



CONVERGENCE STRATEGY REPORT

Quality assurance of micro-credentials in European VET on the basis of the ISO17024 norm

MC GREEN – Conveying Green VET micro-credentials into EQF with ISO17024 quality assurance model. Project N° 2024-1-AT01-KA220-VET-000246403



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1. Introduction

During recent years, micro-credentials have become an important and at the same time innovative part and offer in the European education arena. While in first place being a concept and approach to offer short-term and compact courses together with a stackable certificate for higher education institutions and so generate and allow more flexibility on this level, the approach of micro-credentials has also found its entry into the discussions and developments on the level of vocational education and training in Europe. Based on micro-credentials, VET institutions are also able to offer short-term and concise training chunks together with a certificate that builds on a common European basis and allows for transfer, stackability with other learning outcomes and credentials etc. Especially for the VET sector, it seems that micro-credentials are seen as an appropriate answer to the challenges of a fast-changing labour market together with fast changes on the level of competencies and skills needed in jobs, where adaptations to new emerging fields and competences could be tackled through the development and offer of micro-credentials.

However, while micro-credentials on higher education levels are offered and certified by higher education institutions (universities, universities of applied sciences etc.) and do so have a certain quality assurance background and, in the end, trustability on the labour market, the problem of quality assurance, quality management and trust on the level of vocational education and training is a more profound challenge. Practically every VET institution (big, small, private, public, old, new, profit-oriented or not-for-profit etc.) can develop and offer a micro-credential without any restriction in most of the European countries at the moment. The European Commission has published several recommendations for the structure and set-up of micro-credentials, but these recommendations are still quite general and there is so far no legal obligation to obey these recommendations and rules in the European member states. This situation leads to a quite dynamic development and offer of micro-credentials in vocational education and training in Europe without the sufficient consideration of quality assurance and trustability criteria. Practically all discussions and papers published about micro-credentials in Europe highlight the lack of quality assurance, comparability and trustability in the credentials issued or awarded in VET as the biggest challenge for the whole system.

In a former Erasmus+ cooperation partnership project (Micro-Quest), the majority of the MC GREEN project partners have already been working on this challenge and were testing, evaluating and analysing different quality assurance approaches (EQAVET, ISO 9001, Total Quality Management, ISO 17024 etc.) for its suitability for quality assurance of micro-credentials in VET. After this project, it became very clear and obvious that the international quality assurance standard ISO17024 – Certification of persons, has the biggest potential for quality assurance of micro-credentials as there are broad similarities in the approaches and set-up of the ISO norm and the European recommendations for micro-credentials. More information about these findings and the whole analysis and evaluation process can be found under www.micro-quest.eu.

The MC GREEN project and its ambitious project partners are now working on the concrete steps needed to make ISO17024 a practical possibility for the quality assurance of micro-credentials issued in the European VET system. In a first project step and phase, the two discussion and information poles (micro-credentials and ISO17024) have been deeply analysed and evaluated in

detail to be able to put these two approaches together and find a suitable and practical way, that VET organisations may offer micro-credentials with the use of ISO17024 as international quality assurance standard. The results of the research around the status quo of discussion and information of micro-credentials and ISO17024 have been presented in two desk research reports which are now forming the basis for the deduction of similarities and differences and for converging the two discussion poles into one strategy document as the basis for VET institutions who wish to make use of ISO17024 as a quality assurance model for both their current and future micro-credentials being offered and so find a suitable, credible and trustable solution for the problem of lack of quality assurance for micro-credentials in VET. The convergence strategy between micro-credentials in VET and ISO17024 will form the basis of discussions in the MC GREEN project and will be the kick-off for the development of an information and training package for VET institutions interested in the application of ISO17024 for quality assurance as well as for the development of two test micro-credentials within the project.

Based on the presentation of the applied research methodology, this document will present the current status quo of discussion regarding micro-credentials in VET in all partner countries and, in addition, make use of previous experiences and good practices from other and former cooperation projects in this field. Moreover, the document will also briefly touch on the current status of European policy discussions about micro-credentials in VET as well as present the core and basic information needed to understand and apply the ISO17024 norm for quality assurance. In the final step, the convergence process between micro-credentials and ISO17024 will be presented together with concrete deductions and recommendations.

For a better understanding and classification of the findings and results of this converging strategy, it might be important to familiarise more with the concept of micro-credentials and ISO17024, more information about this may be found in following sources: European Commission (2021):

A European Approach to Micro-Credentials. Accessible via <https://education.ec.europa.eu/sites/default/files/2022-01/micro-credentials%20brochure%20updated.pdf>

CEDEFOP (2023). Microcredentials for labour market education and training: microcredentials and evolving qualifications systems. Luxembourg: Publications Office. Accessible via https://www.cedefop.europa.eu/files/5603_en.pdf

Pouliou, A. (2024). Exploring the emergence of microcredentials in vocational education and training (VET). Publications Office of the European Union. Cedefop working paper series, 22. Accessible via https://www.cedefop.europa.eu/files/6221_en.pdf

Micro Quest (2024). European Micro-Credentials. A Guideline for Vocational Education and Training Providers. Accessible via https://www.micro-quest.eu/wp-content/uploads/MicroQuest_Guideline_EN.pdf

CREDinGREEN (2024) Policy Paper. Accessible via https://www.credingreen.com/fileadmin/Forschung/CREDinGREEN/CREDinGREEN_3.3_policy_paper.pdf

2. Methodology

Within the MC GREEN project, three work package activities are dedicated to the development of the first core project result: the Convergence Strategy Report document: *"Quality assurance of micro-credentials in European VET on the basis of the ISO17024 norm"*.

In activity WP3.1, to which a similar research template was developed and dedicated, a team of partners implemented desk research on micro-credentials' core requirements and expectations, based on official documents of the European Commission, CEDEFOP, and on the professional expertise gained through previous projects related to micro-credentials.

The partners involved in this activity were:

- P1/Auxilium
- P3/Meath Partnership
- P4/FFE
- P5/CCIS
- P6/FHM

In activity WP3.2, to which a second research and results document was developed and dedicated, a second team of project partners researched the ISO17024 core requirements and expectations.

The partners involved in this activity are:

- P1/Auxilium
- P2/SystemCERT

The use of two dedicated research documents to elaborate the two discussion poles of the convergence strategy (micro-credentials and ISO17024) made sure that results are presented in a comparable way, which allows the easy identification of overlaps and differences between the two approaches and the final converging of micro-credentials in VET in Europe and ISO17024. The core part of the research is the transparent presentation of obligatory and optional requirements, both in micro-credentials and in ISO17024.

In activity WP3.3, the results of both research phases are now compared, and the convergence strategy report will be elaborated on the basis of these findings. All partners will contribute to the development of this project result, and it will be translated into all partner languages upon publication.

3. Micro-credentials in VET – status quo

As mentioned above, the discussion about the use and offer of micro-credentials in vocational education and training is relatively new in Europe. Stemming from the field of higher education, the discussion and introduction of the concept into the VET systems in the member states has started and is progressing at a different pace in each European member state and partner country of the MC GREEN project. The status quo of discussions and developments of micro-credentials in the different partner countries is crucially important for the understanding and especially the application of the outputs of the MC GREEN project, and impacts on the deductions made from the converging process between micro-credentials and ISO17024. For this reason, the status quo of discussions and the situation in the partner countries regarding the introduction and use of micro-credentials, and especially in the VET sector, shall be presented briefly in this strategy document.

3.1. Austria

In Austria, the use and concrete application of micro-credentials is still at its very beginning; however, it currently seems that the higher education level and all other levels (e.g. vocational education and training, adult education etc.) are cruising at a different speed or pace. While Austrian universities and higher education institutions have begun integrating micro-credentials into their curricula over the last years, VET organisations and the whole VET sector in Austria is still lagging behind these developments. Micro-credentials at a higher education level are often offered as part of lifelong learning programmes or as supplementary qualifications for students looking to deepen or broaden their expertise in a specific field. Micro-credentials are typically offered in areas such as technology, management, healthcare, and digital skills. e.g.: University of Vienna and other institutions have started offering short, non-degree programmes in areas like digital marketing, data science, and business analytics. These are designed to meet the growing demand for specific skills that can be obtained in a shorter time frame than traditional degree programmes. Other universities such as the Technical University of Graz have also started to offer training programmes based on micro-credentials as part of their lifelong learning offer beyond regular student programmes.

Especially the new challenges around digitalisation and technology have led to a broader offer of micro-credentials answering these fast and dynamic skills developments and needs. Universities offer digital certifications that focus on specific technological competencies, allowing learners to demonstrate proficiency in new technologies without committing to long-term degree programmes.

The picture appears to be different on the level of vocational education and training. Maybe also based on some political will, the VET sector has so far not really adopted micro-credentials and their potentials into the VET offer. If so, it is mainly still universities which offer micro-credentials programmes as VET programmes for postgraduate learners or learners who come to university for a short upskilling programme, benefiting from the quality assurance systems applied on university level as well as from the general reputation of higher education institutions in Austria.

The adoption of micro-credentials especially in the VET system faces several challenges and risks that become evident and do partially also hinder the further exploitation of the approach:

1. **Lack of standardisation:** Micro-credentials lack a uniform framework, leading to inconsistencies in quality and recognition across providers, making them less trusted by employers compared to regular school or university certificates.
2. **Recognition issues:** Employers and institutions may not fully recognise micro-credentials, limiting their value for career advancement and mobility. This negatively impacts the stackability approach of micro-credentials which is an important element and motivation for their broad use.
3. **Integration with existing systems:** Austria's well-established VET and educational structures may resist integrating micro-credentials, making their adoption slower and more fragmented. The well-established dual VET training system in Austria has a very long history and tradition; it has proven to be well-functioning and capable of training the skilled workers of tomorrow. It might be difficult to introduce a new, micro-credential-based approach into this quite rigid system.
4. **Digital divide:** Access to digital learning platforms and skills can be limited for some groups, particularly in rural areas, exacerbating inequalities. Many of the micro-credentials offered are currently online learning offers (especially also the ones offered from organisations beyond Austria and even beyond Europe). Digital literacy, together with digital infrastructure, may become an issue when acquiring micro-credential-based skills and competences.
5. **Quality challenges:** It is definitely one of the most crucial questions to offer quality-based and quality-assured micro-credential certificates, leading to mutual trust, credibility and, finally, recognition. Especially in the VET sector in Austria, we are still lacking those approaches which, at the same time, need to be flexible, cost-effective, etc.
6. **Resource constraints:** Smaller educational institutions and companies may struggle with the financial and logistical investment needed to develop high-quality micro-credentials. The development of a new micro-credential offer, together with a broad and well-accepted quality assurance mechanism, is a costly issue. Also, this new approach may require much more advertisement and public information, which, especially for smaller VET institutions, is a huge challenge. This might lead to the situation where this very flexible and promising approach may only be offered by the few large VET institutions in Austria, such as WIFI or bfi.

There are several further constraints and challenges around the introduction and broad use of micro-credentials in Austria, especially in the VET sector, and above all, it would require a clearer political will on local, regional and national level for further developments and support of VET institutions, which at this moment is not fully visible.

3.2. Germany

Micro-credentials in Germany are an emerging trend that is reshaping the landscape of education and skills development. This development is closely tied to the increasing demand for flexible learning opportunities that address the evolving needs of the labour market.

The dialogue around micro-credentials in Germany is gaining momentum, especially as digital transformation accelerates and the workforce requires new skills. Educational institutions, industry representatives, and policymakers are discussing how micro-credentials can supplement traditional education pathways. Initiatives are being considered to create a system that recognises and formalises these credentials, promoting lifelong learning.

Major Challenges and discussions

1. A major challenge in Germany is the absence of a unified definition and framework for micro-credentials. This inconsistency creates uncertainty about what qualifies as a micro-credential and how it should be recognised.
2. Many employers are not yet fully informed about the value of micro-credentials. As a result, scepticism persists regarding their relevance and effectiveness, making it harder for individuals to utilise them for career advancement.
3. Establishing and maintaining high standards for micro-credentials remains a critical issue. Strong quality assurance mechanisms are needed to ensure alignment with educational benchmarks and industry expectations.
4. The current micro-credential landscape is highly fragmented, with numerous providers operating without a unified structure. This lack of cohesion can reduce the perceived value of micro-credentials and hinder widespread acceptance.

Good Practice

Despite these challenges, some institutions are leading the way in implementing effective micro-credential programmes. For example, the University of Freiburg has developed micro-credential offerings in digital skills that are tailored to meet the needs of local industries. These programmes are often co-created with industry stakeholders, ensuring that the skills taught are relevant and up to date. This collaboration is crucial for enhancing the credibility and applicability of micro-credentials.

Best practice examples

There are some best practice examples of micro-credentials in Germany that illustrate effective implementation and collaboration between educational institutions and industry needs. Here are some examples:

University of Freiburg: The University of Freiburg has developed micro-credential programmes specifically in digital skills. These programmes are designed in collaboration with local businesses to ensure that the skills taught are aligned with the needs of the job market. Students can earn micro-

credentials in areas like digital literacy, data analysis, and software development, which enhances their employability.

Fachhochschule Dortmund (Dortmund University of Applied Sciences and Arts): Dortmund University offers a range of micro-credentials that focus on professional development and practical skills. Their programmes are designed for working professionals and cover topics such as project management, digital marketing, and engineering. The university collaborates with industry partners to ensure that the curriculum is relevant and up to date, thus increasing the value of the credentials.

Hochschule für Technik und Wirtschaft (HTW) Berlin: HTW Berlin has implemented a series of micro-credential courses that cater to specific industry needs. Their offerings include programmes in areas such as sustainability, data science, and digital transformation. The university works closely with various companies to co-develop these courses, ensuring that they address current trends and skills gaps in the labour market.

IHK (Industrie- und Handelskammer) Initiatives: The German Chambers of Commerce and Industry (IHK) have been active in promoting micro-credentialing. They have launched initiatives that allow professionals to earn micro-credentials in various fields, including business management and vocational training. These micro-credentials are recognised by the industry and provide an additional pathway for career advancement.

These examples highlight how micro-credentials can be effectively integrated into educational offerings in Germany, aligning them closely with labour market demands and enhancing the employability of graduates.

Future Developments

Looking ahead, micro-credentials are expected to become increasingly integrated into Germany's educational systems. The European Union's initiatives, such as the European Digital Credentials for Learning project, may influence the development of more standardised micro-credentials across member states, including Germany. As awareness and understanding of micro-credentials grow, it is likely that they will gain wider acceptance among employers and educational institutions.

3.3. Ireland

Ireland recognises that skills are an investment in the economic future, whilst acknowledging that skills and talents are a key challenge (Minister Simon Harris, 2022).

Ireland is the first EU country to implement a National Framework for quality-accredited micro-credentials through the Universities Association (IUA) project, and has invested over 12 million euro since 2020.

QQI remains the state agency responsible for quality assurance and qualifications in further and higher education and training, being responsible for the National Framework of Qualifications (NFQ),

with the responsibility of validating programmes and making awards/qualifications for private independent providers at all 10 levels of the educational framework.

As noted in the Early Exploration into Micro-Credentials report by QQI (2021), the highest percentage of micro-credentials obtained was in the area of Payroll, followed by a credential in Processing Engineering; both of which are continuing to grow in terms of demand. This report also highlights that the trends in Ireland suggest that the highest levels of micro-credentials obtained by learners are for work-related reasons (QQI, 2021).

National challenges, barriers, and risks

Learners: Barriers to lifelong learning have been acknowledged by QQI and educational institutions. A report from AONTAS (Ireland's national adult learning organisation) in 2021 found that lack of time is the primary barrier to participating in further learning. Furthermore, adult learners have commitments such as work and family, in addition to potential financial barriers to take into consideration, e.g. childcare or travel costs. People from a marginalised background are also reluctant to commence learning due to a lack of confidence in their learning capabilities, lower levels of previous education, and the financial impact if in receipt of any form of social welfare payments. This barrier extends to the VET sector in terms of micro-credentials. Given the current data, it is predominantly employed persons attaining such certificates, and not those perceived as marginalised.

Administrative: Educational institutions, both public and private, face a disproportionate assessment of courses submitted for approval, i.e. the same criteria is applied to micro-credentials as to higher awards, which presents itself as a time challenge.

Financial: Whilst the procedures for an organisation to become an approved QQI provider are rightfully robust; in order to be granted approval, new entrants must comply with the core statutory requirements developed by QQI. In addition, there is a cost to organisations seeking to deliver micro-credentials. For sole VET (or Further Education and Training) providers, this might not be an issue; however, for smaller providers, this is both a challenge and a barrier.

Quality Assurance: Educational institutions, including universities, are responsible for developing their quality policies and procedures, rather than following a national standard. Whilst these policies may comply with the European regulations, measurement therefore is not wholly consistent. This is potentially a risk to private or small organisations that depend on external certified institutions to ensure that the micro-credential adheres to quality standards.

Rounded Education: Critics of micro-credentials in Ireland are raising the alarm that the attainment and mass introduction of micro-credentials run the risk of encouraging learners to engage in education that will only provide the bare minimum to attain a job, rather than engaging in a holistic, rounded education.

Best practice examples

TrustEd Ireland is a new quality mark for education in Ireland and has established two codes of practice to ensure quality learning for international learners in higher education. It is not mandatory for learning institutions to sign up.

Out of the 23 recognised universities in Ireland, 7 universities offer micro-credentials: Trinity College University, University College Dublin (UCD), University College Cork (UCC), University of Limerick (UL), Trinity College Dublin (TCD), Dublin City University (DCU), University of Galway, and Maynooth University (MU) participate in the IUA project. The learning focus of micro-credentials continues to be upskilling, reskilling, or career changing in order to meet identified industry requirements and trends in the country, but also in response to potential entrepreneurial opportunities.

Future developments

In response to Ireland's skills challenge, the Irish Department of Education stated that they are committed to reaching a target of 64% of working-age adults participating in training each year by 2030, confirming their commitment to the European Pillar of Social Rights. With the advancements of the MicroCreds Project in Ireland, the hope remains that the project will develop a National Framework for quality-assured and accredited micro-credentials. In addition, the project is set to finalise a Discovery Platform linked to a digital credentialing solution (Europass early adopter).

Quality assurance approaches

In recent years, QQI implemented a streamlined process for the validation of micro-credentials programmes and revised assessment processes to reduce the disproportionate level of review, as the same process was applied for minor awards as for major awards. This has not reduced the quality of learning content but is reflective of the differences between short adult learning and that of a degree or higher, and it still adheres to the fundamentals of the validation compliance requirements. By QQI evaluating their own processes, it is an indicator of their own level of awareness of the changes in the learning environment and how quality assurance must meet new learning models and the changing landscape in adult education. However, it should be noted that in many cases of approved QQI providers in Ireland, many use a QA approach that is standardised within their own respective practice, which has been pre-approved by QQI against the National Framework Quality Standards.

3.4. Slovenia

Slovenia is actively developing and implementing micro-credentials; however, the absence of a fully established legal framework remains a key challenge. The introduction of micro-credentials in Slovenia is primarily taking place through pilot projects, conducted as part of the country's Recovery

and Resilience Plan. These projects allow universities to test micro-credential models, evaluate their strengths and weaknesses, and adapt them to the needs of the economy and society.

Currently, micro-credentials are not yet legally recognised or integrated into the National Qualifications Framework. However, the Draft Law on Higher Education includes provisions for micro-credentials and is currently undergoing further review. The law is expected to be adopted by the National Assembly during 2025, which will formally regulate micro-credentials at the higher education level.

A significant challenge, however, is the fragmented approach to micro-credentials across the educational system. Currently, efforts are largely focused on higher education, while vocational and secondary education remain underdeveloped in this area. This lack of a unified approach across the entire educational vertical hinders the comprehensive adoption of micro-credentials in Slovenia.

One of the best practices in the implementation of micro-credentials can be observed in the efforts of Slovenian universities. The University of Ljubljana has focused its pilot initiatives on digital skills and sustainability, addressing critical areas for both the current and future labour market. These programmes aim to equip learners with highly relevant competencies, ensuring their adaptability to modern challenges. The University of Maribor provides another approach by emphasising practical skills development through strong collaboration with local businesses. This partnership ensures that micro-credential programmes are directly aligned with real-world industry needs, creating a targeted and impactful learning experience. These examples highlight how micro-credentials can effectively bridge the gap between education and workforce demands, serving as a model for other institutions. There are also some first attempts to introduce and make use of micro-credentials in the Slovenian VET system; however, on a legal basis, these steps are not as far advanced as in the higher education sector.

Currently, the quality of micro-credentials is ensured by the institutions developing them, mainly through pilot projects. In the future, the National Agency for Quality in Higher Education (NAKVIS) is expected to oversee the quality assurance of micro-credentials, like other educational qualifications.

The forthcoming adoption of the Law on Higher Education is expected to establish a legal framework for micro-credentials in higher education, facilitating their official recognition and broader use. However, for micro-credentials to reach their full potential, a more unified approach across all educational levels is necessary. Slovenia aims to integrate micro-credentials into the National Qualifications Framework, enhancing their portability and international applicability.

3.5. Spain

The debate in Spain on micro-credentials is moving forward but faces important challenges related to how to implement them effectively and ensure their quality. The success of these initiatives will depend on the ability to overcome the challenges identified and take advantage of the opportunities they offer for lifelong learning and adaptation to changing labour market demands, requiring coordinated efforts between government, educational institutions, and the private sector.

The debate on micro-credentials in Spain is in an active phase, with several initiatives underway:

National Action Plan: A plan has been established to implement micro-credentials at university level, recognising their importance for re-skilling and improving employability.

Cross-sectoral collaboration: Greater collaboration is being promoted between universities, VET institutions, enterprises, and local governments to develop programmes that respond to the real needs of the labour market. However, while there is progress, coordination remains limited.

Seed funding: A seed funding measure has been proposed for the period 2023–2026, with funds from the Recovery, Transformation and Resilience Plan (PRTR). The government has earmarked €50 million to train 60,000 people over two years.

Adaptation of the education system: Discussions are underway on how to integrate micro-credentials into the formal education system, including the possibility of combining them into broader qualifications.

Technological advances: Some initiatives are exploring the use of technologies such as blockchain to ensure the authenticity and traceability of micro-credentials.

Quality and accreditation: There is discussion on the need to apply quality and accreditation criteria similar to those of formal education to ensure recognition and accumulation of micro-credentials.

Challenges, obstacles and risks

- Spain does not yet have a specific regulation that comprehensively addresses micro-credentials. This generates uncertainty about their recognition in the education system and in the labour market.
- The fragmentation between Autonomous Communities and the coexistence of different educational standards makes it difficult to create a common framework.
- Although micro-credentials are gaining relevance, many companies in Spain still do not value them as equivalent to traditional certifications.
- There is a lack of knowledge on how to integrate micro-credentials in selection and promotion processes.
- Micro-credentials should be comparable and transferable. However, in Spain there is no centralised technological infrastructure to facilitate their registration, validation, and consultation, such as a unified European digital system.
- Not all institutions or companies issuing micro-credentials guarantee high quality standards. This generates mistrust among users and employers.
- Lack of impartiality in some cases (organisations offering training and certification simultaneously) can affect credibility.
- Although European initiatives such as EQF and EQAVET are benchmarks, their adoption in Spain has been limited. This makes compatibility with international systems difficult.
- Some regions have fewer technological resources and less access to training and certification programmes, creating inequalities in the issuance and recognition of micro-credentials.

Pilot initiatives

- Programmes such as the Massive Open Online Courses (MOOCs) offered by Spanish universities already incorporate micro-credentials. However, their formal validity is still limited.
- Projects in collaboration with European organisations, such as CEDEFOP, are helping to define good practices for the implementation of micro-credentials in Spain.

3.6. Summary

When summarising the findings and presentations of the situation around micro-credentials in the partner countries, two core statements could be extracted which are considered crucial for the further implementation of micro-credentials and quality assurance on the basis of ISO17024:

1. Different development pace in partner countries: Within the project partnership and the partner countries, it is clearly visible that there are two countries (Slovenia, at the higher education level, and especially Ireland) which are moving forward in the discussion and application of micro-credentials in VET faster than other countries (especially Austria, Germany, but also Spain). The reasons for this may be varied and broad; however, it seems that certain education and VET systems are more open and ready for this new approach than others, which might be a little more conservative. In any case, in the project and with the following development and implementation of the two micro-credentials, it must be considered that the project develops two innovative micro-credentials in VET systems which are more or less ready for the uptake of such approaches. Especially in Austria, Germany, and Spain, it might be more difficult to establish micro-credentials and quality assurance based on ISO17024 than in others.
2. Quality assurance is the key challenge: As mentioned already in the introduction to this document, it became very clear in the desk research in the partner countries that the key challenge around the introduction and use of micro-credentials is quality assurance and trustability. Practically all partner countries are reporting this issue as the most important challenge and risk for the implementation of micro-credentials, which reflects the perceived European situation and is a core legitimisation for the MC GREEN project and its results. A micro-credential will only succeed in the market and within the VET systems of partner countries if it is based on a trusted, well-established, and easily applicable quality assurance model.

4. Micro-credentials in VET – experiences and good practice

Many of the project partners in the MC GREEN project worked in former and previous projects and activities that have created some good practices and, above all, first experiences with micro-credentials and quality assurance concepts. These experiences are a very valuable source for the further development of the outputs of the MC GREEN project and will also help with the understanding of the challenges and possible solutions in quality assurance of micro-credentials. For this reason, we find it important to present some prior experiences and findings in former projects around micro-credentials and quality assurance, which help to give a clear picture of the ongoing discussions.

4.1. Micro Quest

Four of the project partners have worked on the Erasmus+ project MICRO QUEST (2021–2024; <https://www.micro-quest.eu>), which aimed to develop an innovative quality evaluation strategy for micro-credentials in non-formal VET in Europe. The core project result relevant for the MC GREEN project is the *Guideline for VET Providers*, which assessed six broadly accepted quality assurance models and evaluated the best fit for European micro-credentials: ISO 17024.

Micro-credentials require a robust quality assurance system to build trust between educational institutions, students, and employers. The European Commission and CEDEFOP have identified quality assurance as a critical element for the transparency and credibility of micro-credentials. Transparency and credibility in certification processes are essential for micro-credentials to be widely accepted and recognised. The quality of micro-credentials is not only based on national or regional standards, but requires an international framework to ensure comparability and transferability.

Existing quality assurance models analysed in the MICRO QUEST project:

- **European models:** EQAVET (European Quality Assurance Model for VET), EQF (European Qualifications Framework), and ECVET (European Credit Transfer System) provide useful tools to describe and evaluate micro-credentials but are more oriented towards national VET systems.
- **International models:** Approaches such as ISO 9001 and TQM focus on general organisational management but are less specific to individual certification processes. ISO 17024, instead, provides a systematic, transparent, and impartial approach to certifying individual competencies. ISO 17024 is specifically designed for the certification of individuals and establishes a clear and detailed process to ensure the quality and credibility of the certificates issued.

For this reason, ISO 17024 was considered as best suited to the needs of micro-credentials due to its specific focus on the certification of individuals, its structural impartiality, and its alignment with European quality and transparency objectives. This makes it the most suitable tool to ensure the acceptance and credibility of micro-credentials in an international context.

1. Specific Focus on Certification of Persons

Unlike other, more general models, ISO 17024 focuses specifically on individual certification, including candidate requirements, assessment, and certificate issuance. It provides a detailed and standardised framework for assessing and certifying personal competencies.

2. Separation between Training and Certification

The standard requires separation between the organisation providing training and the organisation certifying. This ensures that the certification process is not influenced by internal interests, reinforcing confidence in the micro-credential. That is, it guarantees impartiality in the certification process.

3. Flexibility and international applicability

ISO 17024 allows micro-credentials to be comparable and transferable across borders, facilitating their recognition in different countries.

4. Structural Alignment with Micro-credentials

The elements required by the standard (such as assessment criteria, prerequisites, and surveillance methods) match the descriptors suggested for European micro-credentials, making implementation more consistent.

5. Structured and continuous process

From the definition of certification programmes to continuous assessment, the standard provides detailed guidance for maintaining and improving the quality of the certification system.

4.2. CREDinGREEN

One partner of the MC GREEN project, FHM, has previously been involved in the Erasmus+ project CREDinGREEN (2021–2024; <https://www.credingreen.com>), in which a micro-credential has been developed.

In the following paragraphs, the insights gained from the development and awarding process are shared, with a focus on lessons learnt relevant for the MC GREEN project.

One purpose of the CREDinGREEN project was to encourage tourism SMEs to use the means of the European Green Deal for the development of sustainable products. In order to transmit the necessary knowledge, the project group designed a VET programme (Vocational Education and Training) to upskill SME managers and owners in the tourism sector. The initiative aimed to address the evolving needs of the market following the COVID-19 pandemic and under the influence of the EU Green Deal policy.

The online training provides the opportunity to equip tourism managers across Europe with the skills and knowledge required to navigate the post-pandemic landscape and embrace sustainable practices aligned with the EU Green Deal. The programme focuses on encouraging resilience, innovation, and sustainability in tourism management.

The CREDinGREEN VET training programme is an essential step for tourism managers looking to adapt to the rapidly changing market dynamics and sustainability requirements. By participating in

this programme, managers can be better prepared to lead their businesses towards a sustainable and successful future in the tourism industry.

The following conclusions have been drawn for the accreditation of the CREDinGREEN training programme:

- The concept of micro-credentials is viewed positively by all partners, and all are willing to integrate it into their existing training certifications.
- However, due to the inconsistent factual and developmental situation at European and national level (none of the partner countries has a nationally applied and accepted micro-credential model), it was not possible for us to develop a practicable concept for all partners. The necessary standardised European or national guidelines and frameworks do not exist.
- Due to the low level of anchoring of micro-credentials in the national education systems, these qualifications are not yet very well known, prestigious, or accepted by the learner groups (at least this has been our experience during our project work, especially in the pilot training courses). At the same time, however, learners have shown themselves to be open to and interested in this new accreditation model.
- Despite the unfavourable circumstances, the CREDinGREEN partnership contributes to the discussion on micro-credentials and proposes operational solutions.

Therefore, the partnership has agreed on the following standards and requirements for the accreditation of the CREDinGREEN learning outcomes with 1 micro-credential (MC):

§1 The CREDinGREEN training course comprises 60 hours (2 ECTS points), which can be accredited with 1 micro-credential (MC).

§2 The awarding institution must be certified and recognised as a training institution for vocational education and training and/or higher education in accordance with national legislation and frameworks.

§3 Educational institutions have the obligation to take into account national standards and frameworks (if any) when awarding the MC.

§4 In the status quo (February 2024), only the educational institutions represented in the partnership are entitled to award the CREDinGREEN micro-credential.

§5 As it is the clear intention of all project partners to increase the number of educational institutions, any other educational institution is free and welcome to include this course in its curriculum; all course materials are available free of charge.

§6 However, all teachers of the CREDinGREEN course must have previously attended and successfully completed a train-the-trainer programme of at least 10 hours. This training can only be provided by authorised CREDinGREEN training institutions.

§7 Only institutions already authorised as a CREDinGREEN training institution can certify other training institutions. In addition to the training of the teaching staff, the criteria include the content and strategic orientation of the educational institution as well as its professional and pedagogical excellence.

§8 An MC can only be awarded if the learner has completed 100% of the course content; however, it is possible to have up to 30% of the course content credited through previously acquired learning experience (formal and informal).

§9 An MC can only be awarded if at least 60% of all learning objectives have been successfully completed; in accordance with the flexible structure of the course, the assessment of performance is subject to internal standards and specifications.

§10 The accreditation certificate can be adapted to national or institutional templates and frameworks, but it must contain at least the information and data specified in the proposal below. The data and information labelled "optional" are also desirable.

5. Micro-credentials in VET – policy discussion

Before diving into the detailed analysis of overlaps and differences between micro-credentials as suggested by the European Commission and ISO 17024 as possibly the most promising quality assurance model for micro-credentials, it is important to analyse the status quo of the policy discussion at European level around micro-credentials. When focusing on the discussion of the use of micro-credentials in VET in Europe, it is important to follow the publications and activities of the European Centre for the Development of Vocational Training (CEDEFOP).

CEDEFOP has expressed a specific need for quality assurance approaches in micro-credentials in their recent work (CEDEFOP (2023): *Micro-credentials for labour market education and training: micro-credentials and evolving qualifications systems*, Luxembourg: Publications Office). This is further elaborated in the most recent paper by Pouliou, A. (2024): *Exploring the Emergence of Micro-credentials in Vocational Education and Training (VET)*, Publications Office of the European Union, CEDEFOP Working Paper Series, No. 22.

In the following paragraphs, these needs, demands, and expectations on a quality assurance strategy are summarised, with a particular focus on what can be applied and provided by the MC GREEN project.

In recent years, micro-credentials have gained prominence as a key mechanism to address the evolving demands of the labour market and education systems. The CEDEFOP (2024) report *Exploring the Emergence of Micro-credentials in Vocational Education and Training (VET)* highlights the need for a robust and comprehensive quality assurance (QA) strategy to ensure the credibility, relevance, and recognition of micro-credentials across various sectors.

5.1. Need for a coherent quality assurance framework

One of the key issues identified by CEDEFOP is the lack of a standardised quality assurance framework for micro-credentials across Europe. Since micro-credentials often fall outside traditional qualification frameworks, they require a dedicated system for validation, accreditation, and monitoring. This includes defining learning outcomes, assessment methodologies, and certification standards to ensure that micro-credentials are widely recognised by employers, educational institutions, and policymakers.

5.2. Alignment with labour market and sectoral needs

A critical demand emphasised by CEDEFOP is that micro-credentials must align with labour market requirements to remain relevant and useful for learners and employers alike. This means that stakeholders, including industry representatives, policymakers, and educational institutions, need to collaborate in the design and implementation of micro-credentials. The MC GREEN project can contribute by engaging with green economy stakeholders, ensuring that micro-credentials developed within the project are tailored to the needs of sustainable industries, renewable energy, circular economy, and environmental management. By integrating work-based learning approaches and

industry-driven competencies, MC GREEN can provide micro-credentials that directly support employability and workforce upskilling.

5.3. Recognition and portability of micro-credentials

Another key expectation is the portability and recognition of micro-credentials across EU member states. Currently, variations in national regulations and institutional practices create challenges for cross-border recognition. The MC GREEN project can facilitate harmonisation efforts by ensuring that its micro-credentials adhere to European and international best practices. This includes embedding micro-credentials within digital credentials ecosystems, such as Europass and EBSI (European Blockchain Services Infrastructure), which enhance transparency, security, and interoperability across borders.

5.4. Ensuring assessment and certification quality

CEDEFOP underlines the importance of reliable assessment methods to guarantee the credibility of micro-credentials. This includes defining assessment criteria, verification mechanisms, and skills validation processes that ensure competency-based rather than input-based learning. Within the MC GREEN project, this can be achieved by developing standardised assessment procedures and incorporating digital badges, etc., that enhance the security and traceability of awarded micro-credentials.

5.5. Sustainability and scalability of micro-credentials

One of the key challenges for micro-credentials is their sustainability beyond pilot projects. Many initiatives rely on short-term funding, which can hinder long-term adoption. CEDEFOP recommends that micro-credentials should be institutionally embedded within formal and non-formal education systems to ensure their continuity.

5.6. Bridging the gap between education and training providers

Micro-credentials exist at the intersection of formal education, vocational training, and workplace learning, which requires stronger collaboration between different education and training providers. MC GREEN may foster these connections by developing joint curricula and cross-sectoral training pathways that enable learners to transition between VET programmes, higher education, and industry-specific training.

5.7. Conclusion

CEDEFOP's latest research highlights the urgent need for quality assurance mechanisms that ensure micro-credentials are relevant, recognised, and standardised across the EU. The MC

GREEN project has a unique opportunity to integrate these recommendations into its framework, creating transparent, industry-aligned, and scalable micro-credential solutions for the green economy. By addressing quality assurance challenges, enhancing recognition, and ensuring alignment with labour market needs, MC GREEN can set a benchmark for the future development of micro-credentials in vocational education and training.

Application of the MC GREEN Convergence Strategy in response to the CEDEFOP Report

The CEDEFOP report concurs with the findings of this MC GREEN research on the views and attitudes towards micro-credentials by states, employers, and learners, in addition to the potential labour market returns. The report suggests that further research be conducted on existing initiatives and the role of policies in micro-credentials for learners and small companies. Whilst it does not issue a set of recommendations as such, it does question the current mechanisms and outlines what should or could happen in terms of quality measures for micro-credentials for the learner and labour market.

Of note, the report found that perception of the relevance of micro-credentials is fragmented, and the value of them is either over- or under-estimated by both learners and employers. Where employers do not offer or avail of micro-credential training opportunities, it was identified that this was due to not recognising the 'award' and the assumption that there is no added value to their organisation. This can be viewed as justifiable, as micro-credentials are currently not integrated into the EQF, and there is no officially recognised standard to determine the quality of the learning outcome.

While the CEDEFOP report acknowledges that there is a need for a quality registry for micro-credentials, it also notes that there could be a high cost to develop it. Given that there is an existing mechanism via ISO 17024, a world-renowned, respected mark of quality, this format could, and indeed should, be utilised instead of developing another burdensome layer of quality controls. The application of this ISO standard will further ensure that educators are up to date on the learning content, thereby ensuring that learners receive quality and relevant information. The application of this ISO standard for micro-credentials will also eliminate confusion relating to the recognition of the award from country to country, making it more efficient for both employers and employees.

6. ISO 17024 – introduction and status quo

The ISO 17024 norm is one of many normative regulations within the broader ISO norm family. For a full understanding of the background and value of an ISO norm—especially within personnel certification and in the context of micro-credentials quality assurance—it is important to understand how ISO norms are created, what the background of the ISO 17024 norm is, and what its core factors and requirements are.

First of all, and most importantly: unlike the definitions and requirements of micro-credentials under the European definition, the ISO 17024 norm does not include any optional requirements or facets that may be added if deemed important. The ISO 17024 norm only defines obligatory requirements under which a certification process must be concluded. This is crucially important because it shows that there is no flexibility at the level of ISO 17024 requirements. Therefore, if both poles, micro-credentials and the ISO 17024 norm, are to be matched and combined, it can only be the pole of micro-credentials requirements that offers flexibility and adaptability.

6.1. How is an international ISO standard created?

At the global level, standards are developed under the coordination of the International Organization for Standardization (ISO), based in Geneva. Comprising over 160 national standardisation institutes, ISO aims to harmonise standards worldwide to facilitate international trade in goods and services and promote scientific collaboration among countries. This harmonisation creates a foundation for free global trade and supports technology transfer to developing nations.

Unlike European (EN) standards, which must be integrated into national regulations within Europe, the adoption of ISO standards remains voluntary. ISO positions itself as a non-governmental organisation, working closely with both governmental standardisation institutes and private-sector representatives. This collaboration ensures a balance between economic demands and societal needs in the standardisation process. Alongside ISO, the International Electrotechnical Commission (IEC) and the International Telecommunication Union (ITU) also play key roles in global standardisation efforts.

The development of ISO standards follows fundamental principles of standardisation, ensuring widespread acceptance and practical applicability. These principles include:

- **Impartial Collaboration:** Guaranteeing that all relevant stakeholders are represented at every stage of the standardisation process.
- **Broad Consensus:** Ensuring that no contradictions exist within the standard's content and that all key parties' perspectives are considered.
- **Public Accessibility:** Draft standards are made publicly available before final publication, allowing for objections and comments to be addressed.

6.2. ISO17024 personnel certification

Personnel certification under ISO 17024 is an internationally recognised process for verifying professional competencies. Certificate holders are formally confirmed to possess the skills and expertise specified in their certification, distinguishing ISO 17024 from other forms of certification, such as attendance certificates. This distinction is key to its high value and widespread acceptance.

Beyond competency verification, ISO 17024 personnel certification is characterised by two fundamental principles: impartiality and limited validity. These ensure the objectivity and credibility of the certification at all times. In practice, this means:

- Examiners cannot simultaneously serve as lecturers.
- Those issuing certifications must neither lecture nor conduct examinations.
- Within the validity period, certificate holders must demonstrate continued professional development or active engagement in their certified field.

By complementing state-regulated education and vocational training, ISO 17024 personnel certification plays a crucial role in recognising both non-formal and informal learning. It bridges the gap between theoretical knowledge and practical skills, making competencies more visible, transparent, and internationally comparable.

The high credibility and broad acceptance of ISO 17024 certification stem from the fact that only accredited certification bodies can issue these certificates. The accreditation process itself is governed by international standards and continuously monitored to ensure compliance.

ISO 17024's well-established framework, refined over more than 20 years, positions it as the only truly impartial and objective instrument in the educational landscape. While it shares similarities with newer mobility instruments such as ECVET, ECTS, and Europass, it remains distinct. However, by clearly defining and verifying competencies, ISO 17024 certificates can be aligned with other qualification recognition systems, particularly the European Qualifications Framework (EQF) reference levels.

The certification of competencies under ISO 17024 is a firmly established and widely implemented system in Austria and all partner countries of the MC GREEN project, applied across various target groups. The scope and application of normative personnel certification depend on the specific needs and objectives of these groups. Over time, ISO 17024 certification has proven its value in practice and is now recognised as an essential qualification tool for multiple stakeholders.

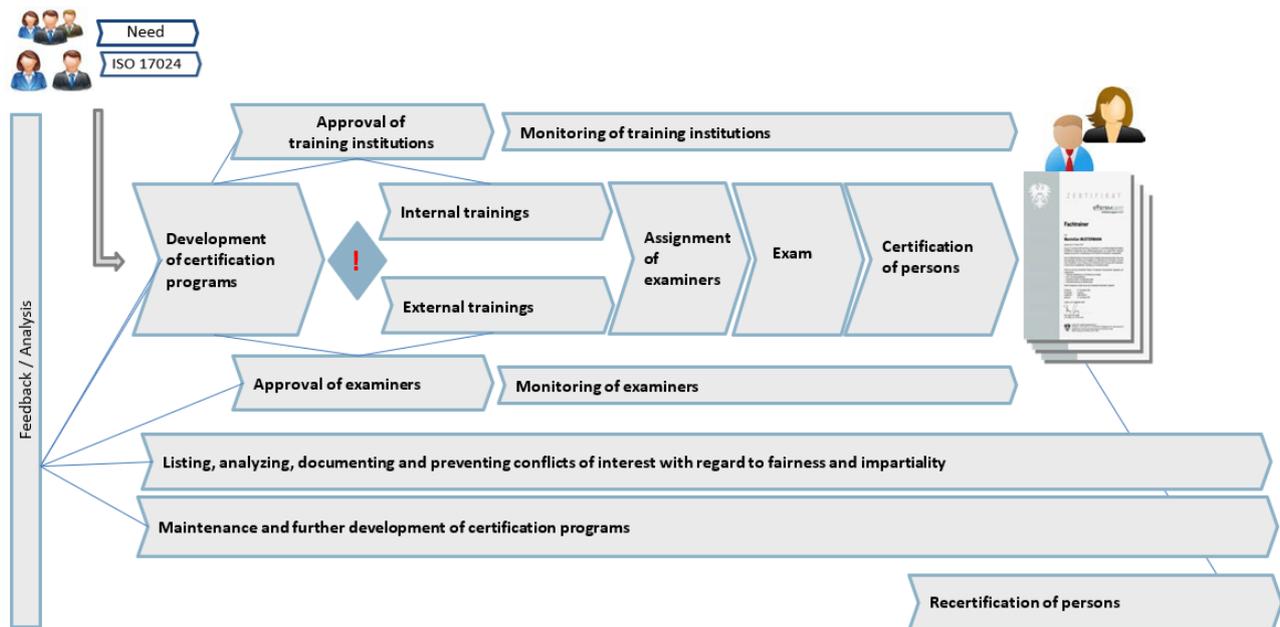
Key Target Groups for ISO 17024 Certification:

- Individuals seeking to enhance their formal education with an ISO 17024 certificate, providing a high-quality, internationally recognised proof of qualification.
- Training institutes looking to elevate their courses by enabling participants to obtain an internationally valid certification, adding value to their educational offerings.
- Examiners who contribute to the certification process through their verified expertise and impartial assessment.
- Vocational colleges and universities that, as accredited training centres, offer students the opportunity to obtain an ISO 17024 certificate alongside their formal qualifications.

- Organisations and institutions that utilise ISO 17024 certification to provide their employees with independent, standardised proof of competence, ensuring internal training consistency and strategic advantages.

Through its broad applicability and proven effectiveness, ISO 17024 certification serves as a valuable tool for professional development, education, and workforce qualification.

To illustrate the process of the development of a qualification scheme under the ISO 17024 norm, which is the basis for certification, the following picture could help:



6.2.1. Need for certification according to ISO17024

The need for certification must be distinguished from any need for a training measure. Defining the need for an ISO 17024 certification programme does not mean describing the need for a particular training programme on the market.

For each certification, the need for certification must be presented in the development process. This is done by the significantly interested parties, who consider similar national and international (formal and non-formal) “qualifications” relating to the competence, as well as any existing legal and regulatory requirements.

The ongoing assessment of the need for certification is implemented continuously by monitoring and evaluating the context of the relevant competence and the number of certificates issued.

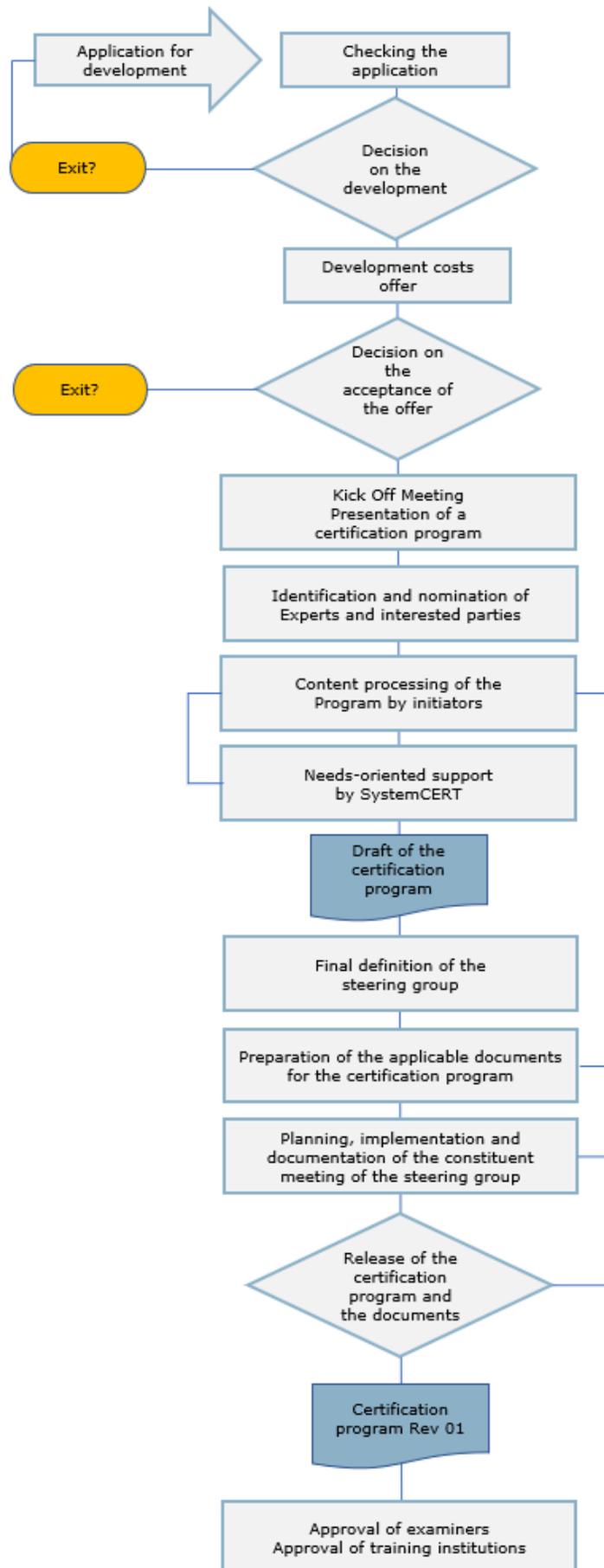
6.2.2. Development of a certification programme

To certify a competence, a certification programme must be developed. The programme can be seen as a rule book. The certification programme contains all the requirements of ISO 17024 and must be adhered to by all parties for the certification process to be considered standard-compliant.

The certification of persons in accordance with ISO 17024 is fundamentally needs-oriented, transparent, and objective. In relation to the development of new certification programmes, this means that several normatively required indicators must be taken into account before the systematic development of certification programmes begins.

One of the most important requirements of ISO 17024 is absolute impartiality. Behind every certification programme is a group of experts—the steering group—which consists of interested parties, for example employers, educational organisations, experts, etc. This group ensures the impartiality of the programme. They develop and maintain a certification programme in accordance with the requirements of ISO 17024.

SystemCERT illustrates the development process for a certification programme based on concrete competence needs as follows:



6.2.3. Approval of training institutions

The certification body collaborates with institutes and training providers to deliver the required training courses necessary for ISO 17024 certification. To offer training programmes that lead to an ISO 17024-certified qualification, institutions must first obtain official approval as a recognised training provider. This ensures that training aligns with the high standards set by the certification framework.

Application and Approval Process

To become an accredited training provider, institutions must submit a detailed curriculum that complies with the specific requirements of the certification programme. The curriculum must outline key aspects such as:

- Course structure and duration
- Learning objectives and competencies covered
- Assessment criteria and exam components
- Required qualifications of trainers
- Training methodology and instructional materials

The steering group, responsible for maintaining the integrity of the certification process, carefully reviews all submitted documents. This group evaluates whether the proposed training aligns with ISO 17024 competency standards and meets the necessary educational and assessment requirements.

If the application meets all criteria, the training institute is granted approval and licensed as an official training provider for a period of three years. During this time, the institute is authorised to offer training courses that prepare participants for ISO 17024 certification examinations.

To maintain the approval, the training provider must ensure continuous compliance with certification requirements, including:

- Regular updates to the curriculum to reflect changes in industry standards and best practices to meet the minimum requirements of the certification programme
- Adherence to quality assurance guidelines in training delivery
- Ongoing monitoring and evaluation by the certification body

After the three year period, training providers must apply for renewal, demonstrating continued compliance with ISO 17024 standards and any updated requirements.

6.2.4. Approval of examiners

Testing and certification form a highly integrated and homogeneous system, where examiners play a crucial role in ensuring the credibility and acceptance of certificates. The competence and quality of examiners are fundamental to maintaining the value of the certification process. Therefore, the certification body places great emphasis on the selection and approval of examiners.

Approval Process for Examiners

To conduct ISO 17024 certification exams, prospective examiners must undergo a dedicated approval process specific to their area of competence. This process includes:

- Submission of documented proof of qualifications relevant to the certification programme.
- An evaluation interview, conducted by designated members of the certification programme's steering group, who assess the candidate's expertise and suitability.

Once all qualification and competence requirements are met, the examiner is officially approved for a period of five years through an approval letter issued by the certification body.

Examiner Assignment and Certification Oversight

When a training body schedules an exam, it must submit a proposal for examiner assignment. The certification body then verifies:

- The validity of the examiner's approval status.
- Compliance with impartiality and objectivity requirements, ensuring that no conflicts of interest exist.

Ongoing Competence Assessment

Throughout the five-year approval period, the certification body is responsible for continuously monitoring examiner performance. This is achieved through:

- Exam supervision, where assessments are observed in real-time.
- Regular performance evaluations, ensuring that examiners adhere to certification standards and maintain the required level of competence.

By maintaining rigorous selection, approval, and monitoring of examiners, the ISO 17024 certification process upholds high-quality standards, ensuring that assessments remain objective, impartial, and credible.

6.2.5. Training providers and training programmes

The path to certification may involve completing a training course and passing a certification test to obtain an ISO 17024 certificate.

The course or training programme can be defined as an entry requirement for certification and examination, but it is not mandatory. The background to this is to keep the presumption of competence as low as possible, as competence cannot be verified 100% through an exam alone.

Almost all certification programmes specify a course or training programme for certification. This is delivered by training centres approved by the certification body (e.g. SystemCERT). It is important to mention that only training programmes delivered by approved training providers may be taken as an entry requirement for certification. However, in place of training programmes, other entry requirements for the certification process, such as years of work experience, practical assessments,

research reports, or other scientific documents, may be defined, if necessary, to demonstrate and support the competences gained in the certification process.

6.2.6. Exam preparation and assignment of examiners

To ensure compliance with normative requirements, certification exams must be registered with the certification provider (e.g. SystemCERT) at least four weeks before the scheduled exam date. This process guarantees that all conditions for a valid and standardised certification exam are met.

Pre-Exam Verification Process

During registration, the certification body conducts a thorough review to ensure:

- The training institution who provided the preparation training is approved and meets all certification requirements.
- The assigned examiner holds a valid approval for the certification programme.
- Impartiality is maintained, meaning the proposed examiner has no personal or professional connections (e.g. same employer, family relationships) with the registered candidates.
- All relevant exam documents, especially the written multiple-choice test (if available and necessary), are reviewed and approved in advance.

Examiner Assignment and Compliance

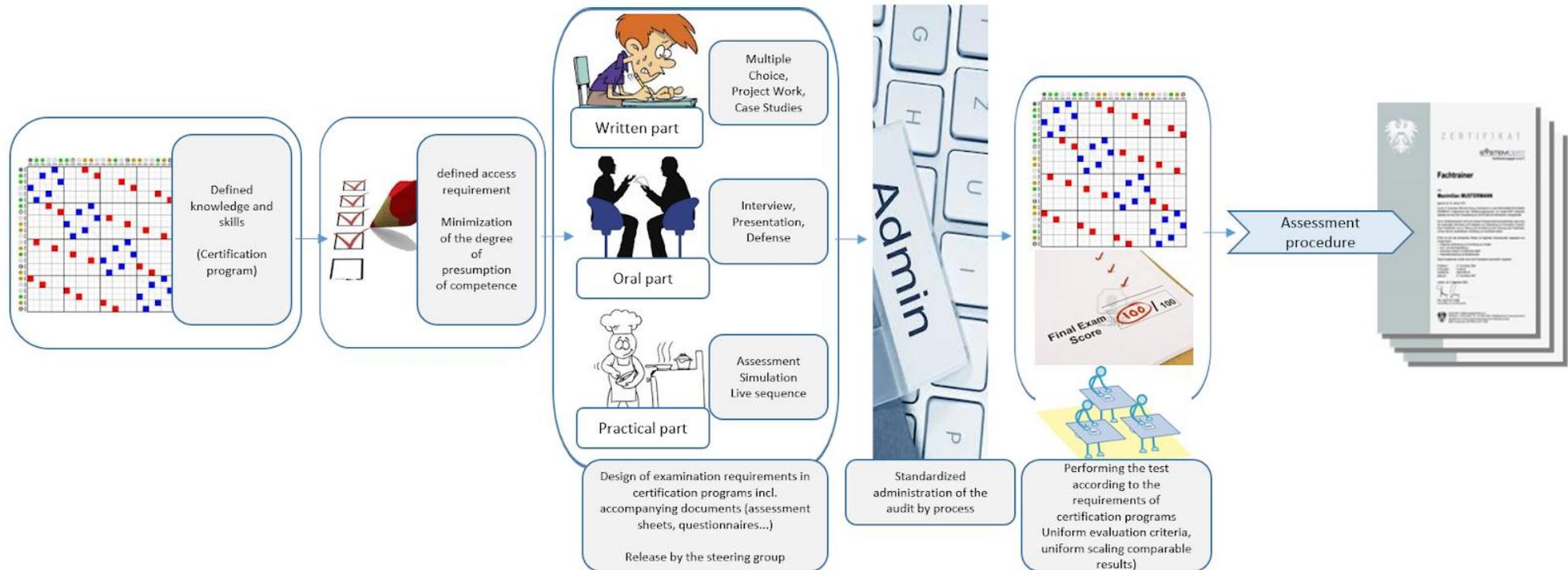
Once the exam registration is validated, the certification body formally assigns an approved examiner to conduct the exam. This binding assignment ensures adherence to ISO 17024 requirements, which stipulate that examiners must:

- Have comprehensive knowledge of the respective certification programme.
- Be able to apply standardised testing procedures and use the official test documents.
- Maintain impartiality and objectivity, avoiding any conflicts of interest.
- Adhere to certification exam regulations, including those for online examinations.
- Confirm they have read and will comply with the Code of Conduct.

Final Approval and Exam Execution

Once the certification body approves the examiner assignment, the exam may proceed in accordance with the certification programme's regulations. This structured approach ensures that all exams meet high-quality, standardised assessment criteria, reinforcing the credibility and acceptance of ISO 17024 certification.

Graphical description of the examination process according to ISO17024 standard:



6.2.7. Examination

The exam is a crucial element of the certification process, as it serves to evaluate and confirm the competencies of candidates, which are subsequently documented on certificates issued under ISO 17024. These competencies form the basis of the certification, which can only be awarded if the exam is conducted in compliance with all regulatory requirements. To achieve full compliance with ISO 17024, it is vital to establish clear guidelines and procedures to ensure that the exam process is standardised, transparent, and consistent.

Standardised Exam Execution and Documentation

Each certification exam must be carried out in accordance with the specific requirements outlined by the relevant certification programme. The results and the process must be documented in a manner that is clear, transparent, and verifiable by third parties. The documentation must meet the following standards:

- **Legibility and Clarity:** All exam records must be readable and understandable, ensuring that they can be reviewed by third parties without ambiguity. This includes written responses, assessment notes, and scores.
- **Comprehensiveness:** The documentation should include all essential details, such as the questions posed to the candidates, any clarifications or comprehension questions, and the results of the exam (e.g. pass/fail, marks for multiple-choice questions, or detailed evaluation sheets for each candidate).
- **Detailed Results:** Each candidate's assessment should include a clear indication of their performance, highlighting whether the candidate passed or failed and providing relevant feedback (e.g. the marking of incorrect answers in multiple-choice tests). This ensures the exam results are objective and fairly assessed.

Measures to Ensure Exam Integrity

To maintain the integrity and credibility of the certification process, all parties involved (examiners and training institutions), must adhere to strict protocols designed to ensure fairness and transparency throughout the exam. The following measures must be observed:

1. **Supervision and Integrity**
 - Examiners must be present as invigilators throughout the exam to oversee the entire process. Their role is to prevent any form of cheating or misconduct that could compromise the validity of the exam results. They must also be vigilant in ensuring that the exam procedures are followed meticulously.
 - Monitoring procedures should be in place to guarantee that all candidates are given an equal and fair opportunity to succeed without external interference.
2. **Exam Conditions and Resources**

- Training institutions are responsible for providing appropriate exam venues that comply with the required standards for examination conditions. This includes ensuring that the exam rooms are adequately equipped, comfortable, and free from distractions.
- All necessary exam materials (e.g. presentation materials, tools, exam papers, and any other specific items required for the exam) must be available and prepared before the exam begins.
- Institutions should also provide any aids required for the exam, such as reference materials, calculators, or online platforms, as per the certification programme's guidelines.

3. Variability of Exam Content

- To ensure fairness and prevent predictability, the exam content must be varied from one exam session to another. The constant use of identical exam questions, especially in formats like multiple-choice tests (MCT), is prohibited.
- The exam must follow the specific number of questions and their distribution as stipulated in the certification programme. Exceeding the prescribed number of questions or changing the distribution of topics or difficulty levels is not allowed, ensuring that the exam remains consistent and standardised across all candidates.

4. Candidate Identification

- Proper identification of exam candidates is essential to ensure the integrity of the process. Before the exam begins, examiners or the training institution must verify each candidate's identity to confirm they are registered for the exam. This prevents impersonation and ensures that only authorised individuals take the exam.

Post-Exam Process and Documentation

Once the exam has been conducted, it is essential that the assessment results and documentation are thoroughly reviewed and recorded. This includes:

- Storing exam records in a secure, organised manner to maintain confidentiality and ensure that they are available for future verification if necessary.
- Post-exam evaluations of examiners' performance, ensuring that they adhered to ISO 17024 standards. If any discrepancies or irregularities are noted, corrective actions should be taken immediately.

Continuous Monitoring and Review

To ensure that the certification process maintains its integrity over time, continuous monitoring and review of exam practices and procedures are required:

- Ongoing assessments of the exam environment to ensure that the conditions remain suitable for each exam session.
- Regular audits of exam processes to check for any discrepancies, non-compliance, or potential improvements.
- Feedback loops from candidates and examiners to enhance the overall quality and effectiveness of the certification process.

Final Approval and Certification

Upon successful completion of the exam and verification of all documents, the results are finalised, and the candidate's eligibility for ISO 17024 certification is confirmed. The certification body then issues the official certification, recognising the individual's competency and confirming their qualifications.

By adhering to these stringent exam regulations and maintaining consistent standards, ISO 17024 ensures that the certification process remains transparent, objective, and internationally recognised, thereby reinforcing the credibility and reliability of certified competencies worldwide.

6.2.8. Certification

After the exam, the certification body requires complete and accurate documentation confirming that all the necessary certification criteria have been met.

The exam file for each participant includes both exam-related documents (such as multiple-choice tests, assessment sheets, practical work, etc.) and personal documents (like the certification application and any relevant evidence). To ensure timely processing and avoid delays in certification, checklists for each competency are provided, guiding the preparation of the exam file and ensuring that all required documents are submitted.

Once the documentation is complete, the certification body generally needs some time (normally up to three weeks) to process and issue the certificates. The training provider must submit the necessary documents within three weeks from the exam date. The certification provider is not responsible for any delays caused by the training institution in the transmission of the required documents.

Impartiality in Processing and Certification

Impartiality is a key criterion when reviewing examination documents and issuing certificates. If any certification body employee has a conflict of interest (e.g. personal connections with the participant, such as relatives or colleagues), they are prohibited from processing the documents or issuing the certificate for that participant.

To maintain fairness, the certifier making the final decision on certification must have had no involvement in the participant's training, examination, or the processing of the documents. This ensures that the certification decision is made impartially and based solely on the documented results.

Once all documents have been processed and verified for completeness and impartiality, the certifier will approve the release of the examination file. Following this, the ISO 17024 certificate will be issued to the participant.

All ISO17024 certificates contain the following core information:

- The name of the certified person

- A unique identification in the form of an automatically generated and traceable certificate number
- The name and location of the certification body
- The certified competence with reference to certification programme
- The scope of the certification in the form of knowledge and skills
- The date of issue and validity of the certificate
- Authorisation by signature of an authorised person

6.2.9. Recertification

Certificates issued under ISO 17024 are provided with a limited validity period to maintain the relevance and accuracy of the competencies they represent. This ensures that the skills demonstrated by the certificate holder remain current, up to date, and aligned with evolving industry standards. The validity period is determined by various factors, including changes in industry practices, technological advancements, shifts in context, and the likelihood that competencies may degrade or become obsolete over time. As a result, the validity of most ISO 17024 certificates ranges from 3 to 5 years, depending on the specific competencies involved.

This validity period takes into consideration the "half-life" of skills, acknowledging that skills and knowledge can diminish over time, especially in rapidly changing fields. By incorporating this concept into the certification process, ISO 17024 certificates maintain high meaningfulness and relevance throughout their lifecycle, providing confidence to employers and stakeholders that the certified competencies are still valid and reflective of the current standards in the field.

Purpose and Goals of Certification

The purpose of certification under ISO 17024 goes beyond merely acknowledging the completion of training; it serves several critical functions:

- 1. Enhancing and Standardising Qualifications and Competencies:** ISO 17024 certification provides a uniform, internationally recognised standard for validating competencies. By setting clear criteria for the certification process, it ensures that individuals meet specific, standardised qualifications across different sectors and regions, increasing the consistency and reliability of professional skills.
- 2. Establishing Objective Classification Criteria:** Certification under ISO 17024 offers an objective framework for classifying and comparing skills across diverse professions. This creates a transparent and measurable way to assess qualifications, providing employers, educational institutions, and other stakeholders with a clear understanding of the candidate's abilities and competencies.
- 3. Improving Transparency in the Recognition of Professional Qualifications:** The certification process helps to promote transparency in recognising professional qualifications. By adhering to internationally accepted standards, ISO 17024 ensures that individuals'

competencies can be easily understood and accepted across different countries and industries, enhancing global mobility and fostering cross-border cooperation.

Recertification Process

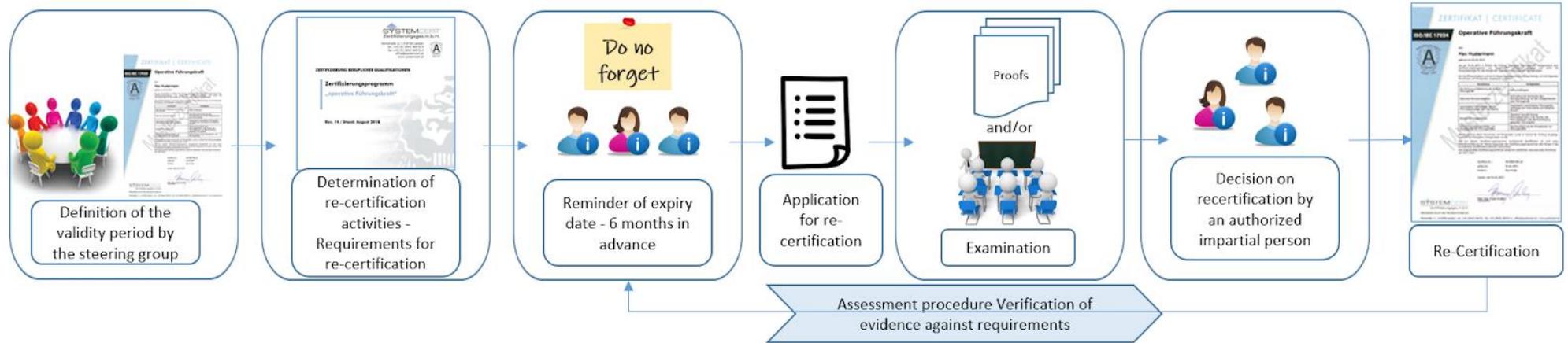
As the validity of ISO 17024 certificates is limited, recertification becomes necessary after the certificate expires. This process ensures that the individual continues to meet the evolving requirements of their profession and maintains the necessary skills and knowledge to perform effectively in their role. To renew their certificate, holders must provide evidence that demonstrates ongoing competence and professional development in accordance with the certification programme's guidelines.

The evidence required for recertification must be sufficient to allow an impartial assessment of the candidate's current competencies. This process ensures that the certified individual remains competent and capable in their field, even as technologies and practices change over time.

For recertification by the certification body, the following elements are typically considered:

- 1. Monitoring of Professional Practice:** Evidence of continued professional activity in the area related to the certification is assessed to ensure that the individual has remained active in their field and applied their skills consistently over the validity period of the certificate. This helps confirm that their competencies have not become outdated.
- 2. Structured Interviews:** A structured interview process may be conducted to assess the individual's continued knowledge, skills, and professional behaviour. These interviews provide an opportunity to evaluate whether the individual's competencies align with the evolving needs of the industry or sector they are working in.
- 3. Confirmation of Ongoing Performance:** To ensure that the individual's skills are being consistently applied in a practical context, confirmation of their ongoing performance may be required. This could come from supervisors, colleagues, or clients who can attest to the individual's professional achievements and competencies since the last certification.
- 4. Examination:** Depending on the certification programme, a reassessment exam may be required to verify that the individual has maintained the level of knowledge and skills required for certification. This could include theoretical or practical exams to ensure the individual has adapted to any new developments in their field since the original certification.
- 5. Training and Professional Development:** Individuals may be required to demonstrate participation in continuing education or professional development activities. These activities can include workshops, seminars, training courses, or other learning opportunities that ensure the individual's competencies remain aligned with industry standards and best practices.

Recertification ensures that ISO 17024 certificates reflect the individual's ongoing commitment to professional growth and their ability to meet the demands of their field. It also provides a mechanism for employers to confidently assess the current skills and competencies of their workforce.

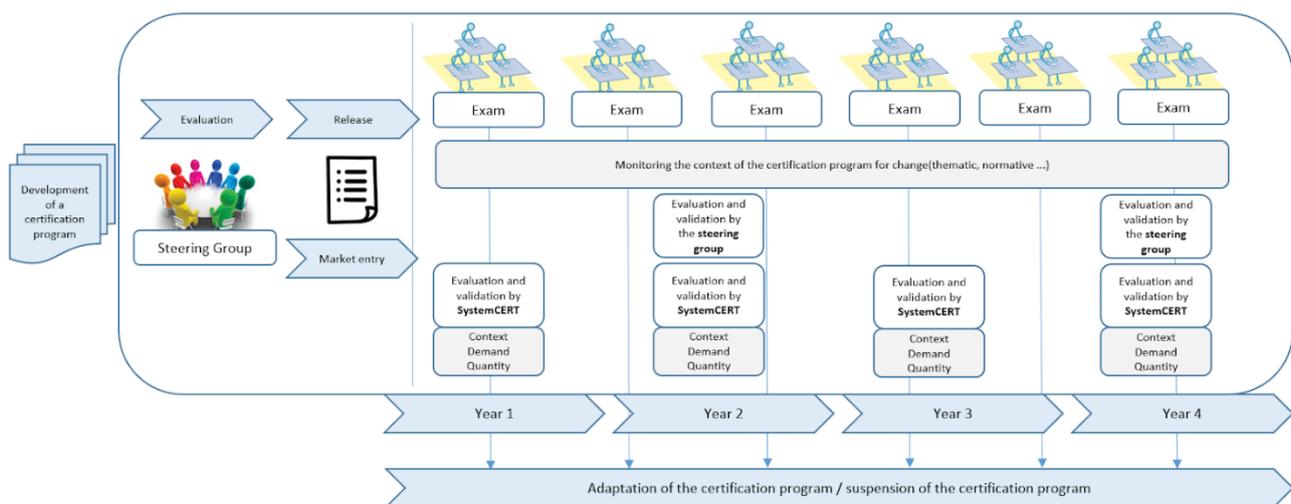


6.2.10. Maintenance and further development of certification programme

Besides the fact that the certificate issued has a limited validity and life duration, the underlying certification programme also needs to be monitored for any changes, new requirements, or emerging competencies that must be reflected in future examination processes and in the issuing of ISO 17024 certificates for the programme in question. The ISO 17024 norm foresees a continuous monitoring procedure of the certification programme, carried out by the certification body in collaboration with the certification programme committee (steering group).

At six-monthly intervals, the certification body reviews and documents any thematic changes relevant to the certification programme, such as new industry standards, regulatory updates, or technological advancements, and identifies whether any adaptations or updates are necessary. These updates ensure that the certification programme remains current and relevant, and that the competencies certified continue to reflect the state of the art and meet both present and anticipated future needs.

The process followed in the maintenance and further development of the certification programme may be illustrated as follows:



7. Converging micro-credentials and ISO17024

ISO 17024 and micro-credentials in Europe share several key overlaps, particularly in terms of their approach to standardisation, certification, and recognition of competencies. These overlaps highlight how ISO 17024's formal structure can complement the growing trend of micro-credentials in Europe, which aim to provide flexible, targeted skills recognition. The most important identified overlaps are:

Competency-Based Certification

Both ISO 17024 and micro-credentials focus on certifying specific competencies rather than just qualifications or attendance. ISO 17024 provides a framework for personnel certification, ensuring that the skills and competencies validated through the certification process meet established standards. Similarly, micro-credentials assess and recognise specific competencies, often in response to rapidly changing market needs, by verifying that individuals possess particular skills or knowledge in a specific area.

- **ISO 17024:** Emphasises the certification of individuals based on proven competencies, ensuring that certificates reflect actual abilities, skills, and knowledge.
- **Micro-credentials:** Typically target niche areas of knowledge or skills, allowing learners to demonstrate proficiency in specific tasks or subjects that may not require a full degree or certification.

Quality Assurance and Standardisation

Both systems emphasise quality assurance and standardisation to ensure that certifications are credible and widely accepted. ISO 17024 sets standards for the certification process, including the establishment of impartial examiners, clear assessment criteria, and transparency in the evaluation process. Micro-credentials in Europe are increasingly being standardised through frameworks like the European Qualifications Framework (EQF), ensuring they align with broader recognition and regulatory systems.

- **ISO 17024:** Establishes a uniform certification process across various industries to ensure credibility and recognition of certified competencies.
- **Micro-credentials:** In Europe, micro-credentials are increasingly aligned with national and European frameworks (e.g. EQF), with some certifications also subject to quality standards, though these frameworks are still evolving.

International Recognition

One of the key benefits of both ISO 17024 and micro-credentials is their potential for international recognition. ISO 17024 is an internationally recognised standard for certification, and certificates issued under this standard are accepted globally. Micro-credentials are also gaining international recognition, especially when they are linked to reputable education and training providers or embedded in global frameworks, such as the EQF.

- **ISO 17024:** The certification provided under ISO 17024 is recognised globally, making it useful for individuals seeking to demonstrate their skills and qualifications across borders..
- **Micro-credentials:** Micro-credentials that adhere to international standards or are linked to well-known accreditation systems can also provide a level of recognition that transcends borders, particularly as European initiatives promote cross-border recognition and portability of skills.

Flexibility and Lifelong Learning

Both ISO 17024 and micro-credentials support the idea of lifelong learning and continuous professional development. ISO 17024 certificates are often valid for a limited period and require recertification to ensure that the individual's competencies remain current. Micro-credentials are designed to be modular and can be earned throughout an individual's career, enabling ongoing learning and adaptation to new skills or knowledge.

- **ISO 17024:** Encourages ongoing professional development through recertification processes, ensuring that competencies remain relevant in an evolving job market.
- **Micro-credentials:** Often focus on smaller, bite-sized learning experiences that individuals can pursue throughout their careers, allowing for continuous skill enhancement and adaptability to new industry demands.

Impartiality and Objectivity in Assessment

Both ISO 17024 and micro-credentials emphasise the importance of impartiality and objectivity in the certification process. In the case of ISO 17024, this is achieved through the certification body's adherence to established standards, ensuring that assessors are qualified and free of conflicts of interest. For micro-credentials, similar principles apply, particularly as they become more formalised within regulated systems.

- **ISO 17024:** Requires that certification processes are impartial, with independent assessments conducted by trained and qualified examiners.
- **Micro-credentials:** Increasingly ensure that assessments for micro-credentials are objective and adhere to transparent criteria, with some initiatives focusing on external validation by recognised bodies.

Linking to National and European Frameworks

Both ISO 17024 and micro-credentials are linked to broader national and European qualification frameworks. ISO 17024 can be seen as a complement to formal qualifications within these frameworks, with certifications reflecting recognised competencies at various levels. Micro-credentials, particularly in Europe, are being increasingly integrated into the European Qualifications Framework (EQF), aligning them with broader educational and professional standards.

- **ISO 17024:** Provides certification that can align with the levels and competencies recognised in national and European frameworks, offering clarity in terms of qualifications and competencies.

- **Micro-credentials:** Many European initiatives are working towards aligning micro-credentials with the EQF to make them part of the broader European system of qualifications, ensuring they are understood and valued across different countries and industries.

Market Relevance and Industry Focus

Both systems are designed to address the needs of the labour market by focusing on competencies that are relevant to employers and industries. ISO 17024 certifications are often tailored to specific industries, ensuring that certified individuals meet the standards required for their roles. Micro-credentials focus on industry-specific skills that can be quickly adapted to changing market demands, making them particularly attractive to employers seeking specialised expertise.

- **ISO 17024:** Aligns certification with industry needs and standards, ensuring that certified professionals meet the competencies required for specific sectors.
- **Micro-credentials:** Provide a flexible and timely solution for certifying specific skills in response to the evolving needs of the workforce, often in sectors with rapidly changing technologies or requirements.

7.1. Turning the tables – from ISO17024 to micro-credentials

After the first analysis of the requirements, obligatory and optional requirements of the ISO 17024 norm and the European definition of micro-credentials, especially in VET but also in higher education, it is important to make a first step in turning the tables: if ISO 17024 should be used as an international standard for quality assurance of awarding micro-credentials, especially in VET, it is important that the definition, processes, content etc. of micro-credentials are adapted to the requirements of ISO 17024 and not the other way round. ISO 17024 is a clearly defined international norm standard which does not show any flexibility concerning content, procedures, elements etc. If even one of the obligatory elements and parts is not considered properly, the issuing of an ISO 17024-based certificate will not be possible. This means that ISO 17024 and its requirements must take the lead in discussions and developments of micro-credentials. For this reason, it is important to fully understand all the obligatory requirements of ISO 17024 and consider all the obligatory elements of ISO 17024 in the micro-credential definition and development process.

7.2. Comparison of ISO17024 and micro-credentials obligatory and optional elements

	ISO17024	Micro-Credentials
Obligatory Elements	<ul style="list-style-type: none"> ▪ The name of the certified person. ▪ A unique identification in the form of an automatically generated and traceable certificate number. ▪ The name and location of the certification body. ▪ The certified competence with reference to the certification programme. ▪ The scope of the certification in the form of knowledge and skills. ▪ The date of issue and validity of the certificate. ▪ Authorisation by signature of an authorised person. <p>These elements need to be based on the following obligatory certification programme requirements:</p> <ul style="list-style-type: none"> ▪ Impartiality and independence. ▪ Competence of certification personnel. ▪ Certification programme development. ▪ Exam and assessment. ▪ Confidentiality. ▪ Continuous improvement and monitoring. ▪ Public information. ▪ Monitoring of certified individuals. 	<ul style="list-style-type: none"> ▪ Identification of the learner ▪ Title of the micro-credential ▪ Country/Region of the issuer ▪ Awarding body ▪ Date of issuing ▪ Learning outcomes ▪ Notional workload needed to achieve the learning outcomes (in ECTS credits, wherever possible) ▪ Level (and cycle, if applicable) of the learning experience leading to the micro-credential (EQF, QF-EHEA), if applicable ▪ Type of assessment ▪ Form of participation in the learning activity ▪ Type of quality assurance used to underpin the micro-credential
Sources	ISO 17024	European Commission (2021): A European Approach to Micro-Credentials

Optional Elements	There are no optional elements, as the standard specifies the exact requirements, and these must be met.	<ul style="list-style-type: none"> ▪ Prerequisites needed to enrol in the learning activity ▪ Supervision and identity verification during assessment (unsupervised with no identity verification, supervised with no identity verification, supervised online or onsite with identity verification) ▪ Grade achieved ▪ Integration/stackability options (standalone, independent micro-credential / integrated, stackable towards another credential) ▪ Further individual information
Quality Assurance Requirements	<p>Mandatory requirements for certification body:</p> <ul style="list-style-type: none"> ▪ Documented Management System (at the certification body). ▪ Impartiality and Conflict of Interest Control. ▪ Competence of Personnel. ▪ Regular Monitoring and Auditing (Requirement of the certification body). ▪ Management Review (Requirement of the certification body). ▪ Control of Non-conformities. ▪ Evaluation of Certification Programme Effectiveness. ▪ Records Control. ▪ Complaint and Appeal Handling (Requirement of the certification body). ▪ Continuous Improvement Mechanism. ▪ Transparency in Certification Decisions. 	<p>Mandatory requirements</p> <p>Quality assurance processes must</p> <ul style="list-style-type: none"> ▪ be fit for purpose. ▪ clearly documented and accessible. ▪ meet the needs and expectations of learners and stakeholders. <p>For training providers</p> <ul style="list-style-type: none"> ▪ External quality assurance is based primarily on the assessment of providers (rather than individual courses) and the effectiveness of their internal quality assurance procedures. ▪ Providers should make sure that internal quality assurance covers all the following elements: <ul style="list-style-type: none"> ○ The overall quality of the micro-credential itself, based on the standards referred to below;

	<ul style="list-style-type: none"> ▪ Periodic Review and Updating of Certification Programmes. ▪ Evaluation of Post-Certification Performance. ▪ Active Involvement of Interest Groups. ▪ Customer Evaluations. 	<ul style="list-style-type: none"> ○ The quality of the course, where applicable, leading to the micro-credential; ○ Learners’ feedback on the learning experience leading to the micro-credential; and ○ Peers’ feedback, including other providers and stakeholders, on the learning experience leading to the micro-credential. <p>Proposed standards</p> <ul style="list-style-type: none"> ▪ External quality assurance is to be conducted in line with: <ul style="list-style-type: none"> ○ Annex IV of the European Qualifications Framework Recommendation, where applicable; ○ The Standards and Guidelines for Quality Assurance in the European Higher Education Area, where applicable; ○ The European Quality Assurance Reference Framework (the EQAVET Framework) in the field of vocational education and training, where applicable; and ○ Other quality assurance instruments, including registries and labels, to build public trust in micro-credentials, where applicable.
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7.3. Convergence and synergy requirements between ISO17024 and micro-credentials in VET in Europe

After a close and comprehensive analysis of the obligatory and optional requirements of ISO 17024 and official definitions of micro-credentials in VET in Europe, and under the perspective that the needs and requirements of ISO 17024 must take the lead since there is no flexibility around optional elements, the following requirements need to be considered and provided for applying quality assurance for micro-credentials through the ISO 17024 norm standard..

7.3.1. Certification body

The most important requirement for the use of ISO 17024 as a quality assurance standard for micro-credentials in VET in Europe is the existence of, and cooperation with, a certification body for ISO 17024. Awarding ISO 17024 personnel certification is only possible through recognised awarding bodies, which are available in all European countries (and beyond, of course). It is therefore crucially important for VET providers and organisations wanting to make use of ISO 17024 for the quality assurance of their future micro-credentials to identify and contact an accredited certification body in their own country, or ideally within their own region, as this will make cooperation and mutual understanding much easier. Large accrediting organisations such as the ANSI Accreditation Board (<https://anab.ansi.org/>), the IAS – International Accrediting Service (<https://www.iasonline.org/services/personnel-certification-bodies/>) or IAF (<https://www.iafcertsearch.org/search/certification-bodies>) may be good online sources for searching for accredited certification bodies for ISO 17024 nearby. VET providers are advised to establish close contact and ultimately decide on one certification body for all upcoming micro-credentials, to minimise effort and maximise synergies. In most cases, there will be more than one certification body active in each European country, which means there is some level of competition between certification bodies that should help identify a good offer. It is also important to know that the activities of certification bodies accredited in one country are not restricted to that country. This means that VET providers may also search for certification bodies outside their country. However, a greater physical distance between the VET provider and the certification body may result in more complicated cooperation procedures.

7.3.2. Certification programme = micro-credential

As a second crucial element or requirement for ISO 17024 is the development of a so-called certification programme together with the certification body. Basically, the approach of a certification programme under the ISO 17024 diction is similar to the approach and idea of a micro-credential. It is the answer to new challenges on the market which require new knowledge, skills and competences. Together with the certification body, the VET provider is required to describe in detail the elements necessary for a certification programme such as market needs, deducted knowledge, skills and competences, learning requirements for obtaining these competences, pre-requirements for the certification of the competences (e.g. training programme to be followed, practical work

experience, certain EQF level required to be admitted for the certification etc.). It is, however, important that the entry and admission requirements are not supposed to make it more complicated, expensive etc. than necessary to obtain the certificate, but that they are adequate requirements to allow for the certification of the intended and identified competences—no more. The description of the certification programme = micro-credential must follow the exact structure given by the certification body. It is important to keep in mind that a certification programme is NOT a training programme, but a collection of knowledge, skills and competences for new challenges on the labour market, and a training programme may (!) be one of the ways these competences can be gained and later certified under the ISO 17024 scheme.

7.3.3. Steering board for certification programme

The description and development of a certification programme also require the establishment of a kind of steering board for the single certification programme. The steering board consists of experts and stakeholders representing the market, sector or industry which requires this new set of knowledge, skills and competences. Normally, such a steering board consists of about 3–5 persons, and they will be approving the certification programme on the basis of their experiences and will also be responsible for the continuous monitoring of the certification programmes for new approaching challenges, new competence requirements etc. The steering board is an obligatory requirement under ISO 17024 and ensures that certification programmes are state of the art and up to date over time. It is also the duty of the steering board to maintain impartiality in this part of the certification process. Normally, steering boards meet (even virtually) every six months for a quick evaluation and revision of the certification programme to ensure continuous monitoring and improvement. For VET providers, it will be important to support the certification body with the implementation of the steering board, suggest and contact potential experts and stakeholders for the certification programme = micro-credential developed and offered.

7.3.4. Definition of entry and admission requirements

The certification programme description = micro-credential description requires the definition of necessary preconditions and entry/admission requirements for certification candidates. In some cases, it will, for example, be a certain training programme to be completed, specific literature reviewed, certain contributions (texts, reports, analysis texts etc.) to be produced about the certification topic, or a certain pre-qualification (e.g. EQF level achieved, certain academic study completed etc.) that are seen as necessary preconditions for being admitted to the certification process. It is important to mention that all preconditions and entry requirements should be as low and easy as possible and agreeable within the steering board for the single certification programme. It is not intended that entry requirements make the certification overly difficult, time-consuming, expensive etc., so VET providers, together with certification bodies, need to be careful when defining the entry and admission requirements for the certification programme. Nevertheless, it has to be mentioned that the entry requirements and preconditions for a certification are very much dependent on the competences to be certified. Maintenance of high quality standards and trustworthiness in the

competence certification are the most important aims when defining preconditions and entry requirements. In addition to this, VET providers need to be aware of the fact that if the completion of a certain training programme is defined as an entry and admission requirement, this would require the approval of the VET provider as a training institution for this certain training programme and also offer all other VET training providers the (at least theoretical) possibility to also be approved as training providers for the preparation of learners for participation in the certification process. The definition of entry and admission requirements may also include the description of the average workload in terms of learning units/hours needed for admission to the certification process. This would also increase the coherence with the ECTS system and allow for better comparisons and transparency.

7.3.5. Approval of training providers

The certification body needs to approve the training provider in terms of quality and appropriateness for the preparation of learners for the certification process if such a training programme is defined as an entry/admission requirement. VET providers are advised to work in close cooperation with certification bodies on the approval conditions during the development of the certification programme. The approach of impartiality is one of the crucial quality criteria of ISO 17024, which does foresee a separation between the training and the testing/certification process. Therefore, it is important that the organisation which offers the training for certain competences is not the one testing and certifying these competences. In addition to this, it must be mentioned that other training organisations are also, at least theoretically, able to request approval as a training organisation for the defined competences of the certification programme developed. However, in practice, this would hardly happen and normally one VET provider will be the exclusive training provider for the competences of a certification programme.

7.3.6. Definition of the examination process and selection of examiners

The description of the certification programme also needs to contain information about the whole examination process for the knowledge, skills and competences defined in the scheme. It is important to mention and understand that, according to the ISO 17024 standard, the examination process needs to cover all competences defined. Unlike other examination approaches which may only focus on a random selection of the competences gained and assume that, because of this, all the other competences are also present, ISO 17024 examination procedures test all competences. This means that the certification programme needs to contain a valid, reliable and objective set of examination procedures (e.g. multiple choice tests, practical assignments, observations, 360-degree feedback etc.) to truly cover all competences, so that a future employer can be confident that an ISO 17024 certification has tested every competence described. This is an important quality factor and a necessary precondition of ISO 17024.

In addition to the description of the examination process, ISO 17024 also requires the careful and transparent selection of examiners for the certification programme. Besides clearly defined criteria for the knowledge and skills required of examiners, the impartiality of examiners is the most important

criterion. The selection of examiners must ensure that there is no conflict of interest whatsoever. Whether personal, cultural, professional or any other type of connection exists between examiners and candidates, such a conflict would make the examiner's participation impossible, and the certification body must ensure that conflicts of interest are checked at the highest possible level. In addition to the selection of examiners, a short briefing or even a short training programme for examiners under ISO 17024 could or should be offered to ensure high-quality and transparent examination processes.

7.3.7. Certificate

The certificate as such is one of the most important elements in the certification process or within the awarding of a micro-credential. The definitions and requirements of a certificate under the ISO 17024 norm and those of micro-credentials under the definition of the European Commission have a lot of similarities and overlaps. This means that a certificate containing the following information and elements will satisfy both ISO 17024 and micro-credentials in Europe:

- Name of the certificate holder
- A unique and traceable (automatically generated) certificate number
- Name and location of the certifying body
- Name of the certification programme = micro-credential
- Description of knowledge, skills and competences of the certification programme = micro-credential
- Notional workload needed to achieve the knowledge, skills and competences (if possible, in ECTS credits)
- EQF level of the certification programme (if possible)
- Date and location of issuing, as well as information on the duration of validity of the certificate
- Signature of the authorised person of the certifying body

Certification bodies together with VET providers are free to add more information and elements, however the ones described above will satisfy the demands of ISO17024 and micro-credentials in Europe.

7.3.8. Recertification requirements

It is one of the core principles and criteria of ISO 17024 that all certificates issued under this norm have a limited period of validity. The assumption behind this is that, nowadays, the change in competences needed in a certain sector is very rapid, especially in light of digitalisation and other megatrends. In this context, the holder of a certificate cannot be certain that the knowledge, skills and competences gained some years ago are still valid and up to date. For this reason, all ISO 17024 certificates show a validity period of between 3 and 5 years. After this time, a re-certification or extension of the certificate is required.

The certifying body must describe the criteria for re-certification in the certification programme, and all learners applying for competence certification must be made aware of the re-certification criteria well in advance. Possible criteria for re-certification or extension of certificate validity may include, for example, certain practical working experience, ensuring that individuals have remained active in the sector of the certification programme and have thereby gained additional practical experience and insight into developments and emerging competence needs. Other possibilities may include short assessments and testing procedures after 3 to 5 years, presentation of literature reviews, additional training programmes or other learning activities. The VET provider, together with the certification body, needs to decide which conditions for re-certification are the most appropriate—again, keeping in mind the principle that the lowest possible threshold for re-certification should be sought.

7.3.9. Certification programme = micro-credential monitoring and adaptation requirements

Like the validity of the individual certificate issued at a personal level, the entire certification programme also needs to be checked for relevance, appropriateness, and potential adaptations. The ISO 17024 norm foresees the continuous monitoring of the certification programme on a periodic basis by the steering board (e.g. every six months). The members of the steering board, who are experts and relevant stakeholders in the sector of the certification programme, must investigate, evaluate and decide whether certain adaptations at the level of knowledge, skills and competences are needed, and whether the certification programme requires changes.

All changes introduced will, of course, have consequences for any training and preparation programmes offered by (approved) VET providers. This means that the entire adaptation and modification process of a certification programme must be implemented in close cooperation between the certification body and the approved VET provider.

8. Deductions for VET providers

After this convergence exercise between the regulations and requirements of ISO 17024 and the European definition of micro-credentials, there are a number of deductions for VET providers which they need to consider when thinking about using the potential, reputation and power of ISO 17024 as a quality assurance instrument for micro-credentials offered. Among probably many others, VET providers should consider the following issues:

1. **ISO17024 and micro-credentials are very close approaches:** After an in-depth analysis of the requirements and needs of micro-credentials in light of the European definition, especially as further elaborated by CEDEFOP for the VET sector, and the core criteria of ISO 17024, it becomes very clear that these two approaches fit well together. The basic logic behind a qualification, a certification programme, and the understanding of a micro-credential is similar in both approaches, and the use of ISO 17024 for micro-credentials appears to be fairly straightforward in this context. A similar logic, the approach that certification programmes or micro-credentials address the competence needs of new emerging challenges on the labour market, and the focus on a set of knowledge, skills and competences together with a comprehensive and transparent way of assessing these competences, allows for an easy application. However, although there are similar thoughts and concepts behind both, different terms and language are used, and some degree of flexibility is still required to translate between these close, but not identical, concepts. This particularly applies to the micro-credential side, as it is by far the more flexible and adaptable of the two. This means that the need and potential for translation and flexibility lies more with the VET providers, who must understand the thinking, terminology and logic of certifying bodies, rather than the other way around.
2. **Training programme ≠ Certificate ≠ micro-credential:** One important differentiation needs to be made and must be clearly understood: a training programme could be (among other options) a means to gain the knowledge, skills and competences defined in a certification programme or a micro-credential—but nothing more. The training programme does not automatically lead to an ISO 17024 certificate or a micro-credential. In addition to participation in a training programme offered by a VET provider, many other paths may be defined to develop the competences foreseen in a certification programme or micro-credential. These could include, for example, practical work experience, internship periods, literature reviews, discussions, observations, written assignments, etc.

VET providers need to adopt the perspective that their training offer is “only” one possible route to acquiring the competences required for certification or a micro-credential—and not a guarantee of certification. There is no automatic link between participation in a training programme and the awarding of an ISO 17024 certificate. In principle, learners must have the opportunity to request assessment and certification without having participated in a specific training programme, provided they have acquired the relevant competences through other means.

- 3. Cooperation with a certifying body is a must:** If a VET provider wants to use ISO 17024 for the quality assurance of a micro-credential for which it offers a training programme, cooperation with an accredited certifying body is essential. Only accredited certifying bodies may issue an ISO 17024-based certificate and ensure the quality of the entire certification programme. This means that as soon as this possibility is being considered, it is important to identify potential certifying bodies in the region or country of the VET provider and initiate discussions and cooperation.

Since the process of building a certification programme and then implementing it over time requires a long-term partnership, the cooperation must be based on mutual trust and a high standard of quality. Establishing such a relationship takes time and therefore requires early action from VET providers who are considering using ISO 17024 for the quality assurance of micro-credentials.

- 4. ISO17024 and micro-credentials answer emerging needs:** It would be a fundamental misunderstanding to simply rebrand an existing programme or course offered by a VET provider as a micro-credential in the future, at least not when ISO 17024 is involved. The precondition for a certification programme under the ISO 17024 norm is that it must address a new and emerging competence need in the labour market, and this should also be the case when developing a micro-credential.

Therefore, when ISO 17024 is used as a quality assurance framework for a planned and offered micro-credential, it must clearly respond to identified, evolving skills demands, these must be well-researched and evidenced, as they are subject to evaluation by the certification programme's steering board. VET providers must bear this in mind when considering the development of micro-credentials in the future. A simple relabelling of an existing programme as a micro-credential will not meet the requirements of ISO 17024.

- 5. Impartiality and avoidance of conflict of interest:** These are the two main quality criteria of ISO 17024, which are reflected throughout all requirements and process steps. This begins with the selection of steering board members and an objective analysis of the needs for a new certification programme = micro-credential, through the approval of training providers for the (potentially) required competence training programme, the selection of examiners and assessors, the entire examination and assessment process, and finally the issuing of an ISO 17024 competence certificate.

A core principle of ISO 17024 is that the organisation offering the training programme for certain competences must not be the one testing and assessing those competences in learners. This concept of impartiality, and the consistent and transparent identification and subsequent avoidance of conflicts of interest, must be taken into account when planning and implementing a micro-credential and offering a related training programme.

Only when these two main criteria are fulfilled will an ISO 17024 certificate be issued. Moreover, only by maintaining and supporting these principles will the reputation and trust associated with an ISO 17024 competence certificate remain as high as it currently is.

6. Using ISO17024 means inclusion from the start: Using ISO 17024 as a quality assurance instrument for micro-**credentials** impacts many different stages and development levels of a micro-credential. This means that the decision to use ISO 17024 must be made at the very beginning and considered throughout all planning and development steps. Close cooperation with the certifying body from the outset must be ensured, as it will be very difficult, if not impossible, to switch to the ISO 17024 track later in the micro-credential development process.

ISO 17024 has strict requirements and framework conditions that cannot be changed or adapted. Therefore, they must be integrated into the development process from the very beginning. For this reason, VET providers are advised to make a clear decision either for or against ISO 17024 at the start of any micro-credential development process.

9. Summary, conclusion, outlook

The main aim of the convergence analysis was the in-depth presentation of the two poles and standpoints that should be converged for common use and mutual benefit: micro-credentials and ISO 17024.

In the first part of the document, the results of the research activities around the current state of discussions about micro-credentials—especially in VET in Europe—are presented, together with the core requirements and obligatory as well as optional description elements. In addition to this, we have also discussed and presented several good practices and experiences already made with micro-credentials, both within and outside the project partnership, which are considered important for a better understanding of the discussion and experience base.

In the second part of the convergence strategy report, the results from the desk research around the criteria and requirements of ISO 17024 are presented and discussed. This has been done with emphasis on the obligatory elements of an ISO 17024 certification process, as there is hardly any flexibility regarding the required elements and components.

Based on the presentation of the two poles of the discussion, an important step and change in direction was introduced by turning the tables from micro-credentials to ISO 17024. Because of the quite rigid and formal regulation within ISO 17024, it was decided that if ISO 17024 is to be used as a quality assurance instrument for micro-credentials in VET in Europe, then ISO 17024 must lead all developments and discussions. On this basis, we further elaborated on the mutual overlaps between the two concepts, and from there we identified the core elements that must be focused on when aiming to introduce ISO 17024 as a quality assurance instrument for micro-credentials in VET.

We then outlined and presented nine core elements that need to be prioritised and fulfilled for the use of ISO 17024. In addition, we made six concrete deductions for VET providers considering the use of ISO 17024.

Most important of all is the insight that there are many similarities and a shared competence logic behind micro-credentials and ISO 17024, which makes the norm a strong candidate for quality assurance in the VET sector. However, the analysis also revealed a number of potential misunderstandings, differing terminology, and different conceptual backgrounds which could hinder—or at least affect—future cooperation between ISO 17024 and VET providers offering micro-credentials.

Based on all the insights gained through this in-depth analysis of micro-credentials in VET in Europe and the ISO 17024 standard, as well as the deductions made and core elements identified, we will now continue our work in the MC GREEN project by developing a comprehensive learning and information package for VET providers. This information package will support the development of necessary background knowledge about ISO 17024 as a quality assurance instrument for micro-credentials in VET and assist VET providers in their decision-making processes regarding quality assurance instruments.

As a next step, the partnership will then develop two separate micro-credentials in the green economy, using ISO 17024 as the quality assurance instrument.

Further information about the project, direct access to the information package for VET providers, and details of the two micro-credentials developed and offered can be found on the project website www.mcgreen-project.eu and on the project's social media channels.

Graz, March 2025