



blockchain skills for Europe

Certification Strategy

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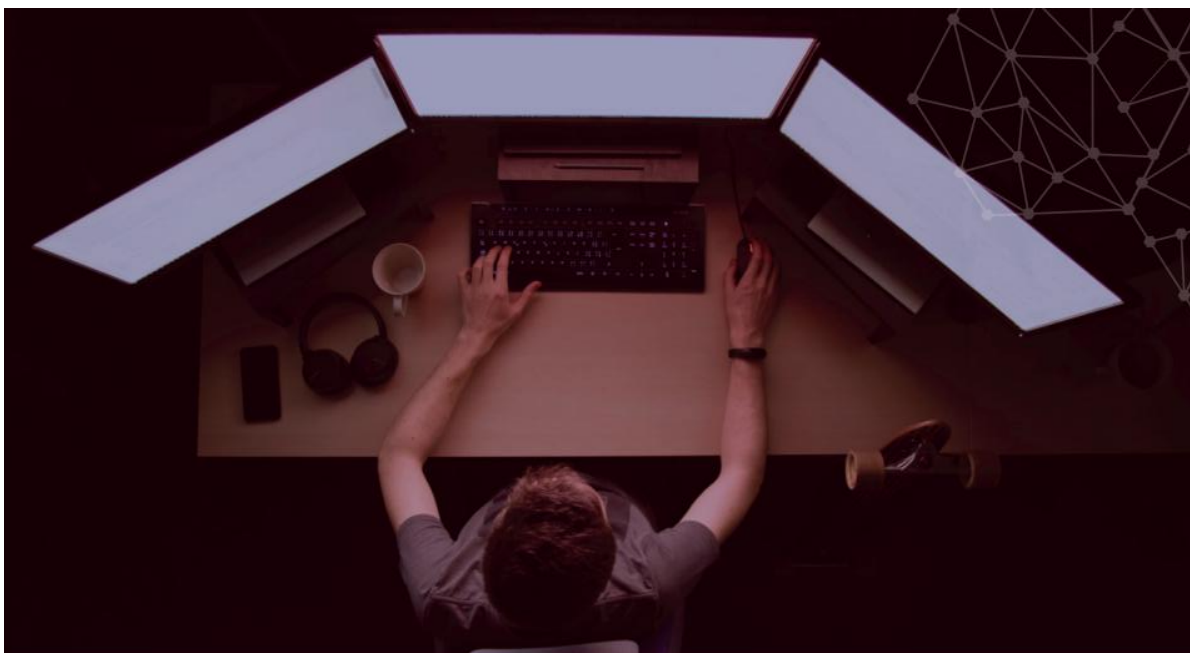
Abbreviations

AF	Application Form
BC	Blockchain
D	Deliverable
DAPP	Decentralized Application
DG	Directorate General
DLT	Distributed Ledger Technology
EACEA	Education, Audiovisual and Culture Executive Agency
EQF	European Qualification Framework
EC	European Commission
EU	European Union
ICT	Information and Communications Technology
KPI	Key Performance Indicator
M	Month
MOOC	Massive Open Online Course
OER	Open Educational Resources
PM	Project Management
PMT	Project Management Team
PT	Points
QA	Quality Assurance
SC	Steering Committee
SME	Small and Medium-sized Enterprise
SSA	Sector Skill Alliance
T	Task
TL	Task Leader
VET	Vocational Education and Training
WP	Work Package
WPL	Work Package Leader



Certification Strategy CHAISE

Blockchain Developer



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1 Introduction

CHAISE is a Sector Skills Alliance financed by the Erasmus+ program. The Project's core mission is to develop a strategic approach on blockchain skills development for Europe, as well as to deliver future-proof training solutions, in order to tackle blockchain skill shortages and to respond to the current and future skill needs of the European Blockchain workforce.

1.1 Scope of this Document

This certification strategy specifies the procedure of how the competence of persons, in particular for the Blockchain Manager role, is certified by ECQA GmbH.

The certification organization ECQA GmbH is an Austrian company, which is 60% owned by the non-profit organization European Certification and Qualification Association (ECQA).

The object of certification is exclusively / solely the competence of natural persons, in this case the Blockchain Manager.

The certification is largely based on the principles of the International Standard ISO/IEC 17024:2012-07 Conformity assessment - General requirements for bodies certifying persons.

Further, this document elaborates on the exam admission requirements, the evaluation criteria and the validation committees' tasks, as stated in the task description of WP5 T5.4.

2 Competence Requirements

2.1 Transversal Skills

Individuals must have the following knowledge regarding the basics and framework of Transversal Skills.

1. Introduction to Blockchain Technology
2. Regulation, Legal Aspects and Governance of Blockchain Systems

2.2 Technical Basics

Individuals must have the following knowledge regarding the basics and framework of Technical Basics.

3. Fundamentals of Blockchain and Distributed Ledger Technologies

2.3 Business Basics

Individuals should have the following knowledge regarding the basics and framework of Business Basics.

4. Blockchain Business Management and Planning

2.4 Business Blockchain Specialization

Individuals should have the following knowledge regarding the basics and framework of Business Blockchain Specialization.

7. Blockchain Platforms
8. Marketing and customer support

2.5 Operational Business Management.

Individuals should have the following knowledge regarding the basics and framework of Operational Business Management.

12. Game Theory in Blockchain

3 Certification Requirements

In order to obtain a certificate issued by ECQA GmbH, the learner needs to have been rewarded both a practical and a theoretical badge. The path to obtain the theoretical badge, practical badge and full certificate can be seen below. Upon rewarding, the certificates will clearly state whether they are only theoretical or practical. It is possible for learners to acquire both certificates individually or in combination.

It is necessary to ensure, that all material needed for a learner to pass the exam, can be found in the provided materials. This applies to both theory and practical paths.

3.1 Theory Badge

- The learner can only take the MOOC theory lectures and their respective Multiple-choice questions but no practical exercises. The learner will be awarded a **Theory Badge**.
- The learner can skip the MOOC theory and attend directly to the Multiple-choice questions. The learner will be awarded a **Theory Badge**.

3.2 Practical Badge

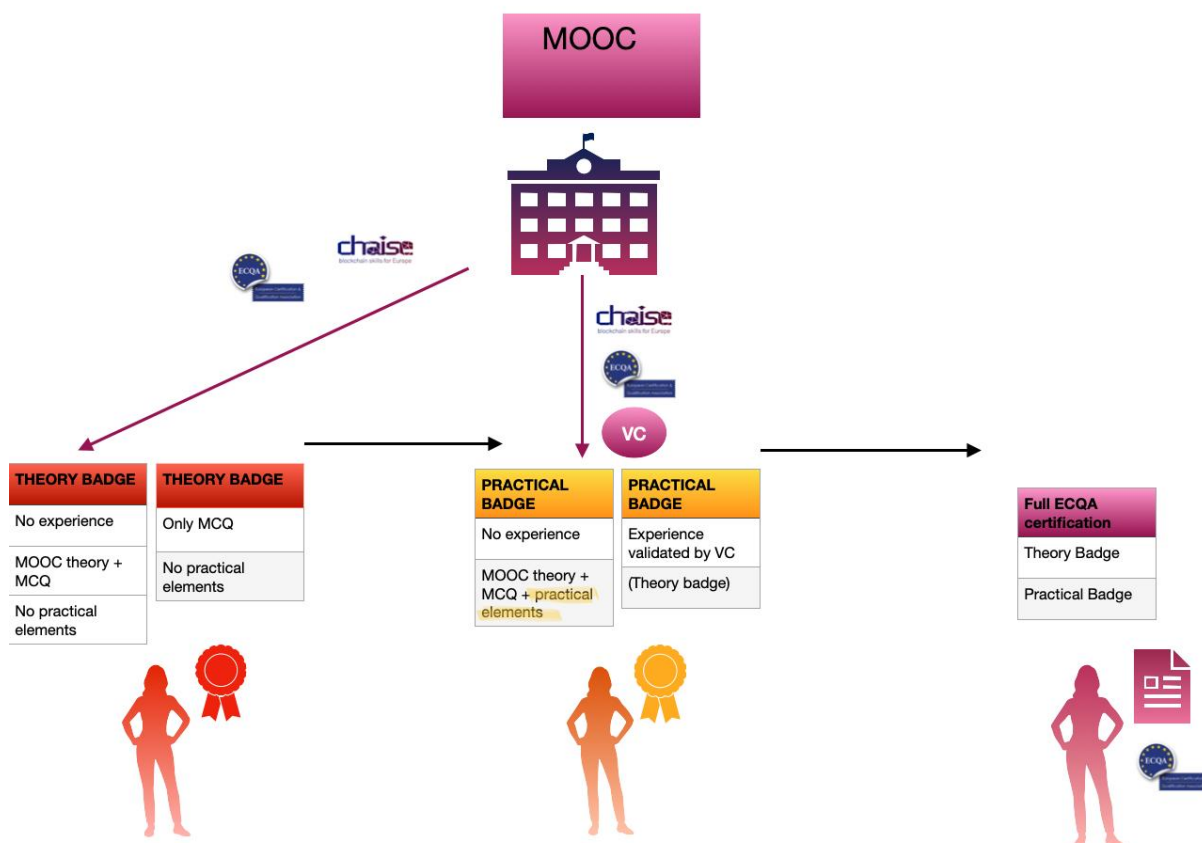
- The learners' previous experience will get validated by the validation committee, according to pre-established criteria. The learner will be awarded a **Practical Badge**.
- The learner can attend to the PE at a later date and has previously been awarded the theoretical badge. The learner will be awarded the Practical Badge and can then go on to get the full certificate.

3.3 Complete ECQA Certificate

- Completion of each Blockchain Manager Module and a positive assessment of the respective practical tasks and MC Questions. The learner will be awarded with the Theory + Practical Badge which together equal the **ECQA certificate**.
- The learner has been awarded the Theory Badge by attending the MOOC+ MCQ but has been awarded the Practical Badge through validation of previous work experience. The learner will be awarded the **ECQA certificate**.

Here it is important to note that, clear guidelines need to be given for who will be able to skip through the lectures and attend to the MCQ immediately, as anyone should be able to take the

MCQ regardless of having participated in the MOOC. (*Validation committee decision*)



4 Case Studies

Individual case studies are part of the course material in each lecture and should be provided as a mandatory part there. Each case study expects different tasks from the learners. Some are walk through examples, where the learner goes through the case study with a step-by-step explanation, whereas others give a short introduction into the problem and have the learner solve it by him/herself.

With the case studies being part of the lecture, an open discussion environment is provided.

There are a total of 28 case studies in the Blockchain Manager course.

In order to confirm the participation and successful completion of the case study, a template will be developed and will serve as a pre-requisite of obtaining the practical badge.

5 Practical Exercises

Each Lecture also includes Practical exercises, which the learners can do under the teachers'

supervision, or on their own with the teacher evaluating the exercises afterwards.
In order to confirm the participation and successful completion of the practical exercises, a template will be developed and will serve as a pre-requisite of obtaining the practical badge.

6 Questions & Answers

Five Q&A are provided in each lecture on the individual lecture topics. Again, these are part of the lecture, and the lecturer is responsible of. There are a total of 140 Q&A exercises in the Blockchain Manager course.

In order to confirm the participation and successful completion of the Q&A, a template will be developed and will serve as a pre-requisite of obtaining the practical badge.

7 Multiple-Choice Questions

The MC-exam for each Module consists of 3 questions per lecture, individually taken from the pool of questions developed for the Manager. The question pool consists of all the questions from the 6 subject areas as per section 2.1 to 2.6.

As an example: Module 1 consists of 2 lectures, which means that 6 individual (3 Questions per lesson) will be asked.

8 Multiple-Choice Exam

The multiple-choice examination is done in writing as a multiple-choice test online, on ECQAs examination portal Bizexaminer.

The maximum duration of the written exam is set at 60 minutes per module. The time allowance might not always be needed, as some modules have fewer lectures than others and will therefore provide fewer questions to the examinee.

The MC exam is treated as an open book exam. All students are allowed to use their material and extra resources. However, collaboration between students is prohibited!

The reason for choosing an open book exam is because in today's working world, information is readily available for everyone. However, the key competence here is to understand this information and use it, which is what this curricular is about as well.

In Phase 3, students can take as many modules as they would like. Each individual attempt will be charged for. This means that someone taking 1 Module will pay the same as someone taking 3 Modules at once, as ECQA GmbH charges on an attempt basis.

9 Evaluation Criteria

We, ECQA GmbH, suggest splitting the evaluation process in three phases going forward. Three phases are recommended, as the evaluation process might need to get updated, once the pilot phase is over.

9.1 Phase 1: Pilot Phase

During the pilot phase of the training, it is very important to look at the readily available material and courses of the project. In basic words “what can be done with what is available now”.

Each Module provides the learners with theoretical knowledge and gives practical input through the case studies, practical exercises, questions & answers, and the multiple-choice questions.

In this phase we suggest that all the practical tasks, except the MCQ, are included in the lessons as much as possible. This not only simplifies the evaluating and feedback process, but the teacher gets direct feedback and sees how the learners perceive and understand the material. Further, the lecturer will get an understanding on how easy/ difficult it is to reach the practical exercises’ passing criteria.

The multiple-choice questions can be provided to the learners at any time, but we recommend doing so at the end of each module and possibly giving students the chance to rework the course material, before taking the exam. ECQA GmbH will collaborate with IOTA to host some MCQ exams during the pilot phase.

At this stage having one of the ten question per Learning Outcome is sufficient, as this is just a trial phase. Some Learning Outcomes might be mapped to several individual questions and others might only be mapped to one, which is OK.

We understand that during the piloting period, learners can choose which modules they want to do. However, a coverage of all modules needs to be guaranteed, since this allows for appropriate and honest feedback on all modules.

Bizexaminer

The MC exam will be hosted on the online exam platform and can be automatically evaluated there, as they are simply only true / false.

The other practical tasks can be fulfilled on the online platform as well, however some practical tasks will need additional equipment or will require the use of different software or other tools. This applies especially to the technical modules.

For example: Module 5 requires the learner to find information about honeypots on a specific website + connecting to an Ethereum node.

Still, even though some of these exercises might not be able to be done directly on the Bizexaminer platform, they can be uploaded onto it using either pictures, or documents. These uploaded documents are then available for manual review. Grading will be done based on the proposed minimum passing levels for each exercise.

9.1.1 Case Studies

ECQA GmbH suggest that the case studies are included as a mandatory part of the lectures themselves, with the teacher evaluating them during the course. As the answers to the case studies can be quite individual, it may present itself as very difficult to develop a standardized answer scheme without human involvement.

With the teachers' involvement, personal feedback can also be provided to the student on a case-by-case basis.

This approach is especially recommended during the trial period of the course.

The passing rate for case studies is 51%.

9.1.2 Practical Exercises

The same approach, as suggested with the Case Studies, is recommended again with the Practical Exercises. Practical exercises are very individual, and students may find different solutions to some of the exercises, which should only be evaluated by people of expert field knowledge.

However, not only the individuality factor comes into play here, but also the time aspect for the practical exercises. Some practical exercises will take a significant amount of time, which has to be accounted for, if they get added to the exam.

This approach is especially recommended during the trial period of the course.

The passing rate for practical exercises is 51%.

9.1.3 Questions & Answers

Again, the Questions & Answers should also be part of the lecture, with the teacher evaluating the questions. This way is beneficial, as the teacher knows what answers the student needs to give in order for a question to be correct. Further, the questions can be revised within the course and the students can be provided with feedback.

The Q&A can, if desired, be added to the Bizexaminer and the students can answer it there. However, another method can be chosen by the lecturer as well.

This approach is especially recommended during the trial period of the course.

The passing rate for Q&A is 51%.

9.1.4 Multiple-Choice Exam

Each question is scored with a maximum of one point each. There are several answer options per question. For each Module, according to section 2.2.1 to 2.2.6 at least 66% must be achieved, for each respective lecture.

- In order for a question to be correct, all right answered need to be given. No half points are possible.
- Lectures, which weren't passed, can be re-done individually.

Further, examining more than one module at once can also be facilitated.

9.2 Phase 2: Feedback implementation

After completion of the pilot phase, all feedback should be taken very seriously and implemented into the course as much as possible. This way, all parties can benefit from the upgrades. This could possibly mean that the practical exercises and the passing criteria need to be adapted, reworked, simplified or even made more rigorous. Further, adapting the examination process is also a possibility.

9.3 Phase 3: After the project; link with exploitation and dissemination

What is crucial in this phase, and which is not yet fully available, is the linking of questions to their respective Learning Outcome. Before the courses go fully online, the existing questions **MUST** be

mapped to the Learning Outcomes of each lecture, so the coverage and appropriate evaluation of each Learning Outcome can be guaranteed.

Further, this step also lays the foundation for any future questions that will be developed. S

In the exam setting, each Learning Outcome should have at least 3-5 questions, so that the exam questions can be taken out of that pool and the possibility of getting the same questions multiple times is reduced. To demonstrate the scenario, we will assume 5 questions per LO.

In practice: Module 1- Introduction to Blockchain Technology has three LO. Which means that a total of 15 questions / tasks need to be developed for the examination to serve as the question pool, from which a certain amount of questions will be taken from. Usually 3 questions will be taken and asked out of the pool.

Multiple choice questions can easily be carried on for an indefinite time and the evaluation happens automatically by the system. What is important here is that the multiple-choice questions get updated on a regular / annual basis, so the course and exam material is up to date and aligned with industry needs.

These updates will be performed by the validation committee as seen in *Chapter 10*.

Thinking ahead to the future, ECQA GmbH really wants to emphasize the importance of a sustainable business model. As this is an important aspect for all parties involved this will need more attention by the consortium to develop a sustainable business model.

This will be added as a separate report, once it has been developed.

Evaluation Guide

For adequate exercise evaluation after the project and without the teachers' involvement, an evaluation guideline needs to be developed. This evaluation guideline will elaborate exactly on what is needed to pass each module, lecture, and practical parts, so the validation committee can review the exercises.

Criteria necessary is: a passing/ failing criteria, key words, a checklist with what should not be mentioned in the answers,. etc.

-> current status: 50% passing criteria needs to be developed by all partners for the practical exercises

The evaluation guide should be developed by the partners, who have developed the learning materials as they are familiar with the material.

An added plus here would be to host group lectures during specific times, where the practical tasks can be discussed with the lecturer and along peers. In addition, an online portal, where peers can be in touch with each other and discuss course material, is also recommended. In a best-case scenario, lecturers would also involve themselves in discussions, answering questions, etc.

10 Proctoring

During on site Piloting

Agreement with the hosting an onsite Partner, who will fulfill the identity checks of participants and will send the information to ECQA GmbH. ECQA GmbH provides exam link to students via e-mail and only those who are present will get the link to access the exam. During the onsite pilot IOTA will facilitate the MC exam in their modules.

During online Piloting

Similar to the on site pilot, where ECQA GmbH needs to get the information of participants present and ready to take the exam.

ECQA GmbH will provide templates for the participant information in both instances.

11 Overall Assessment and Examination Repetition

In order to pass the multiple-choice examination, at least 66% in all elements (lectures) must be achieved.

Negatively assessed Modules and Lectures can be repeated at a later date.

The practical tasks (Case studies, practical exercises and Q&A) have a passing rate of 51%. If a student could not fulfill the 51% requirement, we suggest for the teacher to find a solution by either having them repeat the exercise, giving an additional exercise or else.

In addition, previous work experience fulfills the requirement of passing the practical tasks (Case studies, practical exercises and Q&A), if indicated / approved by the validation committee. In this case, only the necessary MC exams have to be taken.

12 Validation Committee

The proposal states that ECQA GmbH is in charge for recruiting external experts, who will evaluate the courses practical exercises, on a voluntary basis. UCBL, IOTA, UPC, DHBW, UL, ESRI, FUJITSU,

C4A, INTRASOFT, INDUSTRIA, INATBA will participate in the Validation Committee. In addition to the above-mentioned partners, it is advisable to include further external experts to the validation committee, as they can provide additional insights.

The Validation Committees job is to decide, renew and keep the examination content updated on a regular basis (annually). Each participating organization appoints two members in charge of the involvement. Having two people involved, should guarantee that there will always be someone available from each organization, to participate in meetings and to go through the materials. Each partner organization involved in the committee should, of course, only review material, which is in line with their expertise.

Further, badge approval and manual correction will be facilitated by the VC, following pre-established guidelines. Should the skill requirements change over time, this will also need to be addressed.

13 Issue and Validity of Badges and Certificates

The awarded theory and practical badge hold a validity of 2 years. Within this timeframe, the badges are valid to fulfill the requirements of acting as a prerequisite for the ECQA Certificate. If the Badges are not “used” in time for the award of the certificate,

The successful evaluation and passing of the requirements for a theory and practical badge, are the prerequisite for the issuance of a full ECQA certificate.

The awarded certificate is valid for 2 years.

Ultimately, we would like to see the Badges and Certificates issued on the BC / as an NFT.

14 Recertification (important for Phase 3)

14.1 Certificate renewal criteria

In order to renew the certificate, the certificate holder must fulfill the following criteria:

- 14.1.1 The certificate holder must provide evidence of successfully attending and passing, CHAISES' update seminar*.
- 14.1.2 The certificate holder must provide evidence of current, relevant practical activity. This must be provided in the form of a description of the activity or project and will be evaluated by the validation committee.
- 14.1.3 The recertification fee must be paid by the certificate holder and a valid e-mail address must be provided, so that the new certificate can be delivered electronically.

**The updates seminar is a suggestion, and could act as "quick" brush up on the latest training content*

14.2 Issue of the Certificate

After fulfilling all the criteria, according to 12.1.1 and 12.1.2, the certificate is renewed for another 2 years.

14.3 Deadlines

Recertification must take place before the certificate expires. In exceptional cases, recertification may also take place after expiry of the certificate. In this case, the following conditions apply:

- If the recertification takes place after the expiration of the validity of a certificate within a period of maximum six months, the recertification shall be carried out in accordance with the criteria and process specified in Section 11.1. Otherwise, an audit to the extent of the initial certification shall be performed in accordance with Section 8. It shall be assessed if the learner has to go through the entire
- The validity of the certificate is always based on the date of initial certification. This means that the date of the initial certification is always taken as the starting point, regardless of the recertification date.