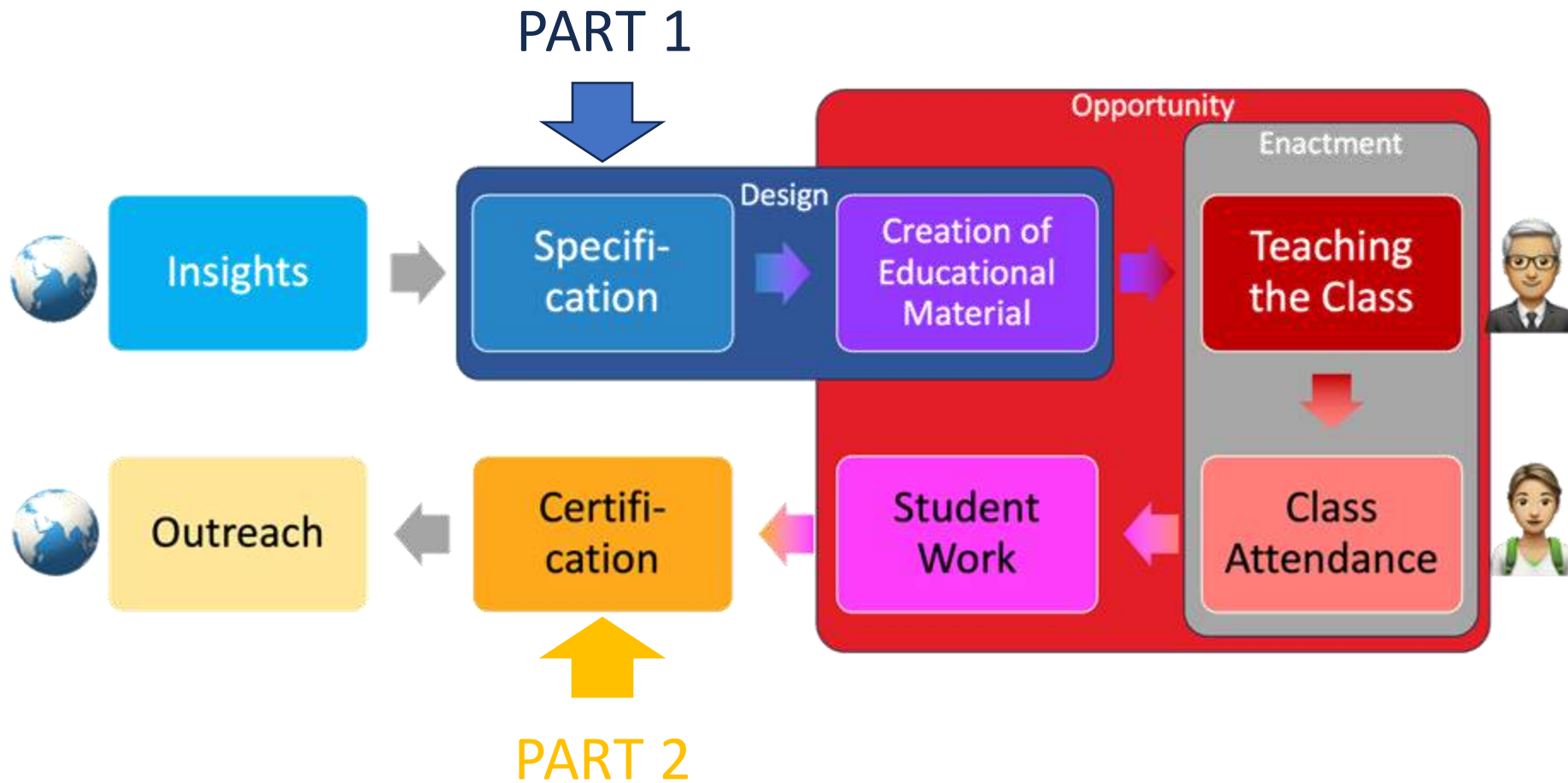


Technologies for the *Specification* and *Certification* of Microcredentials

Carlos Alario-Hoyos and Carlos Delgado Kloos

Universidad Carlos III de Madrid
calario@it.uc3m.es, cdk@it.uc3m.es





Title: ...

Learning Objectives

Learning Outcomes

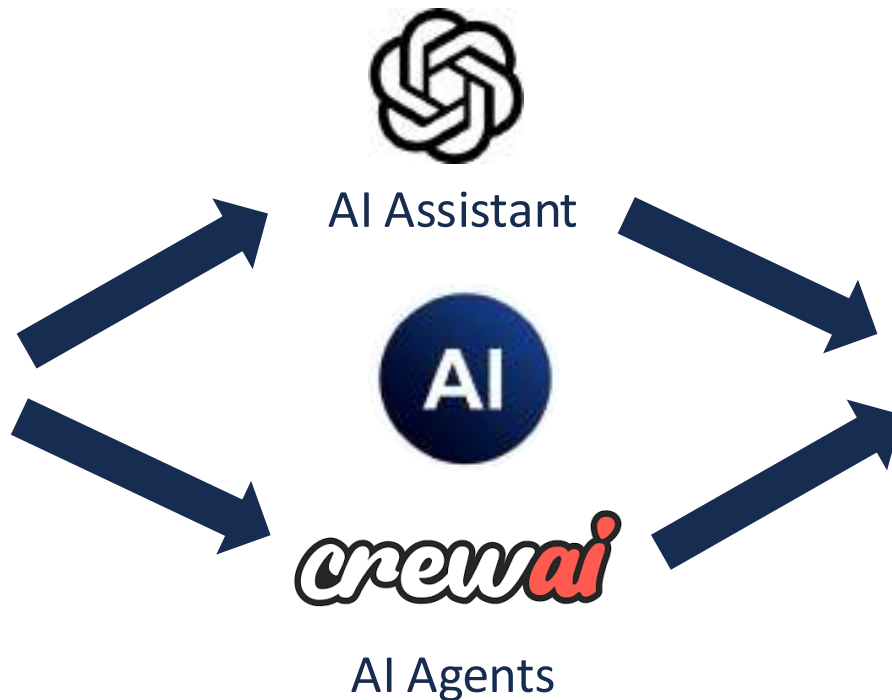
- _____

Activities _____

- _____

Assessment _____

- _____
- _____



Title: ...

Learning Objectives

Learning Outcomes

- _____

Activities _____

- _____

Assessment _____

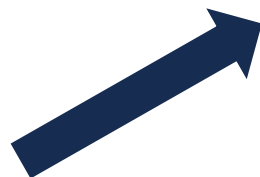
- _____
- _____



<https://bit.ly/4mxj5bi>



AI Assistant



You are an instructional-design expert.

Using the Ideas provided by the user → section below, produce a MICRO-CREDENTIAL SPECIFICATION with the following headings, in this exact order:

1. Title
2. Learning Objectives (3-6 concise bullet points starting with an action verb)
3. Content Description (1-2 short paragraphs)
4. Learning Outcomes (how learners will be able to apply their new skills; 3-5 bullets)
5. Learning Activities (bullet list, each with a brief descriptor)
6. Assessment Methods (list each assessment, its format, and criteria for success)

Ideas provided by the user →

-
-
-



AI Assistant



+

More Contextual Focus *

How would you like to specify your request? (Optional)

☐ Precise (We'll need a specific course instance)

☒ General Topic (I have a focus area but need help refining)

☐ Student Only (I need ideas within a broad field)

Write the Title, Topic, or Domain *

Example: "Explanative AI for decision support systems" or "Blockchain"

Development of Adaptive AI assistants to support programming students




3. Content Description

6. Assessment Methods

Assessment	Format	Criteria for Success
Diagnostic Quiz	Online, auto-graded (MCQ & short code item)	≥ 80 % accuracy to unlock labs
Lab Demonstrations	Live demo + code review	Correct integration, reproducible results, clean repo practices
Capstone Project	Team deliverable: working assistant, repo, video pitch, model card	Functional prototype; evidence-based pedagogical design; ethical compliance; scored via analytic rubric (≥ 70 % overall, ≥ 60 % in each rubric dimension)
Reflective Report	Individual, 1500 words	Critical analysis of design decisions, learning-impact data, and future improvements; meets scholarship-of-teaching standards

- **Capstone Project** – teams create and iteratively refine a functioning AI assistant for a chosen programming unit.
- **Industry & Research Roundtable** – guest talk + Q&A with researchers working on Gen-AI in CS education.



AI Assistant

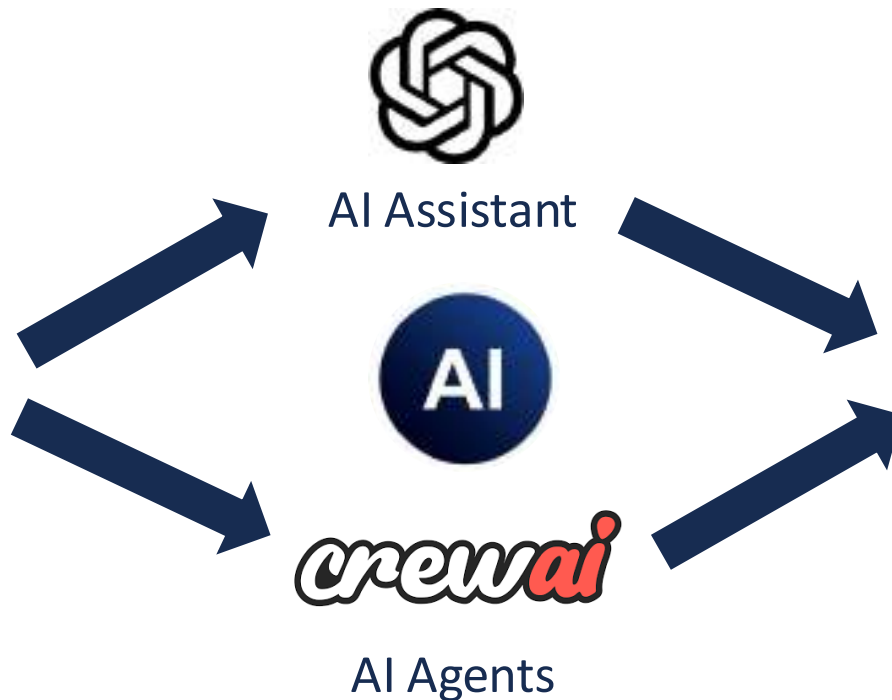


- Is it correct?

- Does it align with
specifications and
regulations?

- Can we do better?





Title: ...

Learning Objectives

Learning Outcomes

- _____

Activities _____

- _____

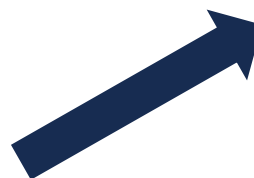
Assessment _____

- _____
- _____



crewai

AI Agents



Title: ...

Learning Objectives

Learning Outcomes

- _____

Activities _____

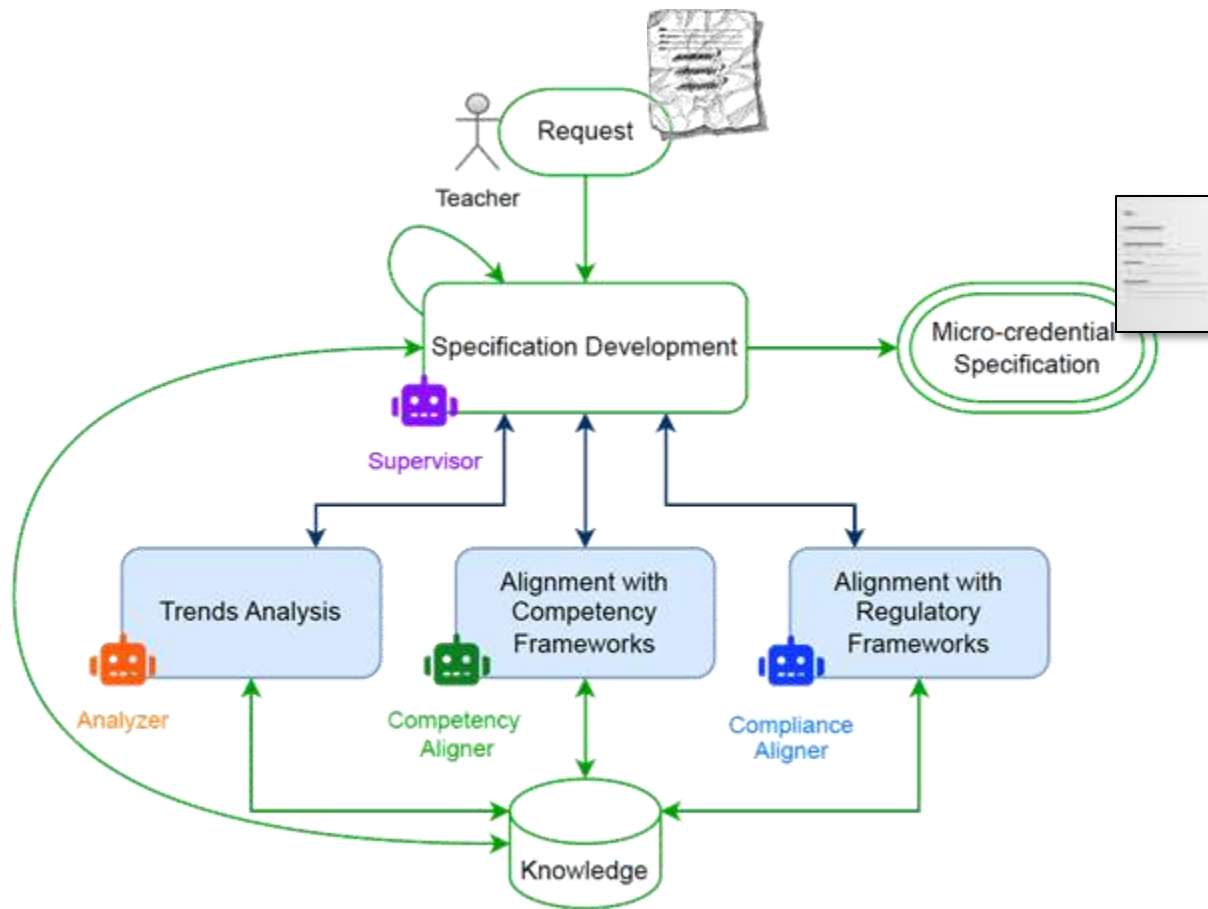
- _____

Assessment _____

- _____
- _____

crewai

AI Agents



crewai

AI Agents

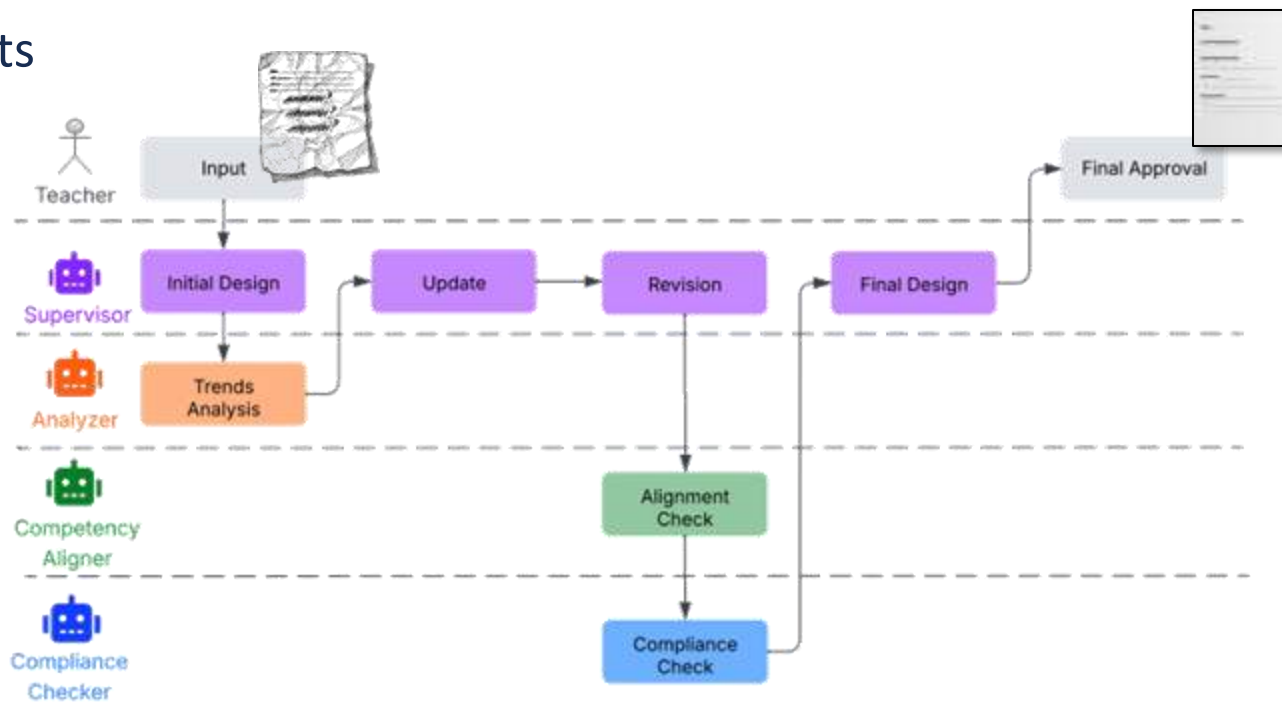


Let's test it!
(It takes some time)



crewai + Gemini 2.0
Flash

AI Agents



crewai

AI Agents


Supervisor



- Orchestration of end-to-end design workflow
- Generates the initial draft
- Refines and updates the specification after the trends analysis and competency alignment and compliance checker

crewai

AI Agents



Supervisor



Input from the human

Input from official national
and internat. documents

Input with the MC elements

Input from the other agents



```
{
  "discipline": {
    "Computer Science"
  },
  "level": "Advanced",
  "micro": true,
  "title": "",
  "topic": "Development of Generative AI assistants to support programming students",
  "domain": {}},
  "industry_relevance": {
    "Include hands-on lab components",
    "Address emerging research"
  },
  "pedagogical_approaches": {
```

COUNCIL RECOMMENDATION

of 16 June 2022

```
micro-credential elements:
Identification:
  Identification of Recipient: "Name of the individual receiving the certification."
  Supervision and Verification of Identity: "Method for identity verification during the course and evaluation."
  Name of Microcredential: "Official title of the micro-credential."
  Issuing University: "University offering the micro-credential."
  Entity for Learning Experience: "Institution providing the learning experience (if different)."

Description of the Learning Experience:
  Start and End Date: "Dates marking the duration."
  Language: "Language used for instruction."
  Admission Requirements: "Entry requirements and criteria."
  Learning Objectives: "Defined educational goals."
  Content Description: "Detailed educational content/subjects."
  Mode of Instruction: "Delivery mode (in-person, online, hybrid)."
  Learning Outcomes: "Skills, knowledge, and competencies achieved."
  Level of Experience: "Qualification level according to EQF/ISCED/EFET."
  Competency Framework: "Reference Frameworks (e.g., EQF, ESCO/COMP)."
  Learning Activities: "List of teaching and practical activities."
  Workload Theoretical: "Hours dedicated to theoretical content."
  Workload Practical: "Hours dedicated to practical tasks."

Assessment and Certification:
  Assessment Methods: "Evaluation methods validating learning outcomes."
  List of Trainers: "Trainer qualifications and experience."
  Accreditation Options: "Integration with other credentials."
  Outcome or Rights for Student: "Credential or additional benefits."
  Quality Assurance: "Procedures ensuring quality."
  Issuing Institution: "Details of issuing university."
  Date of Issue: "Date the credential is issued."
```

crewai

AI Agents

Initial
draft



Supervisor

Micro-credential: Generative AI Assistants for Programming Education

Learning Objectives:

- * Understand the principles and applications of generative AI in programming education.
- * Develop the ability to design and implement generative AI assistants to support students.
- * Evaluate the effectiveness of generative AI assistants in programming education.
- * Apply active learning and project-based learning strategies in the development process.

Learning Outcomes:

- * Upon completion of this micro-credential, students will be able to:
- * Design and develop generative AI assistants for programming education.
- * Apply active learning and project-based learning strategies in the development process.
- * Evaluate the performance and effectiveness of AI assistants.
- * Understand the ethical considerations of using AI in education.

Level of Experience:

Advanced (EQF Level 7)

Competency Frameworks:

ESCO (alignment to be determined), DIGCOMP (relevant areas to be determined)

Learning Activities:

- * Lectures and presentations
- * Hands-on lab sessions
- * Project-based assignments
- * Group discussions
- * Flipped classroom activities
- * Peer review sessions

Case studies, case studies.

Module 1: Introduction to Generative AI Assistants

- * Sub-module 1.1: Fundamentals of Generative AI
- * Sub-module 1.2: Model Selection and Training
- * Sub-module 1.3: Implementation and Testing

Learning Activities: Hands-on labs, project-based assignments, flipped classroom activities.

Module 2: Evaluation and Refinement

- * Sub-module 2.1: Evaluation Metrics for AI Assistant Performance
- * Sub-module 2.2: User Feedback and Iterative Improvement

Learning Activities: Active learning sessions focused on peer review, project presentations, and feedback integration.

crewai

AI Agents



Analyzer

+

ScrapeWebsiteTool

crewai



- In-depth analysis to identify market trends, learner demands, and skills gaps
- Uses job market APIs, employment databases, trend analytics tools
- Generates a trends analysis report based on the initial microcredential draft generated by the supervisor

crewai

AI Agents

Report
example



```
### Key Technical Skills

### Certifications
... specific certifications for generative AI assistants are still emerging, relevant certifications include:
... - Specialty: Validates expertise in building, training, and deploying machine learning models on AWS.
... demonstrates proficiency in using TensorFlow for building machine learning applications.
... managing AI projects effectively.

### Recommendations for Micro-Credential Refinements

1. **Curriculum Enhancement:**
   * **Emerging Tools:** Integrate training on LangChain and LlamaIndex to address the growing demand for these tools.
   * **Cloud Computing:** Expand the cloud computing module to cover practical aspects of deploying AI assistants on AWS, Azure, and GCP.
   * **Generative AI:** Enforce generative AI concepts and techniques.

2. **Hands-On Projects:**
   * **Real-World Applications:** Develop projects that simulate real-world scenarios in programming education, such as building an AI assistant for debugging code or generating personalized learning content.
   * **Active Learning:** Incorporate peer review and feedback sessions to enhance the learning experience.

3. **Assessment Methods:**
   * **Project-Based Assessments:** Increase the weight of project-based assignments to 70% to evaluate practical skills.
   * **Quizzes and Exams:** Reduce the weight of quizzes and exams to 10% and focus on assessing foundational knowledge.
   * **Participation:** Maintain a 20% weight for participation in discussions and activities to encourage engagement.

4. **Ethical Considerations:**
   * **AI Ethics Module:** Include a module on the ethical considerations of using AI in education, covering topics such as bias, fairness, and privacy.

5. **Stackability Options:**
   * **Advanced Micro-credentials:** Develop advanced micro-credentials in areas such as "Advanced MLP for Educational AI Assistants" and "Deploying AI Assistants on Cloud Platforms."

* ... generating real-time code suggestions.
* **Cloud Computing:** Highly demanded
* **Generative AI:** Highly demanded
```

crewai

AI Agents



Competency
Aligner



- Checks skills alignment with ESCO and
DIGCOMP based on refined microcredential
specification

crewai

AI Agents



Report
example



```
# ESCO Skills Alignment Report for Generative AI Assistants for Programming Education

## Methodology
The following report details the ESCO skills aligned with the "Generative AI Assistants for Programming Education" micro-credential. Skills were identified using the ESCO Skill Search Tool with the queries "artificial intelligence", "machine learning", "natural language processing", and "AI ethics". The most relevant skills were selected based on their applicability to the micro-credential's learning outcomes and content.

## Aligned ESCO Skills
- Principles of artificial intelligence: http://data.europa.eu/esco/skill/e465a154-93f7-4973-9ce1-31659fe16d26?language=en
- Utilise machine learning: http://data.europa.eu/esco/skill/8369c2d6-c188-4cf6-bd83-9668d8678433?language=en
- Natural language processing: http://data.europa.eu/esco/skill/fff0e2cd-d8bd-4b82-9daf-158b79d9688a?language=en
- Ethics: http://data.europa.eu/esco/skill/cef5c0f8-1e48-4c89-b6a7-aa7811049e5d?language=en
- Data mining: http://data.europa.eu/esco/skill/25f0ea33-b4a2-4f31-b7b4-7d28e827b180?language=en
```

crewai

AI Agents



- Checks compliance with relevant local and EU regulations (GDPR, EQF, national standards, etc.)

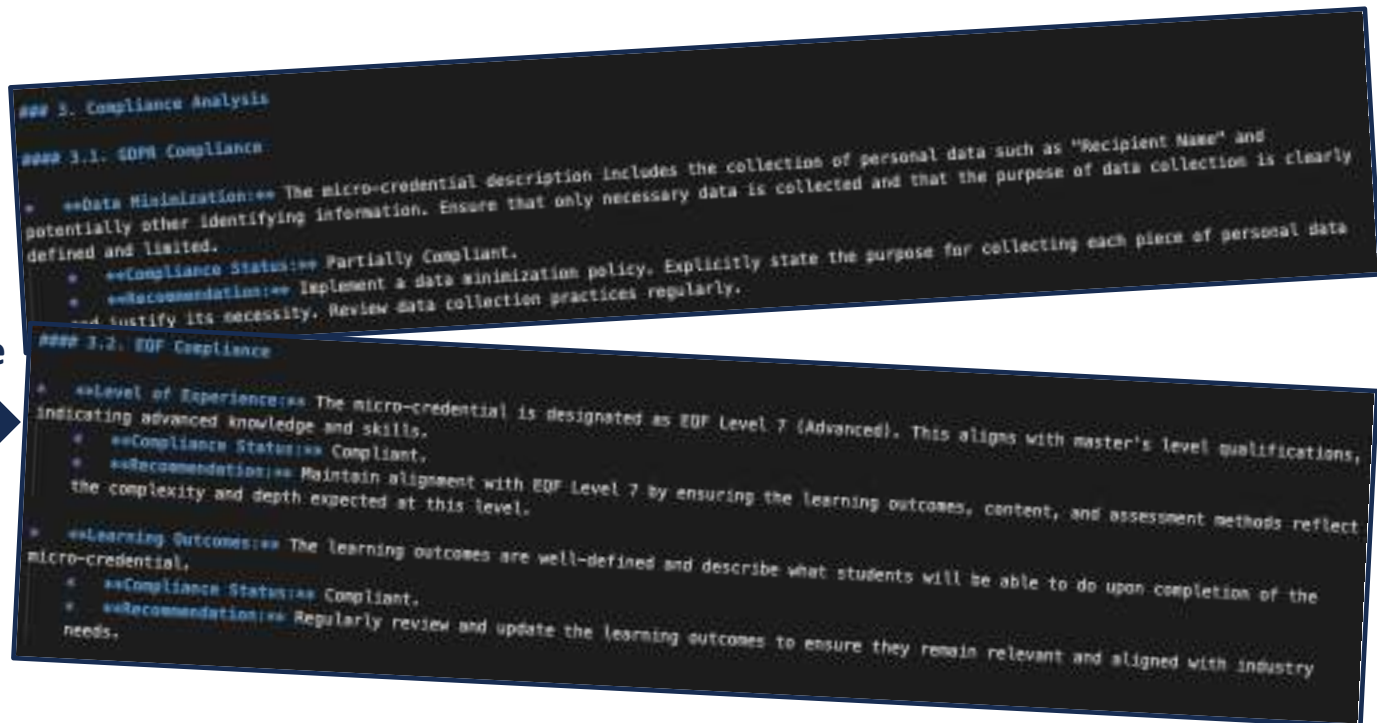
crewai

AI Agents



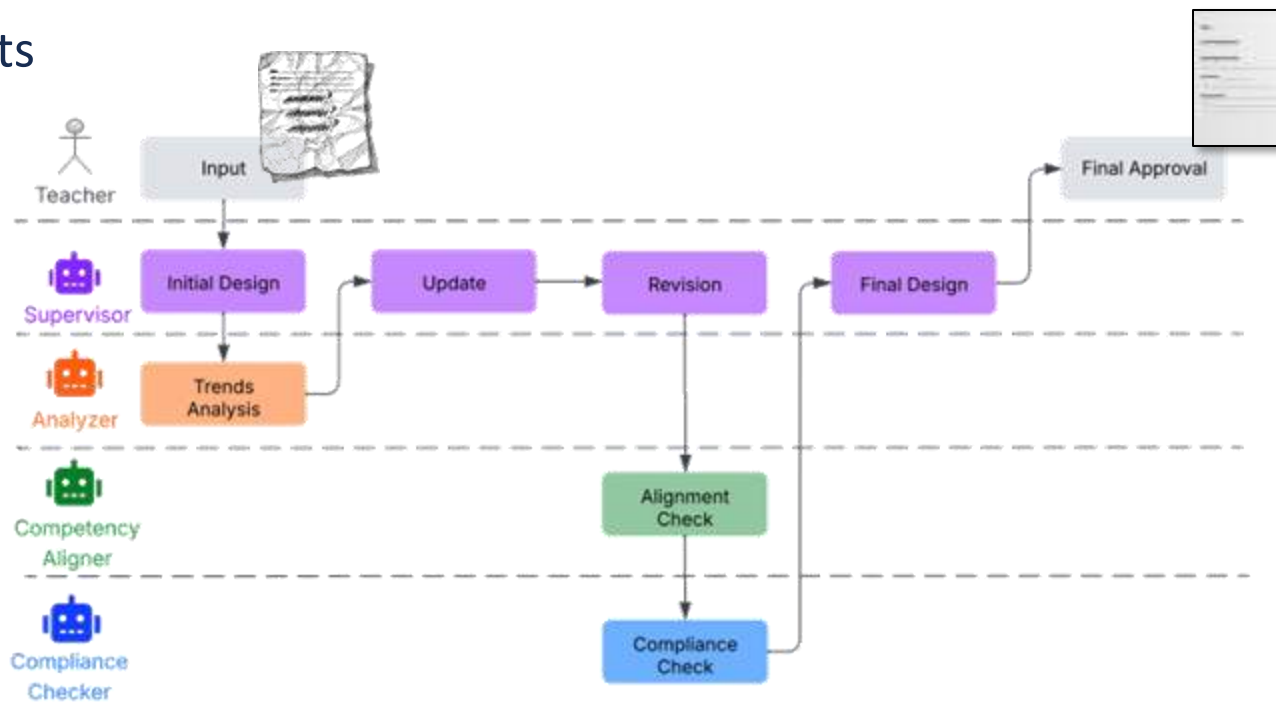
Compliance
Checker

Report
example

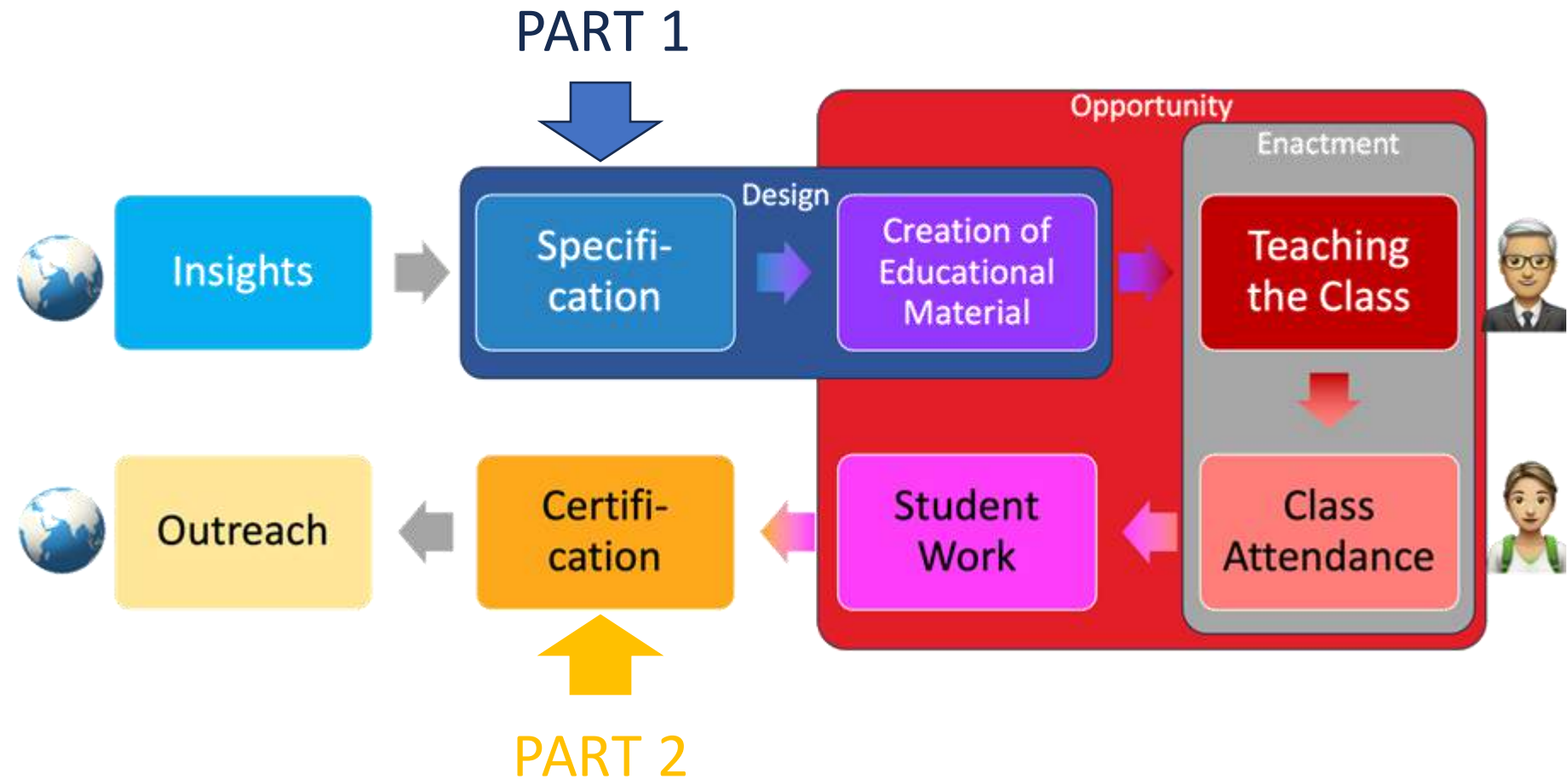


crewai

AI Agents



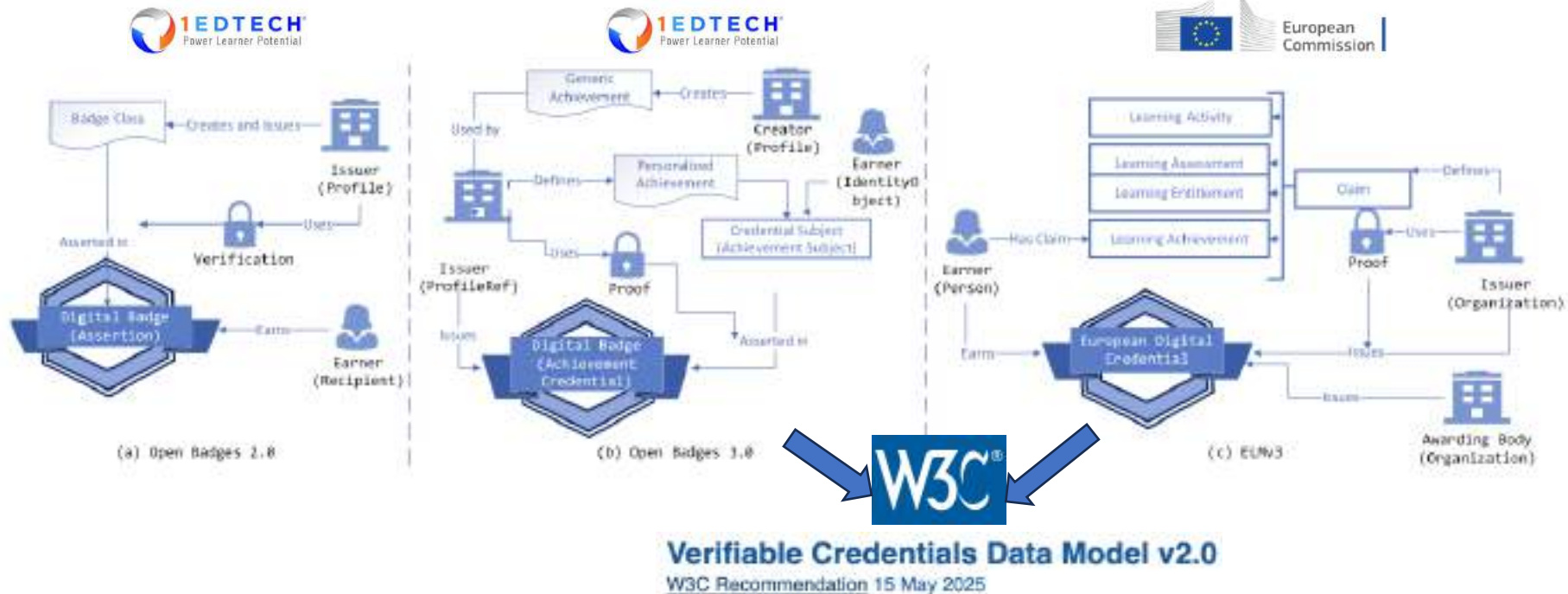
Name: _____
 Date: _____
 Class: _____
 Section: _____
 Teacher: _____
 Student: _____
 Page: _____



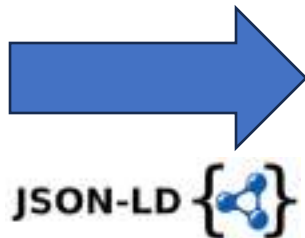
Technological interoperability

- **Data model**
- **Infrastructure for issuance / storage / validation**
- **Others:**
 - o User identification
 - o LMS / SIS integration

Data models: Vocabulary and relationships



Data models: Standard format



JSON-LD 

```
{
  "@context": [
    "https://w3id.org/openbadges/v3",
    "https://w3id.org/vc/2.0/credentials"
  ],
  "type": [
    "VerifiableCredential",
    "AchievementCredential"
  ],
  "id": "urn:uuid:f0e1d2c3-a4b5-6c7d-8e9f-0123456789ab",
  "issuer": {
    "id": "https://example.org/issuers/my-university",
    "type": "Profile",
    "name": "My University"
  },
  "issuanceDate": "2025-05-29T15:09:15Z",
  "credentialSubject": {
    "type": "Assertion",
    "id": "urn:uuid:a1b2c3d4-e5f6-7890-1234-567890abcdef",
    "recipient": {
      "type": "Profile",
      "id": "mailto:your_email@example.com",
      "name": "Your Name"
    }
  },
  "issuedOn": "2025-05-29T15:09:15Z",
  "badge": {
    "type": "BadgeClass",
    "id": "https://example.org/badges/intro-to-ai-v1",
    "name": "Introduction to Artificial Intelligence",
    "description": "Awarded upon successful completion of an introductory course",
    "image": "https://example.org/badges/intro-to-ai-icon.png",
    "issuer": "https://example.org/issuers/my-university"
  }
}
```

Data models: Standard format

Title...

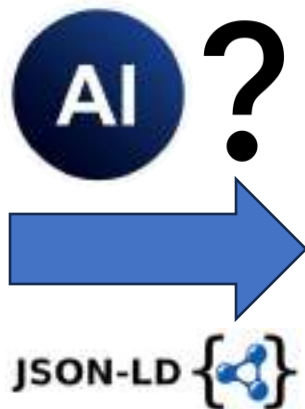
Learning Objectives

Learning Outcomes

Activities

Assessment

+



```
{
  "@context": [
    "https://w3id.org/openbadges/v3",
    "https://w3id.org/vc/2.0/credentials"
  ],
  "type": [
    "VerifiableCredential",
    "AchievementCredential"
  ],
  "id": "urn:uuid:f0e1d2c3-a4b5-6c7d-8e9f-0123456789ab",
  "issuer": {
    "id": "https://example.org/issuers/my-university",
    "type": "Profile",
    "name": "My University"
  },
  "issuanceDate": "2025-05-29T15:09:15Z",
  "credentialSubject": {
    "type": "Assertion",
    "id": "urn:uuid:a1b2c3d4-e5f6-7890-1234-567890abcdef",
    "recipient": {
      "type": "Profile",
      "id": "mailto:your_email@example.com",
      "name": "Your Name"
    }
  },
  "issuedOn": "2025-05-29T15:09:15Z",
  "badge": {
    "type": "BadgeClass",
    "id": "https://example.org/badges/intro-to-ai-v1",
    "name": "Introduction to Artificial Intelligence",
    "description": "Awarded upon successful completion of an introductory course",
    "image": "https://example.org/badges/intro-to-ai-icon.png",
    "issuer": "https://example.org/issuers/my-university"
  }
}
```

Infrastructure for issuance / storage / validation

Centralized

European Digital
Credentials



Distributed (blockchain-based)



Conformant Wallets

Welcome to the EBSI conformant wallets page! Here, you will find information about the different types of digital wallets that are available and conformant with EBSI specifications. The three main types of wallets include Holder, Issuer, and Verifier wallets, each with their own unique capabilities.

Test your wallet ↓

Find your wallet ↓





European Digital
Credentials

Issuance

Credential Information

Credential Title *

Description ¹

Further details

Valid from ¹ *

Expiration date ¹

Credential Type *

Accreditation

Start typing the title of linked accreditation

Click [here](#) to find out more about how to obtain and use your accreditation identifier. Please note that currently this is an experimental feature.

Claims *

Achievements ¹

Start typing the title of linked achievement

Create now

Activities ¹

Start typing the title of linked activity

Create now

Entitlements ¹

Start typing the title of linked entitlement

Create now

Assessments ¹

Start typing the title of linked assessment

Create now

Please fill in at least one of the properties in this section

Issuance

A Qualified e-Seal is needed

Send

Send credentials to the recipients' mailboxes or credential wallets.

Upload Again

Maximum file size: 5 MB

Accepted file formats: XLS, XLSX, XLSM

☒	RECIPIENT	CREDENTIAL TITLE	VALID	SEALED	SENT	RECEIVED	ACTIONS
☒	Johanna Marie Smith	Certificate of Excellence					

Items per page: 10 1 - 1 of 1

Seal

Send

European Digital Credentials

Certification

uc3m



Certificates and diplomas

 Upload



Diploma en S...
European Digital Credentials
for Learning



Reunión de A...
European Digital Credentials
for Learning



Reunión de A...
European Digital Credentials
for Learning

Storage



This credential has been signed: 10/12/2021 23:08 GMT +0100

Diploma en Sostenibilidad aplicado a la industria de la Moda

Valid from: 24/03/2021 00:00 GMT +0200 | Type: Diploma

uc3m

Download Preview | Export | Upload another credential

CARLOS ALVARO MONTE

UNIVERSIDAD CARLOS III DE MADRID

Diploma en Sostenibilidad aplicado a la industria de la Moda

UNIVERSIDAD CARLOS III DE MADRID

Overall grade

Module 1: Economic sustainability

Module 2: Economic sustainability

Module 3: Marketing & communication sustainability

Module 4: Experience about fashion

Module 1: Economic sustainability

Module 2: Economic sustainability

Module 3: Marketing & communication sustainability

Module 4: Experience about fashion

Diploma en Sostenibilidad aplicado a la industria de la Moda

Awarding Body: UNIVERSIDAD CARLOS III DE MADRID

Proven by

Title	Grade
Overall grade	5.9

Sub-achievements

Module 1: El contexto sostenible. Módulo 2: Economía sostenible. Módulo 3: Marketing y comunicación sostenible. Módulo 4: Experiencia about fashion

Specification

Learning Outcomes:

Identify the context and history of sustainable change in Fashion industry

Type: conceptual

Related ESCO Skills: *Indagar el contexto*

Apply the concepts of circular and sustainable economy in Fashion Industry

Type: procedural

Related ESCO Skills: *Analizar el impacto de la sostenibilidad*

Develop good and sustainable practices and skills in marketing and communication

Explore the new challenges of slow fashion segment

Language(s) of instruction: español

Volume of Learning: 120 hours

Maximum Duration: 6 months

ECTS Credit Points: 6

Learning Settings: Aprendizaje formal

Mode of Learning: Mixta

Learning Opportunity Type: Módulo de un programa, Programa de aprendizaje corto

Thematic Area: Programas y certificaciones genéricas sin mayor definición, Programas y certificaciones genéricas sin mayor definición

Entry Requirements: Bachiller level

Issuing organization

Achievements

Outcomes

(ESCO skills)

Workload

Storage

Validation

Credential summary Export Upload another credential Share English

Carlos Alario Hoyos

Issue

EDC Online Credential Builder Training Session Attendance

CertiDigital ^{cd}

The Vice Rectorate for Strategy and Digital Innovation of the Universidad Carlos III de Madrid declares that:

Carlos Alario Hoyos

attended on 30 October 2022 the

Training Session "How to design a digital university badge with EDC Online Builder"

This credential is a document created by the Spanish Ministry of Universities for the University of Carlos III de Madrid. It is a digital credential that can be used to verify the holder's attendance at the training session.

Exported as a PDF document. Signature: 10240002-2022-10-30-10-30-10-30

uc3m Universidad Carlos III de Madrid EDC Online Builder Training Session Attendance

Authentication and Verification Checks

- FORMAT**
This credential is technically valid.
- SEAL**
This credential is sealed by EUROPASS EDCI - UNIVERSIDAD CARLOS III DE MADRID. This credential has not been tampered with since issued.
- REVOCATION**
Function under development. Contact the awarding body for information about this credential's revocation status.
- ACCREDITATION**
Accreditation does not apply to this Credential.
- VALIDITY**
The credential is still valid.
- VERIFIED**

Infrastructure for issuance / storage / validation



Infrastructure for issuance / storage / validation



- Used in Erasmus+ **MICROCASA** (SEA)
- Developed by School of Internet (SOI) Asia Network, led by Keio University
- Currently uses **Open Badges 2.0**
- Easy integration with LMS (Moodle, Canvas) through LTI-compliant endpoints
- Possibility to host it locally



[Backpack](#) [Collections](#) [Certificates](#) [Issuers](#) [Account](#) ▾

[Issuers](#) / Micro-GEAR



Micro-GEAR

Micro-GEAR

calario@it.uc3m.es — Your Role: Owner

Issuer from the Micro-GEAR project

[Visit Website](#) 

Create Badge

...

Create Certificate

PDF Form Certificate

Image-based Certificate

ificates

This Issuer has no badges

No badges associated with this issuer, yet.

Create a badge





 Issued by:
Micro-GEAR

Created on:
05/02/2025

Micro-GEAR badge

This is the first badge received for attending this meeting in the project.

Award Badge

...

Criteria

Attending a meeting

0 Badge Recipients

RECIPIENT INFORMATION

Recipient Name (optional)

Notes: This criterion does not require the recipient to be named.

Identifier

Email Address

☒ Notify Recipient by Email

EXPIRATION (optional)

Expires On: Jun 2, 2025

ADD OPTIONAL DETAILS

☐ Narrative

☐ Evidence

☐ Explanation

Badge Unending

You can award a badge any number of times and you can set an unending expiration date.

[Learn More >](#)

What is Expiration?

This badge is not to expire. You can set the expiration date on a future date and then the badge will automatically expire.

[Learn More >](#)

Cancel

Award Badge



Issuers / Micro-GEAR / From MOOC to microcredentials

From MOOC to microcredentials

Award Certificate

+++

This lecture explores the evolution of online learning, tracing the journey from the early days of Massive Open Online Courses (MOOCs) to the rise of microcredentials. It examines how these flexible, modular forms of learning are reshaping education, upskilling, and career advancement.

This is to certify that



Criteria

- Identify key specifications and frameworks used in designing microcredentials.
- Analyze the role of digital credentials and technologies like EDC in promoting portability, verification, and transparency.

0 Certificate Recipients

Search by full email address

Search by Email



Infrastructure for issuance / storage / validation

- Used in Erasmus+ **ECOCredGT/MOCHILA** (LAC)
- Issuance of digital (micro)credentials for free (centralized) or paid (blockchain-based)
- Compatible with Open Badges 3.0
- “Compatible” with ELM



Proof Of Knowledge



General Information of the Credential

Add the general information of the credential. This information will be the same for all credentials issued with this design. In case you do not want to use any of these sections, leaving the field empty will not show it to the recipient.

- ☐ I want the credential to comply with Open Badge quality standards.
- ☐ Improve the quality of my EdTech Trusted Credential

These options will help your recipients have more information about obtaining the credential, improving its quality.

Details

Description

Description

This information will be displayed as the description of the credential on the recipient's page.

Skills

Skills

Load the verified skills, separated by commas (!), they will be displayed on the certificate page of the recipients.

Earning Criteria

Earning Criteria

This information will be displayed as requirements of the credential on the recipient's page.

Issuer Information

Additional Documents

Personalized General information

The credentials are issued in the LinkedDataProof format. On [this page](#), you can see

Cancel Save

General Information of the Credential

Add the general information of the credential. This information will be the same for all credentials issued with this design. In case you do not want to use any of these sections, leaving the field empty will not show it to the recipient.

☐ I want the credential to comply with Open Badge quality standards.

☐ Improve the quality of my EdTech Trusted Credential

These options will help your recipients have more information about obtaining the credential, improving its quality.

Details

Issuer Information

Additional Documents

Drop jpg, png, pdf files smaller than 20mb

Upload

Personalized General information

The credentials are issued in the LinkedDataProof format. On [this page](#), you can see more details. [Change format](#)

Cancel Save

General Information of the Credential

☐ I want the credential to comply with Open Badge quality standards.

☐ Improve the quality of my EdTech Trusted Credential

These options will help your recipients have more information about obtaining the credential, improving its quality.

Details

Issuer Information

Additional Documents

Personalized General information

You can add other general information that you need. This information will be seen by all certificate recipients for whom you choose this design.

Title of the information to be loaded

Complete the information here

Title of the information to be loaded

Complete the information here

Title of the information to be loaded

Complete the information here

Add Information

The credentials are issued in the LinkedDataProof format. On [this page](#), you can see more details. [Change format](#)

Cancel Save



Issuance

Select credential design

Completed

Credential information

Completed

Upload Credential Information

Institution Name, Faculty, or Department *

Erasmus+

Title *

Introduction to AI for education

Date received *

dd/mm/yyyy

Date *

dd/mm/yyyy

Credential validity

☒ No expiration

☐ Has expiration

* Required field

Next

Receiver details

Credential type

Language of the emails to recipients

Choose the language in which you want your emails containing these credentials to be sent to recipients.

Language

Spanish

Preview credentials

Select credential design

Completed

Credential information

Completed

Receiver data

Completed

Upload recipient information

First Name *

Cortes

Last Name

Alfonso

Recipient email *

colan@igit.uc3m.es

Additional identity validation

You can add the recipient's number as an additional method to verify the credential. The more verification will be the stronger the credential will be.

ID Number

Upload additional file (optional)

You can upload an additional file for each recipient (optional) to verify the credential. The more verification will be the stronger the credential will be.

Upload File

or drag file here

You can choose how the file name will appear in the recipient, depending on the document type.

File type (optional)

Choose a file type, optional (this field)

* Required field

Next

Credential type

Completed

Language of the emails to recipients

Choose the language in which you want your emails containing these credentials to be sent to recipients.

Language

Spanish

Preview credential



Issuance

 pok

Storage

Bulk sending

Manual sending

Select credential design

Completed

Credential information

Completed

Receiver data

Completed

Credential type

Completed

Choose the credential format

☒ Basic Credential

Free. Your recipients will be able to use and share their credentials through the web for free. It is an image available from the PSD website.



☐ Blockchain Credential

Increased security

WPT

Free. Your recipients will receive their credentials issued as an NFT on the blockchain, more secure and forever. You can use them on the web and polygons.



Blockchain networks

 Polygon

Use Polygon for free minting on Polygon network (no minting fee)

Next

Language of the emails to recipients

Choose the language in which you want your emails containing these credentials to be sent to recipients.

Language

Spanish

Preview credential



Validation

Credential



Validate the credential

You can verify the identity of the recipient of this credential by entering the validation code in the corresponding field and clicking on verify. If you want greater security, their identification can also be validated.

Erasmus+

Issues the following credential to

bdb6a...7ecb5

with the title

Introduction to Artificial Intelligence



Issued on: 20/07/2025

This is a web3 certificate. To issue certificates as NFTs on the Blockchain, go to www.pok.tech



Issued on 5/29/2025



No expiration

More credentials from this recipient

If you own this credential, log in or register to choose which credentials to display.

[Log in](#)

Validate web credential

Enter the last name(s) to verify the identity of the credential holder

[Verify](#)

Once the credential is verified, you will be able to download and share it:

 Download

 PDF

Share Credential

Verify your identity to add the credential to your LinkedIn profile

[or share on LinkedIn](#)

or share it on social media





Does the credential contain a typo or incorrect information?

[Report to the issuer](#)



Validation

Credential

 **Validate the credential**
You can verify the identity of the recipient of this credential by entering the validation code in the corresponding field and clicking on verify. If you want greater security, their identification can also be validated.

Erasmus+

Issues the following credential to

Carlos Alario

with the title

Introduction to Artificial Intelligence



Issued on: <https://pok.tech>

This is a Web3 certificate. To issue certificates as NFTs on the Blockchain, go to www.pok.tech

 Issued on 5/26/2025

 No expiration

More credentials from this recipient
If you own this credential, log in or register to choose which credentials to display. [Log in](#)

Validate web credential

Enter the last name(s) to verify the identity of the credential holder.

 Code successfully validated.

The credential has been validated, now you can download and share it.

 Download

 pdf

Share Credential
Add your credential to your LinkedIn profile

[in](#) Share on LinkedIn

or share it on social media

 Does the credential contain a typo or incorrect information?
[Report to the issuer](#)

Introduction to Artificial Intelligence

Issuing date: 29/09/2025 Valid from: 29/09/2025 Type: Genérica Credential id: urn:credential:d5be1861-05a0-4cd9-a816-4a800a006516

Home Export Upload another credential Share Español

Carlos Alario

Issuer

Introduction to Artificial Intelligence

FreeMuse

Issue the following credential to

Carlos Alario

with the title

Introduction to Artificial Intelligence



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Authentication and Verification Checks

- FORMATO**
Esta credencial es técnicamente válida.
- SELLO**
La credencial incluye el Sello de NEGOCIOS DISRUPTIVOS S.A. Esta credencial no ha sido manipulada desde su emisión.
- REVOCACIÓN**
Función en fase de desarrollo. Póngase en contacto con el organismo de expedición para obtener información sobre el estado de revocación de la credencial.
- ACREDITACIÓN**
La acreditación no se aplica a esta credencial.
- VALIDEZ**
La credencial mantiene su validez.
- VERIFICADO**



Upload to Europass (ELM - JSON-LD)



Stackability

Learning Paths

New Path

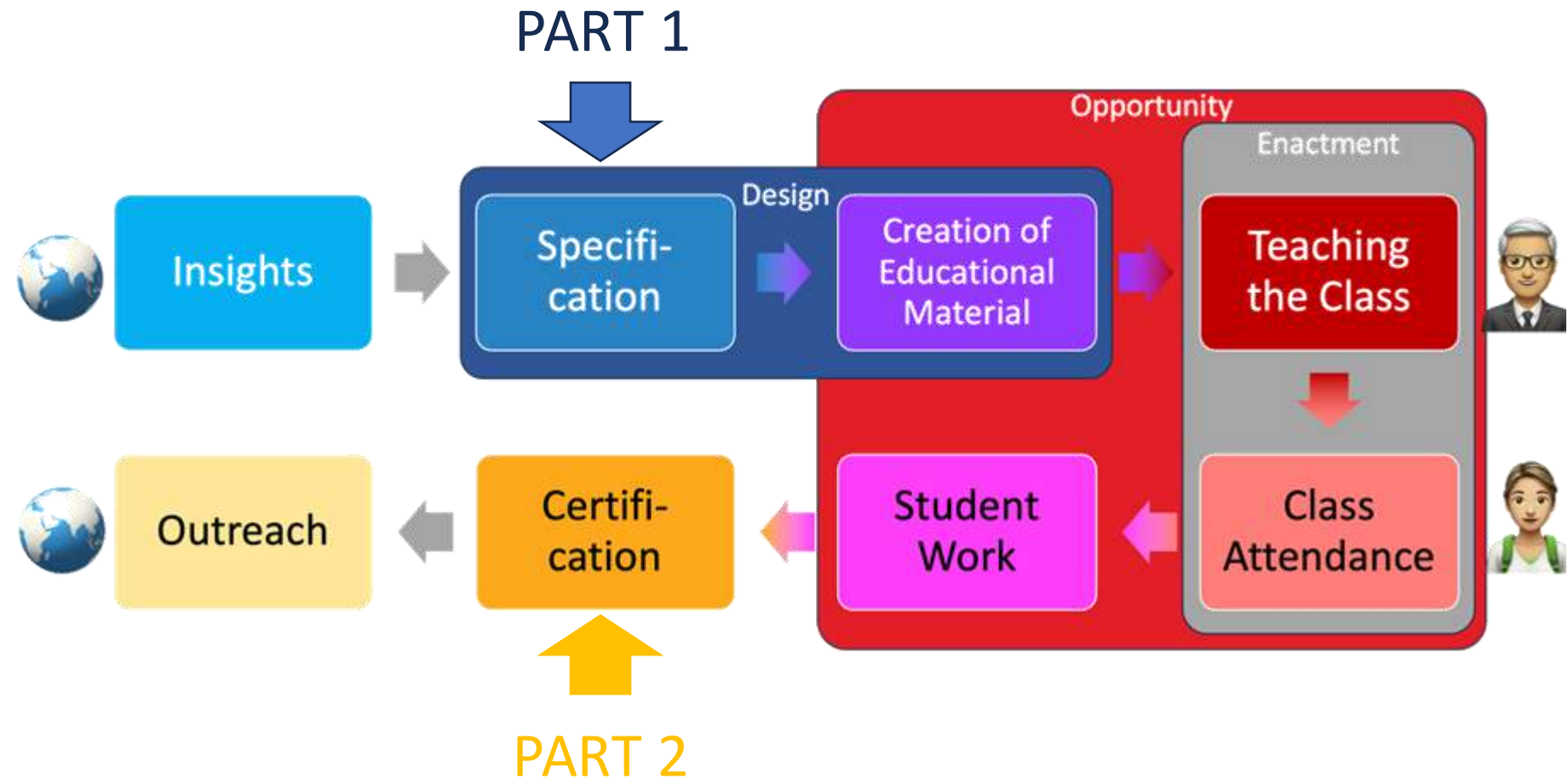


Here you will see all the learning paths

In this section, you can create and view all your learning paths. These paths can be composed of badges or certificates that function as micro-credentials to achieve/complete a specific path.

- Create a new learning path
- Customize it by selecting the credentials that make it up
- Select the credential they will receive upon completing the path

New Path



Technologies for the *Specification* and *Certification* of Microcredentials

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