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Micro-credential, Innovative Framework for Higher and Lifelong Education

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Outline

1. Digital Transformation and the Future of Learning
2. Impact of Micro-Credentials on Higher Education
3. Micro-Credential Initiatives in Japan
4. Framework of Micro-Credentials
5. International Collaboration
6. Relationship between Micro-Credentials and Digital Credential (Digital Badges)
7. Micro-Credential architecture encompasses both educational systems and information technologies
8. Key Takeaways: Designing Micro-Credentials for Global Education

Digital Transformation in Higher and Life-long Education

for Sustanability and Innovation

Global Industry Academia Collaboration

●Blended International Mobility, ●Ecosystem in Asia-pacific region

Inclusive Education

●Student Centered
●Learner Centered
●Lifelong Learning

Pedagogy

●Blended Learning and Hybrid Classroom
●Learning Analytics with AI

Education System, Regulations and Standards

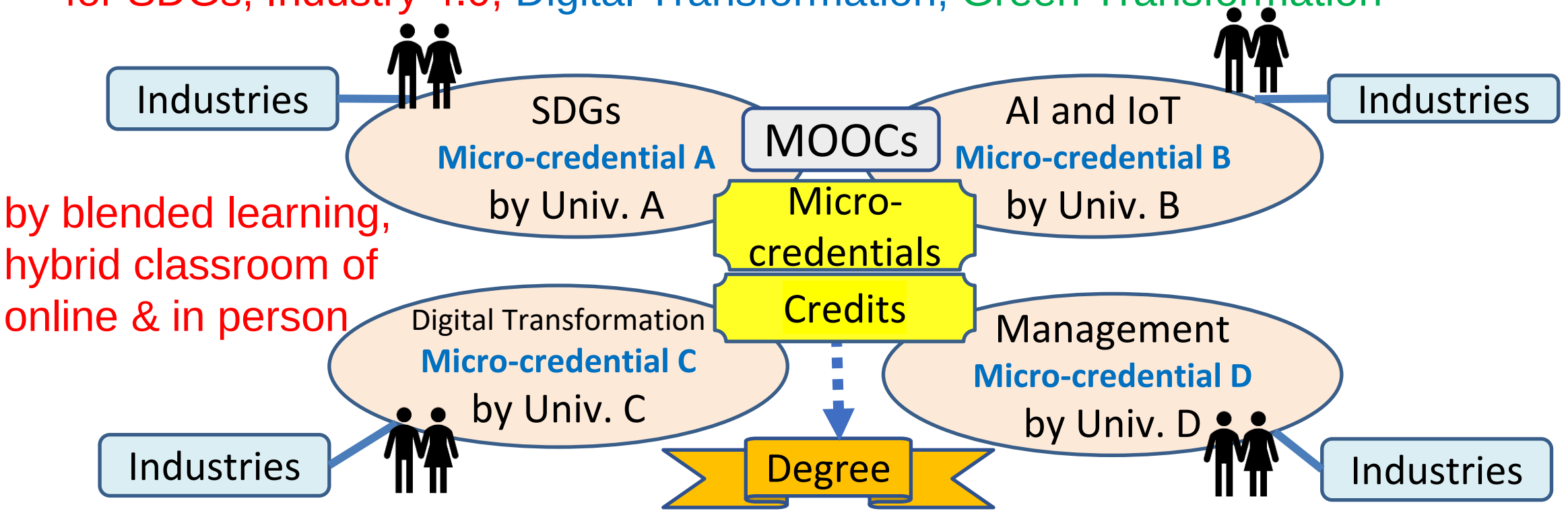
●Micro-credential, Digital Credential

Technology in Education

●AI and IoT, ●VR, AR & Metaverse, ●Next Generation Digital Learning Environment

Global Learning Ecosystem that Enhances Lifelong Learning and Workforce Mobility

for SDGs, Industry 4.0, Digital Transformation, Green Transformation



- Course Clusters: SDGs, Emerging Technologies, Digital Transformation, AI, Data Science, IoT, Robotics, Management, Conceptual skills, Human skills, Technical skills
- Environment and Methods: Blended Learning, Hybrid Classroom, Micro-credential, MOOCs, Global PBL, COIL, Digital Credential, Open Badges, CLR

Impact of Micro-Credentials on Higher Education

- The transformation of higher education will change the learning process and qualifications. It will also increase student mobility among universities.
- Each university will offer distinctive educational programs and issue micro-credentials. (e.g., AI data science, management, energy, environment)
- Stacking of these Micro-credentials can lead to master's and bachelor's degrees.
- Learners can earn Micro-credentials as proof of their learning in line with their career goals.
- Standards for Micro-credential exchange in the Asia-Pacific region are expected to facilitate student and professional mobility.

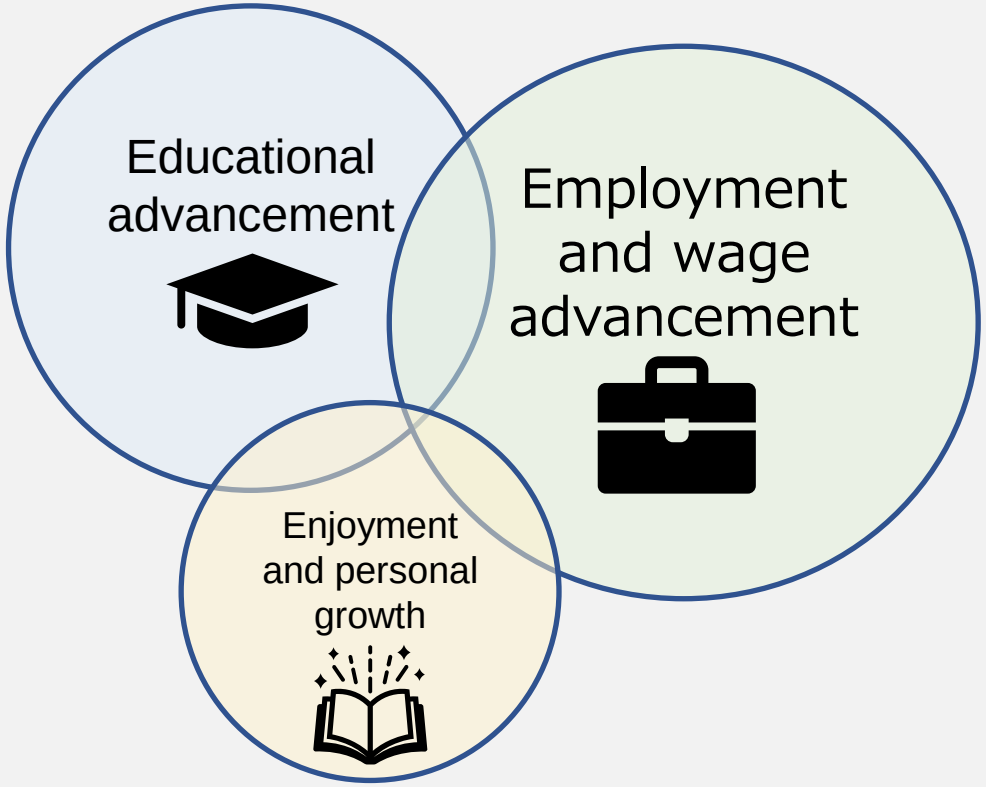
What is a micro-credential?

What ?

Compared to traditional degree programs, micro-credential are:

- Smaller in volume (in study duration or load)
- More targeted in term of skill or study topics
- More flexible in delivery

Why?



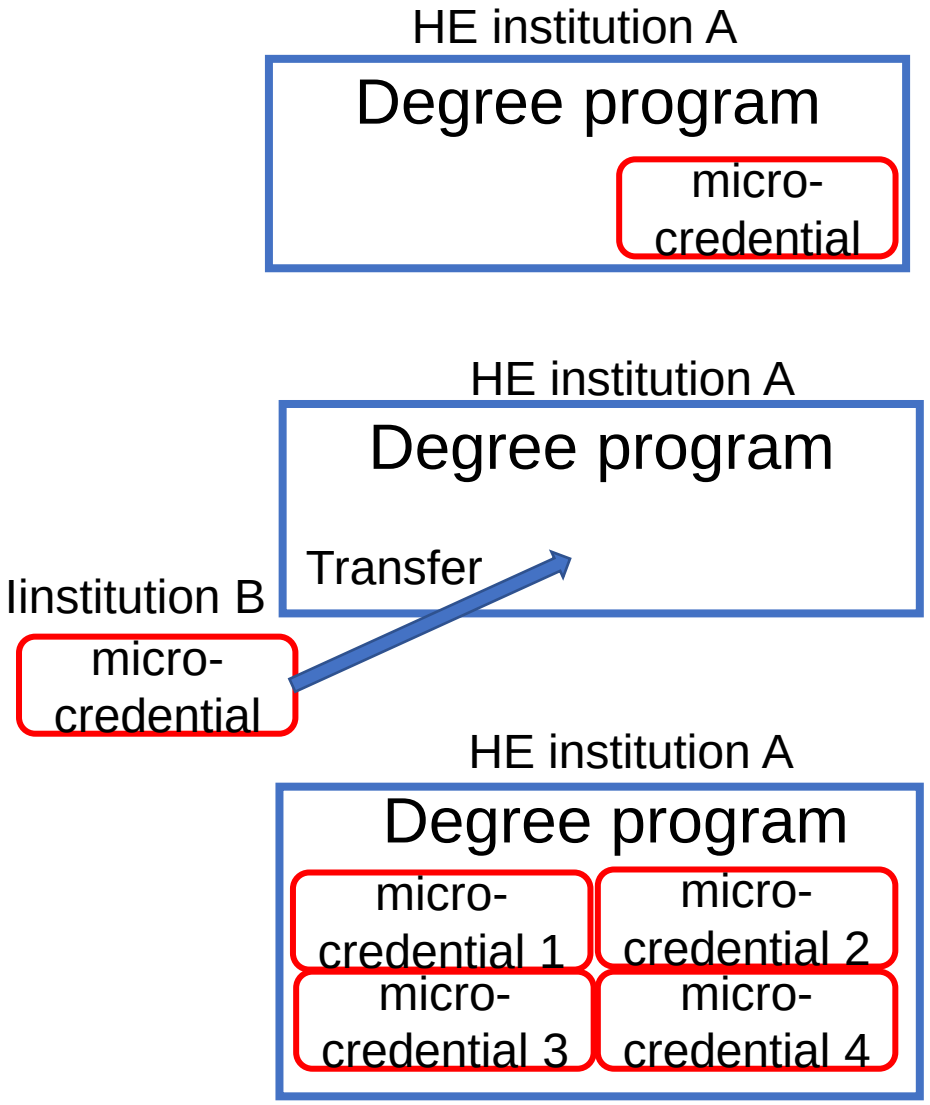
Source: Micro-credential innovations in higher education: Who, What and Why, OECD Education Policy Perspectives No.39, 2021.

Micro-credential providers

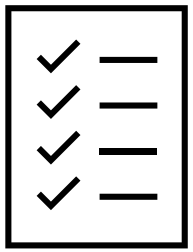
- Micro-credentials are issued by trusted providers such as higher education institutions, vocational education institutions, private training institutions, academic associations, professional associations, and corporations.
- In order to demonstrate that it is a trusted provider, the issuing institution need to disclose information of educational activities including quality assurance.

Micro-credentials leading to a degree

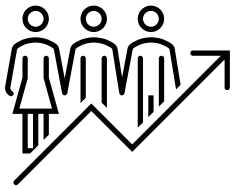
1. Inclusion model: the micro-credential is designed as part of a degree program, so that after obtaining the micro-credential, students can obtain the degree by enrolling in the degree program.
2. Transfer model: after earning a micro-credentials, students enroll in a degree program and credits of the micro-credentials are transferred to the degree program.
3. Modular model: higher education institution divides a degree program into several modules and issues a micro-credential for each module.

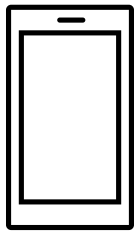


Requirements for Micro-Credentials



- Design Requirements for Micro-Credentials
  - **Transparency**: Disclose information: learning outcomes, learning volume, and issuer information.
  - **Valid Assessment**
  - **Quality Assurance**: Disclose Internal quality assurance guideline
  - **Design according to micro-credential frameworks**
- Planning and Implementing Micro-Credentials
  - **Learner-Centered:** Flexible learning methods, such as online and blended.
  - **Collaboration between Issuing Institutions and Employers**: Understand needs and engage in joint development and implementation.
  - **Learning Pathways:** Support diverse learning pathways, from partial learning to degrees.
  - **Information and Guidance:** Provide support and comparison websites.





- Issuing Micro-Credentials Digitally
  - **Verifiability**: Prevent tampering.
  - **Portability**: Learners can securely own and utilize their learning history.

Micro-Credential Initiatives in Japan

Micro-Credential Initiatives in Japan

Contents

Skill Standard Qualifications Framework

Micro-credential Framework

Research and Study

Scope

Universities

Academic associations

Commercial Providers

JMOOC Micro-credential WG

JMOOC

JV-Campus Micro-credential WG

Micro-credential Joint WG

The WG was established in August 2023.
The framework was published in April 2024.

JSPS Kaken research on Micro-credential

Target

Enterprises

Universities

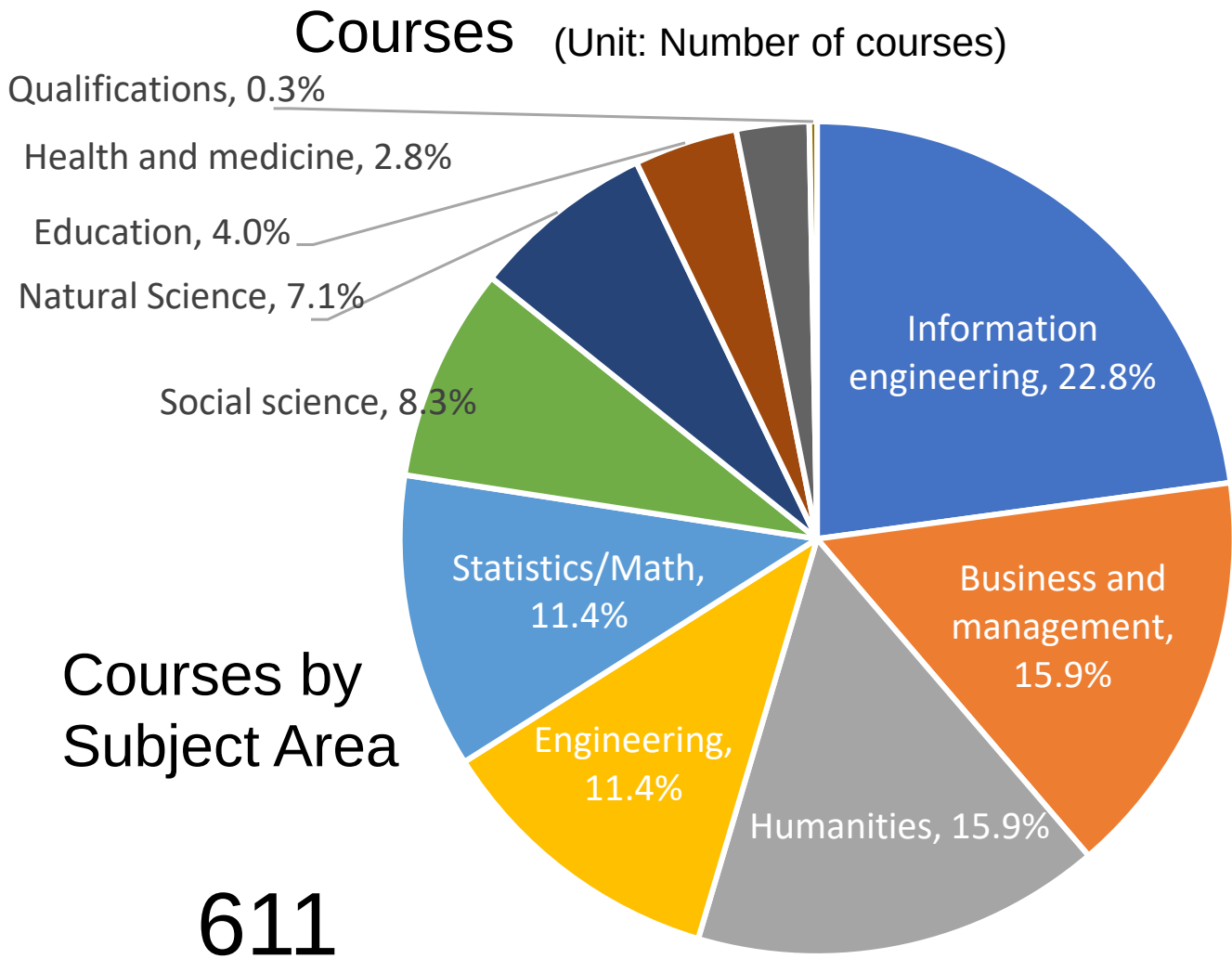
Japan Massive Open Online Courses

Lifelong Learning

University Education

Company Training

Courses by Subject Area



- JMOOC certified courses 611
- Course registrants 1,387,575
- Total Learners 1,631,538

Japan Virtual Campus
Online International Education Platform

The Ministry of Education, Culture, Sports, Science and Technology (MEXT) has developed a new platform as part of its Top Global University Project (TGUP), designed to promote Japan's international education and exchange through the use of online.

https://www.jv-campus.org/en/providers/

Regarding the establishment of the Micro-credential Joint Working Group

(Click here for Japanese translation)

Micro-credential Joint Working Group

August 18, 2023

Japan Forum for Internationalization of Universities

Japan Virtual Campus Management Committee

Japan Massive Open Online Education Promotion Council

Published a Micro-credential framework in April 2024.

Regarding the establishment of the Micro-credential Joint Working Group

The Japan Forum for Internationalization of Universities, the Japan Virtual Campus Steering Committee (JV-Campus), and the Japan Massive Open Online Education Promotion Council (JMOOC) formed the Micro-credential Joint Working Group on August 18, 2023.

With the global development of the online learning environment, it is becoming possible for learners to freely select content and study without being constrained by time and space. In order to do so, it is necessary to clearly indicate the learning purpose, contents, and completion conditions of learning content, as well as quality assurance.
Micro-credential is a focused record of learning outcomes that proves what a learner knows, understands, or can do. Their learning achievements are assessed based on clearly defined standards, ensuring the quality of their education.

Through the activities of the Micro-credential Joint Working Group, the Japan Forum for Internationalization of Universities, JV-Campus, and JMOOC will promote the production and provision of Micro-credentials, as well as develop and collaborate on operational platforms, and

https://www.jv-campus.org/en/newslist/353314/ https://www.jmooc.jp/202308_report/

Micro-Credential Framework

Micro-credential Joint Working Group

https://www.micro-credential-jwg.org

Objectives, Micro-credential framework:

- promote the development, earning, and utilizing of high quality micro-credentials by establishing common guidelines for micro-credentials
  - for learners who decide what to study,
  - for organizations and institutions who issue and accredit micro-credentials,
  - and for employers and professional organizations who need to understand the learning outcomes and competencies of their learners and employees.
- provide a common descriptors that clearly states the content of a micro-credential and the conditions for its acquisition so that micro-credentials can be compared, selected, and evaluated.

Initiatives on Micro-credential Frameworks

- Frameworks should include:
  - Definition of Micro-credentials
  - Standard requirement for Micro-credentials
  - Descriptors of Micro-credentials
- National and regional Frameworks
  - Australia, National Microcredentials Framework, March 22, 2022
  - EU, A EUROPEAN APPROACH TO MICRO-CREDENTIALS, December 2021
  - Japan, Certification Program, January 23, 2008 (only for the HEIs)
  - Japan, Micro-credential Framework 1.0, April 2024

UVCampus / JMOOC Micro-credential Joint WG

Definition, A micro-credential:

- is a record of focused learning achievement verifying what the learner knows, understands or can do.
- includes assessment based on clearly defined standards and is awarded by a trusted provider.
- has standalone value and may also contribute to or complement other micro-credentials or macro-credentials, including through recognition of prior learning.
- meets the standards required by relevant quality assurance.

[1] UNESCO, Towards a common definition of micro-credentials, https://unesdoc.unesco.org/ark:/48223/pf0000381668

Descriptors of reference framework for micro-credentials

Reference framework	EU	Australia	Malaysia
Identification of the learner	**Identification of the learner**	-	Name NRIC
Date of issuing	**Date of issuing**	-	Date of award
Title of the micro-credential	**Title of the micro-credential**	**Title**	Name of course
Awarding body	**Awarding body**	**Provider**	Awarding institution
Country/Region of the issuer	**Country/Region of the issuer**	-	-
Content/ Description	-	**Content/ Description**	-
Learning outcomes	**Learning outcomes**	**Learning Outcomes**	Learning Outcomes
Form of participation	**Form of participation**	**Delivery Mode**	Mode of delivery Method of learning and teaching
Language	-	**Language**	Language
Learner Effort	**Notional workload (in ECTS credits, wherever possible)**	**Learner Effort**	Student learning time
Credit/ Other Recognition		**Credit/ Other Recognition**	Credit hours/ equivalent
Type of assessment	**Type of assessment**	**Assessment**	Assessment
Type of quality assurance	**Type of quality assurance**	**Quality Assurance**	Quality Assurance
Level	**Level of the learning experience (EQF)**	-	Level of the course
Certification	-	**Certification**	-
Prerequisites needed to enroll	Prerequisites needed to enroll	**Prerequisite/s**	Enrolment Requirements
Stackability	Integration/stackability	Stackability	-

Note: **Mandatory**, Optional, -, None

Descriptors of Micro-credentials

Mandatory

1. **Identification of the learner:** Number or Name
2. **Date of issuing**: Date micro-credential issued
3. **Title of the micro-credential**
4. **Awarding body**: Institution that issued the micro-credential
5. **Content/ Description:** Brief description
6. **Learning Outcomes:** Knowledge, skills, or competencies acquired by the learner upon completion
7. **Form of participation**:
   - (e.g., in-person, online, or blended, and whether synchronous or asynchronous learning.)

Descriptors of Micro-credentials (cont.)

Mandatory

8. **Learner Effort**: Amount of learning required of learners
   - Total study time, including class time, study time outside of class, time spent viewing and watching on-demand materials and resources, and time spent on evaluation.
   - It is preferable to list class hours in addition to the amount of learning required of the learner (total hours of learning).
9. **Type of assessment**
   - Ensure that the learning outcomes have been achieved based on clear criteria.
10. **Type of quality assurance**
    - Describe the quality assurance applied to the micro-credential.
    - Internal quality assurance is required within the institution. Publish a Uniform Resource Identifier (URI) indicating the institution's standards.
    - If the institution has received third-party evaluation or accreditation as external quality assurance, indicate the name or URI
11. **Credit/ Other Recognition**
    - The type of certification awarded upon completion of the micro-credential (credits awarded by HEIs or other recognition by associations).
    - It may be listed in UCTS (UMAP credit transfer system, 1 UCTS is 38-48 hours of study and 13-16 hours of class time).

Descriptors of Micro-credentials (cont.)

Optional

1. **Country/Region of the issuer**:
   - Country or region that issued the micro-credential
2. **Language**: Languages used in teaching and assessment
3. **Level**:
   - For higher education institutions, use the undergraduate level, master's level. The method of indicating Qualification Framework or the level of skill standards for each field may also be used.
4. **Certification**: Issuance of certificates of achievement
   - (e.g., certificate of completion program, certificate with digital badge)
5. **Prerequisites needed to enroll**:
   - Prerequisites, micro-credentials, credits, experience, etc. required prior to or upon completion
6. **Stackability:**
   - If the micro-credential can be combined with other micro-credentials to form a larger micro-credential or become part of a macro-credential (master's, bachelor's, or other degree), describe the specific conditions.

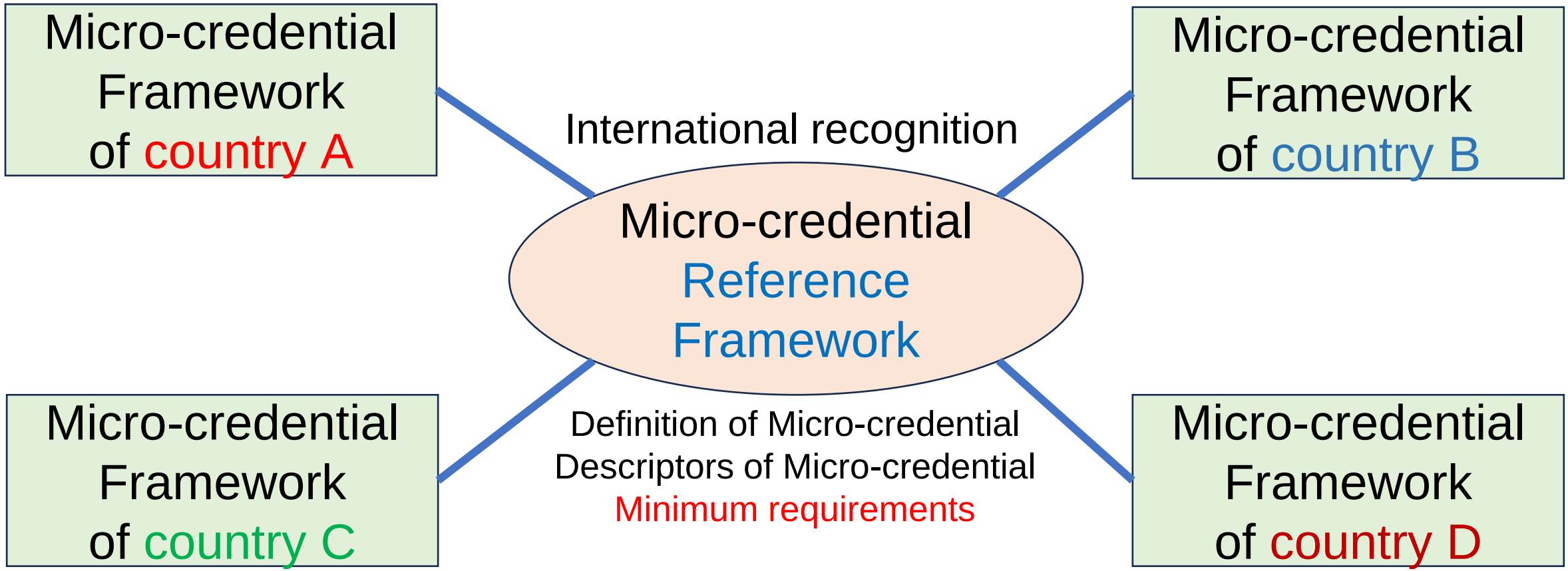
Cyber University Inc, Japan started A Degree Program based on Micro-credentials in April 2024

AI/Artificial Intelligence

- Cyber University launched an online bachelor's program in April 2024, structured through an integration of micro-credentials.
- Students can complete a bachelor's degree in Information Technology through on-demand courses.
- The micro-credentials were developed in strict accordance with the Micro-credential Framework of the Micro-credential Joint Working Group.
- The micro-credentials are issued using Open Badges 2.0.
- The issuance of Badges follows the Digital Issuance Guidelines for Micro-credentials, set by the Micro-credential Joint Working Group.

International Collaboration

Micro-credential Reference Framework for International Collaboration



How to collaborate on a common framework for Micro-credentials?

- Definition of Micro-credential
  - UNESCO, Towards a common definition of micro-credentials

We can share a common definition.

- Descriptors of Micro-credential
  - Mandatory Descriptors
  - Optional Descriptors

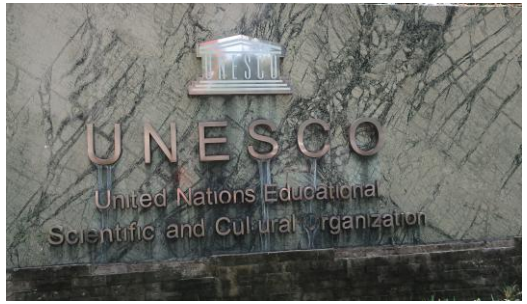
We can share reference descriptors.

- Quality Assurance of Micro-credential
  - Internal Quality Assurance
  - External Quality Assurance

We need share minimum requirements for quality assurance.

Collaborative Activities for Micro-credentials in the Asia-Pacific Region

IEC2023, Bangkok, Thailand, August 31, 2023



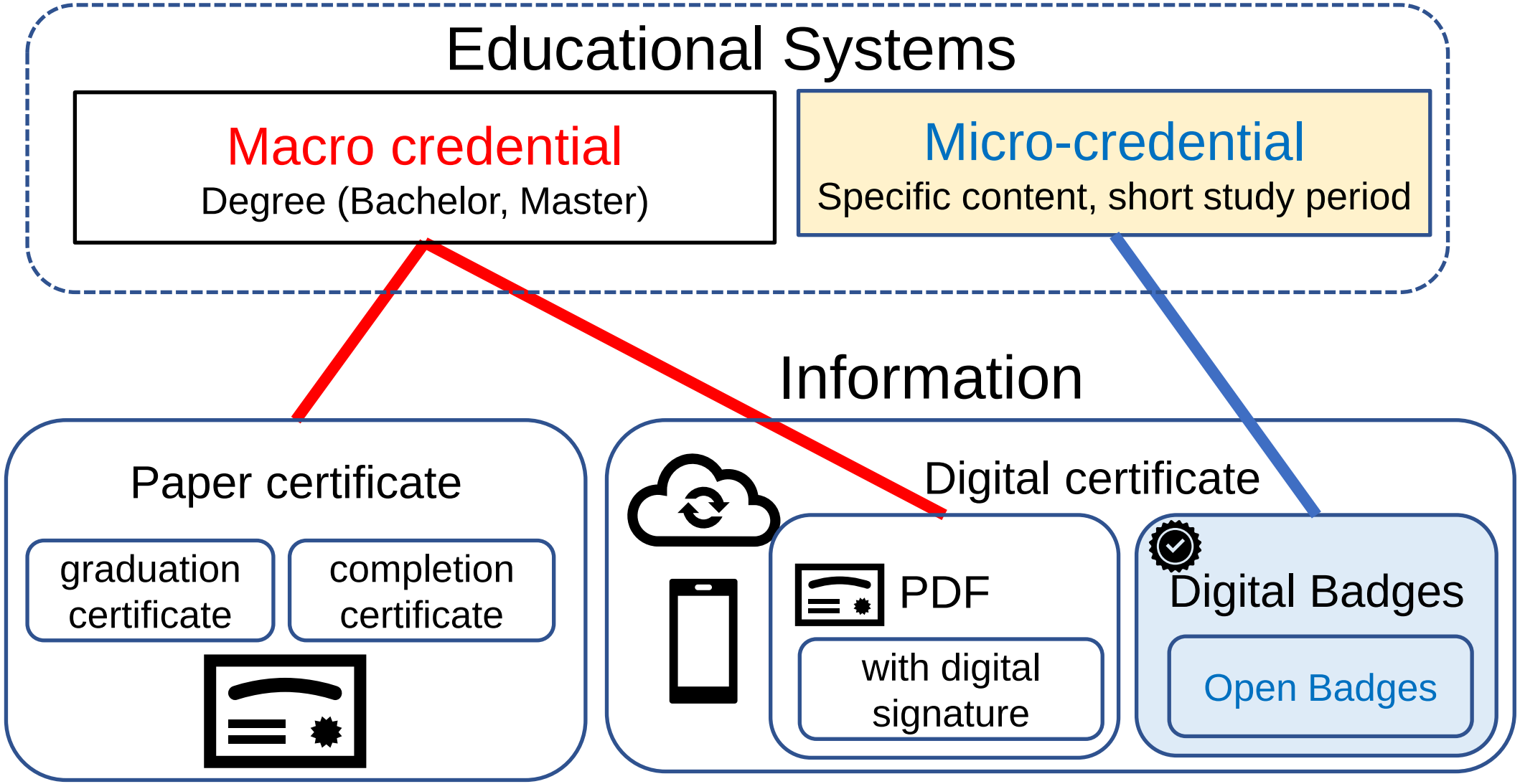
Meeting with the UNESCO, Bangkok, Thailand, August 30, 2023

NALI2023, Malaysia, November 8, 2023

Asia-Pacific MOOC Conference, November 1-2, 2023, Tokyo

Relationship between Micro-Credential and Digital Badges

Relationship between Educational Systems and Information Technologies



Micro-credentials are educational systems; Digital Badges are information technology

Micro-Credentials

A new educational system

・Academic achievement in a specific area of study
(for lifelong learning, reskilling)

Framework development

・Public bodies decide on the education system and Micro-credential requirements.

Contribution to trust of quality

・Define and assess learning outcomes
・Issued by trusted institutions

Different things, different contribution

≠

Example: JSEE certified a micro-credential with a digital badge.

Learning outcomes

Verified by Digital

Digital Badges

Information technology

・Digital technology for verifying participation, studies, certifications, and licenses

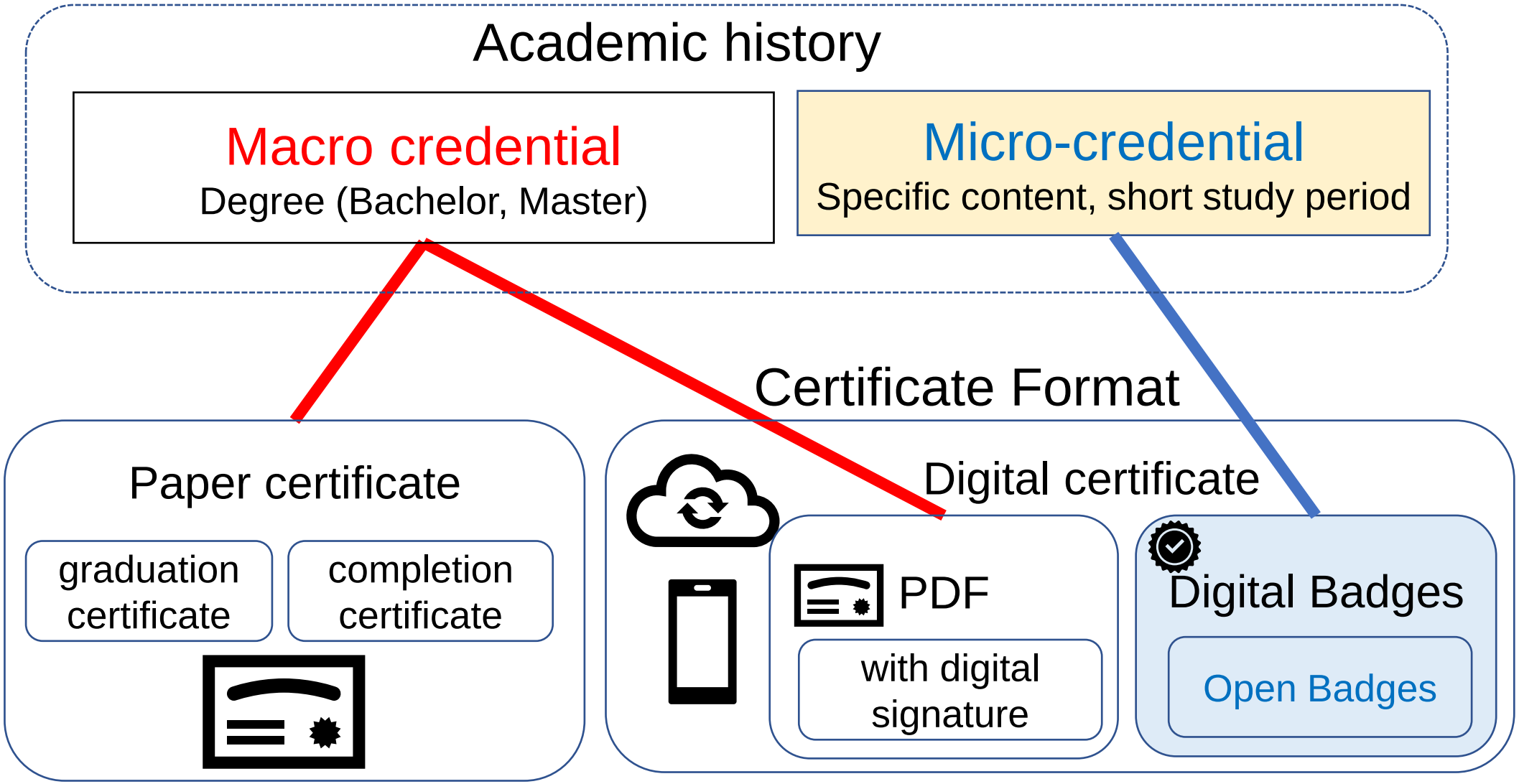
Development of technical specifications

・Developed by international IT associations

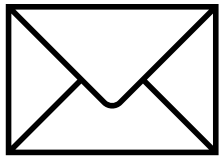
Contribution to trust of security

・Trust through information security (e.g., tamper-proof)

Relationship between Micro-credential and digital badges



Guideline for digitally badging of Micro-credentials



Open Badges 2.0

1. Name 名称
2. Issuer 発行者
3. Description 説明
   - A short description of the achievements
4. Criteria 取得条件
   - URI or embedded criteria document describing how to earn the achievement

Micro-credentials

1. Title of the micro-credential
   マイクロクレデンシャル名称
2. Awarding body 授与機関
3. Content/ Description 内容
4. Learning outcomes 学修成果
5. Form of participation 授業の方法
6. Learner Effort学習量（総学習時間）
7. Type of assessment 評価の方法
8. Type of quality assurance 質保証
9. Credit/ Other Recognition
   単位／その他の認定

Micro-credential architecture encompasses both educational systems and information technologies.

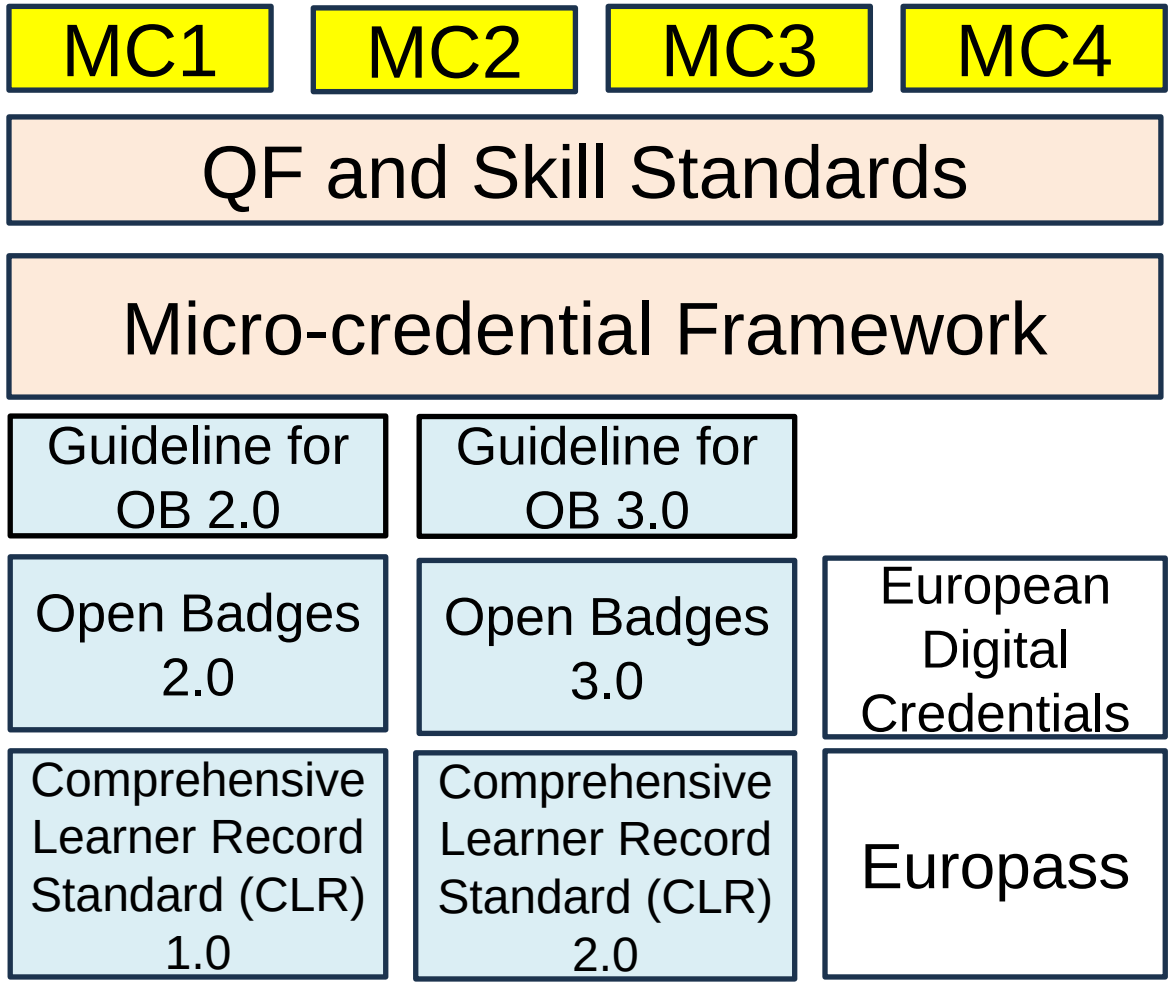
Micro-Credential Architecture

Educational systems

1. Micro-credentials (contents)
2. Qualifications Frameworks & Skill Standards
3. Micro-credential Framework

Information technologies

4. Guideline for Digitally Issuing
5. Digital Certificate
6. Exchanging Academic Records



Note: Open Badges and CLR are developed by 1EdTech Consortium, https://www.1edtech.org/

Micro-Credential Architecture

Educational systems

- Layer 1: Individual Micro-credentials
- Layer 2: Qualifications Frameworks and Skill Standards.
  - Define levels of micro-credentials according to qualifications frameworks and skill standards.
  - Define scope of micro-credentials so that micro-credentials issued by different institutions can be combined without duplication or omission.
- Layer 3: Framework for Micro-credentials

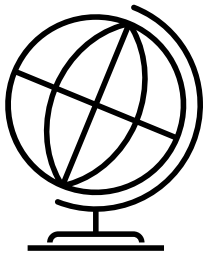
Information technologies

- Layer 4: Interface layer for issuing digital micro-credentials.
  - Inserts the descriptors of micro-credentials into the metadata of digital technology.
- Layer 5: Digital certificate
  - 1EdTech Consortium's specification, Open Badges, and the European specification, European Digital Credential.
- Layer 6: Digital format for exchanging academic records.
  - Comprehensive learner records, including micro-credentials and degrees.

Micro-Credential Design Strategy

- **Objective:** Ensure internationally recognized micro-credentials (MC) that enable diverse learning pathways and connect to degree programs.
- **Structured Design:** Develop a systematic design approach for effective implementation of MCs.
- **Comprehensive Structure:** Design the overall MC architecture and its key elements.
- **Key Elements:** Define the roles of pedagogy and information technology in MCs.
- **Digital Integration:** Utilize digital data to facilitate MC sharing and recognition.

Key Takeaways: Designing Micro-Credentials for Global Education



✅ **Institutional Collaboration** – Design and deliver micro-credentials through partnerships between educational institutions.

✅ **Learner-Centered Design** – Align content and learning methods with real-world needs.

✅ **Clear Learning Outcomes** – Define, assess, and certify achievements.

✅ **Global Recognition & Portability** – Follow standardized frameworks for broader acceptance.

✅ **Quality Assurance** – Continuously improve the quality of education.

✅ **Transparency** – Make key credential information publicly available.

✅ **Secure & Digital Credentials** – Use global digital standards to ensure authenticity and portability.

✅ **Capacity Building** – Conduct hands-on workshops to train micro-credential designers.

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Special Issue on “New Trends in Lifelong Learning and Engineering Education” published in January 2025.

Special purpose

Purpose of the Special Issue on “New Trends in Lifelong Learning and Engineering Education”

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Author information

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Thank you.

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Micro-credential Joint Working Group
https://www.micro-credential-jwg.org
https://www.facebook.com/masahiro.inoue.9849