students (see previous chapter), when stating that, especially in the case of working students (who are among the main potential users of micro-credentials their focus is more on learning quality rather than on credentials.

Even within the same institution, learning outcomes, course content and quality vary over time or between instructors, so the recognition decision necessarily has to be made with incomplete information.

> *"I have to make an educated guess based on trust and reputation, in combination with the information provided." (Course Director, Germany)*

Institutions already supporting technical standards or plans to adapt their curricula

Here we listed the ones that emerged from the interviews, but please consider that **these are just mentions from the declarations of the interviewees that, as said above, often admitted of not being really updated on the situation, even when referring to their own institution.**

This is a further evidence that any accreditation decision in the HE system has to deal with a variable but always huge numbers of entities.

By the way, our findings in this set of interviews are the following:

- Finland set of interviewees: none
- Lithuania set of interviewees: Vytautas Magnus University (in Lithuanian only)
- Ireland set of interviewees: Dublin City University and Linnaeus University
- Sweden set of interviewees: none
- Italy set of interviewees: Politecnico di Milano[11]
- Germany set of interviewees: none

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[10] Interviewees mean the difficulty to measure the learning outcomes. The usual measurement unit is the learning hours, but many argued that it means very little in terms of what the students really learn.

[11] Politecnico does not offer digital micro-credentials but just the opportunity to enroll in single courses:
"Politecnico di Milano offers students the opportunity to attend single courses, during one semester or one academic year, choosing a maximum of 32 ECTS credits from both Laurea (equivalent to Bachelor) and Laurea Magistrale (equivalent to Master of Science) Courses, within the degree course programmes. The choice of courses will depend on the semester of enrolment. Enrolment in single courses entitles to attend lessons, sit the examinations and obtain transcripts of passed and attended exams. Please note that attending a single course DOES NOT give admission to the academic degree programme it belongs to." -
https://www.polimi.it/en/international-prospective-students/p-phd-and-continuing-education/single-courses/
[December 2019] - from the Politecnico di Milano website - see also the table hereunder for further details.

● France: none

When asked about adapting their curricula to allow more flexibility, most universities confirm that they have plans, sometimes accepting open forms of learning (blended or fully online), especially for adults, in order to "include family and working life".

Guidelines

In all cases, the interviewees declared that there are probably guidelines "somewhere", but they are not aware of them.

Most didn't had requests for recognition or validation of open or prior learning.

In most cases this is done case by case, with a process that involves personal judgement.

> *"To truly judge the competencies of a student, I would have to do an oral exam, but in most cases I don't have the specialist knowledge or the specialists for that. So I have to make a judgement based on very little information. The reversal of evidence principle is not known to me and my colleagues"[12] (Course Director, Germany)*

Consistency

Apart from a case from Lithuania, that states that the university decides, in compliance with the national regulations, in general recognition is again a 'case by case' strategy, which makes way for personal biases to influence decision-making.

Very often interviewees are convinced that no institution can ensure the consistency of decisions, they are very sceptical. No institution or department was mentioned as they would be responsible for the consistency of recognition decisions.

Automation

When asked about the part of the recognition that can be automated, **Artificial Intelligence** and **Machine Learning** are often mentioned, as potential methods/technologies, but in general **the overall opinions are divided into two separate currents: those who hope for a fully automated recognition process, and those who think that it still has to be done on a case by case basis by experienced humans** (a minority).

Potential extension of ECTS and EQF frameworks

The answers were very diverse. They all agreed that the European Credit Transfer and Accumulation System (ECTS)[13] and the European Qualification Framework (EQF)[14] should be extended or improved. On the one

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[12] He refers to the Lisbon Recognition Convention III.3 (5) "The responsibility to demonstrate that an application does not fulfil the relevant requirements lies with the body undertaking the assessment."

[13] ECTS is designed to make it easier for students to move between countries and to have their academic qualifications and study periods abroad recognised. For more detailed information please check here: https://ec.europa.eu/education/resources-and-tools/european-credit-transfer-and-accumulation-system-ects_en

[14] The European Qualifications Framework (EQF) is a translation tool that helps understand and compare qualifications awarded in different countries and by different education and training systems. Its eight levels are described in terms of learning outcomes: knowledge, skills and competences. For more detailed information please check here: https://europass.cedefop.europa.eu/europass-support-centre/other-questions/what-european-qualification-framework-eqf

hand, interviewees see it as urgent and priority issue, on the other hand, other interviewees mentioned that it might be too early to extend them now, it should be a medium- term goal.

Many teachers admit that they have a little knowledge on this, so they don't have a precise opinion.

One stated that such frameworks could mutate a little from the charities and informal sector, even taking inspiration by ECVET, where skills are more granular and practical (eg. "knowing how to give an injection").

Provision

Here is an (again incomprehensive) list of institutions offering short learning courses with credits.

Please note that this list is built ONLY from the interviewees answers.

University	Country	Courses	Level	Platform	Example (with link)
DHBW	Germany	Language courses, Intercultural Communication Scientific writing	Bachelor's level	Own platform	
Dublin City University	Ireland	Fintech, Computing	Master	FutureLearn	
TAU[15]	Finland		All levels. Open university offers it at bachelor's and masters while CPD offers for working professionals.	Own platform	
Linnaeus University	Ireland	Open courses that offer certificates.	They also have many short programmes but they all have ECTS and are part of the regular syllabus Lifelong Learning & Continuing Professional Development.	Canvas.net and Eliademy	
UNIR	Spain	Titulos proprios - 10 ECTS (250 hours, duration 4 months)	They are recognized by the ministry.	Own plattform	"Master in philosophia y religion segundo the vision of Ratzinger" (48 ECTS, 12 months).https://www.unir.net/educacion/curso-inteligencia-emocional/549200001404/

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[15] And in all Finnish universities - see under the table for a deeper explanation on this specific case.

Politecnico di Milano	Italy	2 different experiences: 1. Possibility for students to subscribe to single courses, obtaining credits after assessment. It can be done in almost/all the italian universities. Then students can use the credits to ask for enrollment on full course degrees. 2. On going experimentation with open badges, used to promote innovative didactics practices.	1. A student can subscribe to any single course. 2. Such extra credits are added to the Diploma Supplement.	1. Not digital 2. Bestr - Cineca [16]	1. https://www.polimi.it/en/international-prospective-students/p-phd-and-continuing-education/single-courses/ 2. https://bestr.it/organization/show/105
University of Pavia	Italy	ECDL / Language Certification	Bachelor	Own platform	
VDU	Lithuania	It offers short courses with credits	Ba, MA, professional studies) that are later potentially recognized towards BA degree or professional studies.	http://openstudies.vdu.lt	

Please also note that in some countries there are already country-wide specific and very advanced regulations in terms of micro-credentials.[17]

In Finland, anyone can register as a student and start taking courses from any university which can be later combined to account for a degree programme. Students can of course request for a degree if they have finished all the courses required in a particular programme but they can also have standalone credits from the courses they have finished. This happens at both bachelor's and master's level.
In this case is just about the mutual recognition of each others courses between universities. It might lead (in the future) to a micro-credential system, but it is not yet the case.

Identity verification and assessment

ID verification is really an issue and a seriously debatable topic. We go from those that declare that it's not necessary at all, to those that think that is absolutely central.

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[16] CINECA is a not-for-profit Consortium, made up of 67 Italian universities, 9 Italian Research Institutions, 1 Polyclinic and the Italian Ministry of Education - https://www.cineca.it/en. One of its representatives is involved in MicroHE and participated to the interviews as a regulator (see next chapter).
[17] Many other activities in MicroHE are exploring the situations in different EU countries, including international masterclasses and investigations with stakeholders through Delphi methods. Please see here for further details: https://microcredentials.eu/outputs/wp3/

"It is essential that we feel reassured that the credential means something. Essential that you can guarantee the quality of the credential that you are giving out and its connections to its owner." *(Teacher, France)*

Here are the commonly mentioned verification systems:

- student university ID number;
- Municipal ID number - it implies it must be officially registered as a student with the municipal authorities which further implies that their identity is verified;
- methodological recommendations to identify and authenticate the learner, annexed to QA methodology for online and blended learning.

Among the ID assessment common approaches, we found these two:

- Online test with ID check;
- Quiz based-assessement.

Accreditation and stackability

Most interviewees, being teachers, are not involved in the accreditation process, so they couldn't answer the question about the most relevant regulations for their university.

One wisely stated that we are still at the acceptance step, not regulation step.

The mentioned keywords for the issuing organisation, by the way, can be listed as follows:

- Transparency
- Traceability
- Clear visibility

"In higher education the major "currency" is learning outcomes. If learning outcomes are not assessed there is not much to be done with it at the university. While the micro courses outside universities most often do not assess learning outcomes, they do not qualify." *(Lithuania)*

Stackability is debated, again, but we believe that it has mostly to do with the fact that most of them don't really know what this means. When described, in most case they declare it's very important.

Employers

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Common understanding

A quite peculiar finding emerged from this slot of interviews is that, **in the vast majority, employers,** one of the main stakeholders of micro-credentials - being the indirect beneficiaries of this type of implementation - **have no connotation of micro-credentials or even credentials. They associated micro-credentials only with certificates of attendance of professionalized courses** (within a life-long learning or professional development programme). Merely in two cases (Hungary and Finland) we found a previous knowledge of the concept.

Recognition and portability

Micro-credentials are often associated only to the certification of participation to training courses, so not the micro-credential per se. **Indeed many interviewees mentioned the fact that in hiring decision the presence of certificates of attendance of courses focused on soft and social skills development play an important role. Despite this, employers don't have time to check all the metadata related to this type of documents due to time requirements:**

> *"Identity verification is not really important. I trust the person, that he/she selected the right course for his/her personal development. In the process of selecting candidates, I do not have the time to check all this information related to the certificates. I have to trust the system." (Employer, Germany)*

On the other hand, others stated that, whereas sometimes a certificate does not show the real competence and knowledge, they don't pay much attention to the presence of technical certifications. **Certificates are**

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18 Photo by Tumisu - CC - https://pixabay.com/it/photos/lavoro-intervista-stretta-di-mano-4131482/.

taken into account only for certain professional categories which require mandatory development (lawyers, doctors…).

Many of our interviewees **recognized the advantages of micro-credentials since they become a tool to simplify the system and allow transparency in profiles' presentations:**

> *"Special skills can be represented through their credentials. Therefore, it is a great opportunity for them: the skill one gained should not remain hidden because of the lack of portability." (Hungary)*

> *"[Micro-credentials] are useful to better classify certain types of CV and to give a linguistic homogeneity of specific professional profiles." (Employer, Italy)*

For these reasons, **employers recommend and encourage the earning of micro-credentials through internal life-long learning courses by allocating money for this type of training.**

The constant increase of this type of personal and focused training and the earning of micro-credentials can lead to a generalized professional growth and to the fact that people can become "expert" in precise fields.

> *"I am not afraid that our employees are receiving training through courses and build in-depth expertise by using and stacking micro-credentials to become experts. Some of them might leave, but on the other hand we will hire employees from the market having these profiles also, so we benefit from the training and learning activities of others. It is a give-and-take." (Employer, Germany)*

Provision

All the interviewees agreed in recognizing the importance of a training focused on specific skills. **They all stated that universities should offer more short learning programmes: this will help employers to hire more advanced and better educated personnel and they would have less money to allocate for internal trainings.** SLPs represent also a chance for employees themselves as they allow them a specific training when they have not enough time and energy to apply for a degree.

Universities should also offer their courses at all levels in a modularized structure to guarantee flexibility and diversity supporting the students in customizing their learning path relying on their needs and demands.

> *"Certificates are complexity-reducing. That is why employers want them. They don't want to have to understand what a person really studied." (Germany)*

Assessment

Assessment is not really important for the most part of employers: it is important what a person has learned and which experience he or she has. It is a matter of trusting the system because it is not something that concerns them: assessment must be done by providers.

> *"It's more important to know how the training took place, rather than how it was assessed: what is relevant is the experience that the student carries with him." (Employer, Italy)*

Moreover, employers don't understand transcripts of records because it is not their language but they understand learning outcomes. These are more important than certificates, but also certifications become not important if people are not able to demonstrate their competence.

Accreditation

Although someone said that accreditation is not important, others stated that it is a tool that gives some kind of reference for them. In this sense, **accreditation is complexity-reducing and trust-building.**

Moreover, accreditation can become important to certify intermediate levels of competency thanks to the objectivity of the evaluation. Thanks to this type of accreditation, **experiences and competencies gained in different places can be described and compared.**

> *"Through intermediate accreditation, university dropouts and internships can become measurable. In this way we could avoid the lack of assessments of incoming and outgoing skills." (Employer, Italy)*

![Erasmus+ logo]

Regulators

Common understanding

Starting from the assumption that **decision makers are probably the most confident stakeholder in micro-credentials topic,** we collected a series of interesting points of view about what can be considered a micro-credential. First of all, it can be traced back to a sub-unit of a larger learning path that, taken in its entirety, would lead to a formal and recognized qualification. Being a smaller part of it, a micro-credential can be associated to the certification of the single and specific competencies and skills acquired by attending a single sub-course. In this context emerges the concept of "micro-learning": smaller learning paths both in terms of contents addressed, but also in terms of time.

Representing the specific learning outcomes of a course, micro-credentials can be accumulated into a larger credential and/or become part of a personal portfolio. It is immediate in this sense the association with the digital badge as an award of the student.

Furthermore, micro-credentials represent a way to give value to all the forms of non-accredited and non-formal education and lifelong learning.

> *"Micro-credentials are acquaintances and features that go beyond the academic path but that should be part of everyone's life." (Regulator, Italy)*

Recognition and portability

In our ever-changing world, where almost everything has its digital counterpart, also an automatic digital recognition of competencies is taken for granted. **Non-formal and informal learning represent today a large part of the learning offerings, and their learning outcomes need to be validated and recognized as it**

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happens for formal learning degrees. Despite this, it is known that not all universities are moving in this direction and the (simplest) reason is because it is an extremely complex process.

Recognition is very important for the student, because it could be an instrument to present oneself and one's own skills. It is also important to underline that its necessity reflects a bottom-up approach because the needs come from users and technology must satisfy them.

> *"The more tools we make available, the more we give the possibility that these could adapt to specific use cases. Sometimes, only the digital badge is released; sometimes the digital badge, the blockcerts and the bachelor degree are released at the same time. A single instrument can bring to the attention of the public its own limits and only by making to the learner more tools available, we can meet the different emerged needs." (Regulator, Italy)*

Besides the correct choice of the tool to use, **recognition and portability imply the adoption of a common and shared standard; the definition of a single, formalized modality and process.**

The real issue is, for example, that there are many different accreditation systems in Europe. Although they are all based on common standards like the European Standards an Guidelines, in detail there is substantial difference. Some institutions and countries do have accreditation processes and guidelines for micro-credentials in place, but most don't. This kind of situation makes very difficult to implement any unified method that concerns portability and recognition. So, the open question is: how to reach a narrowed down standardization for micro-credentials?

Among our interviewees, someone said that standardization is an ideal, whose achievements hide many challenges: **the recognition of a micro-credential means to recognize both the authority and competence of the releasing entity but also to prove the efficiency of the programme and of the assessment.**

Integration with existing frameworks

The integration within ECTS or other frameworks is also complicated because they focus on quantity (attendance and the number of spent hours), letting the quality of the course itself and of its learning outcomes pass to the background.

Failing the attempt in finding a homogeneous and common standard, for obvious problems that concern the lack of adjustment and of willingness in changing their process in a compliant one, it is also difficult to define a common and shared dictionary. **It becomes therefore fundamental the transparency of information which the micro-credential carries with itself: the metadata.**

Provision

Getting into the context of platforms like Udacity, Coursera, Iversity, Miriadax or LinkedIn Learning, has been addressed the topic of regulation. One of the most important findings about this topic is the difficulty in doing this. Indeed, trying to regulate providers' platform of open education, one cannot ignore the fact that it is a free market.

Some interviewees even claimed that providers should not be regulated, but only those that certify the micro-credentials (universities, agencies, companies, etc.), so not the platform providers.

"Formal regulation is not necessary. A system of quality assessment should be in place. This should be in the domain of the universities, since they are offering what they already have developed and its part of the study programs." (Regulator, Slovenia)

An important concept that our stakeholders pointed out is that the focus of this type of regulation must be the needs of the learner to ensure a student-centric learning.

However, the micro-credential system must facilitate the final user, the employer, so this is another element to consider. **Trust and readability are fundamental factors in micro-credential accreditation.** All these systems must simplify the understanding of those not involved in the leaning system.

Accreditation

All the regulators recognized the importance of the assessment - and consequent accreditation - in the Higher Education sector. The complex point is always the same: how to assess this? We have not necessarily to move towards a single defined accreditation system: **we can create a network of systems in which they can communicate with each other.** In this type of network it would be useful to have a shared dictionary to allow communication between different but stackable credentials.[20]

Nevertheless, someone pointed out that the assessment of learning outcomes is very important in HE, but much less at the workplace, in which the focus is about work performance.

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[20] MicroHE is developing a prototype of a tool that can support such interoperability and 'shared dictionary' called Credentify. See the following chapter for a comprehensive explanation.

Conclusions

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Please note that these are just overall impressions collected by the project partnership, and not the point of view neither of the writers, nor of the team.

The main methodological and operational challenges in recognizing Micro-Credentials are not on a technological and practical level, but the real challenge is more cultural and structural, at government (national and international, or at least European) **regulator's level.**

So far, the 'classic' macro credential is still the main thing both in the HE and in the labour market, but things are changing quickly. Job placement companies are buying MOOC platforms, and they decide what to put on them, and therefore they will also maybe heavily contribute to drive the changes in the accreditation system.

> *"Perhaps the sequence of studies will be reversed: first the micro-credentials or short courses (unbundling education): first I find a job doing a micro-course, so I have the specific skills for that job, then later I enroll in an university full degree course." (Teacher, Spain)*
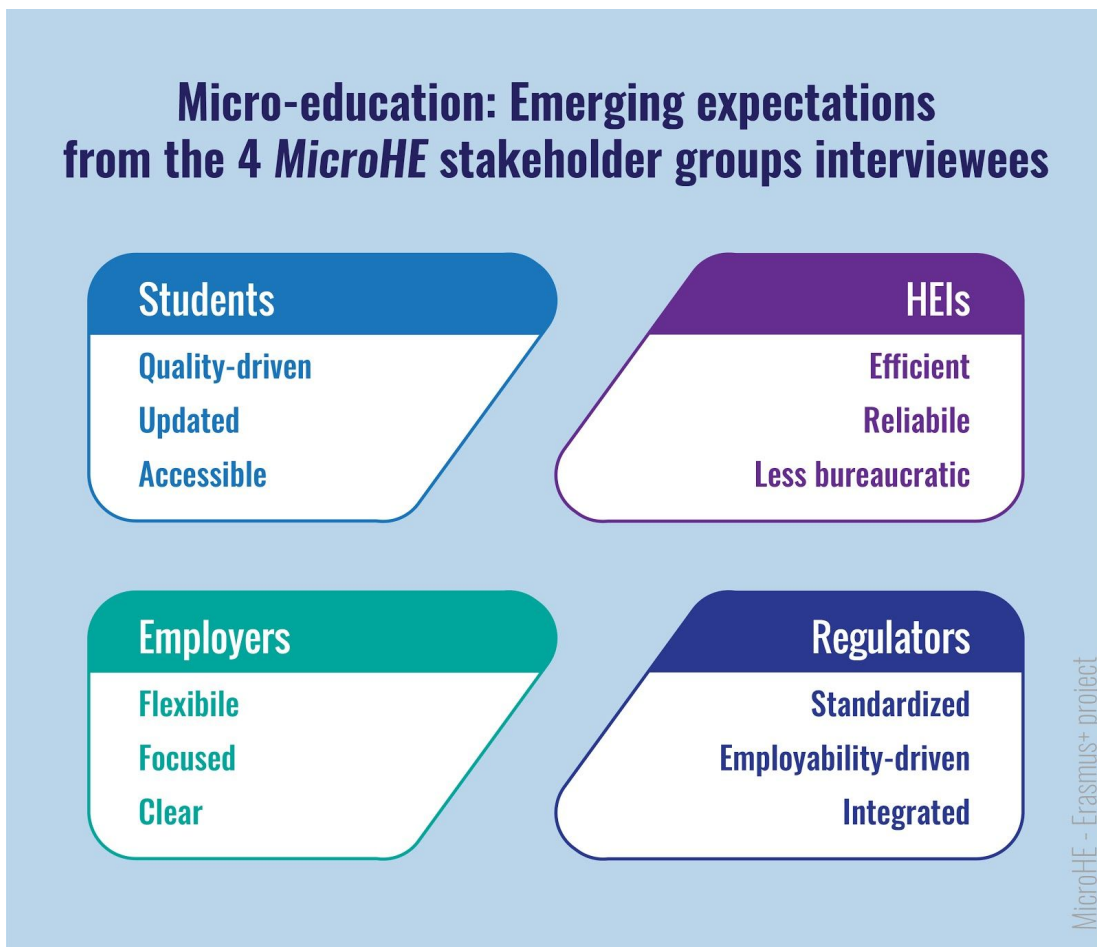
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[21] Photo of the Dublin library by Tuendebede - CC - https://pixabay.com/it/photos/biblioteca-libri-dublino-irlanda-2507902/.

The so-called model of "dual education", that combines apprenticeships in a company and vocational education, and is practiced in several countries (eg. Germany, Austria and Switzerland) is probably going to develop more and more.

Some even declared that, **as long as micro-credentials are important for the students in the university and the employers, they are important for the HE sector, that somehow is in the middle.** University is often market driven, but the students do not bring many micro-credentials, actually.

Expectations

In general terms, **we tried to identify a set of 'main keywords', as expectations, emerged for the four groups, that you can find summarised in the following scheme.** We think that this helps to see how differently they positions themselves when declaring their views on advantages and potentials of micro-credentials in HE. For instance, the students seems to be very interested in the 'micro' dimension, as said in the previous chapters, not that much in terms of accreditation, but of 'short/effective/updated' courses. HE institutions, on the other hand, are still interested in accreditation as it's actually part of their main business and role, but making it micro is more functional to follow students' interests or the drive of the market.

Micro-education: Emerging expectations from the 4 *MicroHE* stakeholder groups interviewees

Students	HEIs
Quality-driven	Efficient
Updated	Reliabile
Accessible	Less bureaucratic

Employers	Regulators
Flexibile	Standardized
Focused	Employability-driven
Clear	Integrated

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HE institutions plans for the future

When asked for plans for the future, HE interviewees said that it's a hard question to answer, as they are not fully aware of all the institution's plans. **Most of the interviewees said that they are interested in the idea of involving micro-credentials at faculty/department level but there is no strategic plan for this**. Very few interviewees said that some specific modules will be identified in order to contribute to micro-credentials.

> *"Our plan is to organise the student around his e-portfolio and therefore his e-portfolio will contain a number of ECTS – then somehow, the magic bit is that these ECTS can be converted to a diploma, this is what nobody knows how to do." (Teacher, France)*

> *"In the future we will have more MOOCs and SLPs offered for our students. We could act as mentors and inform students which course we would recommend for specialisation and customization for our industry partners. They will tell us what they need, we will look for the courses based on standards we define, and put it in our campus MC database of recommended and approved courses.*
> *This approach challenges us the professors becoming more or less instructors, moving away from selecting and transmitting information in large blocks or chunks, such as a one-hour lecture, to guiding students to find, analyze, evaluate, and apply information relevant to a particular subject domain. This 'relevance' becomes more negotiated between instructor or call it mentor and student. The role moves more to that of facilitator with less control over where and how learning takes place, and often entering into negotiation over exactly what the content is." (Professor, Germany)*

Another goal is to adapt to the needs of the learners ensuring quality learning within HE, and to offer more attractive courses for the Continuing Professional Development (CPD) and LifeLong Learning (LLL) in open forms, improving flexible learning pathways as part of their strategy.

They often also hope that accreditation in education will be less bureaucratic. A "digital passport for education" is a request, as they think it can be used for lifelong learning and become a reality soon.

Artificial Intelligence was mentioned to be used to recognise and provide for competency needs. There should be a bilateral feedback loop between institutions and students, with the focus moved towards accreditation of competency-based learning.

Concerning those (many) who are currently not offering micro-credentials, the most common explanations are that universities are often carried away by their own form of studies rather than what the market is gravitating towards.

> *"[providing micro-credentials] is not possible for planning reasons. Who should be offering micro-credentials? I do not even have time to attend conferences. My job is to teach and to acquire future students and cooperating companies. We are salespeople, this is what course directors should do. This is also the reason why we don't have joint teaching with our colleagues." (Course Director, Germany)*

> *"The 4th industrial revolution changes the way we live, work, learn, communicate, relate, etc. Hence it will be crucial to have new forms of recognition and validation. The validation system also needs to be changed." (Hungary)*

In this sense, **it is fundamental to have new forms of recognition and validation and also this system needs to be changed.**

"We can't just adopt new things in old infrastructures." (Hungary)

The most important issue concerning future trends is about a review of the relation between the student, the university and the interactions in-between: systems will support students' choices relying on the previous learning paths created with stackable credentials and than can be created new ones. Always in the perspective of a bottom-up approach, **future changes will be driven by people and not by universities**.
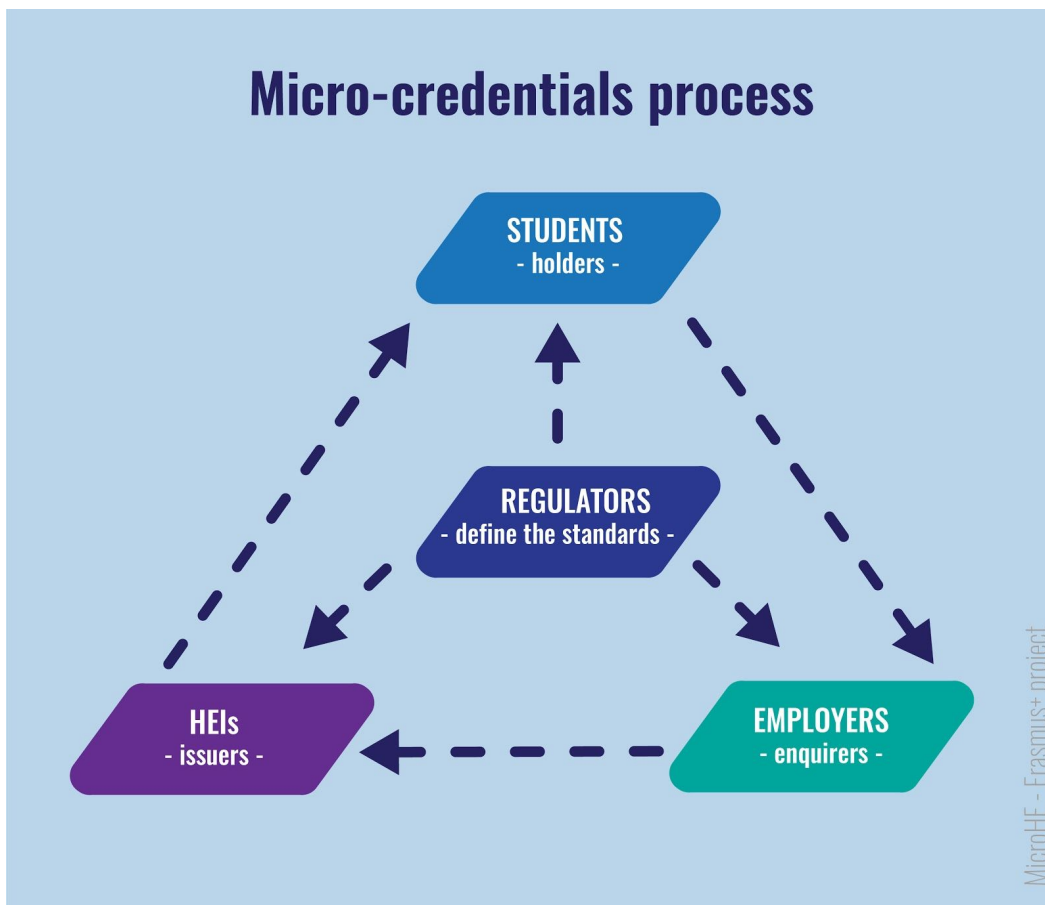
"The crucial point is more about pedagogy than technology: technically it may already work." (Regulator, Italy)

Technically, we are almost there - and MicroHE is exploring a solution - realistically, it's not a near future.

Accreditation in 2025

We asked to describe how will accreditation look like in 5 years from now. Here is a sample of the most interesting replies. It can be easily noted how diverse they are.

How will a micro-credential look like in 2025?

Positive attitude

It will be integrated in the EQF.

Education and system should go in the same direction following micro-credentials.

It should be visible like a passport and flexible.

It will actively support personal learning goals of students.

Neutral attitude

It will be maybe necessary, but the overall validation system needs to be changed.

Coursera MOOCs will be more important than local HE courses like now in some african countries.

Negative attitude

It's impossible to accredit micro-credentials.

It will become a parallel system to a formal education.

Nothing is going to change.

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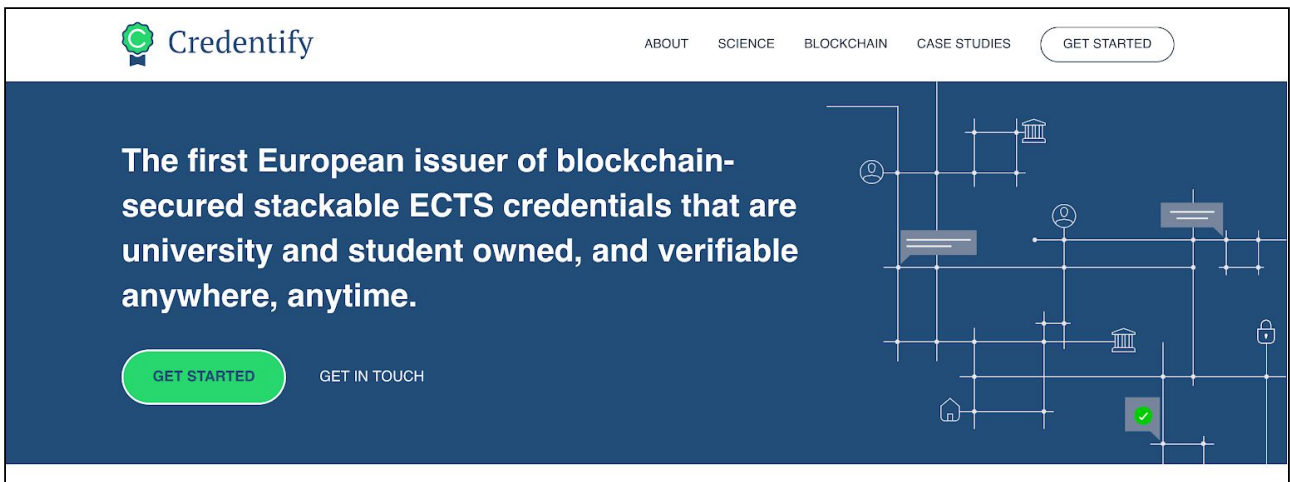## Potential evolution: the MicroHE proposal and the Credentify plattform

The stakeholders and their opinions about needs and expectations form new approaches in credentialing analyzed and presented in this briefing paper can be transposed to potentially thousands of interconnected players in the European Educational area.

Assuming there is even a wider set of target groups involved in the current education cycle from the ones we identified

(1) students on all levels,

(2) teachers, professors and assistants,

(3) researchers, policy makers,

(4) university administrators and

(5) human resources departments in companies to thousands of training associations and educational providers, we can see emerging the complexity of the credentialing space.

However, with only a handful of common denominators, among them trustworthiness and transparency, **there have been only few technological attempts to create a structure that would provide these stakeholders with a new and innovative, common value proposition.**

Since technologies are becoming easier to make but more expensive to deliver on a scale, taking into consideration that policy projects are not natural place holders for technology development, valuable products are becoming very hard to design, especially ones that would solve more than one specific problem for more than one specific target group and address multiple market segments. Therefore, projects that can build on policy and decouple and scale to be tools for the implementation of those policies, have a competitive advantage.

The MicroHe project designed and launched Credentify, a decentralized micro-credentials clearinghouse prototype powered by a blockchain network allowing safe transfer of micro-credentials. The design requirements will hopefully meet the interviewees needs and expectations.

https://credentify.eu/

Indeed, in some occasions, Credentify was shown to the interviewees at the end of the meeting with them, and an informal feedback was collected by the MicroHE partners.

**Introducing flexible equity in European education**

Credentify is a decentralized micro-credentials clearinghouse powered by a blockchain network across European universities allowing safe transfer of millions of micro-credentials as smaller units summing up into ECTS credits. This empowers European students, educational workers and universities across Europe to make the accreditation of their traditional learning experience fast, dynamic, safe, reliable, transparent and accountable.

Credentify ensures that micro-credentials are certified and mapped to European qualifications frameworks and can scale into other forms of Higher Education. Credentify therefore empowers students and universities with equitable knowledge accreditation by allowing it to be more fair and flexible in its delivery. Credentify is built on native European technologies, extensive policy and research analysis and is integrated with ESCO to maximize impact in the European Education Area and Digital Single Market.

This technology is designed to empower students, educational workers and universities across Europe to make the accreditation of their traditional learning experience fast, dynamic, safe, reliable, transparent and accountable. Credentify is therefore a means for stakeholders from students to universities to provide equitable knowledge accreditation by allowing it to be more fair and flexible in its delivery. What's most important is that it is built on native European blockchain technologies, extensive policy and research analysis and is integrated with ESCO to maximize impact in the European Education Area and Digital Single Market.

Credentify has an API service in the cloud that enables anyone to issue and receive micro-credentials that can be stacked into ECTS. It is based on blockchain technologies and offers tools for developers and researchers. **Credentify is the first European free and open credentials service to use blockchain conventions for educational content, specifically designed with European stakeholders, which immensely improves transfer and transparency of the work done credentials.**

Design keywords for the MicroHE platform
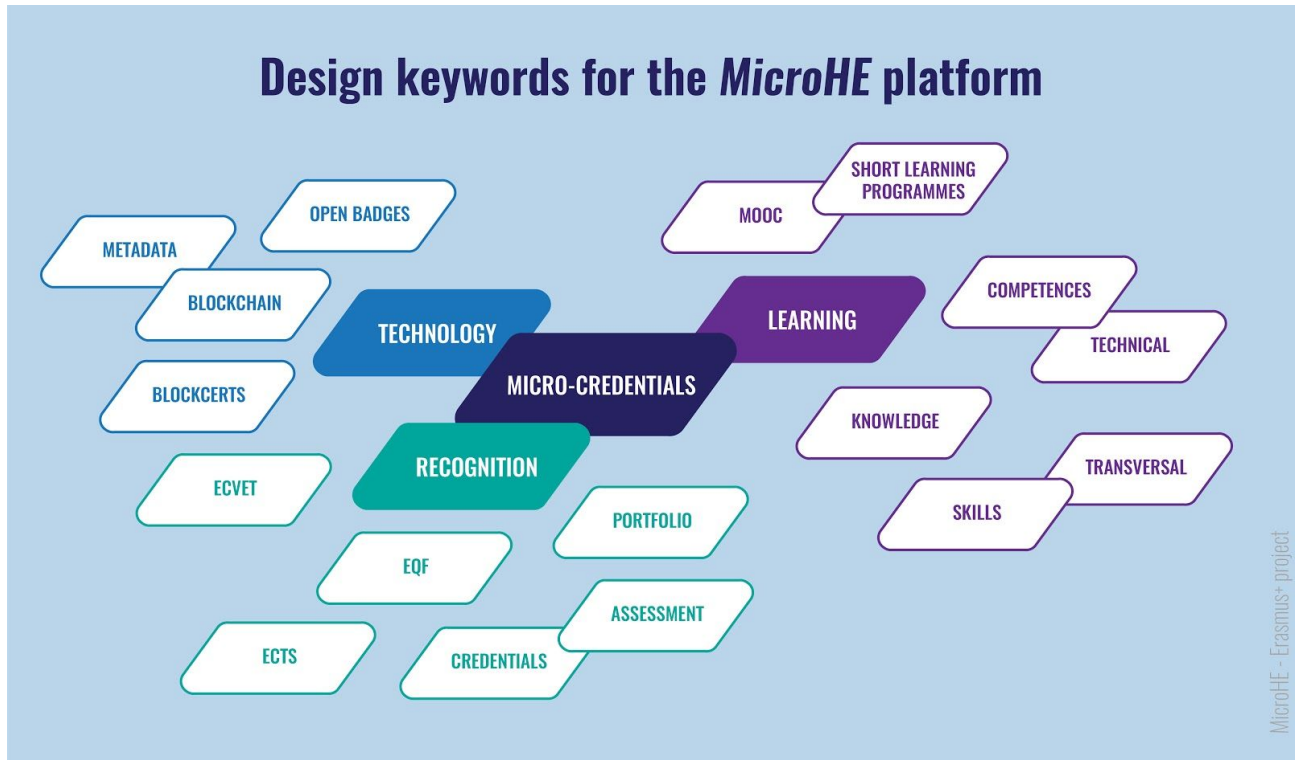
The project develops also the following key Deliverables:

1. Survey on Micro-Credentials in Europe
2. Future Impacts of Modularisation and Micro-Credentials on European Higher Education
3. **Briefing Paper on Challenges of Micro-Credentials (this publication)**
4. Credit/Module Supplement
5. Users' Guide
6. Meta-Data Standard
7. Credentials Clearinghouse (now called Credentify)
8. Conference: The Future of Micro-Credentials in Europe

We therefore invite readers to follow the project, that also:

- Organises events to reach a wider audience;
- Populates a website with information about the project and on the topics;
- Develops a Sustainability Strategy that will present the guidelines for the future exploitation of results and to ensure the future impact of the project;
- Designs a new methodological basis for the adoption of micro-credentials strategy at EU level.

Acknowledgments

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Website

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This is version 6.0 of December 2019 of this document.

The improvements between the previous one are:

- improved paging

MicroHE - Support Future Learning Excellence through Micro-Credentialling in Higher Education

MicroHE is an Erasmus+ KA2 project (2017-2020).
The specific objective of the project is to examine the scope for and impact of micro-credentials –
a form of short-cycle tertiary qualification – in European Higher Education.

Through this project the focus on skills and innovation is strengthen,
and an increase in equity and a better social mobility is launched.

www.microcredentials.eu

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