

Furn5.0 PROJECT

CALL FOR TENDER

Experts in a selected set of KETs and their applications

This document presents all aspects of this call for experts who shall be able to contribute to the implementation of the **Furn5.0** project funded in the 2023 European Sectorial Social Dialogue call SOCPL-2023-SOC-DIALOG (Project 101145616). In this document, you will find:

- 1) A short description of the project;
- 2) Purpose of the call containing a detailed description of the services required (purpose, type of expertise, dedication and budget); and
- 3) the application rules and selection criteria.

1) The Furn5.0 PROJECT

FURN5.0 project will focus on Furniture sector Industry5.0 transition, providing key analysis, tools and recommendations to promote and strengthen social dialogue at regional, national and EU level to properly address this topic. It will also provide EU furniture companies and workers with knowledge, skills, guidelines and tools to facilitate a successful transition, as this sector greatly need to tackle problems related with workers and talents attractiveness.

In this framework, EU furniture stakeholders need to:

- know the maturity level of EU furniture companies toward Industry5.0 transition.
- identify their priority lines of action for facilitating this transition and make them more competitive and resilient.

FURN5.0 tackles the challenge of providing sector companies with practical guidelines and tools to support them to implement this transition and aims to develop:

- an online survey to collect and analyse data on the general situation of companies across the EU
- practical, validated guidelines to integrate companies existing management models with actions and activities to deploy Industry5.0 practices
- an online tool for self-evaluating their level of maturity and real readiness to deploy Industry5.0 practices

The project will also identify managers' and employees' knowledge and skills needed to successfully implement Industry5.0 practices and create a set of recommendations for furniture and other sectors stakeholders to foster and support the deployment of these practices.

The partners are:



<https://ambitcluster.org/en/> **AMBIT** – Living Spaces Cluster



<http://www.federlegnoarredo.it/> // **FLA** – FEDERLEGNOARREDO



<https://www.efic.eu/> // **EFIC** – European Furniture Industries confederation

See **ANNEX I** for more details.

2) Presentation of this call

The purpose of this call for tender is to **identify and select a number of suitable experts** (consultants or consultancies) in the field of **Industry 5.0**, with particular expertise in the following **Key Enabling Technologies** and their **associated applications**, as outlined below:

- i) **Human–Machine Interaction and Robotics.** Specific applications focus on: **Human-Robot Interaction (HRI)** (No. 1) in furniture factories, showing how *collaborative robots* (*‘cobots’*) can assist workers in tasks like assembly or surface finishing; **Extended Reality (XR)** (No. 2) – i.e., Augmented and Virtual Reality – in product design and prototyping; **XR for workforce training and upskilling** (No. 3) in the furniture industry.
- ii) **Smart Materials and Functionalities.** Specific applications focus on: **smart functionalities applied to the furniture sector** (No. 4), exploring advanced materials and embedded technologies that give furniture new capabilities.
- iii) **Digital Twins and Simulation.** Specific applications focus on: **digital twins of products and processes** (No. 5) and explains how creating a digital mirror of a furniture piece or an entire production line can help in design, testing; **technologies for simulation and measurement of environmental and social impact** (No. 6) in furniture manufacturing.
- iv) **Data Integration and Traceability.** Specific applications focus on: **Product Traceability through the Digital Product Passport (DPP)** (No. 7); **Data Processing for Learning Processes** (No. 8): this application examines how companies can turn raw data into actionable knowledge in Industry 5.0; **Data and System Interoperability** (No. 9): this application deals with the challenge of integrating various IT systems and equipment so that they communicate effectively; **IoT and Sensor Integration in Production and Products**, two closely related applications focus on networking sensors, one **at the manufacturing chain level** (No. 10) and one **at the product level** (No. 11).
- v) **Artificial Intelligence Applications.** Specific applications focus on: **Generative AI for Custom Design and Fast Prototyping** (No. 12); **AI-Driven Knowledge Management Systems** (No. 13); **Optimizing Marketing and Sales with Generative AI** (No. 14); **AI Analytics and Pattern Analysis** (No. 15).

Moreover, this call aim also to **subcontract one leading expert** in charge of supporting AMBIT and the consortium in supervising the work of the different experts and support the preparation of the Furn5.0 guide which will include 15 specific cards (one for each of the above-mentioned applications) and different parts to present the challenges for the sector related to the deployment of these technologies and applications. The leading expert while implementing this task can also contribute to the preparation of one or more cards.

In this framework

In the **ANNEX I** (pag. 4) there is a complete project summary and, in the **ANNEX II** (pag. 6) a detailed description of the tasks, requirements and activities timing for the expert.

This is a call for different **consultants or consultancies** to provide expertise as part of the implementation of the Furn5.0 project in different fields of expertise as listed below and by exploring these AI-focused applications in specific thematic cards, which can provide readers insights into how **to efficiently and successfully apply them within the furniture sector industry**.

ID	Application description
1	Human-Robot Interaction (HRI)
2	Extended Reality in product design and prototyping processes
3	Extended reality for workforce training and upskilling
4	Smart functionalities applied to the furniture sector
5	Smartize Product Development Processes through Digital Twin Technologies
6	Using Digital Twins, increasing the Safety and Productivity of Manufacturing Processes while minimize their Environmental Impact
7	Product traceability through the Digital Product Passport

8	Data Science applied to sector Manufacturing
9	Human-machine interoperability
10	AIoT for smart manufacturing
11	The journey of IoT and connectivity
12	Generative AI for custom design and fast prototyping
13	AI-driven knowledge management systems
14	Optimizing marketing and sales processes with Generative AI
15	Smart Decision-Making Through Data Correlation and AI-Powered Analytics

These experts will be required to contribute to the activities and objectives of the Furn5.0 project according to the content of Annex II. They will be **subcontracted by AMBIT** for their contribution to the preparation of the project, as outlined below.

The primary objective of these experts' involvement is to enhance the understanding of sector stakeholders and companies of the implementation of these applications and the associated use of the related Key Enabling Technologies within the European furniture sector. Additionally, it is to identify potential solutions and initiatives to address the sector's challenges related to the transition towards a more environmentally conscious industry, with a focus on enhancing the working conditions and employee satisfaction. Should you require further information regarding the project's objective, please refer to Annex I.

It is anticipated that the cards will contain the following:

- The technology is described in a clear and accessible manner.
- Clarify of its use and applications, focusing specifically on the furniture sector.
- Description of the challenges and difficulties related to its adoption, including the economic feasibility.

The content will be subject to consistent validation by the Furn5.0 consortium. In addition, the experts will benefit from ongoing guidance and support from the Furn5.0 AMBIT team and the other project partners. AMBIT will ensure that a collaborative environment is established among all the different experts selected and subcontracted by the Furn5.0 consortium.

All consortium partners and associate organisations will provide their support to ensure the proper linkage of expert work with the EU furniture sector perspective and the priorities of the Work Programme of the European Social Dialogue Committee on Furniture. This linkage will relate to the challenges faced by companies as they transition towards more circular models and processes.

More details about experts' tasks are detailed in **ANNEX II** - Tasks, Requirements and Timing.

Budget

- The maximum budget foreseen for the preparation of one single card is 3.500€.
- The maximum budget for the leading expert is set at €5.000.

Timing

The experts will start to work on the project by the **2nd of November 2024**, and their contribution are expected to finalize **by the end of January 2025**.

It is imperative that the tasks are completed within this specified end date, as outlined in Annex II. Should the implementation stage require additional time, this can be arranged with the AMBIT team, following consultation and agreement. Please refer to Annex II for more details.

3) APPLICATION RULES AND SELECTION CRITERIA

Experts are required to present their application by sending an email to julio.rodrigo@ambitcluster.org and admin@ambitcluster.org. The application could include:

- The academic and professional CV
- Presentation and motivation letter
- An economical offer based on tasks foreseen and the maximum amount earlier presented.

Candidates who believe they have the capacity to prepare multiple cards are welcome to apply for different positions. However, it is essential that they can demonstrate their ability to fulfil the expected activities for each role. Please, refer to ANNEX II to properly understand the call requirements.

Applications need to be sent **by the 10th of October 2024**, and feedback will be sent by the **of 20th of October 2024**.

Through these documents, experts could **present and prove their expertise, past experiences and skills**:

- through their academic and professional CV
- mentioning their experiences related to the identified KET and their specific applications, possibly in the furniture sector
- confirming participation in other related projects and initiatives
- giving details of related publications
- level and reasons of interest for the participation in the project

Evaluation criteria

Each candidate expert will be evaluated based on the following criteria (weight):

- Evidence of strong and relevant academic background and past professional experiences (30%).
- Proven research skills in KETs in the furniture sector (30%).
- Previous publications related to KETs in the furniture sector (20%).
- Capacity of working within a team in a collaborative and constructive way (10%).
- Specific and sound knowledge of EU Furniture sectors will be a plus (10%).

All these values will count for the 70% of the whole weight, while the economic offer will count for the remaining 30%.

The **contract for each one of the cards will be awarded** to the expert (consultant or consultancy) that, based on the previous selection criteria, will get the highest number of points. If the call collects only one candidate for one of the cards or for the overall leading role, and this is considered appropriate for implementing the foreseen tasks, there is no need to look for additional candidates. In the eventuality that s/he is not consider appropriate, a new call with a wider dissemination will be implemented by the Partners and a special support will be required to the EC officers in charge of dealing with Furn5.0 project.

The **selection process** will be based on principles of transparency, non-discrimination and equal treatment. Any possible conflict of interest will be avoided. The members of the selection committee of AMBIT will evaluate the different proposals and prepare a report containing an evaluation report and classification of participation. Based on this document the project partners will take a decision.

Following the applicant selection, AMBIT will contract the service directly or through signing a standard contract with her/him taking into consideration the financial regulations of the European Commission. Consultants will have to respect all the obligations laid down in the Grant agreement between the European Commission and the consortium for the Furn5.0 project. The contracts will be signed asap, immediately after the expert selection is done in order to speed-up the starting of their work.

Payment shall be made based on the invoices, once the tasks have been performed and the results of the work have been accepted by the steering group.

ANNEX I

Furn5.0 - Industry5.0 guidelines and tools with a worker-centred approach for the EU furniture sector digitalization

General context and specific background

European industry (including the furniture one, as a relevant part of it) is a key driver in the economic and societal transitions that we are currently undergoing and in order to remain the engine of prosperity, industry must lead the **digital and green transitions**.

The EU is currently pushing to enlarge and upgrade the current vision of the Twin transition (green and digital) toward the concept of **Industry5.0**. Confirmation of this can be seen in different EC website and initiatives, among others we would like to mention: the Industry5.0 EC central webpage: <https://shorturl.at/cuxDM>; the launch of the “Industry 5.0 Award 2023” <https://shorturl.at/cdBO5>; the launch of the initiative “Industry 5.0 Community of Practice (CoP 5.0)” <https://shorturl.at/dfDN0>; the “Industry 5.0 roundtable” publication <https://shorturl.at/muxMU>; and finally the publication “Industry 5.0, a transformative vision for Europe” <https://shorturl.at/aerDI>. All these initiatives and publications, reinforce the concept that Industry5.0 approach can provide a vision of industry that aims **beyond efficiency and productivity** as the sole goals, and **reinforces the role and the contribution of industry to society**.

It places the **wellbeing of the worker** at the centre of the production process and **uses new technologies** to provide prosperity beyond jobs and growth while **respecting the production limits of the planet**. Industries can play an active role in **providing solutions to challenges for society** including the preservation of resources, climate change and social stability.

The EU Industry of the Future (Industry5.0) in this new paradigm, is required to pay attention on some specific **Key Enabling Technologies** which in addition to **Artificial Intelligence** (that is getting a growing attention from all industries and that within our project will play a relevant game changer role) includes **Human machine interaction, Smart materials, Digital Twins and data transmission, storage, technologies and Energy Efficiency**. The **Industry5.0 transition**, through the proper adoption of these technologies and many other actions/activities, should bring **benefits for companies, for workers and for society**. It should **empower workers**, as well as address the evolving skills and training needs of employees. Increasing **industry competitiveness** can help to attract the best talents. It should be good for our planet as it should **favour circular production models and support technologies** that make the use of natural resources more efficient. It should revise existing value chains and energy consumption practices and thus, it can also **make industries more resilient against external shocks**, such as Covid-19 crisis.

The EU furniture sector NACE 31 (**209.277 companies, >1.166.385 workers, >140B turnover** and is growing) is a **labour-intensive** sector mainly composed (99%) by SMEs & micro firms. It is affected by specific challenges such as an **ageing workforce, poor attraction of youngsters, a growing cost of timber and wood-based materials** and their supply shortages, **innovation costs**, international protectionist measures and at the same time **weak IPRs protection, growing competition** from low labour costs countries.

For the last decade, the EU furniture sector has been affected by its digital and green transitions (Twin transition), which have been requiring big efforts by all sectoral stakeholders (especially companies and workers/employees) to face the challenges and to exploit the opportunities posed by the transitions progress. Now, the EU furniture industry should go a step further and integrate the concepts of Twin transition with the ones newly identified and highlighted by the **Industry5.0 approach**, taking into consideration in a systemic approach working for the **wellbeing of workers, the resilience and the environmental and social sustainability of this industry**. This approach should provide a new vision of industry that aims **beyond efficiency and productivity** as the sole goals, and reinforces the role and the **contribution of industry to society**. It complements the existing “Industry 4.0” approach by specifically putting research and innovation at the service of the **transition to a sustainable, human-centric and resilient European industry**.

In this framework, companies in the EU furniture sector, which are mainly SMEs, **need guidelines and supporting tools** helping them **facing the huge future challenges to successfully deploy their an appropriate Industry5.0 strategy and deploy the related practices**.

General objectives of the project.

The European Union is supporting the adoption of Industry5.0 principles, which will facilitate that EU industry development and transition going **beyond efficiency and productivity** as unique economic objectives, and **strengthen the role and the contribution of EU industry for a more fair and sustainable society**. To really support this transformation, companies need clear guidelines and workers need to possess the necessary skills and knowledge to effectively carry it out.

Overall, project outcomes will facilitate the **design of sectoral strategies** putting at the centre a worker approach for the further development and transition of sectoral companies **toward stronger digitalization and circularity**, making them **more resilient** to the current challenges and the ones to come while ensuring the **wellbeing of workers** in all processes along the whole value chain. This will happen while outcomes will benefit the **reduction of the industry environmental footprint**, the increase of **industry resilience** and a better **conservation of natural resources**.

In short, **this project tackles the challenge of providing companies in the furniture sector with guidelines and tools that support them to define their Industry5.0 strategy** and in a practical manner, **to identify and deploy those practices that can successfully lead them to the implementation of this strategy**.

Moreover, based on ESCO v1.1 new taxonomy, it will help to **properly identify the Skills and Knowledge needs** required for this transformation for each of the main and relevant occupations within the sector.

In this framework, the FURN5.0 will provide:

- An **analysis** of the **situation and level of development of Industry 5.0** within the manufacturing industry across the EU. **WP2**
- **Key information** to the different sector stakeholders (especially to social partners) about the level of **understanding, take-up and progress level of Industry5.0** in furniture companies across the different EU countries. **WP2**
- **Guidelines** to design and implement actions and activities to deploy Industry 5.0 practices in furniture companies and integrate them in company's management models and production processes. **WP3**
- **An online tool** enabling companies to understand in details their level of maturity of Industry5.0 practices and the identification of priority actions, their needs and how they can facilitate their progress in its deployment. **WP4**
- A **validation process** of the guidelines (through a survey and a workshop) and of the online tool among sector companies, which will ensure that these project deliverables will properly respond to sector actors' needs and greatly benefit the target groups and stakeholders in general. **WP4**
- Identification of the **knowledge and skills** needed by employers, managers and employees to successfully design and deploy Industry5.0 actions and practices. **WP5**
- **Recommendations** for furniture sector stakeholders to promote and facilitate the deployment of Industry5.0 actions and practices within companies and the progress of the industry toward a more competitive, resilient, sustainable and worker-centred system. **WP5**
- A **comprehensive dissemination strategy** enabling project partners to reach a higher number of relevant stakeholders across the EU and spur them to exploit the project outcomes and stimulate stronger and better prepared social dialogues at regional, national and European level. **WP6**
- A **follow-up plan** to properly exploit the project outputs and outcomes after the project end and how to involve in these processes a greater number of social partners and stakeholders willing to facilitate the sector transition from across the EU. **WP6**

ANNEX II

TASKS, REQUIREMENTS and TIMING

1. SUBCONTRACTOR TASKS AND REQUIRED DELIVERIES / CONTRIBUTIONS

Experts developing the cards related to the 15 applications will contribute to different project activities:

- Contribute to the preparation of the **Deliverable 3.1 - Guide for deploying Industry5.0 practices in Furniture companies**. The development of a specific informative and explanatory card on one or more applications of the Key Enabling Technologies as listed above is hereby requested. These cards aim to enhance the understanding of sector stakeholders and companies about the implementation of these applications and the associated use of the related Key Enabling Technologies within the European furniture sector. Additionally, they will be required to identify potential solutions and initiatives to address the sector's challenges related to the transition towards a more environmentally conscious industry, with a focus on enhancing the working conditions and employee satisfaction. **(Initial version M10 Feb. 24 and final version M10-March 25)**.
- Contribute to the **preparation of the Furn5.0 survey for the guide validation (T3.2)**. It will involve different professionals among experts with different and complementary expertise, that will be selected and invited by all partners. AMBIT will involve the respondents, which will evaluate the appropriateness of the Guide and its good practices. They will be also required to suggest additional good practices and business cases of furniture companies that successfully deployed Industry 5.0 and related strategies and activities. **(by M13-May 25)**.
- Contribute to the **Furn5.0 Survey (by M13-May 25)**.
- Looking at the survey results in collaboration with AMBIT experts and contributing to properly interpret the outcomes. Based on these, contribute to prepare the presentation of the **Survey results** for the project Workshop **(by M13- May 25)**.
- Participate to the **Online workshop for survey results validation (T3.3), (2nd Milestone)** which is intended to provide key feedback and inputs about the D3.1 Guide **(by M14-June 25)**.
- Together with AMBIT team they will **interpret and report the workshop outcomes** and identify the **changes that should be implemented in the guide** to make it more useable and effective for sector different types of stakeholders **(by M14-June 25)**.

The leading expert in Industry 5.0 will contribute to different project activities:

- Supporting AMBIT and the consortium in supervising the work of the different experts in charge of preparing the fifteen cards.
- Support the preparation of the Furn5.0 guide which will include the 15 specific cards already mentioned and different parts to present the challenges for the sector related to the deployment of these technologies and applications.
- Contribute to the preparation of both the survey and the workshop for the guide validation and participate to these events.
- The leading expert while implementing this task can also contribute to the preparation of one or more cards.

2. EXPERTISE, EXPERIENCE AND SKILLS REQUESTED

The prerequisites are:

- Proven ability to have English language working proficiency.
- Communication capacities that enable to draft documents, make presentations and actively participate in meeting and brainstorming sessions.
- Past experiences of joint research activities and report drafting.
- Possibility and ability to work respecting deadlines and budget limits.
- Any interests that he/she has, which may prejudice her or his independence.

- Being nationals of one of the EU 28 Member States, or of one country of the European Economic Area or Switzerland.

Knowledge, skills and expertise that will be evaluated for each candidate expert:

- Evidence of strong and relevant academic background and/or past professional experiences.
- Proven research skills in Industry 4.0 and 5.0
- Previous publications related to Industry 4.0 and 5.0 in the furniture sector will be a plus
- Proven knowledge in the areas of the selected KET and the identified applications for the cards
- Capacity of working within a team in a collaborative and constructive way and capacity of guaranteeing the quality of the written materials produced, in terms of content and format.
- Knowledge of EU Furniture sectors will be a plus.

Please, remember that experts will be provided with documents and information helping them to link the research field with specific aspects of the furniture sector.

3. TIME SCHEDULE AND REPORTING

The subcontracted experts will liaise closely and report to AMBIT as their contractor. In spite of this, the general supervision and evaluation of the expert contributions will be carried out by the Furn5.0 Steering Committee.

The subcontractor will be required to participate to the **Furn5.0 online final conference** foreseen for March 2026.

The deadline to deliver the contribution or reports will be the ones detailed at point 1.