

SHOE 5.0: RESHAPING THE FUTURE OF FOOTWEAR INDUSTRY



The new concept of Society and Industry 5.0 was first proposed in 2016 by the Japanese government on the occasion of the Fifth Basic Plan for Science and Technology. It places the society rather than the industry at the centre of technology development. Within Society 5.0, the well-being of the worker is at the centre of the production process, who should use new technologies to provide prosperity beyond jobs and growth, while respecting the production limits of the planet. The international consortium of the Shoe 5.0 project wants to extend such approach to the footwear sector by preparing their workers for the next phase of industrialisation. Such philosophy is people-centred and supports the transition to a sustainable and competitive European industry.

The project has three main objectives, firstly to provide knowledge to workers so that they can interconnect the implementation of new technologies, bring maximum performance to their companies, and thus take a further step towards sustainability and efficiency, improving human experiences at work. Then, partners of European footwear sector wish to embrace the challenge of transition to a sustainable, human centric and resilient industry, transcending efficiency and productivity objectives, allying benefits for industry, workers and society. Finally, it aims to develop a personalised, multi-level digital training plan that meets the specific needs of workers.

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This will be accompanied by the corresponding tools to implement and facilitate a green and digital transition, making shoe factories a place where creative and talented people can come to work and have a human and personalised experience.

The activities started with the elaboration of a report with the major findings from a desk and field research related to i5.0 applied in Footwear. This part focused on the training needs and definition of the future profiles required in the industry. During the past months, partners from Belgium, Italy, Portugal, Romania and Spain worked to identify the profiles and skills required to respond to an efficient implementation of industry 5.0 in the footwear sector. The results will be validated by experts and collected on a report that will facilitate the transition of companies and VET providers towards the implementation of Industry 5.0.

The second phase concerns the development of a training tool kit with innovative contents (virtual and augmented reality) and practical exercises focused on the Digital Key Competences for the Footwear sector in the i5.0 that will be supported by Manuals for trainers. Thanks to the skills needs analysis tool, an individual will be able to identify the training path and modules to choose, which will be different depending on the skills they possess, regardless of their profile. Thus, each individual will get a customised and personalised training plan depending on their initial competences.

In this edition of the project's newsletter, Technical University of Iasi (TUIASI) will give us an overview of the concept of Industry 5.0 and how it applies to the footwear industry. Then, the Portuguese Footwear Technological Centre (CTCP) will present you the first phase and results of the project.

We wish you a pleasant reading and invite you to keep following the project news on our social media ([Facebook](#) and [Instagram](#)) and on our [website](#)!

WHAT IS THE INDUSTRY 5.0 ? (by Technical University of Iasi - TUIASI)

Industry 5.0 represents a proposed transformation in manufacturing that emphasises the integration of human-centred design, intelligent automation, and sustainable production. It builds on previous industrial revolutions, including the steam engine, assembly line, and automation, but seeks to address some of the social and environmental challenges associated with these approaches.

Industry 5.0 places a renewed emphasis on the value of human workers in the manufacturing process, to enhance their skills and creativity through collaboration with advanced technologies. This includes the use of advanced robotics and artificial intelligence to augment human capabilities and enable more flexible and efficient production.

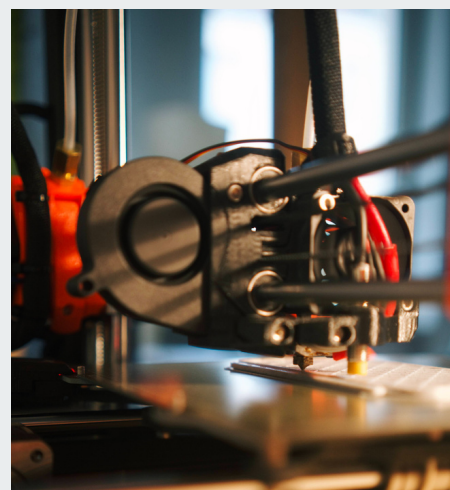




Sustainability is also a key element of Industry 5.0, to reduce waste, improve resource efficiency, and minimise environmental impact. This is achieved through the use of advanced sensors and data analytics to optimise production processes, as well as the adoption of renewable energy sources and closed-loop manufacturing systems.

Overall, Industry 5.0 brings a shift towards a more human-centric, sustainable, and technologically advanced approach to manufacturing, with significant benefits for the footwear industry, such as:

- **Increased customisation and personalisation of products** thanks to advanced technologies such as 3D printing and computer-aided design. Manufacturers will be able to create highly customised and personalised footwear for individual customers and their specific needs.
- **Greater sustainability and reduced environmental impact** are driving the use and development of eco-friendly materials, such as recycled or plant-based.
- **Improved efficiency and process automation** in footwear manufacturing thanks to the integration of technologies such as robots, cobots (i.e., collaborative robots) and the Internet of Things, which in turn is expected to lead to more significant cost savings and faster production times.
- **Creation of new business models** in the footwear industry considering the connectivity and technology integration into the entire value chain.
- **Development of smart and connected shoes**, etc...

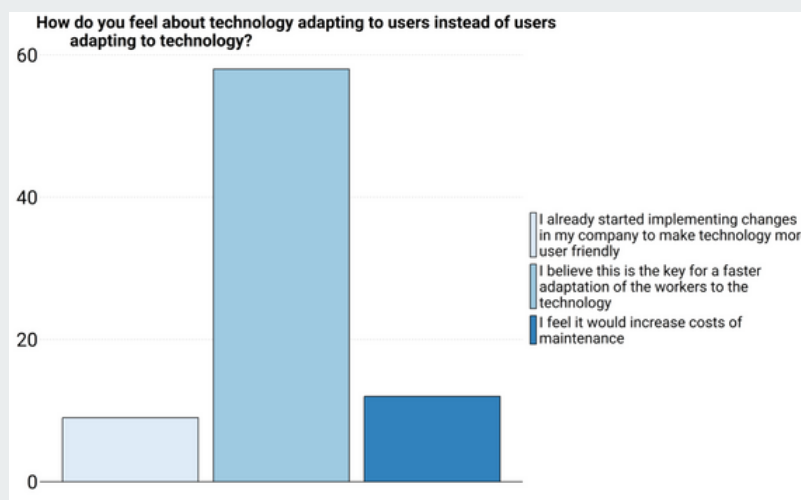
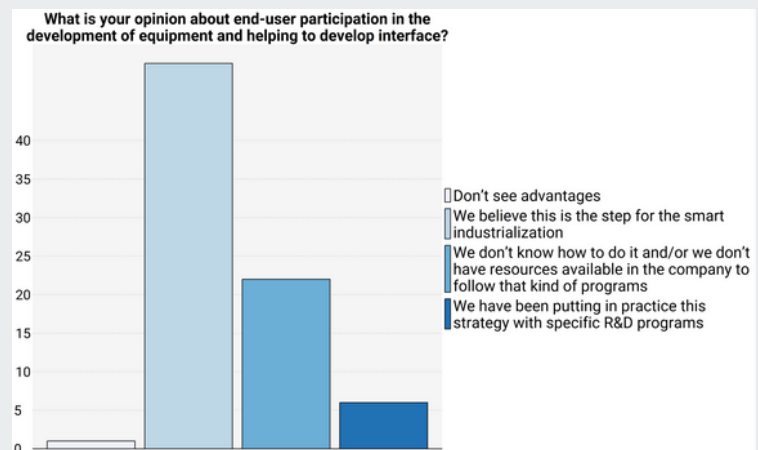
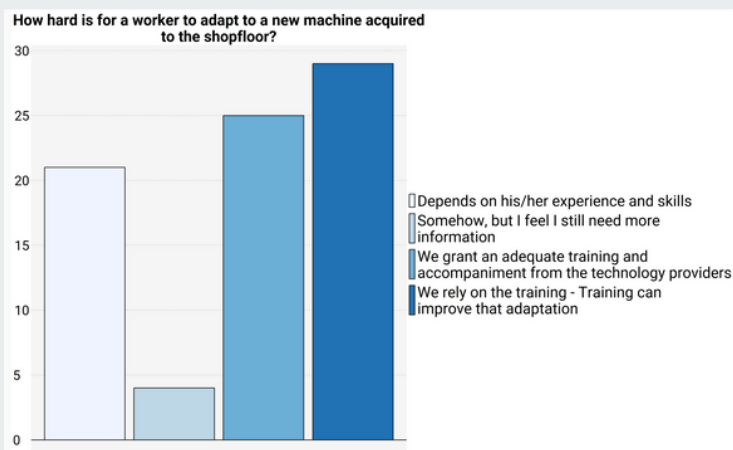


Implementation and initial results
(by Portuguese Footwear Technological Centre - CTCP)

First steps of the project show great industry engagement

The project consortium launched a study on I5.0 applied to the footwear industry in Europe aiming at analysing the current integration of the I5.0, studying the current and future footwear workforce and matching with the footwear professional profiles, in Portugal, Spain, Italy and Romania, through an articulated desk and field research, supported by a survey to experts and focus groups.

CTCP outlined the research plan and defined templates for collecting data to be validated and implemented by each partner in their respective country. The desk research was complemented by a focus group held in each country, organised by the respective partner, and in other non-partners' countries to extend it across Europe. The envisaged outcome was far achieved with **80 surveys completed**. The research was enriched by the mentioned focus groups, each involving a total of **40 participants** in each of the 4 countries.



Examples of questions asked in the questionnaire

Implementation and initial results
(by Portuguese Footwear Technological Centre - CTCP)

Discussions in the focus groups provided very good perceptions on how i5.0 can be implemented in the footwear industry. The majority of the participants from a wide scope of companies, were very curious rather than sceptic on what kind of benefits i5.0 could bring to their companies and collaborators. They saw the clear benefit of the emerging technologies and the articulation with the human resources. Many participating companies were already implementing some of the i5.0 features. They show interest in information and training, alerting for the need of innovation in training methodologies and tools using the possibilities of the new technology to support more and more very directed and practical training, and they were willing to do more than the legislation at all levels: sustainability, H&S.

Big data was one of their concerns because of privacy questions, but they realised that it would represent a valuable asset for the traceability of products and processes. Sustainability was still very focus on materials, the concept of circularity was not so assimilated yet. However, they had a strong worry about what to do with waste and were constantly considering how to valorise them and transform them into raw materials again.

From the survey and focus group together a set of new training domains emerged:

- Management of HR for i5.0 (Mentoring, Training careers' management skills, Communication and Emotional Intelligence in Leadership)
- Programming using block language
- Big data (analytics)
- Networking & Coworking
- Product traceability & Supply Chain for i5.0 (Recycling)
- Artificial Intelligence (AI) in Footwear industry to support design, prototyping, logistics and communication
- Manufacturing i5.0 (Energy efficiency, lean robotics, etc.)
- Co-innovation 5.0
- CSR for i5.0 (Openness, transparency, ethics)
- Ergonomics and Digital anthropology (Health & Safety) (UX)
- Bio inspired materials & technology
- Wellbeing in i5.0 (UX)
- Circular design / materials / smart material / processes
- Management for Technological Changes
- Product Ultra-Customisation

All this research data is being compiled and processed. It will soon be available for footwear companies' consultation on the project website: shoe50.eu





Definition of the key profiles related to I5.0 for the future footwear industry's workforce

In parallel, partners have worked on a study of the footwear qualification framework in their own countries, with a view to identifying the professional profiles and corresponding qualifications that need to be adapted in order to enable the implementation of i5.0 principles in the footwear sector across the EU.

This work began, under the leadership of the Politecnico Calzaturiero (Italy), with a roadmap of each country's qualification framework, which resulted in a set of 13 different profiles and qualifications identified among the 4 countries involved, as well as Germany, Poland and Italy thanks to the intervention of the CEC in order to have a wide range of qualification frameworks related to the footwear industry across Europe.

On the basis of this work and the results of the research, including the survey to experts and the results of the focus groups, partners have adapted 4 occupational profiles and created 1 new occupational profile. These profiles will be validated by the sector in the coming weeks:

- **Footwear technical manager**
- **Footwear manufacturing operator**
- **Footwear designer / pattern maker**
- **Maintenance technician**
- **5.0 Footwear Architect**

IF YOU WANT TO LEARN MORE ABOUT THE PROJECT, FOLLOW OUR ACTIVITY ON THE PROJECT WEBSITE AND SOCIAL MEDIA. DO NOT HESITATE TO CONTACT THE CONSORTIUM FOR ANY INFORMATION!



PROJECT PARTNERS



Gheorghe Asachi
Technical University of Iasi
(TUIASI)



Politecnico Calzaturiero

PROJECT COORDINATION



Project Leader

Capital Humano Edit Value, Lda
www.editvalue.com
Praceta João Beltrão n.º 16 4715*286
Braga (Portugal)



Communication

CEC - European Footwear
Confederation
www.cec-footwearindustry.eu
Square de Meeûs 37
1000 Brussels (Belgium)

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