

Bolster-Up 2: core profiles for furniture professions

REPORT ON EUROPEAN FURNITURE PROFESSIONS

Transparency for Upholstering, Cabinetmaking and Joining Qualifications and Quality in the European Furniture Industry



European Federation
of Building
and Woodworkers



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Brussels, 2020

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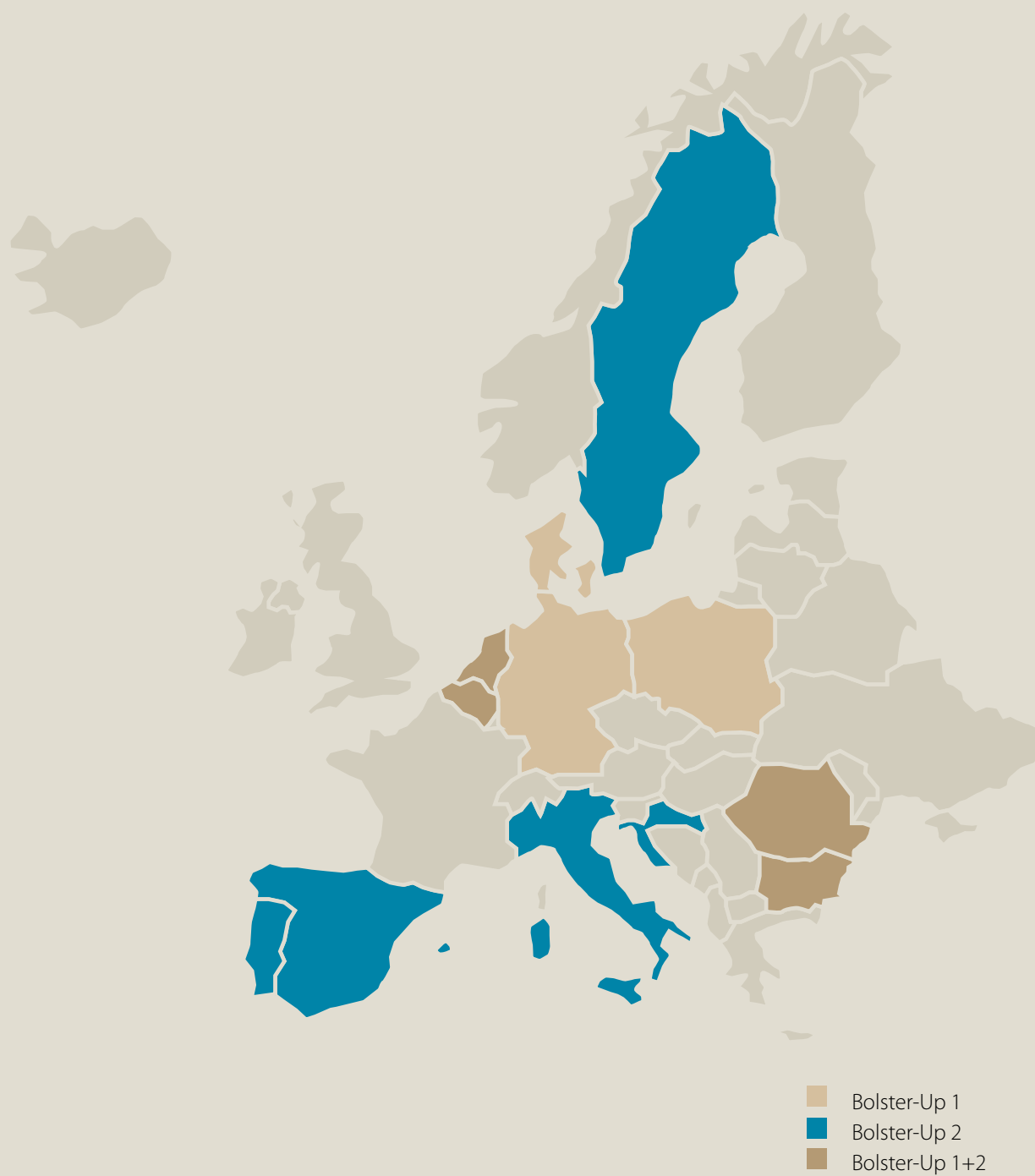
(1) Project partners: 9 countries were involved in this project, namely Belgium, Bulgaria, Croatia, Italy, the Netherlands, Portugal, Romania, Spain and Sweden, all of which contributed to the creation of the core profiles.

(2) Participants to the Steering Group and Working groups: Jeroen Doom, project coordinator, WOODWIZE (Belgium), Marleen Limbourg, project expert, MLAdvise (Belgium), Rolf Gehring, EFBWW (Belgium), Marina Mesure, EFBWW (Belgium), Magdalena Sikorowska, EFBWW (Belgium), Ivaylo Todorov, BBCWFI (Bulgaria), Miroslava Simeonova, BBCWFI (Bulgaria), Ana Dijan, Croatian Wood Cluster (Croatia), Nicolas Sangalli, FederlegnoArredo (Italy), Valentina Pintus, FederlegnoArredo (Italy),

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¹ Based on: Limbourg & Van Robaey, M. & N. (2012), Methodology for the detection of future competency requirements, MLADVISIE 2012, <https://www.mladvise.be/>.







I. Executive summary

The furniture industry is characterised by innovation, new requirements for sustainable production, changing job profiles and constant workforce mobility. Even though globalization and competition has changed the face of the European furniture industry, the sector remains competitive. It is innovative in terms of design, materials, productivity and work organisation. Higher competition resulting from globalisation, outsourcing and specialisation, new technologies and materials, increased automation in manufacturing, ecological regulations, health and safety and stronger customer orientation are factors that also influence the contents of Vocational Education and Training (VET). A highly qualified workforce is essential for the further development of the whole sector.

The European Social partners of the Furniture sector attach great importance to vocational education and training. For this reason, the European Social Dialogue Committee for the sector set up a special vocational education and training (VET) working group. By developing different activities, the group established close cooperation between national and local training bodies, which regularly participate to the meetings and the activities of the VET working group.

Since the EU still lacks a common certification system, vocational qualifications are not equally recognised in all countries. Furthermore, training often takes place in form of non-standardised and non-certified courses or through informal and non-formal learning, which makes it hard to assess its quality.

The result of this project will also contribute to the EU policy making in the field of professional

European Skills, Competences, Qualifications and Occupations. The EU classification will be able to benefit from an updated analysis of three professions that will reflect the continuous changes in these professions and well as future needs. The project is also in line with the “New Skills Agenda for Europe”, in particular for the initiatives aimed at making VET a first choice and for making skills and qualifications -including both higher skills and those acquired through non-formal and informal learning- more comparable.

This report is a further follow-up of the Bolster-Up 1 project on furniture professions. The origin of the Bolster-Up project lies in the Leonardo da Vinci project on “Transparency for Upholstering and Cabinetmaking Qualifications and Quality in the European Furniture Industry”.

Bolster-Up 2 (2018 – 2020) builds on the first project (2012 – 2014). The project mainly concerns the recognition of qualifications and competencies for three professions in the (industrial) furniture sector: 1. Upholsterer, 2. Joiner and 3. Cabinet maker.

These core profiles will support the activities to raise the quality of existing national VET programs. This report focusses on the project results: 3 core profiles, documents we developed and the results concerning VET for these 3 occupations.

If you are interested in reading more about this Bolster-Up 2 project, please consult the website <https://www.bolster-up2.eu/>



II. Introduction

THE MAIN OBJECTIVES OF BOLSTER-UP 2

The Bolster-Up 2 project aimed recognition of qualifications and competencies in three professions in the (industrial) furniture sector, namely upholstery, joinery and cabinetmaking, by enhancing their transparency and comparability, and by establishing mutually recognised European core profiles.

PROJECT AIMS

The fundamental idea is that European core profiles would work as good tools for guaranteeing minimum training standards, without the need to standardise the different systems. These core profiles support the activities aimed at raising the quality of existing national VET programs as recognition of the identified common core profiles within Europe would contribute to (labour) mobility.

This project contributes to the political goal of further fostering cooperation between national stakeholders at European level and supporting the need to modernise occupations and VET-structures.

The three professions are chosen as they represent the major group of the skilled handicraft workers in this sector. Most skilled handicraft workers are specialised in one material, such as wood or upholstery. Due to automation and robotisation in the production of furniture, there are new challenges regarding job profiles, for instance in terms of technical and more complex and higher skills as well as “soft” skills. The education and training systems have to take these changes into account by updating occupational profiles and incorporating them into new curricula. Employees and enterprises in the sector


are required to take part in lifelong learning to keep up to date and secure their employability.

As one outcome of the Bolster-Up 2 project, this report includes the description of the three core profiles for upholsterer, joiner and cabinet maker, providing a description of the knowledge, skills and competences required to perform tasks in the different countries for each phase of the work.

PROJECT BACKGROUND

Education and training as a guarantee for sustainable employability of the workforce

One of the cornerstones of the EU is to guarantee the free movement of goods, capital, services and labour. An example is trade in goods: the same type and quality of goods can be purchased almost anywhere in Europe. International companies use the same technologies, procedures and processes in all countries. Standardisation plays a key role in this. Nowadays, large-scale projects use the same techniques, materials and qualifications. Another example is mobility within the labour market. The demand for a skilled workforce raises the importance of education, training and lifelong learning for achieving sustainable employability. To facilitate mobility on the labour market, instruments have been developed such as the European Qualifications Framework (EQF), the European Credit System for Vocational Education and Training (ECVET), etc... The EU lifelong learning programs are policy programs that encourage Member States, through financial incentives, to implement EU policies. Education and development of talents fosters economic and social participation in society. European



education and training systems are one of the fundamentals for creating equal opportunities on the labour market. Vocational education and training (VET) is key when managing transition to the labour market (skills for the future) and facilitating mobility programs so that learning as well as working experience can be acquired abroad.

We therefore encourage compatibility, transparency and mobility in vocational education and training in Europe through mechanisms such as EQF and ECVET, which have already been successful. Together, we are working towards greater recognition of vocational training in the world of education and work. We are committed to raising awareness among policy makers, entrepreneurs, people management and training professionals, education associations, teachers, social partners, etc., in order to focus their attention on the importance of education and training as key factors for the future. Technology and globalisation are driving change and are challenging education systems to innovate and adapt in order to be futureproof. We promote the added value of the development of the skills needed to bridge the gap between labour market needs and available qualifications, and of formal education and vocational training to enable transition between educational systems. Promoting VET and the validation of knowledge, skills, competences (KSC) acquired through learning within education systems and in the workplace (on-the-job) are important for both economic and social inclusion.

The second reason the Bolster-Up 2 project is important is the impact of the digital transformation on the wood furniture industry. We refer for this to the DIGIT-FUR project “Impacts of the digital transformation in the wood furniture industry” (www.digit-fur.eu). DIGIT-FUR has provided a better understanding of the possible effects of digitisation by 2025 and the effect on occupational profiles caused by changes to tasks and the required new KSC and VET. We have incorporated these insights into the Bolster-Up 2 project.

PROJECT METHODOLOGY

Methodology²

Following the methodology, the core profiles are based on an extensive study of national qualifications as well as the actual skills and competence requirements of the industry.

The results of the Bolster-Up 1 and Euro-joiner³ projects are used as a basis for developing the core profiles. Additional necessary information is collected through reports prepared by the partners at national level. The use of reports alone is not sufficient to extract the information needed for defining the core profiles. An analysis of the industry's current and future competence requirements is necessary in order to develop the European core profiles. Consequently, questionnaires were prepared and focus groups and interviews organised at national level with relevant stakeholders. We also refer to the DIGIT-FUR project and report.⁴

Following the same methodology, the existing two profiles for cabinet maker and upholster (resulting from Bolster-Up 1) were updated and adapted by the new countries / partners. The new profile for joiner was assessed by all the countries / partners.

The three core profiles are formulated in the form of learning outcomes and sub-divided into LO units in order to be matched with the EQF and respective NQF's. Means and problems of assigning credits (ECVET) and potentially emerging sectoral frameworks were assessed. Gaining skills and competencies in non-formal and informal ways were analysed, potential validation discussed and results are shared among project partners. Sharing of national experiences was encouraged during project seminars (Brussels, Stockholm, Barcelona, Brussels, Porto and Milan).

Relevant actors within the social dialogue were involved in the project and there is a great interest

² Based on: Limbourg & Van Robaey, M. & N. (2012), Methodology for the detection of future competency requirements. Marleen Limbourg, was involved in the Bolster-Up 2 project, as the project expert.

³ <http://www.eurojoiner.com/>

⁴ <https://www.digit-fur.eu/>

from employers' as well as employees' side to implement long-term recognition of mutual European profiles in this sector.

The entire project, its implementation and outcome, is steered and supervised by a group consisting of the representatives of the European Social partners from each country's organisations and the project coordinator. Steering group and workgroup meetings were organised.

A number of newsletters were sent to the partners as a follow-up to the project.

The results of the project are summarised in this booklet and translated into 7 languages, in order to ensure a wider dissemination. A pdf-version of the booklet will be made available for digital distribution.

Further dissemination

The dissemination will be ensured by the affiliated entities via their VET networks. Wider dissemination will also be ensured by the European Social Partners through their affiliated organisations, which will also be constantly informed during the project implementation. The websites of the project partners and their social media tools will also be used during the implementation of the project to inform about the various steps and activities that have been organised and, at the end, to spread the results. A short summary of the results will be drafted for this purpose. The Social Dialogue meetings will also be an important dissemination tool, during the project and at the end to ensure the sustainability and durability of the results and the efforts to foster wide recognition of the core profiles. (see section IV MEMORANDUM of UNDERSTANDING)



Activities

In order to achieve the above-mentioned objectives, the following activities have been developed:

- Analyse national qualifications and competence requirements relevant to the job profiles identified, based on the framework of the first Bolster-Up 1 and the Euro-joiner project on the elaboration of new national reports in each participating country. Kick off meeting in Brussels, Steering group meetings in Stockholm (September 2018) and in Barcelona (February 2019).
- Prepare questionnaires, organise focus groups and perform interviews with all relevant stakeholders to gather input for the development of the new core profile (joiner) and for the update and adaptation of the existing ones (cabinet maker and upholsterer).
- Prepare first draft of the three defined European core profiles.
- Organise a seminar to discuss and test the relevance and completeness of profiles with relevant stakeholders (Brussels May, 2019).
- Readapt the core profiles following the inputs of stakeholders (July 2019).
- Define the relevant learning outcomes (LO) for the three profiles (Porto, October 2019).
- Define the LO units to assign EQF/NQF levels (Milan, December 2019).
- Prepare a report that will include the methodology used and the three core profiles, relevant learning outcomes, with the LO units and EQF/NQF levels.
- Organise a seminar to discuss the results of the project, dissemination and promotional conference based on the results and final report (March 2020).

In order to achieve the goals set out in the project application, a detailed work plan is established and updated on an on-going basis.⁵ The project tasks were divided into different steps:

- Step 1: desk research and study of national qualifications. The purpose was to collect sector information, main trends, profiles and qualifications.

- Step 2: focus groups with job holders / firms.
- Step 3: field research by questionnaire.
- Step 4: in-depth interviews.
- Step 5: national reports.
- Step 6: analysis of national reports for preparing final report.
- Step 7: interactive workshop to discuss the contents of the 3 core profiles (focus on main duties and responsibilities).
- Step 8: draft core profiles (responsibilities and KSC) and general agreement.
- Step 9: formulation of the learning outcomes.
- Step 10: proposal for EQF level and translation to national QF, based upon learning units.
- Step 11: possible qualification pathways and validation (ECVET).

The project coordinator and expert provided the necessary guidelines, (online) questionnaires, templates or digitised files for each step.⁶ All the documents and reports are drafted in English.

Note:

To define the KSC for the core profiles we proceeded as follows:

For the upholsterer and cabinet maker all the participants updated the existing core profiles elaborated during the previous Bolster-Up 1 project.⁷

For the joiner, we started from scratch. All countries needed to visit representative companies and conduct interviews in order to collect information on the local joiner profile. For the assessment of the profile we could refer to the Euro Joiner Report.⁸ We developed an online questionnaire based on the Euro Joiner Report.

We divided the core profiles and qualifications into units organised by workflow and related activities, included KSC.

In the assessment of the core profiles we focused on the 'DNA' of the profiles: the activities and the required KSC that the skilled workers in the different countries have in common. During our evaluation meetings we decided to define only those

⁵ See details in Appendix 5.1 Project plan

⁶ See details in Appendix 5.2 Methodology guidelines

qualifications shared by all partner countries as “core qualifications”.

In this report we will present the core profiles with core qualifications and an overview of the KSC that were considered as optional.

Definition of Knowledge, Skills and Competence

- **Knowledge** is described as theoretical and/or factual, such as knowledge of the work processes, principles and concepts in a field of work.
- **Skills** are described as cognitive (involving the use of logical, intuitive and creative thinking) and practical (involving manual dexterity and the use of methods, materials, tools and instruments). It refers to know-how, ability to perform tasks: “is able to ...”
- **Competence**: “is competent to ...”

Knowledge: “knows ...”	Skills: “is able to ...”	Competence: “is competent to ...”
<ul style="list-style-type: none"> • Joining techniques • Ergonomic principles • Wood species • Measuring methods • 	<ul style="list-style-type: none"> • Use tools • Produce parts • Apply coatings • Mount fittings • 	<ul style="list-style-type: none"> • Work in a cost- and time effective way • Control the quality of their own work • Ensure accuracy •

⁷ See in Appendix 5.2 Methodology guidelines

⁸ See Euro-joiner report www.eurojoiner.com



Personal statement

Marleen Limbourg – MLAdvise

Developing a Centre of Competence on furniture jobs

From the fruitful collaboration and exchange of insights, and experiences about the core profiles in the furniture sector, we recommend continuing this initiative by setting up a “Centre of Competence”. This should be an expertise platform in the context of social dialogue whereby the developments in the sector and their impact on jobs and competencies (KSC) should be monitored in order to anticipate them in time. What should be the added value?

- *Sector trends around multiple topics should be identified, researched and shared in the community in a timely manner.*
- *Relevant knowledge, experience, lessons learned should be exchanged.*
- *Attention should be given to the KSC for sustainable employability.*
- *New developments and good practices should be inspiring in terms of learning and development.*
- *Attention should be drawn to career development opportunities as preparation for the future, for both young and older employees.*
- *The sector should be put on the map in an attractive way (sector branding).*

In this way all stakeholders will become aware of changes more quickly, arrive at new insights in time and then take the appropriate steps.

Today and for the future of tomorrow.

Because the future starts today.

III. Results

SYNTHESIS REPORT

3.1. EU FURNITURE SECTOR: STATE OF THE ART

In general

By 2025, with a massively interconnected and globalised economy, the wood furniture manufacturing industry will offer personalised smart products and services based on digital manufacturing, logistics and sales systems supplied by resource-efficient and sustainable industries with an immense need for enough digitisation talents and skills securing a competitive transformation of the industry.⁹ This will be a particular challenge for national SMEs.

Another challenge is workforce aging. Workers are confronted with new technologies and the need for digital skills in general and the need to adapt to innovation and change. New techniques, tools and machinery poses new challenges for health and safety. At the same time, new types of workplaces, human-friendly technologies, control systems, etc., may increase workers' health and safety.

All these trends have an impact on occupational profiles in terms of the tasks and the skills they require.

In assessing the 3 core profiles, compared to the 2014 results (Bolster-Up 1), we noticed the increasing demand for digital, technical as well as soft skills:

- Digital skills for using data systems, working with automated machines, digital process control, etc.
- The need for a broader view on and insights in production flow and steps (down- and up-stream) and technical aspects such as understanding the workflow and sequence of operations, contributing to maintenance and logistics tasks.
- The importance of professional language use.
- Completing assignments autonomously.
- Developing their own employability in order to work in a polyvalent work organisation setting.
- A sense of responsibility with a problem-solving attitude and a mindset for looking for improvements.
- The need to act as a responsible person: for example, in the efficient use of materials and tools and the economic use of energy, in working according to health, safety and environmental regulations, in using health and environmental protection and in contributing to waste management.
- Being aware of and participating cooperatively in teamwork with respect for the interests of others.

⁹ DIGIT-FUR report, <https://digit-fur.eu/>; incl. McKinsey Levers and industry 4.0 technologies

A brief overview of the industry developments¹⁰ and their effect on the furniture industry (focus on sales, manufacturing and technology), jobs, knowledge, skills and competence needs related to manufacturing and the 3 core profiles

	Challenges for the future and their effect on the company	Sales: products and services	Manufacturing: production and work organisation
Connected economy and globalised trade:	<ul style="list-style-type: none"> ✓ Globalised market ✓ Competition (low production cost countries) ✓ Protectionist measures, regulatory aspects, intellectual property ✓ Strict regulations on public tenders ✓ ... 	<ul style="list-style-type: none"> ✓ Industrial design ✓ Creation of niches and different segments (commodity up to high end, product & service specialisation) ✓ Cost price control ✓ Open innovation in design, new advanced and multifunctional materials ✓ Low price products competition 	<ul style="list-style-type: none"> ✓ Subcontracting ✓ Outsourcing ✓ Innovation: new ways of production and work organisation ✓ Low quality products competition ✓ ...
Customer is King:	<ul style="list-style-type: none"> ✓ Customer intimacy ✓ Services 24/7 ✓ Price / quality ✓ E-commerce ✓ Multi-trends in living and decoration ✓ ... 	<ul style="list-style-type: none"> ✓ Remote product development, co-creation (customer involvement) ✓ Personalised smart products and services versus mass customisation ✓ Furniture as a service ✓ Intelligent order and payment systems ✓ Large range of products with very small differences between them and competing between them. ✓ Sales must be involved in the whole value chain process ✓ Importance of 'customer journey' 	<ul style="list-style-type: none"> ✓ Intelligent production lines ✓ Smart products with embedded digital services ✓ Short time between order and delivering ✓ Low quality products design ✓ ...
Industry 4.0:	<ul style="list-style-type: none"> ✓ Digital manufacturing era > digital transformation ✓ Industrial IoT (Internet of Things) ✓ Horizontal and vertical systems integration ✓ ... 	<ul style="list-style-type: none"> ✓ Disruptive business models based on digital transformation of manufacturing and supply chain ✓ ... 	<ul style="list-style-type: none"> ✓ Embedded machine intelligence and metrology ✓ Digital working tools for operators ✓ Operational excellence, lean and agile production and supply chain ✓ ...
Employment:	<ul style="list-style-type: none"> ✓ Globalisation labour market ✓ New relationship between employer and employee ✓ New social dialogue ✓ New models of work-life balance. ✓ ... 		<ul style="list-style-type: none"> ✓ Safe and clean working conditions ✓ Risk and safety regulations ✓ Health and safety, protective equipment ✓ Ethics ✓ ...
Sustainability:	<ul style="list-style-type: none"> ✓ Circular economy ✓ Focus on renewable and traceability ✓ Corporate Social Responsibility CSR ✓ ... 	<ul style="list-style-type: none"> ✓ Eco design and eco-friendly products ✓ New materials ✓ ... 	<ul style="list-style-type: none"> ✓ Investments, higher operational costs ✓ Emission reduction ✓ Energy management ✓ ...

¹⁰ <https://digit-fur.eu/>, <https://ditrama.eu/>

Technology and technological solutions	Effect on jobs and new KSC needs, education and training needs	Biggest barriers and bottlenecks according to KSC development needs	Possible actions to promote industry developments and KSC needs
<ul style="list-style-type: none"> ✓ Cloud computing ✓ Increased global market analysis capabilities ✓ Traceability (e.g. blockchain) ✓ ... 	<ul style="list-style-type: none"> ✓ Speaking other languages ✓ Digital literacy ✓ Planning and organisation skills ✓ Employability ✓ Smart working skills ✓ ... 		
<ul style="list-style-type: none"> ✓ Big data analytics and AI on customer behaviour and needs ✓ ERP (enterprise resources planning) ✓ CRM (customer relationship management) ✓ Developing communication capabilities between client and worker ✓ ... 	<ul style="list-style-type: none"> ✓ Design thinking ✓ Customer orientation ✓ Service oriented attitude ✓ Responsiveness ✓ Quality and cost awareness ✓ Soft skills ✓ Technical skills for sales people ✓ ... 	<ul style="list-style-type: none"> ✓ Currently a high degree of KSC gaps ✓ Lack of skilled workers, craftsmanship, knowledge intensive jobs ✓ Aging workforce ✓ Lack of knowledge transfer between generations ✓ Difficulty in attracting young workers, motivated and qualified workers ✓ Reluctance to changes ✓ Insufficient time for applying changes ✓ Reluctance to new technologies adoption ✓ Insufficient development resources ✓ Lack of skilled teachers/instructors ✓ Difficulties to have access to funds to underpin development needs ✓ ... 	<ul style="list-style-type: none"> ✓ Technological surveillance, market and design surveillance and translate it to new KSC needs ✓ To set up and promote international design platforms ✓ Using IT technologies and digital tools in teaching ✓ Building a network (platform) of professional trainers and teachers to exchange best practices ✓ Reflection on the future of VET ✓ Creativity in learning and training solutions ✓ Searching for best practices in L&D ✓ Creating synergies in L&D ✓ Assessment of KSC to develop competences and to set up a training plan ✓ Promoting internships for young workers, dual learning, training on the job ✓ Apprenticeship programmes ✓ Edtech ✓ Interactive MOOC's (massive open online courses), training videos ✓ Mentoring ✓ Career guidance ✓ School-Work relationship as a School-Work alliance, e.g. involve company trainers in vocational schools ✓ Promoting the importance of LLL ✓ ...
<ul style="list-style-type: none"> ✓ CAD – CAM ✓ Collaborative robots (cobots) ✓ Autonomous robots ✓ Cybersecurity ✓ Use of Additive Manufacturing, IoT, Horizontal/Vertical systems integration, simulation, augmented reality ✓ ... 	<ul style="list-style-type: none"> ✓ Technical skills ✓ Digital skills ✓ Non-technical skills: e.g. problem solving, critical thinking, information retrieval ✓ Soft skills: e.g. communication, emotional intelligence, autonomy and team collaboration ✓ Behaviour and attitude: flexibility, adaptability, initiative ✓ Knowledge about company processes ✓ ... 		
	<ul style="list-style-type: none"> ✓ Awareness to safety and health ✓ Human resources awareness ✓ Entrepreneurial thinking ✓ Employability and lifelong learning (LLL) ✓ ... 		
<ul style="list-style-type: none"> ✓ Tools of traceability (product custody) ✓ ... 	<ul style="list-style-type: none"> ✓ 'Green' skills ✓ Awareness to environmental aspects, responsible use of resources and energy ✓ Waste management ✓ Awareness for sustainable development - CSR 		

The furniture industry is a labour-intensive and dynamic sector dominated by small and medium-sized enterprises (SMEs) and micro firms. EU furniture manufacturers have good reputation worldwide thanks to their creative capacity for new designs and responsiveness to new demands. The industry is able to combine new technologies and innovation with cultural heritage and style, and provides jobs for highly skilled workers.¹¹

Why the EU furniture industry is important



Employment - the sector employs around 1 million workers in 130 thousand companies generating an annual turnover of around EUR 96 billion;



Trend setting - EU furniture manufacturers set global trends. About 12% of designs registered in the European Union Intellectual Property Office relate to this sector;



High-end segment - the EU is a world leader in the high-end segment of the furniture market. Nearly two out of every three high-end furniture products sold in the world are manufactured in the EU.

Challenges faced by the furniture sector

The furniture sector has been severely hit by the recent crises and has faced a significant drop in the number of companies, jobs, and turnover. The main challenges are:



Competition – the EU furniture sector faces enormous competition from countries with low production costs. China's penetration of the EU market is growing rapidly and it is now the largest furniture exporter to the EU, accounting for over half of total furniture imports to the EU.



Innovation - the reliance on innovation and design combined with an increase in global trade and digitalisation makes the sector more vulnerable to weak protection of intellectual property rights. Boosting research and innovation also requires finance that is often inaccessible to SMEs.



Structural problems - the aging workforce combined with difficulties in attracting young workers may lead to disruptions in maintaining skilled workers and craftsmanship.



Trade - protectionist measures on international markets create market distortions and decrease the sector's competitiveness. EU furniture producers face both duties on imports of raw materials and tariffs on exports of finished products. Moreover, operational costs in the EU are higher due to high environmental, sustainability, and technical standards.

Opportunities for the furniture sector

The EU furniture sector has undergone significant changes to make it more export-oriented and to focus on upgrading quality, design, and innovation. These changes include restructuring, technological advances, and business model innovations. The main opportunities ahead lie in:



Investment - continuing investment in skills, design, creativity, research, innovation, and new technologies can result in new products which are in line with the changing population structure, lifestyles and trends, as well as with new business models and supplier-consumer relationships.



Research - research in advanced manufacturing technologies can result in the creation of high technology and knowledge intensive jobs, which would give the sector the attractiveness it needs to attract employees from younger generations. This could help rejuvenate the sector while keeping it highly competitive on the world stage.



Accesses to new markets – EU furniture manufacturers are recognised worldwide for their quality and design. This creates opportunities for the sector to further seize other markets, in particular in high-end segments and emerging economies.

¹¹ <https://www.eqwood.org/>



Synergies - with construction and tourism could also be exploited, building on the sector's excellent track record in sustainability. Specifically, the reliance on raw materials from sustainable sources used in the furniture production could have a positive impact on sales among environmentally concerned end-users.

According to the current industrial transformation, this brings us to a set of 9 new skills, knowledge and competence requirements¹²:



1. Critical Thinking and Problem Solving



2. Collaboration Across Networks and Leading by Influence



3. Agility and Adaptability



4. Initiative and Entrepreneurship



5. Effective Oral and Written Communication



6. Information Retrieval



7. Curiosity and Innovation



8. Digitally-minded and Digital Literacy



9. Data security

In the following we summarise the specific situation of the three core profiles in each country, in alphabetical order:

Belgium - WOODWIZE:

For Belgium, the 3 occupations (cabinet maker, upholsterer and joiner) are relevant. Presently the courses focus on "woodworking" in general. Only after this general education, one can choose a specialisation for one or some of these occupations, as upholsterer or cabinet maker.

80% of the furniture industry is situated in Flanders. As the labour costs are very high in the industry, digitalisation will allow more productivity. There is a need to have higher skilled workers, but as there is a "war for talents", employers might prefer to engage anyone who shows interest in working in the company, even without the proper skills. There are some sectoral systems to train them "On-the-Job".

Croatia - Croatian Wood Cluster:


There are secondary school options for all 3 occupations in Croatia. However, companies mostly complain that the students are not very interested and motivated for actively participating in the working/production process. The students are also very much focused on theoretical knowledge and not so much on the practical issues. It is therefore important to involve them more in the production processes and to find a way how to motivate them to use the theoretical knowledge in the practical work. In addition, there is a need to change the mindset about lifelong learning process, which is critical for ensuring the sustainable and competitive working environment.

Italy - FederlegnoArredo:

Regarding the 3 core qualifications, Italy has professional 2-year training courses following compulsory education. Most of them are based in Lombardy and Venice - the two main furniture making regions of Italy.

The weakness is the digital gap between school and the enterprise workshop. Not all schools have a workshop with modern machines resembling those in the company. Companies must fill this gap when they introduce new young people.

¹² Jeroen Doom – Digit-Fur conference Barcelona 7/2/2019 – PowerPoint presentation



Companies in Italy need these people - difficult to train but necessary for the national production system.

The Netherlands - Hout- en Meubileringscollege:

HMC MBO has a particular interest in design and efficient production. Designing products for circular economy, even if it is still on a very small scale. Students are aware of these designs for circular economy.

Portugal - AIMMP:

AIMMP is mainly focusing on new design and concepts. There are 5 sectoral divisions, which cover the cycle of the wood, from the tree till the finished product. Companies cover all the various steps. There is a need to open-up the field of design by means of guidelines. The industry is getting old and functions become outdated. The same company still wants to do everything. AIMMP performed some studies, but not specific ones with specific profiles. AIMMP could provide help for the research through the design schools in Portugal, mainly in the North of the country. In Portugal, upholsterers are in another sector (textiles).

There has also been a great increase in the education provided by skilled training centres, since they are a valuable resource for preparing the new workforce needed by companies, with which they collaborate directly. This is aimed at reducing the gap between school curricula and the desired simulated practice. There is also a need to improve autonomous work, but that will have a direct effect on the management styles of most companies since almost 85% of them are Small and Medium Sized Enterprises.

Romania - APMR:

Romania has a large need for workers in the wood-working and furniture industry. Training takes place in technical colleges (formal learning, especially for young people), in companies (dual learning and apprenticeship learning, for young people and adults) and private training institutions (non-formal learning for adults).

The best learning systems are in the technical colleges and companies. Not all high school graduates get a training place at work. Beginners trained in companies remain employees of companies. Workers trained in private training institutions, however,

do not receive a complete education.

The greatest lack of workers is in the upholstery sector. Future workers are trained in the formal, non-formal and informal system. (Informal system: family tradition.)

The company-based training (dual learning) should be extended as this provides the best training and the students remain employees of the companies. It is necessary for trainers / teachers to know the results of the project Bolster-Up 2 and incorporate it in to the training regardless of the educational system.

Spain - CENFIM:

For Spain the 3 occupations (cabinet makers, upholsterer and joiner) are relevant. The most relevant one is joiner, it represents 75% of the 3 occupations. The VET Spanish system does not have specific qualifications for the 3 targeted occupational profiles, but there are 4 VET qualifications related and relevant for those 3 occupations. The Spanish system also offers some training modules providing official qualification (Professional Certificates) relevant for the targeted occupational profiles.

Sweden - GS:

GS deals with several projects and has a good overview of the future skills requirements. Schools are responding more to the requirements of companies. Skills are similar to those used in the paper industry; automation and robotisation represent a challenge.

For detailed information, see Appendix 5.2 Methodology guidelines. A brief overview of the furniture industry developments in each country is also available on the website www.bolster-up2.eu



Personal statement

Nicolas Sangalli – FLA

Cross-fertilisation: the key for the evolution of a mature market

The wood and furniture sector looks to the new decade that has just begun, aware of having to face some essential challenges for its own competitiveness:

- *Competition from manufacturing countries with low labour costs (especially China and Southeast Asia)*
- *Loss of attractiveness of the sector towards young people entering the job market*
- *New market targets with new needs: millennials, silver customers, migrants with different cultural preferences.*

The key to meeting these challenges for a mature market such as the woodworking lies in cross-fertilisation.

This cross-fertilisation has three different forms:

- **Generational cross-fertilisation:** *in which the know-how and cultural heritage of the woodworking and furniture supply chain can be passed on to the new generations throughout the value chain (manufacturing, marketing and selling, organization and management).*
- **Cross-fertilisation with other product sectors:** *some sectors are engaged in the same challenges and have embarked on a process of enhancing the supply chain and brands from which even woodworking and furniture can learn much.*
We think in particular of the other “F” sectors: food and fashion, which together with Furniture need to find a new balance between tradition, innovation, progressive digitalisation and the globalisation of the market.
- **Cross-fertilisation within the supply chain:** *the various stakeholders of the supply chain are called to cooperate by sharing needs and solutions, outside of their accustomed way of doing things.*

Together with companies and the entire production chain, the world of design and communication (architects, designers, publishing and communication experts), the world of education (VET centres, academies, universities, training centres), the associations representing companies and workers are involved in these processes of change.

Social dialogue projects offer a key area for deepening and developing these precious alliances.

3.2. THE FINAL RESULTS ON THE 3 CORE PROFILES AND THE REQUIRED KSCS

3.2.1. Upholsterer (m/f)



The upholsterer is a professional who produces upholstery and the upholstered parts of furniture. They operate as a skilled worker for large and medium sized companies in the upholstery industry or in small, more craft-based companies. They typically perform the following tasks:

- Prepare the production of upholstery parts. To do this they consult work orders, read technical drawings and choose fittings.
- The first step is to produce upholstery parts: select and check materials, make upholstered parts and use for this manual electrical and pneumatic tools as well as woodworking machines; measure, cut materials to size and sew covers.
- Secondly, they are in charge of assembling the upholstery parts and attach materials to the desired end product. Finally, they judge the quality of their own work.
- They have insight and experience in the construction of upholstery, know how to work with different materials and types of auxiliary materials and their properties and handling. An upholsterer understands how to use measuring methods and tools.
- To handle work assignments the upholsterer needs to use the company's ICT system and software, related to its field of work. For example, to consult work orders or to complete production files. It is important to understand technical regulations, acceptance standards, documentation procedures, health and safety regulations,

waste handling procedures and maintenance procedures for performing basic maintenance of tools and equipment.

The upholsterer acts as a responsible person:

- Works in accordance with basic health and safety regulations, including environmental protection and efficient energy use.
- Works in a customer-oriented manner.
- Considers cost- and time-effectiveness when planning and organising their work in their area of influence and assist in implementing quality assurance tasks.
- Contributes to continuously improving work processes in the company.
- Acts as a team player, coordinates work with the rest of the team, reports to the team leader and cooperates with other departments (administrative, commercial and technical services).
- Works in a way that respects co-workers.

The upholsterer works under the supervision of the team leader or foreperson and has a high level of responsibility for the quality of their own work as well of the work of co-workers.

They work independently in familiar and predictable contexts and adapt their own behaviour to the situation when solving problems. They are able to investigate new materials and innovative work-methods.

Note:

In comparison with the results of 2014, the upholsterer nowadays needs to focus on using data systems (digital skills), working with automated machines, complying with security regulations, health and environmental protection, contributing to maintenance activities and waste management.

According to the Digit-Fur report, the challenges for the future (2025) are in the field of digitalisation such as using digital simulation models, working in an environment with advanced digital process control, cobots and robots.

Detailed overview:

A skilled upholsterer is able to deal with the following aspects of knowledge, skills and competence:

UPHOLSTERER

Unit 1: PREPARATION OF THE PRODUCTION OF UPHOLSTERY AND UPHOLSTERY PARTS

Is able to prepare their own assignments, and can therefore:

- accept materials
- read technical drawings
- select and mount fittings

Knows:

- acceptance standards
- technical drawings
- technical regulations
- upholstering techniques
- fittings

Unit 2: PRODUCTION OF UPHOLSTERY AND UPHOLSTERY PARTS

Is able to produce upholstery parts, and can therefore:

- select, check, transport and store all the necessary materials
- prepare work pieces before upholstering
- deal with materials by hand and machine
- use tools
- make upholstered parts
- cut materials to size
- sew covers

Knows:

- construction of upholstery
- upholstery techniques
- ergonomic principles
- different basic materials; different types of auxiliary material and their properties and handling
- portable, electrical and pneumatic tools as well as manual tools, including basic maintenance
- measuring methods and tools
- wood protection

Unit 3: ASSEMBLY OF UPHOLSTERY PARTS

Is able to assembly all parts, and can therefore:

- select and mount fittings
- assemble all parts to a final result
- judge the quality of their own work

Knows:

- mounting and assembly techniques
- fittings

Unit 4: COMPLETING THE WORK ASSIGNMENT

Is able to complete their own work assignment:

- read, understand and fill in documentation
- deal with waste
- perform basic maintenance

Is competent to:

- maintain an overview

OTHER RELEVANT KSCs for all units

Knows and understands:

- documentation procedures
- the company structure and the responsibilities of other departments
- the company data system for their area of influence
- health and safety regulations
- maintenance procedures
- waste procedures

Is able to:

- use the company's ICT system and standard software (workplace specific)
- use and carry out basic maintenance of tools and equipment

Is competent to:

- act competently within the production system
- work in a way that respects the interests of co-workers
- work in a cost- and time effective way
- use materials and machines within the whole process efficiently and effectively
- ensure accuracy and reliability
- take on responsibility for compliance with health and safety regulations

3.2.2. Joiner (m/f)



As the name suggests, a joiner is a professional who makes and assembles elements/furniture parts based on wood and its derivatives, using hand tools, electrical hand-operated machinery and woodworking machines. They are also capable of finishing the surfaces of these elements/parts. Joiners work with a vast array of hand tools, electrical hand-operated machinery and woodworking machines. They work as a basic skilled worker for large and medium sized companies operating in the woodworking and furniture industry or in small, more craft-based companies. We can see the joiner as a generally recognised or “universal woodworker”.

The joiner

- Prepares their own work for the making and assembly of wooden (furniture) parts and elements. To do this, they collect data and make (basic) calculations for the (elements of) joinery and, as necessary, program automated and computerised woodworking machines.
- Collects and controls the materials (amount, quality). He/she selects, controls, mounts, replaces and calibrates (cutting) tools on the woodworking machines and sets up and changes over the machines. He/she eventually selects the right programs for the automated and computerized woodworking machines.
- The next step is to produce wooden parts, pieces and elements: they check the safety features of the (woodworking) machines and processes and shape solid wood and wood-based materials to make joinery parts and elements by the use of hand tools, electrical or pneumatic hand-operated machinery, (stand-alone mechanical) woodworking machines and, possibly,

automated and computerised machines.

- Assembles joinery elements by different techniques. They arrange fittings and seals on interior and exterior joinery (hinges, handles, locks, fixtures, etc.) and check the functioning of moving parts.
- Prepares wooden surfaces for finishing (sanding, removing glue, etc.), prepares the products for basic finishing and applies a basic finishing to the joinery parts or elements / treat surfaces of interior and exterior joinery. When needed, they can make small repairs.
- Completes the work assignments by checking the final quality, reports to their team leader and finalises work and documents with the company's ICT system.
- It is important that they understand technical regulations, acceptance standards, documentation procedures, health and safety regulations, maintenance and waste handling procedures.

The joiner acts as a responsible person:

- Works in accordance with basic health and safety regulations, including environmental protection and efficient energy use.
- Considers cost- and time-effectiveness when planning and organising their own work in their area of influence and assists in implementing quality assurance tasks.
- Contributes to improving work processes.
- Acts as a team player, coordinates their own work with the rest of the team and reports to the team leader.
- Cooperates with other departments (administrative, commercial and technical services).
- Works in a way that respects co-workers.

The joiner works under the supervision of the team leader or foreperson and has responsibility for the quality of their own work. They work independently in familiar and predictable context and adapt their behaviour to the situation when solving problems.

Note:

In comparison with the results of 2016 (Erasmus+ EuroJoiner project), the joiner needs: Reduction of production and technical scope: installation on-site is for carpenters and installers of tailor-made interiors, not for joiners.

Emphasis on digital skills:

According to the Digit-Fur report, the challenges for the future (2025) are in the field of digitalisation, such as working with semi-automatic or fully automated, even autonomous woodworking machines and the use of digitisation tools to work in a customer-oriented manner.

Detailed overview:

A skilled joiner is able to deal with the following aspects of knowledge, skills and competence:

JOINER

Unit 1: PREPARATION AND PLANNING

Is able to:

- accept materials
- read technical drawings and make measurements
- calculate the amount of the material and the timber to be used
- select and mount fittings
- program automated and computer-controlled machines

Knows:

- acceptance standards
- technical specifications and characteristics of the product
- technical regulations
- cutting techniques
- sharpening techniques
- fittings
- CNC machines and computerised equipment
- (C)NC-programming

Unit 2: SELECTION OF MATERIALS AND MACHINES

Is able to:

- read and understand the material standards and retrieve information from the relevant tables and data sheets
- collect and control materials (amount, quality)
- select, control, mount, replace (cutting) tools and accessories on woodworking machines
- check working tool status and settings (cutting wheels, milling cutters and drills, etc.)
- select and prepare woodworking machines

for producing joinery while complying with the standards of risk prevention

- select the right programs for the automated and computerised woodworking machines
- check working parameters

Knows:

- the most commonly used materials (types and classification, properties and characteristics, designation, machinability) such as solid wood, boards based on wood, adhesives, coatings, etc.
 - (portable) woodworking machines, basic functionality and uses and safety features
 - cutting tools with their feed speed, cutting depth, cutting speed and contour
- Is competent to:**
- set up woodworking machines with the right choice of tools for the materials to be processed
 - start up (automated/computerised) woodworking machines for the production

UNIT 3: PROCESSING

Is able to produce furniture parts up to furniture:

- take measurements
- check the safety and health standards
- make joinery parts, using electrical and pneumatic hand tools, using woodworking machinery (sawing machines, planers, drilling machines, sanders, routers and profilers, jointers, etc.)
- process operations with computerised machines, using specific programs
- check the quality of the processed products
- perform basic maintenance of equipment and machinery

Knows:

- joining techniques
- ergonomic principles
- personal protective equipment
- safety and health rules for woodworking machinery
- manual tools, portable (electrical and pneumatic) tools
- (automated and mechanical) woodworking machines and basic maintenance
- measuring methods and tools
- production methods and their work-flow and sequence of operations

Is competent to:

- set up and operate hand tools, (portable) woodworking machines and/or automated, computerised woodworking machines to make joinery elements, adhering to health and safety standards

Unit 4: ASSEMBLY**Is able to:**

- collect and transport joinery parts and elements
- collect and adjust electrical and pneumatic hand tools and auxiliary equipment
- select and check materials (glues, adhesives, fasteners and sealants, application tools)
- assemble different pieces of joinery parts or elements and combine these to a complete workpiece
- check moving parts (turning, sliding, tilting, etc.)
- check and rectify the assembled parts

Knows:

- different types of glues, adhesives, fasteners and sealant and their properties and uses
- effective assembly strategies, logical work sequence
- construction and connecting techniques for joinery used in the industry
- industrial assembly processes (logistics, internal quality control, lean production, procedures and regulations)
- methods of rectifying and repairing

Unit 5: FINISHING SURFACES**Is able to:**

- prepare the surfaces of joinery for finishing (sanding, removing glue, etc.)
- select and prepare the product(s) for (protective) wood treatment and/or finishing of joinery
- consult technical sources
- apply the primer, intermediate and finishing coatings
- comply with safety, health, hygiene and welfare instructions
- check the quality
- prepare the finished joinery for internal transport or storage

Knows:

- environmental care systems and instructions

in relation to own activities

- products for finishing (levelling, primers, coatings, etc.)
- finishing techniques for joinery
- safety, health, hygiene and welfare instructions, personal and collective protective equipment
- quality standards, values and tolerances
- storage and stacking techniques
- ergonomic hoisting and lifting techniques

Is competent to:

- use finishing tools and equipment for applying coatings

Unit 6: COMPLETING WORK ASSIGNMENT**Is able to:**

- read, understand and fill in documentation and reports on the finalised work
- coordinate their own work with the team
- control the (final) quality of produced goods
- evaluate their own work process

Knows:

- quality procedures, quality of product and process standards
- documentation procedures

Is competent to:

- perform the quality control of products and processes

OTHER RELEVANT KSCs to all units**Is able to:**

- use the company's ICT system and standard software related to their work field
- use and carry out basic maintenance of machines, tools and equipment
- sort out and dispose waste according to guidelines
- assist in implementing quality assurance methods
- speak idiomatically and professionally

Knows and understands:

- the company data system for their area of influence
- health and safety regulations, personal protection
- documentation procedures
- economic behaviour related to own work field
- environmental protection and waste procedures
- efficient energy use

Is competent to:

- solve problems
- control quality of their own work
- ensure accuracy and reliability
- work in a cost- and time effective way
- use materials and machines efficiently and effectively
- take on responsibility for compliance with health and safety regulations
- act competently within the production system
- act and cooperate within the team and respect the interests of co-workers
- look for information
- work in a customer-oriented manner
- be aware of and take part in compliance with work regulations
- judge work results, check working process
- consider ways to improve processes
- understand the logistic process in the plant
- maintain an overview
- taking an active role in civil society

What we consider as optional:

- The subtask 'Draw designs and plan its production processes' within 'Preparation and planning' is considered as optional for the joiner.



3.2.3. Cabinet maker (m/f)



As the name suggests, a cabinet maker is a professional who produces 'cabinets', furniture and parts of furniture. Various wood species, materials and styles can be used. Cabinet makers work with a vast array of tools and woodworking machines. They operate as a skilled worker for large and medium sized companies operating in the furniture industry or in small, more craft-based companies.

The cabinet maker

- Prepares the production (of parts) of furniture. To do this, they consult work orders, read technical drawings and select fittings.
- The next step is to produce furniture parts. To do this, they take measurements, prepare work pieces for coating, apply coatings and mount fittings. They use manual tools as well as woodworking machines.
- Is involved in the installation of furniture: assembles different pieces of furniture into furniture parts and combines furniture parts to a complete furniture. Assesses the quality of their own work results.
- They have insight and experience in the production, construction and installation of furniture, understand technical drawings, and know how to use carving, cutting and sharpening techniques as well as mounting, joining and assembly techniques. They understand wood protection, coating and coating techniques. A cabinet maker understands how to use measuring methods and tools.
- Resolves problems and looks for improvements.
- To handle work assignments the cabinet maker needs to use the company's ICT system and

software related to their own specific work assignments.

- It is important that they understand technical regulations, acceptance standards, documentation procedures, health and safety regulations, maintenance and waste handling procedures.

The cabinet maker acts as a responsible person:

- Works in accordance with basic health and safety regulations, including environmental protection and efficient energy use.
- Works in a customer-oriented manner.
- Considers cost- and time-effectiveness when planning and organising their own work in their area of influence and assists in implementing quality assurance tasks.
- Contributes to improving work processes.
- Acts as a team player, coordinates work with the rest of the team and reports to the team leader.
- Cooperates with other departments (administrative, commercial and technical services).
- Works in a way that respects co-workers.

The cabinet maker works under the supervision of the team leader or foreperson and has a high level of responsibility for the quality of their own work and the work of co-workers. They work independently in a familiar and predictable context and adapt their behaviour to the situation when solving problems. They are able to investigate new materials and innovative working methods.

Note:

In comparison with the results of 2014 the cabinet maker needs :

- Emphasis on digital skills.
- Enlargement of production and technical scope: understanding of work-flow and sequence of operations, repairing furniture and elements of it, contributing to maintenance and logistics tasks such as internal transport, storage of materials and furniture.
- Importance of professional language use.
- Sense of responsibility: problem solving attitude and looking for improvements.
- To act as a responsible person: efficient use of energy, economics; working according to health, safety and environmental regulations; using health and environmental protection,

- contributing to maintenance activities and waste management.
- Teamwork: act as a team member with respect for others.

According to the Digit-Fur report, the challenges for the future (2025) are in the field of digitalisation such as working with highly digitised, connected and automated woodworking machines and in an environment with cobots and to work in a customer-oriented manner via human-robot collaboration and the use of digitisation tools.

Detailed overview:

A skilled cabinet maker is able to deal with the following aspects of knowledge, skills and competence:

CABINET MAKER

Unit 1: PREPARATION OF THE PRODUCTION OF FURNITURE AND PARTS OF FURNITURE

Is able to:

- accept materials
- read technical drawings
- select and mount fittings

Knows and understands:

- acceptance standards
- technical drawings, applied mathematics
- technical regulations
- cutting techniques
- sharpening techniques
- computerised equipment
- fittings

Unit 2: PRODUCTION OF FURNITURE AND PARTS OF FURNITURE

Is able to produce furniture parts of furniture:

- select, check, transport and store all the necessary materials
- prepare workpieces before coating
- apply fluid and solid coatings with manual tools
- mount fittings
- deal with materials by hand and machine
- use automated / computerised equipment
- make furniture parts

- take measurements
- ensure internal transport and store materials

Knows and understands:

- construction of furniture
- joining techniques
- ergonomic principles
- different basic materials, wood species
- manual tools
- woodworking machines, basic maintenance
- automated machines, basic maintenance
- measuring methods and tools
- wood protection
- coatings and their application methods (required in small companies)
- portable, electrical and pneumatic tools
- storage of materials
- different producing methods and their workflow and sequence of operations
- how to perform the scheduled maintenance

UNIT 3: INSTALLING OF FURNITURE

Is able to:

- assemble different pieces of furniture into furniture parts and combine furniture parts to a complete furniture piece
- select and check materials

Knows and understands:

- mounting and assembly techniques
- different types of auxiliary material and its properties and handling

Unit 4: COMPLETING THE WORK ASSIGNMENT

Is able to:

- read, understand and fill in documentation
- deal with waste
- perform basic maintenance
- restore the functioning of movable parts
- repair furniture

Knows:

- basic maintenance of tools and equipment in order to prepare for next assignment
- storage of furniture
- properties and proper handling of goods related to their work assignment

OTHER RELEVANT KSCs to all units

Is able to:

- use workplace-specific software
- use the company's ICT system and standard software related to their own work field
- assist in implementing quality assurance methods
- speak idiomatically and professionally
- use and carry out basic maintenance of machines, tools and equipment

Knows and understands:

- the company data system for their area of influence
- health and safety regulations, personal protection
- documentation procedures
- economic behaviour related to own work field
- environmental protection
- efficient energy use
- waste procedures

Is competent to:

- solve problems
- control quality of their own work
- ensure accuracy and reliability
- work in a cost- and time effective way
- use materials and machines within the whole process efficiently and effectively
- take on responsibility for compliance with health and safety regulations
- maintain an overview
- act competently within the production system
- understand the logistic process in the plant
- act and cooperate within the team and respect the interests of co-workers
- consider possibilities for improving processes
- look for information
- work in a customer-oriented manner
- be aware of and take part in compliance with work regulations
- assess work results, check work process
- taking an active role in civil society

What we consider as optional:

- Knowledge of historical styles.
- Knowledge of the company structure and responsibilities of other departments.
- Knowledge of furniture design.
- Selecting and checking materials and preparing work pieces for coating. This is considered important in small companies where polyvalence and multitasking are relevant. In larger companies, however, the work process is divided into multiple work areas and these are the responsibility of other work areas such as supply, work preparation, quality control or coating division.



Personal statement

Julio Rodrigo – CENFIM

Share value with employees and other stakeholders to be a more competitive SME

EU furniture manufacturers and their workers will have to face very important challenges in the near future: the digital transformation of the sector, the transition of companies to a more circular and inclusive economy and the need to attract young workers. Regarding this last challenge, the recruitment and retention of young workers is necessary for three main reasons:

- *The aging of the current workforce and the lack of its renewal*
- *The lack of vocations in the sector*
- *The low appeal of the sector for highly qualified professionals*

One possible solution to the “attraction and retention of young workers” in furniture manufacturing companies can be the deployment of Corporate Social Responsibility (CSR) practices and the creation of “Shared Value”.

According to Michael E. Porter and Mark R. Kramer, the central idea behind the creation of shared value is that the company competitiveness and the health and well-being of the communities around it (e.g. employees, customers, suppliers, society, public administration, etc.) are mutually dependent, meaning that sharing more value with employees makes companies more competitive and workers more satisfied.

SMEs have economic and resource limitations for implementing CSR practices. Currently, there are no practical CSR guides or supporting tools specifically for furniture sector SMEs. It would therefore be useful for the sector to have guides and tools that would allow companies to have a “fresher and more attractive” management and thus deploy shared value practices in a compatible and synergetic manner with their business processes. Amongst other benefits, this would allow companies to retain and motivate good employees, attract talent, establish sustainable and responsible supply chains with customers; in short, to be more competitive.

Within the European Social Dialogue Committee on Furniture we have started to work on the development of guides and tools for EU SMEs furniture manufacturers. Through these, we aim to integrate economic, social and environmental aspects into their management and decision-making processes from a strategic and operational perspective, and thus help our companies to be both more attractive for employees and more competitive in the market.

3.3. COMMENTS ON THE CORE PROFILES

Although we have agreed on the core profiles, the discussion has also shown that the profiles depend on the context of the companies / countries. There is a difference between internationally operating companies and smaller companies such as local SMEs (see below).

If the worker is working in an industrial company with many employees, the workflow is more or less given, the work process is marked through a division of labour and there is no direct contact with the (final-) customers. The work assignments, work methods, quality standards, etc., are provided by first line managers and cannot be influenced by an individual worker. The production of furniture is performed by a team in co-operation. They are jointly responsible for the results and the quality of their own work within a team comprising all workers. The team leader will give advice.

If the worker is working in a small company (craft sector) or even alone as a craftsperson, the workflow to produce the furniture follows the same technical rules but the worker has greater autonomy in organising their work. There is less division of labour. It is also possible to be in contact with the (end-) customer and the furniture has to be designed to the demands of the customer. It is an individual production of furniture consisting of small series for the individual customer (tailor-made).

This is the background to most of the differences we noticed. A country that provides the VET for the cabinet maker, upholsterer or joiner working within industry has to do this differently from a country (context) that does it more for the small companies. The VET system can therefore be adapted to the different approaches to production: different professional contexts for the furniture maker, perhaps different education systems and different ways of lifelong learning.



Overview of the different contexts of the core profiles: industrial versus craftsmanship

3.3.1. Upholsterer

Overview of professions / core profiles and required KSCs	Hand-made work: focus on custom- or tailor made, repair or renovate seating furniture (traditional workshop, polyvalence)	Serial work: (small) series	Mass production: e.g. seating furniture for hospitality sector, office furniture, automotive, cinema and theatre, mattresses etc. (production environment)
Manual labour	CRAFTSMANSHIP <ol style="list-style-type: none"> 1. Upholsters complete furniture 2. Works in craft-based companies 3. Prepares own work assignments, drawings 4. Works with manual tools and single workstations 5. Has in-depth knowledge of upholstery techniques, materials and their properties 6. Works within general guidelines 7. Is responsible for the quality of the overall end result 8. Requires long term training, education combined with on-the-job training to become a skilled craftsman: on average 2 years 9. Works with generic software 10. Considers customer focus, cost and time effectiveness, quality of end result 11. Knows the different units of measurement and the conversions between them 		
Single, standard woodworking machines			
Combined woodworking machines			
Combined processing stations, cobots or robots (cutting fabrics, wood)		OPERATOR <ol style="list-style-type: none"> 1. Upholsters parts of furniture 2. Works in industrial companies 3. Receives work orders, drawings 4. Works with in-line combined workstations 5. Knows and understands the specific operations and materials to be used 6. Complies with set standards and specific procedures (health, safety, waste) and regulations 7. Is responsible for the quality of a specific production step 8. Requires on-the-job training as an operator: on average, 6 months 9. Works with specific company software (ERP environment, reporting production and performance indicators) 10. Understands company structure and assistance from other support services (first line management, logistics, technical service, quality control, customer service, administration, etc.) 	

3.3.2. Joiner

Overview of professions / core profiles and required KSCs	Custom- or tailor made	Serial work: (small) series	Mass production
Manual labour			
Single, standard woodworking machines			
Combined woodworking machines	OPERATOR – CRAFTMANSHIP <ol style="list-style-type: none"> 1. Produces separate work orders / small runs / combination of workstations 2. Programs semi-automated and computerized woodworking machines (make industry) 		OPERATOR <ol style="list-style-type: none"> 1. Produces serial work orders / one or more parts / large runs / process industry 2. Selects the right programs and parameters of fully automated, autonomous woodworking machines (process industry)
Combined processing stations, cobots or robots			

3.3.3. Cabinet maker

Overview of professions / core profiles and required KSCs	Custom- or tailor made	Serial work: (small) series	Mass production
Manual labour	CRAFTSMANSHIP <ol style="list-style-type: none"> 1. Makes complete cabinets: all-round and multitasking 2. Works autonomously, prepares own work assignments, drawings, required materials, tools and workstations 3. Works with various tools and woodworking machines 4. Has in-depth knowledge of techniques, materials and their properties, historical styles, design (custom made) 5. Has final responsibility for the quality of the overall end result 6. Considers customer focus, cost- and time effectiveness, quality of end result (in B2C context has contact with customer for the installation of furniture incl. problem solving) 		
Single, standard woodworking machines			OPERATOR <ol style="list-style-type: none"> 1. Produces parts of furniture: single tasking – multiple work areas 2. Receives work orders, work instructions, methods and drawings; has to know how to translate a designer project into a product 3. Works with in-line combined workstations 4. Knows and understands the specific operations and materials to be used 5. Complies with set standards and specific procedures (health, safety, waste) and regulations 6. Has shared responsibility for the quality of a production step 7. Works with specific company software (ERP environment, reporting production and performance indicators) – digital skills 8. Understands company structure and the assistance from other support services (first line management, logistics, technical service, quality control, customer service, administration, etc.)
Combined woodworking machines			
Combined processing stations, cobots or robots			

3.4 LEARNING OUTCOMES

Learning outcomes clearly identify what a worker must demonstrate to successfully take up the responsibilities and perform according to the job requirements.

For students, learning outcomes state in clear terms what they should be able to do at the end of a course.

For the 3 core profiles we decided to develop a framework that takes into consideration clusters of learning outcomes based on the units described in the core profiles.

In a first step, we briefly describe the clusters with learning outcomes.

In a second step we show how the required competencies are developed in each country: school-based learning, work-based training or specialised training providers or centres (expressed in %) (see upholsterer below as an example).

Next, a brief overview is given of the success factors and pitfalls in guaranteeing quality assurance for the education.

Finally, we show how the 3 core profiles will look in the future.

For more details, see our website
<https://www.bolster-up2.eu/>



Overview of the clusters of learning outcomes

3.4.1. Upholsterer

CLUSTERS OF LEARNING OUTCOMES

To state in clear terms what students should be able to do at the end of a course

Cluster: Students are able to prepare and plan their own tasks autonomously.

Inter alia they:

- Prepare production of upholstery parts
- Consult work orders
- Read technical drawings
- Know upholstery constructions
- Select fittings

Cluster: Students are able to prepare the basic materials for the assignment autonomously.

Inter alia they:

- Select and check materials (amount, quality)

Cluster: Students are able to make upholstered parts under supervision.

Inter alia they:

- Measure upholstery materials
- Cut upholstery materials to size
- Sew, stitch covers
- Work with fillers, foams
- Work with adhesive sprays
- Make pre-upholstery
- Upholster seats/furniture (parts)
- Adjust/operate electric and pneumatic hand tools

Cluster: Students are able to assemble upholstery parts autonomously.

Inter alia they:

- Assemble upholstery parts
- Attach auxiliary materials to the defined product

Cluster: Students are able to make small repairs for upholstery.

Inter alia they:

- Make small repairs

Cluster: Students are able to complete the work assignments autonomously.

Inter alia they:

- Check the final quality
- Report to their team leader
- Finalise work and documents
- Know how to use the ICT system

3.4.2. Joiner

CLUSTERS OF LEARNING OUTCOMES

To state in clear terms what students should be able to do at the end of a course

Cluster: Students are able to prepare and plan their own tasks autonomously.

Inter alia they can:

- Collect data
- Make basic calculations
- Where necessary, program machines (optional)

Cluster: Students are able to prepare the basic materials for the assignment autonomously.

Inter alia they can:

- Collect and check materials (amount, quality)
- Select, check, mount, replace and calibrate (cutting) tools
- Set up and changeover woodworking machines
- Select the correct program(s)

Cluster: Students are able to check safety features of the machines and produce wooden parts, pieces and elements autonomously / under supervision, this includes being able to adjust/operate:

- Electric and pneumatic hand tools
- Planing & thicknessing machine or square planing & milling equipment
- Panel saw or beam saw machine
- Mortising machine
- Multi-spindle drill or drill & punch machine or automatic drilling machine
- Vertical routing machine or CNC router
- Belt sander or large band sander or edge (profile) sander

Cluster: Students are able to assemble joinery elements autonomously.

Inter alia they can:

- Assemble joinery elements
- Arrange fittings and seals
- Check moving parts

Cluster: Students are able to prepare wooden surfaces for finishing under supervision.

Inter alia they can:

- Sand, remove glue...
- Prepare products for basic finishing
- Apply basic finishing / surface treatments
- Make small repairs

Cluster: Students are able to complete the work assignments autonomously.

Inter alia they can:

- Check the final quality
- Report to their team leader
- Finalise work and documents
- Know how to use the ICT system

3.4.3. Cabinet maker

CLUSTERS OF LEARNING OUTCOMES

To state in clear terms what students should be able to do at the end of a course

Cluster: Students are able to prepare and plan their own tasks autonomously.

Inter alia they can:

- Prepare the production (of parts) of furniture
- Consult work orders
- Read technical drawings

Cluster: Students are able to prepare the basic materials for the assignment autonomously.

Inter alia they can:

- Select and check materials (amount, quality)
- Select fittings

Cluster: Students are able to make furniture parts autonomously.

Inter alia they can:

- Take measurements
- Prepare work pieces for coating and apply coatings
- Mount fittings
- Use cutting and sharpening techniques
- Use mounting, joining and assembly techniques
- Use manual tools
- Adjust/operate electric and pneumatic hand tools
- Adjust/operate woodworking machines: planing, cutting, sawing, tenoning, routing, sanding, etc.
- Understand wood protection, coating and coating techniques

Cluster: Students are able to install furniture, under supervision.

Inter alia they can:

- Assemble different pieces and components of furniture into furniture parts
- Combine furniture parts into a complete piece of furniture

Cluster: Students are able to treat surfaces autonomously.

Inter alia they can:

- Sand and polish the surfaces
- Treat the surfaces manually or by pistol spraying

Cluster: Students are able to resolve problems and look for improvements.

Cluster: Students are able to do preventive basic maintenance and handle goods and waste according to the procedures.

Inter alia they can:

- Perform preventive basic maintenance
- Know the basics of warehouse management
- Handle waste according to the procedures

Cluster: Students are able to complete the work assignments autonomously.

Inter alia they can:

- Check the final quality
- Understand technical regulations, acceptance standards
- Act according to the health and safety regulations
- Finalise work and documents, following the procedures
- Understand how to use the ICT system and software



Personal statement

Mircea Vlad - APMR

ECVET and the 8 Key Competences of EU

Defining new European Core Profiles and upgrading training standards in woodworking and furniture making should be done in compliance with the ECVET system requirements. The European Credit system for Vocational Education and Training, referred to as ECVET, is a technical framework for the transfer, recognition and accumulation of individuals' learning outcomes with a view to achieving a qualification. This system ensures mobility and transfer of workers on the labour market of the European Union.

Specific woodworking and furniture competences must be developed and acquired together with the eight key competences. In 2018 the EU renewed the recommendation that identifies 8 key competences as part of their lifelong learning strategies. These competences are fundamental for each individual in a knowledge-based society.

Recommendation: Teachers, trainers and practice instructors has to acquire the 8 key competences, unanimously accepted by the European Union and must teach students the professional knowledge in the spirit of these eight key competences:

1. **Literacy:** strengthening literacy as a basis for further learning and communication in different societal and cultural contexts.
2. **Multilingualism:** enhancing the ability to use a variety of languages to be active and better cope with the challenges of today's multilingual and diverse societies.
3. **Numerical, scientific and engineering skills:** science, technology, engineering and mathematics (STEM) focusing on improving acquisition of these competences to educate scientific understanding.
4. **Digital and technology-based competences:** strengthening the confident and critical use of digital technology, including coding and programming, safety and citizenship-related aspects.
5. **Interpersonal skills and the ability to adopt new competences:** personal, social and learning improving the skills necessary to participate in an active social life.
6. **Active citizenship:** the importance of democratic participation, European values, sustainable development and media literacy.
7. **Entrepreneurship:** enhancing entrepreneurial attitudes to unlock personal potential, creativity and self-initiative.
8. **Cultural awareness and expression:** increasing intercultural skills and the ability to express ideas in a variety of ways and contexts. To this end, the Commission will make it easier for Member States to learn from each other.

Students must study the technical books for machinery, equipment and tools. In this way the students will clearly understand their use and maintenance and the relevant safety rules.

Trainers must, in turn, be trained in the knowledge and use of IT technologies and in the digitisation of all the activities and industrial processes. The competences of teachers and trainers in this should be assessed. Assimilation of both key competences and specific skills provides the necessary premises for lifelong learning.

The three core profiles analysed in this Bolster-Up 2 project meet the requirements of the ECVET system, as the defined learning outcomes are described with knowledge, skills and competences.

3.5 PROPOSED EQF LEVEL AND TRANSLATION TO NATIONAL QF, BASED UPON LEARNING UNITS

3.5.1. The European Qualification Framework (EQF)

The European Qualification Framework (EQF) is a reference tool, a translation device for national qualifications systems and frameworks. The main

components are eight reference levels described in terms of learning outcomes (combining knowledge, skills and/or competences)¹³. These eight levels integrate all the existent qualifications, since the basic knowledge, skills and/or competences to those identify as the ones in the highest academic level and are defined by a set of descriptors indicating the learning outcomes relevant to qualifications at that level in any system of qualifications, as follows:

EQF level	Knowledge	Skills	Competence
Relevant learning outcomes	In the context of EQF, knowledge is described as theoretical and/or factual.	In the context of EQF, skills are described as cognitive (involving the use of logical, intuitive and creative thinking) and practical (involving manual dexterity and the use of methods, materials, tools and instruments).	In the context of the EQF responsibility and autonomy is described as the ability of the learner to apply knowledge and skills autonomously and with responsibility.
LEVEL 1	Basic general knowledge	Basic skills required to carry out simple tasks	Work or study under direct supervision in a structured context
LEVEL 2	Basic factual knowledge of a field of work or study	Basic cognitive and practical skills required to use relevant information in order to carry out tasks and to solve routine problems using simple rules and tools	Work or study under supervision with some autonomy
LEVEL 3	Knowledge of facts, principles, processes and general concepts, in a field of work or study	A range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information	Take responsibility for completion of tasks in work or study; adapt own behaviour to circumstances in solving problems
LEVEL 4	Factual and theoretical knowledge in broad contexts within a field of work or study	A range of cognitive and practical skills required to generate solutions to specific problems in a field of work or study	Exercise self-management within the guidelines of work or study contexts that are usually predictable, but are subject to change; supervise the routine work of others, taking some responsibility for the evaluation and improvement of work or study activities
LEVEL 5	Comprehensive, specialised, factual and theoretical knowledge within a field of work or study and an awareness of the boundaries of that knowledge	A comprehensive range of cognitive and practical skills required to develop creative solutions to abstract problems	Exercise management and supervision in contexts of work or study activities where there is unpredictable change; review and develop performance of self and others
LEVEL 6	Advanced knowledge of a field of work or study, involving a critical understanding of theories and principles	Advanced skills, demonstrating mastery and innovation, required to solve complex and unpredictable problems in a specialised field of work or study	Manage complex technical or professional activities or projects, taking responsibility for decision-making in unpredictable work or study contexts; take responsibility for managing professional development of individuals and groups
LEVEL 7	Highly specialised knowledge, some of which is at the forefront of knowledge in a field of work or study, as the basis for original thinking and/or research. Critical awareness of knowledge issues in a field and at the interface between different fields	Specialised problem-solving skills required in research and/or innovation in order to develop new knowledge and procedures and to integrate knowledge from different fields	Manage and transform work or study contexts that are complex, unpredictable and require new strategic approaches; take responsibility for contributing to professional knowledge and practice and/or for reviewing the strategic performance of teams
LEVEL 8	Knowledge at the most advanced frontier of a field of work or study and at the interface between fields	The most advanced and specialised skills and techniques, including synthesis and evaluation, required to solve critical problems in research and/or innovation and to extend and redefine existing knowledge or professional practice	Demonstrate substantial authority, innovation, autonomy, scholarly and professional integrity and sustained commitment to the development of new ideas or processes at the forefront of work or study contexts including research

Table 1.- Descriptors defining levels in the EQF (source: <https://ec.europa.eu/ploteus/en/content/descriptors-page>)

¹³ CEDEFOP: Terminology of European education and training policy: a selection of 130 terms, 2nd edition, Publications Office, Luxembourg 2014.

Considering the focus on learning outcomes, to what a person knows, understands and is able to do on completion of a learning process, it is also important to distinguish different kinds of learning:

a) Formal Learning

Learning occurs in an organised and structured environment (e.g. in an education or training institution). It is an intentional process from the learner's point of view and leads to validation and certification¹⁴.

b) Non-Formal Learning

Non-formal learning is not provided by an education or training institution and typically does not lead to certification; however, non-formal learning is intentional on the part of the learner and has structured objectives, learning time and learner support¹⁵.

c) Informal Learning

Informal learning results from daily activities related to work, family life or leisure, it is not structured and most often does not lead to certification; in most cases, informal learning is unintentional on the part of the learner¹⁶.

European recommendations underlined the necessity of the Member States enable individuals to obtain a full qualification or, if not possible, a part of the qualification on the basis of validated non-formal and informal learning. Validation arrangements must be linked to national qualifications frameworks and in line with European qualifications framework.

Therefore, EQF takes into account the diversity of national systems, facilitating translation and comparison of qualifications between countries.

3.5.2. EQF for the three defined core profiles

Based upon the defined learning outcomes, validated by all the project partners, we can conclude that the three core profiles are situated on **EQF level 3**. The learning outcomes relevant to **level 3** are:

- Knowledge of facts, principles, processes and general concepts, in a field of work or study.
- A range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information.
- Taking responsibility for completion of tasks in work or study.
- Workers adapting their own behaviour to their circumstances in solving problems.

In some participating countries, it is possible to choose a longer and more intensive learning path that is aimed at a higher level (level 4) for a more independent working situation such as self-employment or a team leader function.

¹⁴ https://www.ecvet-toolkit.eu/tools-examples-more/glossary/letter_f

¹⁵ https://www.ecvet-toolkit.eu/tools-examples-more/glossary/letter_n

¹⁶ *idem*

3.6. POSSIBLE QUALIFICATION PATHWAYS AND VALIDATION (ECVET)

3.6.1 Education and training environment

In a following phase we looked at how the required skills were developed.

In the overview below we show how the competencies are acquired through school-based learning, work based (on-the-job) training or at a specialised training centre.

- SCHOOL BASED LEARNING.

This type of education provides the *formal education*: schools and technical colleges of wood processing.

- WORK BASED TRAINING.

This type of education meets the *Dual Learning* and *Apprenticeship Learning* system (or on-the-job-training) at work.

- SPECIALISED TRAINING PROVIDERS / CENTERS.

This type of education is a private, commercial initiative.

UPHOLSTERER	SCHOOL BASED	WORK BASED	SPECIALISED TRAINING CENTER
Belgium	14%	79%	7%
Bulgaria	82%	16%	2%
Croatia	30%	70%	0%
Italy	38%	55%	7%
Netherlands	No information		
Portugal	33%	31%	36%
Romania	31%	58%	11%
Spain	44%	48%	8%
Sweden	13%	87%	0%

JOINER	SCHOOL BASED	WORK BASED	SPECIALISED TRAINING CENTER
Belgium	80%	15%	5%
Bulgaria	77%	20%	3%
Croatia	25%	75%	0%
Italy	38%	57%	5%
Netherlands	No information		
Portugal	34%	31%	35%
Romania	42%	50%	8%
Spain	48%	42%	8%
Sweden	77%	23%	

CABINET MAKER	SCHOOL BASED	WORK BASED	SPECIALISED TRAINING CENTER
Belgium	80%	11%	9%
Bulgaria	77%	21%	2%
Croatia	20%	80%	0%
Italy	38%	54%	8%
Netherlands	65%	35%	
Portugal	37%	29%	34%
Romania	37%	29%	34%
Spain	51%	35%	14%
Sweden	64%	36%	

3.6.2. European Credit System for Vocational Education and Training (ECVET)

The European Credit System for Vocational Education and Training (ECVET) is a methodological framework to facilitate the accumulation and transfer of credits, attributed to learning outcomes from one qualification system to another. ECVET allows to validate and to recognize learning outcomes in different contexts, whether through a formal, informal or non-formal learning path. Learning outcomes can be transferred to the national context of the person concerned for accumulation and qualification. In this way, ECVET facilitates mobility across Europe.

Successful ECVET implementation requires that qualifications are described in terms of learning outcomes, brought together in units.

ECVET users are able to benefit from the use of common European documents that promote quality in learning mobility, namely:

- **Memorandum of Understanding (MoU)**: a voluntary agreement, between competent institutions, which sets out the framework for credit transfer and accumulation; the MoU formalises the ECVET relationship through confirming mutual acceptance of the status of, and the procedures put in place by, competent institutions.
- **Learning Agreement (LA)**: a contract signed by all mobility parties, including the learner, in which the learning duration and expected learning outcomes are defined together with the methods for assessment, validation and recognition.

The defined core profiles for upholsterers, joiners and cabinet makers are aimed to become a point of reference for the national training providers in the furniture industry. In those countries where the standards are below the level as described here, their intention should be to improve the vocational education to this defined level.

The situation in countries as in The Netherlands can be used as an example. The Belgian situation for example shows that well equipped schools can attract more students and can ensure an efficient transfer between school and workplace. Other examples can be found in Denmark and Germany, where Dual Learning is well integrated and has a higher esteem in the educational system.

3.6.3. Success factors and pitfalls (in order to guarantee the quality of education and training)

EDUCATION	SCHOOL BASED LEARNING	WORK BASED TRAINING	TRAINING CENTERS
Success factors to quality assurance of education	<ul style="list-style-type: none"> • Appropriate training path (curriculum) • Up-to-date infrastructure, fully equipped classrooms, new technical materials, top hand tools • Up-to-date teachers • Number of students per school • Regional training offers • Perspective of a secure job (homeland as well as in other EU countries) • Real assignments • Implements and promotes dual training 	<ul style="list-style-type: none"> • Appropriate training plan; to accept students as a part of the curriculum • Sufficient time investment for learning • Appropriate infrastructure/machinery; complete system of working machines • Mentoring, tutoring • Good assignments in the internship • Possibility for international internship • Perspective of a secure job in the company • Students should understand / be involved in the process from receipt of an order up to the delivery (end-to-end) in order to understand customer needs 	<ul style="list-style-type: none"> • Regional training offers • Collaboration with suppliers • Up-to-date infrastructure • Up-to-date instructors / teachers • Centre where the unemployment services train unemployed people also available for co-worker training • Updated/advanced training contents • Qualification degrees easily obtained • Fully equipped classrooms
Pitfalls	<ul style="list-style-type: none"> • Low intensity of use of the infrastructure or machinery by the student • Learning not aligned with the real needs of the sector • Specific for upholsterer: availability of modern scanning / cutting equipment for coating materials (leather, imitation leather, textiles). Cutting and making patterns is done manually 	<ul style="list-style-type: none"> • Working instead of learning • Students vs co-workers; not enough time for tutoring • Time investments for learning: students reduce productivity during working and learning • Need to be aware that the working machine systems are up to date • Expectation does not match skills (especially at start of education). At start not clear what the learning goals are • Not enough importance to OHS or waste management issues 	<ul style="list-style-type: none"> • Unrealistic pricing • Suppliers with a too strong commercial focus • Number of students per centre can be too low • Risk of incomplete training – does not cover all the real needs • Training contents not technologically updated • Working machine system may not be complete and no view on completing it

3.7. FUTURE DEVELOPMENTS

3.7.1. Core profiles in the future 2020 - 2025

CLUSTERS OF LEARNING OUTCOMES	INDUSTRY DEVELOPMENTS AND IMPACT ON KSC	NEW KSC NEEDS	POSSIBLE ACTIONS
Cluster: Students are able to prepare and plan their own tasks autonomously	<ul style="list-style-type: none"> • New forms of production and work organisation, emphasis on working autonomously • Emphasis on using data systems • Short time between order and delivery • Production organisation using IT technology to improve quality and productivity • Software development will allow rapid selection and organisation of production activities. This means flexibility in technology 	<ul style="list-style-type: none"> • Planning and organisation skills • Digital literacy and skills • Flexibility • Scanning / cutting equipment for coating materials required 	<ul style="list-style-type: none"> • Develop KSC, using IT technology • Training digital skills • Workers must be trained at the same time on woodworking and applied IT technologies • Training organisational skills • Training plan-check-do-act skills • Training soft skills • More exercise assignments
Cluster: Students are able to prepare the basic materials for the assignment autonomously	<ul style="list-style-type: none"> • Enlargement of production and technical scope: understanding of work-flow and sequence of operations • By having programs based on preliminary lists of materials, students will easily organise the work • Working with new materials, applying new techniques • Patterns should be archived using IT technology 	<ul style="list-style-type: none"> • Continuous learning skills • Acquainted with good numeracy and mathematical competence • Understanding the properties of new materials, especially in terms of environmental recyclability • Applicability of new materials 	<ul style="list-style-type: none"> • Surveillance of new materials (antenna) • Safety requirements of materials • Training courses for improving organisational production/ organising the production • Surveillance: looking out for and assessing new materials (antenna) • Practice course

CLUSTERS OF LEARNING OUTCOMES	INDUSTRY DEVELOPMENTS AND IMPACT ON KSC	NEW KSC NEEDS	POSSIBLE ACTIONS
Cluster: Students are able to make and assemble parts - see below at the specific tables for the upholsterer, joiner and cabinet maker.			
Cluster: Students are able to make small repairs			<ul style="list-style-type: none"> • Specialised/technical skills • Learning to have technical insights by means of extra assignments • More practice
Cluster: Students are able to complete the work assignments autonomously	<ul style="list-style-type: none"> • Contributing to maintenance and logistics tasks such as internal transport, storage of materials and furniture • Working with files containing specific procedures, bills of material, patterns, manufacturing programs, etc. 	<ul style="list-style-type: none"> • Developing maintenance and logistics skills • Developing digital skills 	<ul style="list-style-type: none"> • Training in processes and equipment systems • Training in other KSC than woodworking skills • Training digital skills and organisation
Cluster: Students are able to resolve problems and seek for improvement	<ul style="list-style-type: none"> • Having insight into the "end-to-end" process (from receipt of an order up to delivery) • Understanding good practices, quality assurance 	<ul style="list-style-type: none"> • Developing problem solving techniques and skills 	<ul style="list-style-type: none"> • Training critical thinking, analytical and problem-solving skills
Cluster: Students are able to do preventive basic maintenance and handle goods and waste following the procedures	<ul style="list-style-type: none"> • Contributing to maintenance and logistics tasks such as internal transport, storage of materials 	<ul style="list-style-type: none"> • Developing basic maintenance and logistics skills 	<ul style="list-style-type: none"> • Training in some specialised/technical/logistics skills • Digital support for these tasks (use of Augmented Reality)
Specific to upholsterer			
Cluster: Students are able to make and assemble upholstered parts	<ul style="list-style-type: none"> • Using digital simulation models, working in an environment with advanced digital process control, cobots and robots • Using digital working tools • Repairing upholstery and elements of it 	<ul style="list-style-type: none"> • Design thinking • Customer orientation • Service oriented attitude • Responsiveness • Technical skills • Quality and cost awareness 	<ul style="list-style-type: none"> • Training on the job • Apprenticeship programs • Digital support (use of Augmented Reality) • Coaching and intervention (learning in a supervised group) • New digital skills learning • Training video's, interactive MOOCs

CLUSTERS OF LEARNING OUTCOMES	INDUSTRY DEVELOPMENTS AND IMPACT ON KSC	NEW KSC NEEDS	POSSIBLE ACTIONS
Specific to joiner			
Cluster: Students are able to check safety features of the machines and produce wooden parts, pieces and elements	<ul style="list-style-type: none"> Using digital simulation models, working in an environment with advanced digital process control, cobots and robots 	<ul style="list-style-type: none"> Design thinking Customer orientation, service-oriented attitude Responsiveness Quality and cost awareness 	<ul style="list-style-type: none"> Training on the job Apprenticeship programs Digital support for using machines (use of Augmented Reality)
Cluster: Students are able to assemble joinery elements	<ul style="list-style-type: none"> Using digital working tools Using the best and safest assembly tools 	<ul style="list-style-type: none"> Technical skills 	<ul style="list-style-type: none"> Training videos, interactive MOOCs Exercise handiness, first under supervision
Cluster: Students are able to prepare wooden surfaces for finishing under supervision	<ul style="list-style-type: none"> New materials, new techniques 	<ul style="list-style-type: none"> Understanding the properties of new finishing materials, especially in terms of environmental protection 	<ul style="list-style-type: none"> Surveillance of new materials (antenna) Practice course
Specific to cabinet maker			
Cluster: Students are able to make and install furniture parts	<ul style="list-style-type: none"> Using simulation models New equipment/machinery (digitized) Use of tags (radiofrequency) Use of robots, cobots and more automated/autonomous machines 	<ul style="list-style-type: none"> Design thinking Customer orientation Service oriented attitude Responsiveness Quality and cost awareness 	<ul style="list-style-type: none"> Training digital skills Training in some specialised/technical skills Training in soft skills Training on the job Apprenticeship programs Digital support for mounting (use of Augmented Reality) Assembly exercises with different types of furniture; use of hand power tools for assembly
Cluster: Students are able to treat surfaces autonomously	<ul style="list-style-type: none"> Using digital working tools 	<ul style="list-style-type: none"> Digital skills Technical skills 	<ul style="list-style-type: none"> Training videos, interactive MOOCs Looking out for and assessing new applications (antenna)

3.7.2. Critical points for attention in the core profiles in the future 2020 - 2025

CRITICAL POINTS FOR ATTENTION	INDUSTRY DEVELOPMENTS AND IMPACT ON KSC	NEW KSC NEEDS	POSSIBLE ACTIONS
Working with highly digitised, connected and automated wood-working machines and in an environment with cobots and to work in a customer-oriented manner by means of human-robot collaboration and the use of digitisation tools	<ul style="list-style-type: none"> • Enlargement of production and technical scope • Understanding of workflow and sequence of operations • Working with ERP systems • Working with cobots • Digital working tools for operators • Contributing to maintenance and logistics tasks 	<ul style="list-style-type: none"> • Importance of professional language use • Digital literacy and skills • Technical, maintenance and logistics skills • Planning and organisation skills • Customer orientation • Teamwork: act as a team member and with respect for others • Adaptability to change 	<ul style="list-style-type: none"> • Simultaneous training on woodworking and applied IT technology and digital skills • Specialised training for using new generation of tools/equipment/machinery • Digitised, interactive learning and training solutions • Dual learning, training-on-the-job, apprenticeship programmes
Increasing importance of operational excellence, lean and flexible production, supply chain	<ul style="list-style-type: none"> • Basic understanding of the supply chain, end-to-end from order to delivery related to production process • Focus on continuous improvement 	<ul style="list-style-type: none"> • Sense of responsibility: problem solving attitude and looking for improvements • Quality and cost awareness 	<ul style="list-style-type: none"> • Training in good practices
Risk and safety regulations, well-being	<ul style="list-style-type: none"> • Complying with security regulations, health and environmental protection • Safe working conditions 	<ul style="list-style-type: none"> • Awareness to safety and health 	<ul style="list-style-type: none"> • Training in regulations and procedures in OHS (occupational health and safety)
Focus on principles of circular economy	<ul style="list-style-type: none"> • Awareness of durability • Repairing furniture and its elements • Efficient use of energy 	<ul style="list-style-type: none"> • Green skills, awareness of environmental aspects, responsible use of resources and energy, waste management 	<ul style="list-style-type: none"> • Education on principles of circular economy, training in environmental procedures and waste management
Increasing importance of behavior and attitude	<ul style="list-style-type: none"> • Beside technical skills, demand for non-technical and soft skills 	<ul style="list-style-type: none"> • Non-technical skills: e.g. problem solving, critical thinking • Soft skills: e.g. communication, information retrieval, emotional intelligence, autonomy, team collaboration • Attitude: agility, adaptability, initiative, responsiveness, sense of lifelong learning and employability, customer orientation 	<ul style="list-style-type: none"> • Assessment of KSC to develop training plan • Training in non-technical and soft skills • Mentoring, coaching • Promoting the importance of lifelong learning



Personal statement

Jeroen DOOM - WOODWIZE

Corporate Social Responsibility in an international context

We are already 20 years into this new millennium. And after the first crisis with the dot.com bubble and the larger (banking) crisis in the years 2008 and 2009, which also triggered a global economic crisis, we have seen a positive economic revival in recent years. An economic boom, which for the first time - and certainly not for the last time - makes the War for Talent painfully clear in daily business. After all, growth also means that more people are needed to meet the demand. And that's where the problem is and will stay for several years now, anyway.

We are still aiming too much at the white knights, at young professionals in their thirties, with a good, technical education, who can be deployed immediately and broadly. But the "normal" labour market is empty. You have to be very creative nowadays to reach people from the above-mentioned target groups, let alone bring them in. Internationalisation of the workforce is one way of getting the right skilled collaborators. That is what we were aiming at with this Bolster-Up 2 project. So in each of the participating countries we have a view of what a joiner, a cabinet maker or an upholsterer is able to do.

Another possibility to attract workforce is "inclusive entrepreneurship". An inclusive company strives for profit and is strongly committed to diversity, based on a strong vision and values. Diversity in age, background, gender, and nationality can help - together with other solutions - in a new and innovative way to solve the need of the employers to find qualified personnel.

And you can even go a step further. The United Nations drew up the SDGs or Sustainable Development Goals in 2015. The 17 SDGs are the guiding principles for corporate social responsibility. If we want there to be a future for our planet, for our people and for our sector, we have no choice but to do everything we can as soon as possible to really run our businesses responsibly. At the beginning of this new decade, we should place Corporate Social Responsibility at the top of the priority lists. In international collaboration we can work on a furniture sector that shows respect for the planet, for all people. And the great thing is that you can also gain an economic advantage from this!



IV. Memorandum of Understanding (MoU)

4.1. OUR MAIN GOALS

The value of a qualification very much depends on trust in the teaching system, i.e. the curriculum, the learning process and other elements of the respective vocational qualification. It is the urgent interest of the signatories of this Memorandum of Understanding to improve the quality and capacities of the national systems of vocational education within the European furniture industries. We are especially interested in the learning content and further development of skills, knowledge and competences, new forms of working processes, new technologies used in the sector and the combination of these within a particular form of work-organization.

The signatories are highly interested in an improved cooperation between the social partners and the various stakeholders in our sector. The mutual exchange of information, communication and practical collaboration regarding the various national systems of vocational education can contribute to a permanent improvement of the education systems in the furniture industry.

To remain champions of innovation and quality in a world of growing competition in a globalised economy, the signatories are convinced that the European furniture industry needs to upgrade the qualifications of its workforce, the quality of its training systems and its structures for further training. Additionally, we consider it crucial to strengthen the link between product innovation and science and, likewise, to facilitate the permeability between vocational education and universities. This is paramount for the future development of our training systems towards a 'learning' system. Not at last developments such as a greening economy, the ongoing digitalisation or the climate

change will confront our sectors with new challenges in the field of skills, knowledge and competences.

Recognizing that education is not a policy area for European harmonisation, the signatories underline the need for an improved coordination of national policies in the field of vocational training. The economic interdependence, the existence of multinational companies but especially the worker's right of free movement and the related need for the mutual recognition of qualifications all underline the high importance of better coordination and needed steps towards the assimilation of training qualifications, competences of workers and work processes. In this respect the signatories promote the concept of 'European Core Qualifications' as a pathway of stronger comparability of our vocational educations, the assurance of quality standards and a way to facilitate the mutual recognition of professional qualifications to which our here presented 'Core Profiles' present a step forward.

In this connection, the present Memorandum of Understanding (MoU) establishes that each signatory organisation:

- Recognises the 'European Core Profiles' for cabinet makers, upholsterers and joiners as they were defined in the project
- Agrees on the MoU fields of activity and implementation measures
- Supports the stakeholder platform for the implementation and recognition of the 'European Core Profiles' for the cabinet maker, upholsterer and joiner
- Identifies other stakeholders and competent institutions to involve in the process, and
- Supports ongoing work on the European Core Profiles and the extension of the concept to possible further occupations

To this end and as a basis of common understanding, the following text operationalizes three main objectives of the project entitled "Bolster-Up 2".

4.2. OPERATIONAL OBJECTIVES

This Memorandum of Understanding pursues the following operational objectives for its entire period of validity:

Objective 1 – The description of the European Core Profiles for the cabinet maker, for the upholsterer and for the joiner.

Objective 2 – The establishment of a platform for the implementation of the European Core Profiles, including the enlargement of institutions and countries involved in this platform.

Objective 3 – Further development of the European Core Profiles, including enhancement of the level of the qualification as well as the enlargement of the core profile concept to other professions within the European furniture sector.

4.2.1. Operational Objective 1: Description of a European Core Profile for the cabinet maker, upholsterer and joiner

Two elements are of the highest importance for the future of the European furniture industry, i.e. the mobility of workers and a high level of qualification of the sectors work force. A higher mobility will not only avoid labour shortages in the European furniture industry but also provide to a fruitful exchange of traditions, skills, work technics and concepts of intelligent work organisation and is therefore (potentially) fostering innovation. The latter aspect also directly refers to the need for higher levels of qualifications which will pave the way to knowledge-based production with a high level of innovative capacity and flexible workforce and work processes (instead of standardized production). The signatories of this Memorandum of Understanding are convinced that a broad scope of the initial vocational training is the best guarantee for an individual to become more flexible in his/her working career and to facilitate further training.

To this end and as a consequence of the "Bolster-Up 2" project, the signatories have the intention to

continue with specific activities after the formal end of the project, as follows:

- Further evaluation of national structures of vocational education in the furniture sector.
- The dissemination of the European Core Profiles for cabinet maker, upholsterer and joiner. This includes the description of the qualification in terms of skills, knowledge and competences. The qualifications itself are operationalized in learning units, each accompanied with a proposal for a possible timeframe.
- A future European Core Qualification for cabinet maker, upholsterer and joiner is not just the detected common ground of the vocational education in the respective countries but, they shall ensure the quality of the education in various aspects. Those aspects are:
 - o The concept of a comprehensive and reflexive decision making and responsibility
 - o The combination of theoretical and practical knowledge
 - o Knowledge on materials, used technologies and technics
 - o The inclusion of the whole work process, i.e. preparation, choice of materials and tools, execution and quality control as well as communication with other occupations and clients
 - o The various aspects as just mentioned shall also guarantee to develop towards an improved permeability between vocational training and higher education
- The European Core Profiles for cabinet makers, upholsterers and joiners shall become a point of reference for the national training providers in the furniture industry. The signatories' intention is to improve the vocational education in those countries where the standards are below the level as described in the European Core Profiles for the three professions.
- The European Core Profiles are designed in a way that they can easily refer to the European Qualification Framework respectively to the National Qualifications Frameworks.
- By using the concept of learning outcomes (units) the European Core Profile is also applicable for non-formal and informal learning paths.

The European Social Partner Organisations for the furniture industry agree that the European Core

Profiles for cabinet maker, upholsterer and joiner are mutually recognized as a basic qualification of cabinetmaker, upholsterer and joiner and, by this, become European Core Qualifications for the respective profession. They will promote them on the national levels and convince the responsible stakeholders equally recognize these core qualifications as a basic qualification for these furniture professions. In this respect we consider the concept of European Core Qualifications as supportive for the process of mutual recognition of qualifications throughout Europe.

4.2.2. Operational Objective 2: Establishment of a platform for European Core Qualifications

It is the conviction of the signatories that, in the midterm, tendencies of harmonization of skills demands throughout the European furniture industry (and within the international furniture industry) are becoming more evident. Reasons for this harmonization are:

- materials and technologies are used commonly everywhere in Europe
- transnational companies in tendency using the same work processes and types of work organisation in all its businesses
- the process of automation in manufacturing is similar in all EU countries
- via the new information and communication technologies, new technologies and new goods are available everywhere at, more or less, the same time.

In this respect, the Bolster-Up 2 project and its close connection to the European Social Dialogue for the furniture industry is considered as a contribution to fostering the cross boarder collaboration between the various stakeholders in the field of vocational training.

- As to continue the implementation and testing of the European Core Qualification, the inclusion of more stakeholders, also from others than the currently involved nine EU-countries, is crucial.
- The main aim of the European Social Partner Organisations for the furniture industry is to establish a platform for European Core Qualifications on EU-level. They have agreed on dissemination

activities and they will connect their activities to the existing structure for vocational education, as provided by the European Social Dialogue for the furniture industry.

- Promoting the exchange of information amongst MoU signatories, peer learning through the participation of national actors and informational initiatives and workshops organized by the European Social Partner Organisations in the furniture sector.
- Promoting the global concept of European Core Qualifications to other sectors of economic activity.
- As next milestones, the European Social Partner Organizations will:
 - o disseminate the project results and announce the concept of European Core Qualifications in all EU-member states during 2020/2021
 - o foster the concept of a sector skills council in the framework of the European Social Dialogue for the furniture industry, by attracting further countries and stakeholders from the field of vocational training.

4.2.3. Operational Objective 3: Further development of European Core Qualifications

The knowledge-based society provides more and more opportunities for 'new combinations'. Innovation circles are accelerating and the resulting effects regarding the needed skills are accelerating too. If our analysis, as pointed out in the above chapter, is correct, that we witness a trend of harmonized implementation of those changes, there is good reason to reflect the consequences for the vocational training of those professions concerned, on the European level too.

In this respect, it is a precondition to provide opportunities and structures for the stakeholders involved. The signatories of this document believe that the recognized European Social Dialogue for the furniture industry could provide the anchorage ground for such a structure. However, we need specific means for a stable structure of communication. The project partner organisations will take care to provide these means.

- Given that the national stakeholders recognize and apply the concept of European Core Quali-

fications, the concept shall be promoted as a concept for the whole sector.

- The project partner organisations for the furniture industry will agree on the final Core Qualification of the three professions and mutually recognize the qualifications achieved on the basis of this core qualification.
- The signatories will use the European Core Qualifications to improve the mutual recognition of existing national qualifications where justifiable.
- The concept of European Core Qualifications shall be promoted as a benchmark for all professions applied in the European furniture sector.
- Further, the European Social Partner Organisations will agree on recommendations regarding the recognition of qualifications on a level as presented by the European Core Qualification for cabinet maker gained on an informal or non-formal way of learning.
- Additionally, the concept shall also be promoted towards other sectors of economic activity.



V. Appendix

5.1. PROJECT PLAN

Hereby the project plan, as carried out. There has been some delay in the first phase, due to changes of staff members in several partners' organizations. Within the partnership, the following, new project plan and time schedule has been adopted:

First phase: months 1 to 12

Months 3 – 5 (March - May 2018): Preparation phase: meeting with the project steering group

Months 4 (April 2018): Kick off meeting with all the partners to agree on methodology, tasks to be undertaken and time schedule (Brussels)

Months 5 - 9 (May – September 2018): Desk research on **existing national qualification** by the partners (step 1), Preparation/transmission of script for the **national focus groups** (step 2), Organization of focus groups, Preparation/transmission of the **questionnaire** for the larger research 'on the field' (step 3), Research by all project partners in own country

Month 9 (September 2018): Steering group meeting in Stockholm for a first assessment of the collected information and discussion on the following steps.

Months 9 - 12: (September – December 2018): Preparation/transmission of the questionnaire/script for the **in-depth interviews** with selected reference group of companies. Preparation of provisional timetable for interviews during field visits (step 4), Organization of interviews and analysis of received information, Preparation of national/country

reports: format and script (step 5) and National reports

Month 11 - 12 (November – December 2018): Analysis of the national reports with first draft of three European core profiles (step 6), Second steering group meeting in Barcelona to assess the first draft of European core profiles and Finalisation of first draft of European core profiles

Second phase: months 13 – 22

Month 17 (May 2019): First Seminar in Brussels to discuss and test the relevance and completeness of profiles (step 7)

Months 16-18 (April – June 2019): Re-adaptation of the core profiles on the basis of the discussion and feedback provided during the first seminar (step 8)

Month 22 (October 2019): Third steering group meeting in Porto to preliminary assess the revised core profiles, Definition of Learning Outcomes for the defined profiles (step 9), Definition of Learning Outcome units and assumed EQF/NQF-levels (step 10)

Months 18-22 (April – October 2019): Draft report with the three core profiles, relevant learning outcomes, the LO units and EQF/NQF-levels

Month 23-24 (November - December 2019): Fourth steering group meeting in Milan, Discussion and feedback on the defined Learning Outcomes

Month 24 (December 2019): Finalising the report and Preparation of a Memorandum of Understanding (step 12)

Third phase: months 23 -27

Months 23-27 (December 2019– March 2020):

Preparation of the final conference, Finalization of the Memorandum of Understanding, Finalization of final report

Month 27 (March 2020): Final conference in Sint-Niklaas (Belgium)

5.2. METHODOLOGY GUIDELINES AND WORK DOCUMENTS

The guidelines for interviews, company visits, in-depth interviews and a survey with brief overview of the furniture industry developments in each country can be found on the project website www.bolster-up2.eu.

A marking grid was developed to indicate aspects for each core profile / country for the core profiles Cabinet Maker and Upholsterer. For the core profile Joiner, the results were obtained by means of the online questionnaire.

The master file with the results for all countries is available on the project website, as well as the evaluation file for each core profile, including a comparative report and an overview on learning outcomes with the results of each country.

Please visit <https://www.bolster-up2.eu>

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THE SWEDISH UNION OF FORESTRY,
WOOD AND GRAPHICAL WORKERS

Kenneth Edvardsson

Notes

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