Issuing e-sealed micro-credentials

Online event
17 November, 10:00 CET

Co-funded by the European Union
THE FUTURE OF MICRO-CREDENTIALS
INSIDE AND OUTSIDE UNIVERSITY ALLIANCES

ANTHONY F. CAMILLERI
KNOWLEDGE INNOVATION CENTRE
HOW IS THE LANDSCAPE CHANGING?

AI

...AI

.......AI
HOW IS THE LANDSCAPE CHANGING?

Micro-Credentials for Virtual Mobility

Evolving Trust Landscape

Diverging Employer and Institutional Recognition
IN THE SHORT-TERM AI WILL ALLOW US TO

- Massively accelerate our ability to ingest and compare information
- Massively accelerate the process of media creation
- Replace many forms of Tutoring
- Lower Costs of Content Translation
How Exactly Is the Human Brain Organized?
The cerebrum is also known as the ____ brain.

Quiz:
What is the name of the structure that connects the two sides of the brain?
- Prefrontal cortex
- Corpus Callosum
- Limbic system
- Pituitary gland
Introducing Duolingo Max
The best plan for advanced learning. New AI-powered features plus all the benefits of Super.

Explain My Answer
Get AI-powered personal feedback in your lessons

Roleplay
Practice ordering coffee, planning a trip, and more with AI

Correct answer:
No me **gustan** esos vestidos.

Almost there! But when **gustar** is used with a plural item like **vestidos**, you’ll use the plural form **gustan**.

Your answer, **no me gusta**, would be used for a single item, like **vestido**.

Does that help?

Order food and drinks at a Parisian Cafe
Practice conversing in French with Oscar

Yes, I’m all set

Can I see an example?

No, please elaborate

START +40 XP
Can you just tell me the answer?

It's important that you learn how to do this yourself! What do you think you need to do to multiply 2 by 5/12?

They need the same denominator.

That's a good thought, but in this case, you don't need to find a common denominator because you're multiplying, not adding or subtracting. What else could you try?

Tell me more about your character. What are her interests, talents, fears, and dreams?

She likes dogs. She's good at writing.

She's scared of the dark. She dreams about changing the world.

That's a great start! Now, let's think about what kind of story we want to tell. What kind of goal or problem might your character face?

Type message (do NOT share any personal data)
IN THE SHORT-TERM AI WILL ALLOW US TO

- Integrate different materials and methods from hundreds of courses
- Package learning in multiple formats: textbook, stories, presentation, video
- Make personalised tutoring part of every homework assignment
- Enable new Forms of Multi-Lingual Learning

Massively accelerate our ability to ingest and compare information
Massively accelerate the process of media creation
Replace many forms of Tutoring
Lower costs of Translation
“AI will become the calculator for micro-credential design”

Inspired by…Erik Brynjolfsson – Professor of Economics & Information Technology at Stanford
HOW IS THE LANDSCAPE CHANGING?

Micro-Credentials for Virtual Mobility

Evolving Trust Landscape

Diverging Employer and Institutional Recognition
WHAT IS THE STATUS OF MICRO-CREDENTIALS TODAY?

33

European University Alliances

Currently implementing or planning to implement micro-credentials

Source: 2023, Making Interoperability Work, HochschulForum Digitalisierung
WHAT IS THE STATUS OF MICRO-CREDENTIALS TODAY?

14 European Countries

Have policies for the recognition of micro-credentials (with 8 more discussing)

Source: 2021, Micro-credentials and Bologna Key Commitments - State of play in the European Higher Education Area, MICROBOL.
DOMINANT FACTORS IN MICRO-CREDENTIAL OFFERS BY UNIVERSITY ALLIANCES

- Micro-Credentials are typically offered to students coming from institutions within the alliance – some alliances offer micro-credentials to the general public;
- **Recognition** of micro-credentials is nearly entirely within the alliances
- Many institutions see micro-credentials as **Erasmus-lite** an alternative or complement to mobility experiences, or as a mechanism to facilitate joint awards
FLEXIBILITY IS INCREASING – WITHIN LIMITS

Micro-Credentials used to:
- build learning pathways crossing multiple institutions
- experiment with new learning methodologies
- do some examples of
UNIVERSITY ALLIANCES HAVE NOT

- Significantly changed the structure of the student population
  - no upskilling at scale of adult learners;
  - no use of micro-credentials to increase access
WHAT IS THE STATUS OF MICRO-CREDENTIALS TODAY?

MOOCs with over a million users in 2022 (none are from the EU)

Source: ClassCentral
3% of the top 250 MOOCs are at advanced level

Source: ClassCentral
Is a Focus on Virtual Mobility distracting from scaling micro-credentials?
HOW IS THE LANDSCAPE CHANGING?

Micro-Credentials for Virtual Mobility

Evolving Trust Landscape

Diverging Employer and Institutional Recognition
Digital Credentials are able to capture complex awarding processes
The need for Digital Signatures is no longer up for discussion
Trust Registries provide a link between accreditation processes and credentials/diplomas
THE ROLE OF SKILLS

Personalised Learning at Scale means a move from:

- Standardised Skill Definitions
- Skill Frameworks to Contextualise Skills
- Tests of Competence
- Knowledge Banks for Skill Acquisition
IS THIS EASY TO UNDERSTAND?
Where to find trusted micro-credentials from European Universities / Alliances?
HOW IS THE LANDSCAPE CHANGING?

Micro-Credentials for Virtual Mobility

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Diverging Employer and Institutional Recognition
ARE WE FOCUSED ON THE RIGHT THINGS?

Figure 3: Key factors in deciding to earn a Professional Certificate (students)

Question: What factors would you consider when deciding to earn a Professional Certificate? (Select the top 3 and rank them, with 1 being most important)

- Offered by an industry-leading company: 41% (Rank #1), 8% (Rank #2), 8% (Rank #3), 57% total
- Counts as credit toward my degree: 29% (Rank #1), 17% (Rank #2), 9% (Rank #3), 55% total
- Job placement data of completers: 9% (Rank #1), 21% (Rank #2), 14% (Rank #3), 44% total
- Employer endorsements: 5% (Rank #1), 17% (Rank #2), 15% (Rank #3), 37% total
- Includes projects that allow me to build a portfolio: 4% (Rank #1), 9% (Rank #2), 16% (Rank #3), 29% total
- Cost: 4% (Rank #1), 8% (Rank #2), 17% (Rank #3), 29% total
- Student reviews: 5% (Rank #1), 13% (Rank #2), 8% (Rank #3), 26% total
- Time commitment: 3% (Rank #1), 7% (Rank #2), 14% (Rank #3), 24% total

n = 2407

Source: 2023, Advancing Higher Education with Industry Micro-Credentials
WHAT IS THE STATUS OF MICRO-CREDENTIALS TODAY?

27 Million LinkedIn Learning Users

Source: LinkedIn
FUTURE OF MICRO-CREDENTIALS IN INDUSTRY
FUTURE OF MICRO-CREDENTIALS IN INDUSTRY
SOME CONCLUSIONS
SCENARIO A

Adding variety and lower costs within the boundaries of an outdated model of massified education
Creating a completely new paradigm for personalised learning
HOW ARE MICRO-CREDENTIALS LIKE ELECTRIC CARS?

- proven concept
- proven technology
- social imperative
- public demand
- legacy and new providers
- easy to get
- enable new types of mobility
HOW ARE MICRO-CREDENTIALS LIKE ELECTRIC CARS?

- not accepted everywhere
- not fully trusted
- are not interoperable
- face scaling issues
- compete with legacy systems
PERSONALISING INDIVIDUAL MICRO-CREDENTIALS FOR DIFFERENT USERS IS THE NEW TECHNOLOGICAL FRONTIER
SCALING
A EUROPEAN MODEL OF MICRO-CREDENTIALS IS THE LARGEST CHALLENGE FOR UNIVERSITY ALLIANCES
TRUSTING MICRO-CREDENTIALS VIA AUTOMATIC RECOGNITION IS OVERDUE
ANALYSING
PEOPLE’S LIFE-HISTORY TO
POWER RECOMMENDATIONS
IS THE FUTURE OF
PERSONALISED LEARNING
DOCUMENTING

ACHIEVEMENT FOR EVERY
CITIZEN WILL BE
FOUNDATIONAL FOR SOCIAL
MOBILITY
THANK YOU
FOR YOUR ATTENTION
Broader EU Policy context of micro-credentials

E-sealing micro-credentials by ECIU University

Koen Nomden, European Commission
DG EMPL.B2
European Year of Skills 2023

To further promote a mindset of reskilling and upskilling

- **Investment**: Increased, more effective and inclusive investment
- **Skills relevance**: Strengthening skills relevance by close cooperation
- **Matching aspirations**: Matching people’s aspirations and skills-set with labour market opportunities
- **Attracting third country talent**: Attracting people from third countries with the skills needed
**Key labour market challenges**

- **Geopolitics**: A skilled workforce is key to the EU’s competitiveness and capacity for growth and innovation.

- **Green**: The green transition will create 1-2.5 million additional jobs by 2030.

- **The solution starts at home**: but work to upskill, reskill and activate the domestic workforce will not alone be enough.

- **Digital**: still 11 million short of the EU target of employing 20 million ICT professionals by 2030.

- **Demographic changes**: Europe is an ageing society.

- **Care sector** growing needs: from 17.4 million workers in 2008 to around 22 million workers in 2022.
Some figures on skills shortages

- 42 occupations were classified as having shortages in 2023.
- 77% of companies struggled to find employees with the required skills in 2019.
- Adult learning participation rate remains low, around 37%.
- Over 90% of jobs require digital skills, however 54% of the adult population in Europe has basic digital skills.
EU targets by 2030 related to skills

- 60% of the adult population to participate in training each year
- 80% of Europeans to have at least basic digital skills
- 20 million ICT specialists (+ gender convergence)
Skills development in the EU

Lifelong upskilling and reskilling need to become the norm, ensuring sustainable competitiveness, social fairness, and strong resilience.
What is the purpose of the EQF?

**CHALLENGE**
Education and training systems differ across countries. Qualifications are diverse and reflect national rules and traditions.

**SPECIFIC OBJECTIVE**
To improve the transparency, comparability and portability of people's qualifications, skills, credentials.

**WIDER IMPACTS**
- Employability, mobility and social integration of workers and learners
- Foster lifelong learning
- Modernising education and training systems
Wider eco-system of the European Approach to micro-credentials

- Acquire, update and improve skills
- Quality and transparency of MC
- Quality, accessibility and flexibility of the learning offer
- Personalised learning and career pathways
- Inclusiveness, access and equal opportunities
- Skills intelligence – understanding LM needs
How could micro-credentials be used to address skill shortages?

- Quick
- Targeted
- Flexible settings
- Recognition as motivation
Central to the EU’s Policy Agenda

- Digital Education Action Plan
- Micro-Credentials Recommendation
- European Data Strategy
- Digital Decade

EDC - ELM

EQF

Europass Decision

Individual Learning Account Recommendation

European Skills Agenda

Achieving the European Education Area (2025)
Thank you.
Our collaboration is firmly based on expertise in innovative education, research, and knowledge exchange. We pride ourselves on being entrepreneurial, and on maintaining an innovative culture in our institutions, as well as providing a catalytic role for innovation in society.

We are ECIU, the European Consortium of Innovative Universities, a network of 13 universities united since 1997 by a common profile of shared beliefs, interests, and mutual trust.

Together, we will create, test and evaluate a whole new educational pedagogy. This will help to focus all the university activities from education, research, administration and support through to innovation and valorisation.

The ECIU University is an EU-funded European University that will create a completely new educational model on a European scale. The ECIU University gathers together learners, teachers, and researchers to cooperate with cities and businesses and solve real-life challenges.
Broad range of learning Offerings as micro-credentials

- Current offers include
- Challenges
  - May have ECTS
  - Hackathons and workshops that don’t carry ECTS
- Micro-modules
  - Include learning offerings from partners
  - Co-created by partners for ECIU
  - Micro 1-3 ECTS, standard up to 8ECTS
  - Online or hybrid setting
  - Instruction in English

https://engage.eciu.eu/browse
Micro-modules

"A micro-module is a short learning experience that formally assessed and supports learners to fill their knowledge gaps and boost their capabilities in order to successfully engage in ECIU University challenge-based activities."

Characteristics (2021-2022):

- Provided by an accredited institution or program (currently via ECIU network)
- Preferably 1-3 ECTS (or unbundled from a larger module)
- Is preferably master's level, but can be also bachelor's level
- Priority for online provision, offline possible
- Provided in English
Challenges

- SDG themes
- Collaboration with
  - Industry
  - Cities
- ECTS based
- May have short non-formal opportunities (No ECTS)
Micro-credentials in ECIU University

A record of the learning outcomes that a learner has acquired following a small volume of learning which have been assessed against transparent and clearly defined criteria

- EU commission
<table>
<thead>
<tr>
<th>Mandatory elements:</th>
<th>Identification of the learner</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Title of the micro-credential</td>
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<tr>
<td></td>
<td>Country(ies)/Region(s) of the issuer</td>
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<td></td>
<td>Awarding body(ies)</td>
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<td></td>
<td>Date of issuing</td>
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<tr>
<td>Learning outcomes</td>
<td>Notional workload needed to achieve the learning outcomes (in ECTS credits, where possible)</td>
</tr>
<tr>
<td></td>
<td>Level (and cycle, if applicable) of the learning experience leading to the micro-credential (EQF, QF-EHEA), if applicable</td>
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<tr>
<td>Type of assessment</td>
<td></td>
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<tr>
<td>Form of participation in the learning activity</td>
<td></td>
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<tr>
<td>Type of quality assurance used to underpin the micro-credential</td>
<td></td>
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<tr>
<td>Optional elements, where relevant (non-exhaustive list)</td>
<td>Prerequisites needed to enrol in the learning activity</td>
</tr>
<tr>
<td></td>
<td>Supervision and identity verification during assessment (unsupervised with no identity verification, supervised with no identity verification, supervised online, or onsite with identity verification)</td>
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<tr>
<td></td>
<td>Grade achieved</td>
</tr>
<tr>
<td></td>
<td>Integration/stackability options (stand-alone, independent micro-credential/integrated, stackable towards another credential)</td>
</tr>
<tr>
<td></td>
<td>Further information</td>
</tr>
</tbody>
</table>
European Standards

- European Learning Model
- European Digital Credential
- W3C VC datamodel
- EQF levels
- Qualified eSeal
- DEQAR for accreditation
- ESCO framework
Mandated issue

The European Digital Credentials for Learning Infrastructure allows credential issuers to delegate the sealing role to third parties. Signing a digital credential on behalf of another organisation is called mandated issue, and this is familiar practice in cases where, for example, a national body such as a Ministry of Education or a parent organisation of an awarding body, seals a credential on behalf of the institution that officially issues it. In other cases, it may be a technology provider that, from within its system, formally seals credentials issued by its education and training provider client.

If an institution wants to issue legally admissible digital credentials that pass the EDC Seal verification check, it must acquire an advanced or qualified electronic seal, and once a credential is sealed with that e-Seal, it cannot be tampered with without detection – the slightest change in the file data will result in the e-Seal verification check failure.

Qualified eSeal

• uniquely linked to the creator of the seal
• capable of identifying the creator of the seal
• created using electronic seal creation data that the creator of the seal can, with a high level of confidence under its control, use for electronic seal creation, and
• linked to the data to which it relates in such a way that any subsequent change in the data is detectable
• created by a qualified seal creation device (QSCD)
• and is based on a qualified certificate for electronic seals


https://ec.europa.eu/digital-building-blocks/wikis/display/ESIGKB/What+are+the+levels+simple+--+advanced+and+qualified+of+electronic+seals
Signed by

Stichting European Consortium of Innovative Universities

Also known as
Stichting European Consortium of Innovative Universities

Seal validation information

The credential is Sealed. This credential has not been tampered with since it was issued by Stichting European Consortium of Innovative UniversitiesKLASS3-SK 2016 AIA OCSP RESPONDER 202311 ;KLASS3-SK 2016 AIA OCSP RESPONDER 202307 ;root-ca ;KLASS3-SK 2016 ;good-tsa ;Stichting European Consortium of Innovative Universities ;, on 7/6/23, 4:11 PM.

Evidence statement

Every claim inside this credential is to be construed as having been made by the indicated awarding body, who maintains sole responsibility for said claim. By applying its electronic seal, the signing organisation certifies the correctness of origin of each claim, as having been made by the indicated awarding body.

Identifiers

<table>
<thead>
<tr>
<th>Legal ID</th>
<th>EIDAS Identifier</th>
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<tr>
<td>08164880</td>
<td>NTRNL-08164880</td>
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</table>
DUBLIN CITY UNIVERSITY (DCU)

Legal ID
999892588

Awarding Date
01/12/2023

Description
Webinar - Participants in this webinar will learn about how the ECIU University is rolling out centralised, tamper-proof micro-credentials to its learners. These micro-credentials are issued and eSealed by ECIU University using the European Digital Credentials platform, ECIU University and other credentialing experts will explain the ECIU user journey as an early adopter of e-sealed micro-credentials.

Learning Outcomes

Understanding micro-credentials

Related ESCO Skills
digital competencies, Types of digital badges, demonstrate enthusiasm

Related Skills
Platform

Learner

Competences

Catalogue of Learning opportunities

Learner Registrations

Issue Micro-credentials

3rd party software

University 1

University 2

University n

Learners

Learner Guidance

Learner Competences

EDC

University Uni 1

University Uni 2

University Uni n

Learner Uni 1

Learner Uni 2

Learner Uni n
Journey from registering to ELO till MC issued

Learners can open wallet and store/share their credentials

Learner receives email from EDC

Status for learner changed to "complete"

Create MC

eSeal and Issue thru EDC Issuer platform

Europass
PAVING THE ROAD FOR THE MICRO-CREDENTIALS MOVEMENT

ECIU UNIVERSITY WHITE PAPER ON MICRO-CREDENTIALS

Access our 1st Micro-Credential white paper: https://www.eciu.org/news/micro-learning-varies-from-online-courses-to-study-packages


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**Features of Micro-Credential platforms in Higher Education**

Padmasheela Kiiskilä, Ahmed Hanafy and Henri Pirkkalainen

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**Are Micro-Credentials Valuable for Students? Perspective on Verifiable Digital Credentials**

Padmasheela Kiiskilä, Arttu Kukkonen, and Henri Pirkkalainen

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**Association for Information Systems**

**AIS Electronic Library (AISeL)**

14th Scandinavian Conference on Information Systems

Scandinavian Conference on Information Systems

9-22-2023

**HOW CAN EUROPEAN BLOCKCHAIN SERVICES INFRASTRUCTURE BE USED FOR MANAGING EDUCATIONAL DIGITAL CREDENTIALS?**

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The ECIU University is an EU-funded initiative that creates a ground-breaking and innovative educational model on a European scale.

www.eciu.eu

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