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Practical Guide for Integration of **European** Qualification in **National** Qualifications Framework/System



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Additive Manufacturing (AM) is seen as a Key Enabler Technology for the EU that secures a strong industrial base. Market forecasts predict that between 2031 and 2038, AM is expected to reach 50% of the market potential. It is evolving at a much faster pace than the development of the workers' skills is being tackled. AM suffers from a "capability challenge" characterized by a skills gap and a difficulty in finding a well-trained workforce capable of applying AM to real world production.

Metal AM Profiles skilled in design are of outmost importance for companies, but the current shortage of talent is requiring new educational initiatives to deliver qualified professionals. In this context, making Vocational Education and Training (VET) a first choice is critical to guarantee a smoother transition of students /youngsters into employment and maintain the workforce skills according to sectoral and national needs, thus avoiding shortage of people with VET qualifications in the future.



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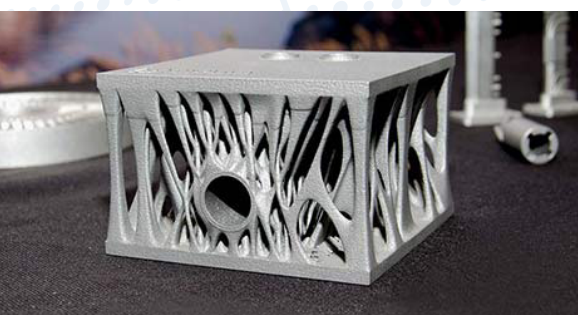


THE GUIDE



WHAT?

This guide indicates a **set of recommendations** to ease the integration of International / European qualifications in National Qualification Systems across Europe.



FOR WHOM?

This guide is intended for policy makers, VET providers, Higher Education Institutions or other educational players wishing to integrate the qualification of **European Metal Additive Manufacturing – Design Technician** into their national qualifications system.



HOW?

In each recommendation you will find the lessons learned and the identification of **future actions** to integrate European/ International qualifications in to National systems.



WHY?

Because the **European Metal Additive Manufacturing - Design Technician qualification** goes beyond a gap in the additive manufacturing industry. It also represents the opportunity to increase the educational and training offer in other organizations at European level.



RECOMMENDATIONS

Overarching Recommendation - Focus on the identification of transversal needs to achieve an International Qualification

The identification of international transversal needs in industry and labour market is the answer to the challenge of keeping **VET programmes** and **qualifications** updated and avoiding deliver outdated skills and competences. The closed link between players, meaning the strengthen collaboration between industry and training organizations, will allow a more comprehensive result, in terms of quality and applicability.

Lesson Learned:

DESTINE project shows us how to conduct the process to have a qualification that is aligned with the industrial macro needs, in an **international level**. The first task is to consult and map out the needs in industry stakeholders, in different countries.

This map out will allow the identification of the **specific common needs** and provide consistent clues for the main subjects to include in the curriculum, in a harmonized way.

Future Actions:

The **clear identification** of needs and subjects to be performed is crucial, but it will be valued if these needs are mapped out in a **specific local, regional, and national** context, complementing what is defined in the curriculum. The modular structure will allow the easy inclusion of these topics in an agile way, at the same time, that allows a much more individual approach, meaning that each local, regional or national needs are settled and included.



RECOMMENDATIONS

Recommendation I - Creation of Sectorial Diagnosis Groups

The alignment of the **European Metal AM- Design Technician (EMAM – DT) Qualification** and **Competence Units** with EQF / NQF enables the integration of this qualification in each country framework. The **competence units** of this new qualification are structured in Learning Outcomes - on what a learner is expected to know, be able to do and understand – which provides us with a much more direct insight into national content priorities and intentions.



At the same time, one of the challenges for policy makers and stakeholders in **Vocational, Educational and Training segment** is, on one hand, how to keep up the current speed of technological, economic and societal changes, and, on the other, how to identify future needs regarding skills developments.

The **development of sectorial groups** made of policy makers, VET providers, experts, industry stakeholders, among others, allows the definition of a diagnosis,

identifying the **needs** and the **opportunities** for all the players. These sectorial groups can be identified at a European level or at a national level. These groups provide inputs and validate the **skills needed** and **technological trends** in industry. By working in collaborative with education groups during the validation of industrial requirements will provide the **updating** and **development** of new qualifications in close connection to labour market and industry.



RECOMMENDATIONS

Lesson Learned:

With the **International AM Qualification System (IAMQS)** we learned how this qualification system addresses the specific industry needs and involves trainers from industry and case studies based on real industrial issues. The modular approach of this system allows a link on emerging front-end technologies and the periodical revisions of qualifications and competences units by experts working groups add value and recognition.

Also, the **Portuguese National Agency for Qualification** is defined here as a model, with the qualifications compiled in a National Catalogue.

The qualifications are **reviewed occasionally**, by the sectorial groups.

Among its objectives are the production of **qualifications and competences** that are critical for the competitiveness and modernization of the economy and for the **personal and social development** of people and the development of a readable and flexible qualifications framework that favours the **comparability of qualifications** at national level and international.





RECOMMENDATIONS

Lesson Learned (cont.):

In Germany there is a similar system to the Portuguese with a national framework of available and recognised professional trainings. A **training frame workplan** as a component of a training regulation introduces a recognised training occupation. A training regulation specifies the vocational skills, knowledge and abilities which are at least the subject of the vocational training (training occupation profile).

The review of the training frameworks is regularly done by the Federal Institute for Vocational Education and Training (BIBB) with the involvement of the **Chamber of Commerce and Chamber of Crafts**, that collect the needs of changes in the professional profile from their member companies.

With the **IAMQS**, the bases for the structure of training in AM was set up, and with the rising demand from industry, the **European Metal AM Design Technician profile** could be a starting point to introduce AM qualifications into national frameworks

Future Actions:

The future action in this recommendation is based on the promotion of initiatives on local, regional and national level, that feed and map out the most important needs from **industry** and that keep involved the most relevant stakeholders, allowing a curriculum as much closed to the reality as possible, and on time.



RECOMMENDATIONS

Recommendation 2 - Inclusion of Technical International Qualification/Modules as part of a National Qualifications

International Qualifications are recognised by the industry as an added value for their employees, either during recruitment stages or as part of **professional development** and **career management policies**.

Nevertheless, the principle of “**think globally, act locally**” is being more and more implemented worldwide, therefore, it's important that national qualifications consider not only national needs, but also provide the development of skills to work in a **global environment**. Considering each of the national specificities, we can find different status for the implementation of new qualifications in the national framework:

- Emerging qualifications that may give rise to a new area/qualification
- Existing qualifications that can be valued with the EMAM- DT qualification

Lesson Learned:

Using the example of the **Portuguese case** there are a few existing national qualifications where the **EMAM-DT** could be integrated, and become part of the curricula of these qualifications, namely:

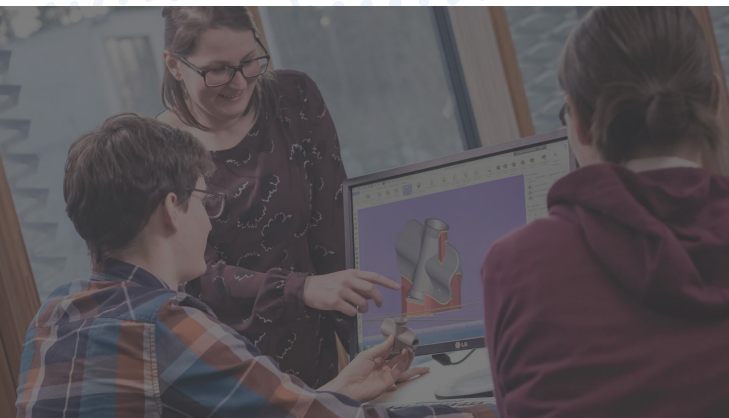
- CAD/CAM Technician / Technician Design of Molds and Models
- Casting / Mechanical Construction Design Technician / Metallurgy and Metalworking Industrial Planning



RECOMMENDATIONS

Lesson Learned (cont.):

The **EMAM-DT qualification** will value the existing curriculum offer. VET providers can select the Competence Units from a National qualifications catalogue. The Portuguese system has competence units, in the technological training component, that the system foresees mandatory and others that are optional. **VET providers** can select from a group of available competence units, the inclusion of the EMAM-DT competences units in these options is one of the focuses of DESTINE project.



Future Actions:

Education and Qualification development and implementation is a challenge for each country members of **European Union**, when the aim is to harmonize qualifications and enable workers to see recognised their skills and knowledge regardless of the region, or to give confidence to industry when hiring.

The alignment between **National Qualifications Framework (NQF)** and **the European Qualifications Framework (EQF)** is the trigger point, it provides harmonization, transparency and comparability of qualifications add quality and reliability, in national and international context.



RECOMMENDATIONS

Recommendation 3 – World Skills League as an accelerator for the integration of new qualifications in NQF

The WorldSkills Occupational Standards reflect the **global occupations** or **work roles** that are represented by the WorldSkills Competition.

This world competition intends to cover the **specialist, technical and generic skills** that comprise intermediate work roles across the world and indicates the relative importance of each section of the standards, as advised by industry and business. Also, the competition is monitored by technical and vocational WorldSkills Experts and have an updated with industry and business worldwide.

In a nutshell, the **WorldSkills Competition** establishes the baseline from which to grow and reward authentic vocational performance for WorldSkills Members and more widely they provide a benchmark for national and regional standards as economies and markets become increasingly international.

Lesson Learned:

One of the pillars of DESTINE project is to provide excellence in the AM sector by developing a competition to provide **visibility** and **motivation** for this qualification while introducing AM technologies in skills competition: The National and the European Skills Leagues.

The DESTINE competition was designed in the same way as the world competition: WorldSkills. The result is present in the in the video of testimonies made by the **2nd European Skills Leagues**, by the end of the project. The main remarks were on the visibility that this experience add to their personal curriculum, as well as the applicability of the case study itself.



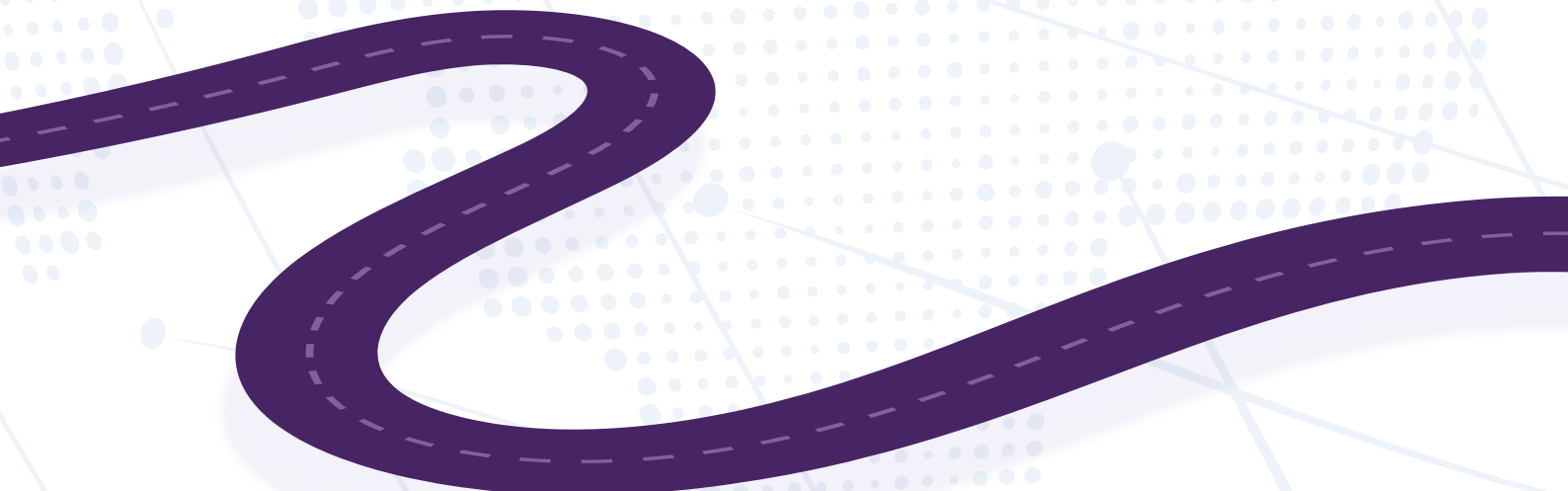
RECOMMENDATIONS

Future Actions:

EMAM-DT can be included in the **Cluster/ Activity Area** of Manufacturing and Engineering Technology in WorldSkills. Alongside with the World Skills, also in Portugal this **cluster/activity** will be performed as demonstration in the national competition WorldSkills Portugal.

DESTINE **National and European Skills League** performed a true example of applicability as a new proposal, and as a good practice, this qualification can accelerate the implementation of this new qualification in National Qualifications Framework.

The EMAM-DT is aligned with the **WorldSkills Occupational Standards (WSOS)** and this fact will increase the argumentation for the integration of the EMAM-DT qualification in NQF.





USEFUL LINKS

DESTINE Project webpage

<https://www.destineproject.eu/>

DESTINE Project Video

<https://www.youtube.com/watch?v=Da9iPEILsyM>

DESTINE Skills League - Testimonies video

<https://youtu.be/56mVhwn6sNc>

WorldSkills

<https://worldskills.org/>

Portuguese National Qualifications Catalogue

<https://catalogo.anqep.gov.pt/>

WorldSkills Portugal - Worldskills Portugal

<https://worldskillsportugal.iefp.pt/>

Italian National Institute for Public Policy Analysis

<https://inapp.org/>

Atlante del lavoro e delle qualificazioni - Italy

<https://atlantelavoro.inapp.org/index.php>

Berufsbildungsgesetz - Germany

https://www.gesetze-im-internet.de/bbig_2005/index.html

https://www.bibb.de/dienst/berufesuche/de/index_berufesuche.php/regulation/neufassung_metallberufe_2018.pdf

Ministerio de Educación y Formación Profesional

<https://todofp.es/que-estudiar/loe/fabricacion-mecanica.html>

Spain Skills

<https://spain-skills.es/>

Compare national qualifications frameworks across Europe

<https://europa.eu/europass/en/compare-qualifications>



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