

Utilising a Meta-Data Standard for Digital Credentials and Recognition of Open Learning



Jochen Ehrenreich jochen.ehrenreich@heilbronn.dhbw.de

Elena Trepulè elena.trepule@vdu.it

ICDE World Conference on Online Learning – Dublin 2019

jochen.ehrenreich@heilbronn.dhbw.de

<https://oepass.eu/>





Erasmus+



Why is a Meta-Data standard needed?

Short Learning Programmes, Micro-Credentials, Unbundling of Education

Recognition, Validation, Credit Transfer

Trust and Transparency

Strategic Implications for HEIs

Student

wants to

- display
- accumulate
- transfer

credentials/credits using the

Higher Education Institution

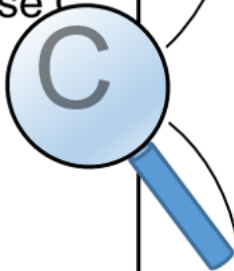
needs sufficient information about a credential to make an informed and consistent decision on recognizing open learning as ECTS credits towards a degree programme

Open Education Provider

needs to know which information they should provide and which formal requirements exist regarding workload, learning outcomes, assessment, ID verification, EQF level, etc.

Learning passport

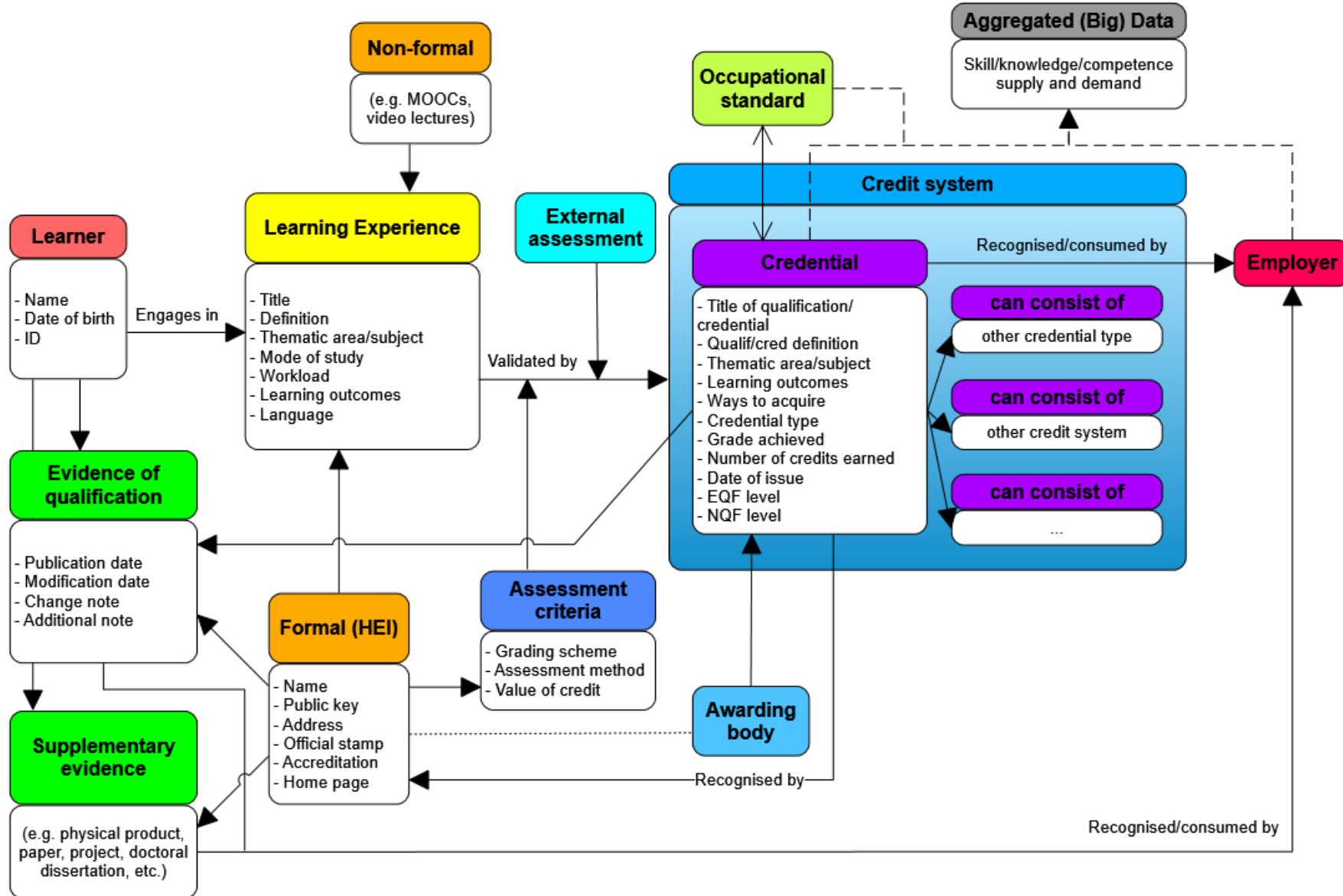
Open Course A
Open Course B
Open Course C

**Meta Data Standard**

Descriptive	Structural	Administrative
Title	Identifier	Homepage
Alternative label	Reference language	Landing page
Definition	EQF level	Release/publication date
Learning outcome description	NQF Level	Update/modification date
Field	Credit / Token System	Change note
Is partial qualification	Number of Credit Points	History note
Is made up of	ECTS credit points	Additional note
Ways to acquire	Volume of learning	Status
Related occupation	Entry requirement	Replaces
Awarding activity	Expiry period	Replaced by
Awarding method	Accreditation	Owner
Recognition	Supplementary document	Provenance Agent
Mode of Study		Publisher
Assessment_method		
Grade_scheme		

**Requirements for Recognition towards a Higher Education Qualification**

Workload
Learning Outcome
Assessment & ID





To be able to make an informed recognition decision within reasonable time limits, the e-evaluate project proposes a procedure based on seven criteria:

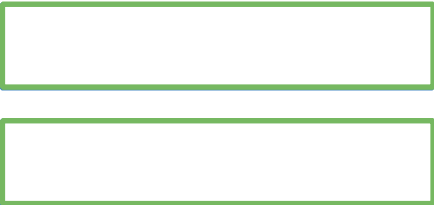
1. Quality of the course
2. Verification of the certificate
3. Level of the course
4. Learning outcomes
5. Workload
6. The way study results are tested
7. Identification of the participant

Source:
<https://www.nuffic.nl/documents/1141/practitioners-guide-for-recognition-of-e-learning.pdf>

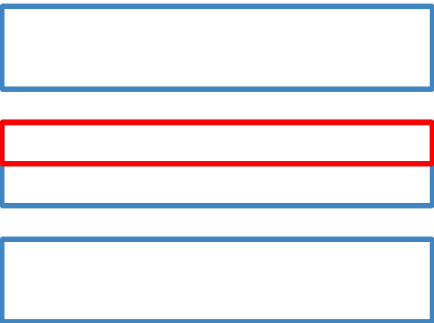
Unbundling of Higher Education

**Traditional
model**

Master's Degree

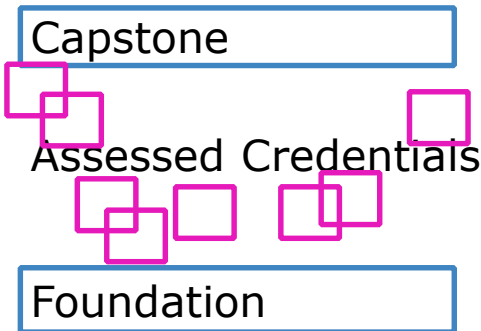


Bachelor's Degree

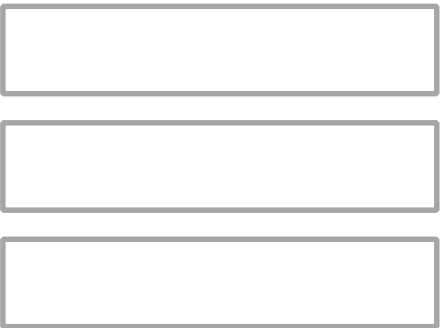


**Deakin
Professional
Practice Degree**

Master's Degree



Bachelor's Degree

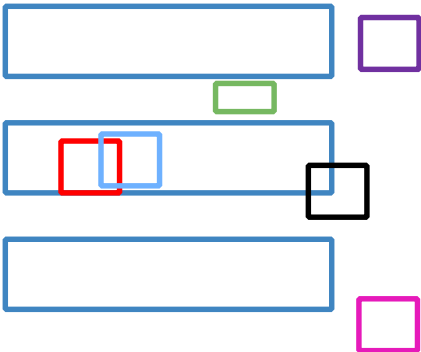


**Core
Curriculum
model**

Master's Degree

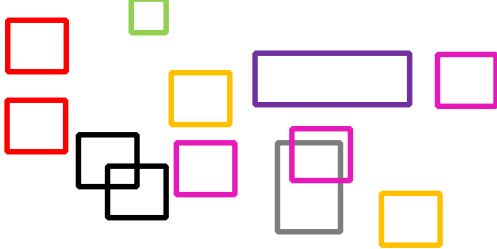


Bachelor's Degree

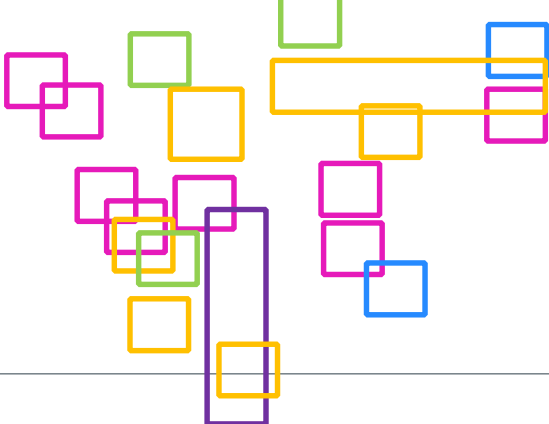


**Fully
Flexible
model**

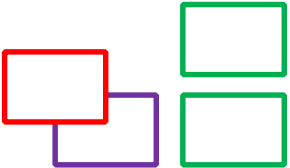
Master's Degree



Bachelor's Degree



**CPD
model**



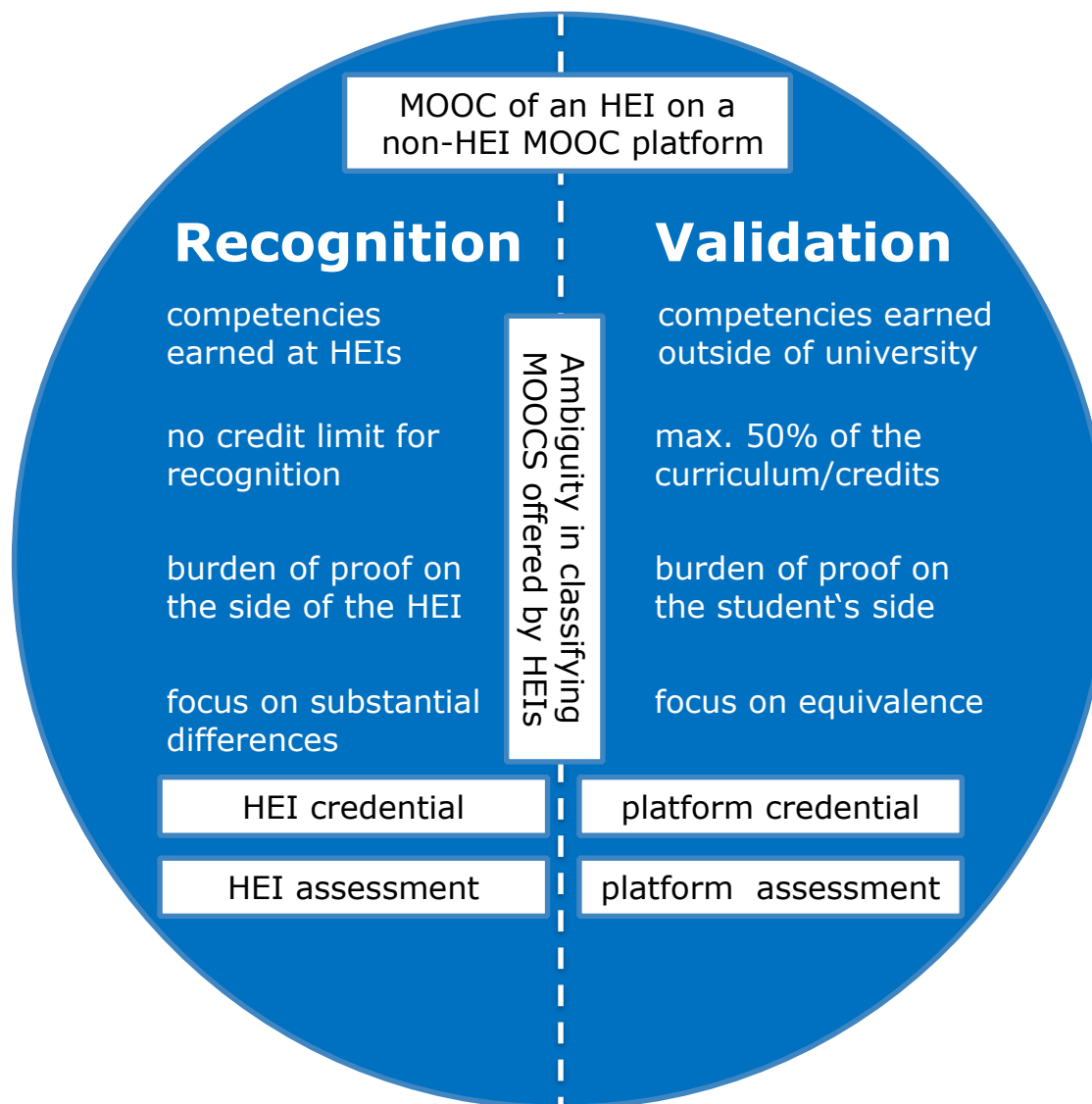
Master's



Bachelor's



Physical Student Mobility: transfer credits	Virtual Student Mobility: transfer credits
between higher education institutions (HEIs)	from online and other non-traditional short learning programmes which might be offered not only by HEIs, but also by other education and training sectors
from accredited study programmes	which are typically not higher education accredited
with credits described in ECTS	which are often not described in ECTS, instead use alternative systems of credentials
with controlled assessment environments	where identity verification processes and assessments are more complex and challenging than in face-to-face settings
with learning agreement from home HEI	without formal statement from home HEI about the perception of externally acquired learning
with module description that provides information about workload, learning outcome and assessment conditions	which lack transparency regarding academic content and learning methodologies
→ Trust and Transparency	→ Lack of Trust and Transparency



Source:
<https://hochschulforumdigitalisierung.de/de/blog/digital-anerkannt-so-geht-qualit%C3%A4tsorientierte-anerkennung-und-anrechnung-von-moocs-hochschulen>

Short Learning Programmes



Level

European Qualification Framework (EQF)
ranging from foundation to doctoral level (4 to 8)



Study time

Study time between 5 to 60 ECTS



Flexibility and scalability

Implementation of flexible and scalable SLPs as main part of continuing education/continuous professional development and lifelong learning policies. Flexibility by for example responses to market, flexible building blocks to degrees, openness, non-stop enrolment, flexible learning paths, asynchronous, etc. and scalability by progressive accreditation, massive audience, easy context adaptation, etc.



Recognition and accreditation

Recognising SLP qualifications as part of wider degree programmes. Such that these qualifications are compliant with the (renewed) EQF as well as with quality assurance and accreditation procedures



Relation to formal degrees

SLPs must be regarded as building blocks to formal degrees



Target groups

Mainly non-traditional learners and adult learners, who combine work and study or learn for personal development



Online and blended

The E-SLP project will mainly focus on flexible online/blended SLPs



Society and Market driven

- responding to the demand of large numbers of students for a shorter study
- responding to immediate economic knowledge and skills requirements in enterprises, to cultural, social and environmental needs and personal development in society
- responding to the needs of large numbers of learners for continuous education and continuous professional development and innovation in enterprises

Source:
<https://e-slp.eadtu.eu/>

European MOOC Consortium: Common Microcredential Framework

- between 100 and 150 hours (4-6 ECTS), including Summative Assessment
- Level 6 or Level 7 in the European Qualification Framework
- Summative Assessment that enables the award of academic credit
- reliable method of ID verification at the point of assessment
- transcript that sets out the learning outcomes for a Course, total study hours required, EQF level and number of credit points earned.

Additional Recommendations

- hours of study per week are suited to learners who will need to fit their study around existing commitments in their lives
- combine a mix of theory and practice

Source:
https://emc.eadtu.eu/images/EMC_Common_Microcredential_Framework.pdf/

PROJECT OUTPUTS

By 2020, the project will significantly expand the European knowledge-base on recognition of open learning through



CREDENTIALS IN OPEN EDUCATION

A quality system for analysing credentials through a lens of ease-of-recognition and portability.



LEARNING PASSPORT

A standard form for collection of information about open education experiences.



RECOGNITION AND VERIFICATION OF CREDENTIALS IN OPEN EDUCATION

A proposition for a technological infrastructure to support the portability and recognition of open credentials.



USING ECTS FOR OPEN EDUCATION

A methodology for the calculation, verification and assessment of learning outcomes and workload in digital environments.



REALISING THE SCOPE OF OPEN EDUCATION THROUGH CREDENTIALISATION

The report will look at the future of Open Education, by considering a set of scenarios where education is fully open or fully closed, and where the systems of credentialisation is fully open or fully closed.



OPEN EDUCATION PASSPORT

Improving the Portability and Recognition of Open Learning





SUPPORTING LEARNING EXCELLENCE

through Micro-Credentialling in Higher Education



APRIL 25, 2019

Blockchain and Education: Lille Conference Examines The Next Steps



FEBRUARY 18, 2019

DHBW 'Fachtag'



MicroHE aims to *provide the most comprehensive policy analysis yet conducted of the impact of modularisation, unbundling and micro-credentialing in European Higher Education*, and will address the challenges described above by:

- **gathering the state of the art in micro-credentialing in European Higher Education today**, by organizing the first European survey on micro-credentials in HE, surveying at least 70 institutions across the continent, with the aim of understanding the current level of provision, the types of micro-credentials offered and future trends in provision of micro-credentials
- **forecasting the impacts of continued modularisation of Higher Education on HE Institutions** by using forward-scanning techniques, specifically through the use of DELPHI methodology
- **examining the adequacy of European recognition instruments** for micro-credentials, in particular ECTS, the diploma supplement and qualification frameworks
- **proposing a 'credit supplement'** to give detailed information about micro-credentials in a way compatible with ECTS, the diploma supplement and qualification frameworks
- **proposing a meta-data standard and developing an online clearinghouse** to facilitate recognition, transfer and portability of micro-credentials in Europe.



Erasmus+




VYTAUTAS MAGNUS
UNIVERSITY
Innovative studies institute




Context of the OEPass and MicroHE projects within the European Landscape



European Commission

English 



[Home](#) > [Departments and executive agencies](#) > [Education, Youth, Sport and Culture](#)

DIRECTORATE-GENERAL | EAC

Education, Youth, Sport and Culture

This Commission department is responsible for EU policy on education, culture, youth, languages and sport



EACEA


Education, Audiovisual and Culture Executive Agency

European Commission > EACEA > Erasmus+ > Actions > Key Action 3: Support for policy reform

 [ERASMUS+](#) [CREATIVE EUROPE](#) [EUROPE FOR CITIZENS](#) [EU AID VOLUNTEERS](#) [INTRA-AFRICA](#) [EUROPEAN COMMISSION](#)

[Erasmus+](#) [Actions](#) [Funding](#) [Beneficiaries Space](#) [Selection Results](#) [Library](#) [News](#) [Events](#) [Contact](#)


Key Action 3: Support for policy reform

 Share


Key Action 3 provides grants for a wide variety of actions aimed at stimulating innovative policy development, policy dialogue and implementation, and the exchange of knowledge in the fields of education, training and youth. The majority of them are managed by the EACEA. Most of the actions under KA3 are managed outside the annual general call for proposals.


The three main instruments that are managed through specific calls for proposals [published on this website](#):

- **Initiatives for policy innovation** giving support to **forward-looking cooperation projects** on policy developments and **European policy experimentations** led by high level organisations and public authorities to stimulate innovative policies and prepare their implementation;



European Commission


English 



[European Commission](#) >


[Employment, Social Affairs & Inclusion](#)

Employment, Social Affairs & Inclusion




ESCO

European Skills/Competences, qualifications and Occupations




[European Commission](#) > [Futurium](#)



Europass

[Join Europass](#)

 [New Europass](#) [Document Library](#) [Events](#) [Latest News](#) [About](#)

Digitally-signed credentials

Digitally-signed credentials are **electronic records** given to a person to **certify the learning** they have received. Learning includes formal education, training, an online course, volunteering experience and



ESCO

European Skills/Competences, qualifications and Occupations

European Commission > ESCO > Occupations > University and higher education teachers



ABOUT ESCO

CLASSIFICATION

TOOLS & RESOURCES

FORUM



Occupations

Skills/competences

Qualifications

Search

OCCUPATIONS

- > 0 Armed forces occupations
- > 1 Managers
- ▼ 2 Professionals
 - > 21 Science and engineering prof...
 - > 22 Health professionals
 - ▼ 23 Teaching professionals
 - ▼ 231 University and higher ed...
 - > 2310 University and high...
 - > 232 Vocational education tea...
 - > 233 Secondary education te...
 - > 234 Primary school and earl...

University and higher education teachers

English (en) ⌵



ISCO-08 code

2310

Description

University and higher education teachers prepare and deliver lectures and conduct tutorials in one or more subjects within a prescribed course of study at a university or other higher educational institution. They conduct research, and prepare scholarly papers and books.

Tasks include -

- (a) designing and modifying curricula and preparing courses of study in accordance with requirements;
- (b) preparing and delivering lectures and conducting tutorials, seminars and laboratory experiments;



View > Diploma in Sociology



Diploma in Sociology

Date: 12/05/2019 | Type: Diploma



Issuing organisation

Credential owner

Achievements

Assessments

Activities

Verification

Signature

Sub-credentials

Other Data

Johanna Marie Smith

Date of Birth: 15 Oct 1987

Nationality: France

Student ID Number: 123124G

Technical Data



Property	URI	Usage note
Identifier (required)	adms:identifier	This property refers to an (alternative) identifier of a qualification like a national code or any other unique code issued by some agency and/or system. This can be on any level: an international, national, regional, private or institutional level (e.g. the unique and persistent identifier of the qualification within the publishing system). (See Identifying Resources and How to work with Identifiers?)
Reference language	esco:referenceLanguage	The ISO 639-1 code of the language (2-char language code) in which information about the qualification is published. This language will be used as the default reference language for the qualification.
Title (required)	skos:prefLabel	The exact and official title of the qualification, in a given language. This property can be repeated for parallel language versions of the title. There can be no more than one title per language. It is mandatory to mention the title at least in the reference language if specified. See Multilingual Aspects for more information.
Alternative label	skos:altLabel	An alternative name of the qualification (e.g. synonym, acronym).
Definition	skos:definition	Short and abstract description about the qualification. This property contains a free-text and can be repeated for parallel language versions of the definition. There can be no more than one definition per language. It is mandatory to mention the definition at least in the reference language if specified. See NodeLiteral and How to work with NodeLiterals?
Learning outcome description (required)	dcterms:description	The full learning outcome description of the qualification. This property contains a free-text and can be repeated for parallel language versions of the learning outcome description. There can be no more than one learning outcome description per language. It is mandatory to mention the description at least in the reference language if specified. See NodeLiteral and How to work with NodeLiterals?
Field (required)	esco:hasISCED-FCODE	This property relates the qualification to the ISCED FoET 2013 classification code (Field of Education and Training Code). It indicates the thematic area of the qualification. See Controlled vocabularies to be used.
EQF level (required) (non-applicable for qualifications which are not part of national qualifications framework)	esco:hasAssociation	This property relates the qualification to the level as specified by the European Qualification Framework. See AssociationObject.
NQF Level	esco:hasAssociation	This property relates the qualification to the National or Regional Qualification Framework level. See AssociationObject.
Credit / Token System	microhe:CreditSystem	Name of the Credit system in use, such as ECTS etc.Relational to microHE:CreditSystem_type
Credit System Title	microhe:CreditSystem_label	The exact and official title of the credential-type/credit-system if available

Property	URI	Usage note
Credit System Definition	microhe:CreditSystem_definition	Short and abstract description about the credential type/credential system
Credit System Value	microhe:CreditSystem_value	Value described in terms of hours, certificates, accomplishments or other measure used for the token
Credit System Issuer	dcterms:creator	Which organization / consortium / law regulates who can issue this token
Can consist of	microhe:hasAssociation	Which other credential type/credit system can be used to build this credential type/credit system
Credit System Reference Number	adms:identifier	Reference number
Number of Credit Points	microhe:hasCreditPoints	This property contains the credit points assigned to the qualification, following the credit system outlined above
ECTS credit points	esco:hasECTSCreditPoints	This property contains the credit points assigned to the qualification, following in the ECTS credit system.
Volume of learning	esco:volumeOfLearning	This property contains an indication of how many hours of learning efforts are needed, i.e. notional learning hours.
Is partial qualification	esco:isPartialQualification	Indicates whether a qualification is a full qualification or part of another qualification. In the latter, the qualification is only obtained as a formal outcome of a “broader” qualification of which it is part. The default value is ‘false’.
Is made up of	microhe:consistsof	Describes the (micro) qualifications which have been linked together to create the qualification
Ways to acquire	esco:waysToAcquire	This property indicates whether the qualification can be acquired by validation of a formal, non-formal and/or informal learning processes. The different ways are encoded as skos:Concepts in a controlled vocabulary defined by the QMS (see Controlled vocabularies to be used)
Educational Credential Type	microhe:hasAssociation linked to microhe:CreditSystem	Provide the full name of the qualification type or credit system in use, such as ECTS, degrees etc.
Entry requirement	esco:hasEntryRequirement	This property refers to an entry requirement of the qualification.
Expiry period	esco:expiryPeriod	The validity period of a qualification.
Learning outcome	esco:hasAssociation	Expresses a learning outcome of the qualification as a relation to a skill, competence or knowledge from a known framework or standard classification. The recommended framework is ESCO. See AssociationObject Minimum 1 of each skill, competence, knowledge
Related occupation	esco:hasAssociation	Relates the qualification to an occupation or occupational field from a known framework or standard classification. The recommended framework is ESCO. See AssociationObject
Recognition	esco:hasRecognition	Information related to the formal recognition of a qualification, such as the country and/or region where the qualification was recognised and optionally the date of formal recognition.
Awarding body	microhe:AwardingBody	

Property	URI	Usage note
Awarding activity (Required to specify the awarding body/ competent authority and the Country/Region)	esco:hasAssociation	Refers to an activity related to the awarding of the qualification, such as the country or region where the qualification is awarded, the awarding body and optionally the awarding period.
Awarding method	microhe:AwardingMethod	Is the qualification certified through: <ul style="list-style-type: none"> undergoing the learning activity an assessment of competence acquired
Grade scheme	microhe:GradeScheme	Description of the grading scheme, and what the grade means.
Mode of Study	microhe:mode	Online / Face to Face / Practice / Workplace / informal learning
Public key	microhe:PublicKey	Public Key the institution uses to identify itself and authenticate the credentials
Assessment method	microhe:Assessmentmethod	Description of the form of assessment
Accreditation	esco:hasAccreditation	Information related to the accreditation, quality assurance and regulation of a qualification, such as the agent that was primarily responsible for the accreditation, the date the accreditation was formally approved, the review- and/or expiry date and additional information about the accreditation and used standards in the assessment and quality assurance of the qualification.
Homepage	foaf:homepage	The homepage (a public web document) of a qualification. There can be only one qualification that has a particular homepage.
Landing page	dcat:landingPage	A web page that can be navigated to in a web browser to gain access to the qualification and/or additional information. A qualification might not have a homepage but instead a landing page.
Supplementary document	esco:supplementaryDoc	A public web document containing additional documentation about the qualification, such as a diploma or certificate supplement. It can be any document containing further information about the qualification. The document can be a web page that can be navigated or a downloadable file. See Document and How to work with Documents?
Release/publication date	dcterms:issued	Date of formal publication. The date the qualification was published and the metadata about the qualification was made available
Update/modification date	dcterms:modified	Date when the qualification was last updated since it was published.
Change note	skos:changeNote	A property to record information about fine grained changes of the qualification. This property contains a free-text and can be repeated for parallel language versions of the change note. See NodeLiteral and How to work with NodeLiterals?
History note	skos:historyNote	A property to record information about major lifecycle changes of the qualification (e.g. past state/use/meaning of a qualification). This property contains a free-text and can be repeated for parallel language versions of the history note. See NodeLiteral and How to work with NodeLiterals?

Property	URI	Usage note
Additional note	esco:additionalNote	A property to record any further information about a qualification. This property contains a free-text and can be repeated for parallel language versions of the additional note. See NodeLiteral and How to work with NodeLiterals?
Status (required if not valid)	iso-thes:status	The publication status of a qualification, e.g. released, obsolete, ... It MUST take one of the predefined values as specified in the section Controlled vocabularies to be used.
Replaces	dcterms:replaces	A related qualification that was replaced, displaced or superseded by this qualification. The learning outcomes of a qualification might change overtime and therefore result in another qualification replacing the old one.
Replaced by	dcterms:isReplacedBy	In case a qualification is deprecated, this property refers to the qualification that replaces, displaces or supersedes the first qualification.
Owner	dcterms:rightsHolder	Refers to the owner of the qualification. The organization owning rights over the qualification. For example, an awarding body, a national or regional authority or an international organization.
Provenance Agent	dcterms:creator	Organisation primarily responsible for establishing defining and managing the qualification and its curricula. Sub-creator can be a natural person
Publisher	dcterms:publisher	Refers to the agent responsible for making the information about the qualification available.
Holder's Name	microhe:Holder	Name of the person receiving the credential
Date of birth		Date of birth of the person receiving the credential in day/month/year in format
Student ID	microhe:PublicKey	Student identification number or code or public key used to authenticate student
Grade	microhe:Grade	Grade achieved
Credits awarded	microhe:hasCreditPoints	Number of credits awarded
Sub-Credentials contained	microhe:consistsOf	Other credentials which may make up this credential, by Unique Identifier
Unique Identifier	adms:identifier	Automatically generated for each credential
Supplementary evidence	esco:supplementaryDoc	A public web document containing additional documentation about the credential awarded to the user, such as a diploma or certificate supplement, or a doctoral dissertation
Credential	microhe:hasAssociation	The credential which is being awarded to the student
Expiry Period	esco:expiryPeriod	Date on which the credential will expire



Micro-Credential Meta-data Standard draft

Based on the Qualifications metadata schema and ESCO data schema, extended with MicroHE:

<http://helium.ijs.si/microhe/escomc.html>

The schema defines the following properties:

1. INFORMATION IDENTIFYING THE AWARDING BODY

Owner (URI: `dcterms:rightsHolder`)

Defined by `Owner` property.

Usage Note: Refers to the owner of the qualification. The organization owning rights over the qualification. For example, an awarding body, a national or regional authority or an international organization.

Provenance Agent (URI: `dcterms:creator`)

Defined by `Provenance Agent` property.

Usage Note: Organisation primarily responsible for establishing defining and managing the qualification and its curricula.
Sub-creator can be a natural person

Public Key (URI: `microhe:PublicKey`)

<https://github.com/european-commission-europass/EDCI-Data-Model>

A new kind of university for the Digital Pioneers of tomorrow

CODE is a newly founded private university of applied sciences that is embedded into the vibrant network of Berlin's digital economy.

[Our bachelor programs >](#)

- Learning Experience
- Study Programs
- Campus & Partners
- Admission & Tuition
- About CODE



Innovative study programs

CODE offers three bachelor's programs for young talents striving to become developers, designers and digital entrepreneurs.



Creating something meaningful

The core of our study programs are real-world projects, accompanied by seminars and workshops with an advanced flipped-classroom concept.



Challenge-based learning

Assisted by a mentor, students evolve competencies, learn how to collaborate, and reach their full potential.



Positive impact on society

A Science, Technology and Society Program that supports a broad horizon and a multidisciplinary approach to problem-solving.

Thank you!



jochen.ehrenreich@heilbronn.dhbw.de

<https://oepass.eu/>

The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

This work is licensed under a Creative Commons Attribution ShareAlike 4.0 International License.

You are free to:

Share — copy and redistribute the material in any medium or format

Adapt — remix, transform, and build upon the material

for any purpose, even commercially.

The licensor cannot revoke these freedoms as long as you follow the license terms.

Under the following conditions:

Attribution — You must give appropriate credit, provide a link to the license, and indicate if changes were made. You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use.

ShareAlike — If you remix, transform, or build upon the material, you must distribute your contributions under the same license as the original.

No additional restrictions — You may not apply legal terms or technological

