NEWSletter

Scalable Socio-Technical System Simulation in Manufacturing

Issue 2 July 2026

The online survey, aimed to ensure that the forthcoming simulation platform is grounded in validated training needs and accurately reflects stakeholder priorities, addressing modern manufacturing complexities and supporting workforce development across Europe. The survey has been completed, and the basic results are presented below.

Survey Objectives

Outcomes:

- Identify key skills required in modern manufacturing
- Identify key socio-technical factors Industry 5.0 manufacturing contexts
- Understand current training limitations
- Prioritise future training needs
- Shape the AI-driven simulation training platform requirements

Target Audience:

Responses were collected from quality managers, safety engineers, production supervisors, HSEQ officers, manufacturing engineers, operators or shop floor workers, and educators/instructors in relevant fields.

Survey Structure

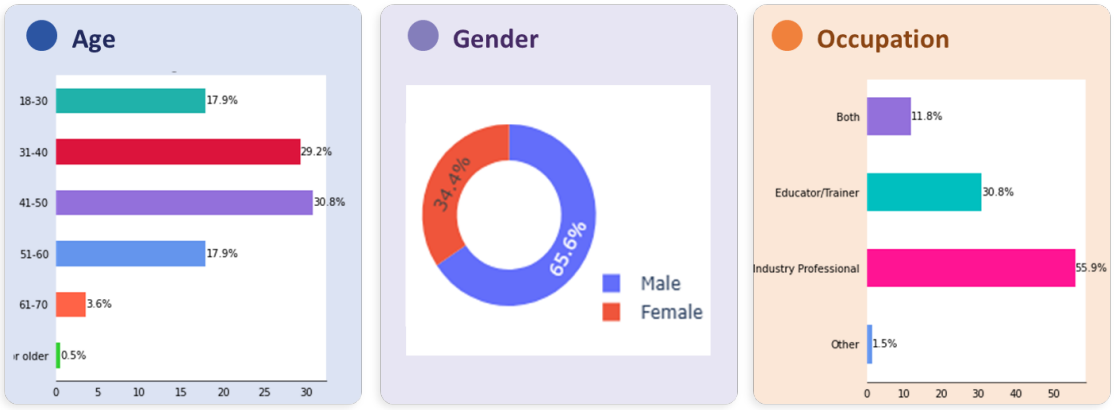
- Modified **Hennessy-Hicks Training Needs Analysis** questionnaire format (Leider et al., 2020), assessing the perceived ability of the workforce to perform key skills and to meet the need for the skills in Industry.
- **Sections:** Experience, Workforce skills (lean, safety, quality, HTI, ergonomics), Training needs
- **Versions:** 2 separate versions for Educators/Trainers and Industry Professionals
- **Data collection period:** April-May 2026

Survey Results

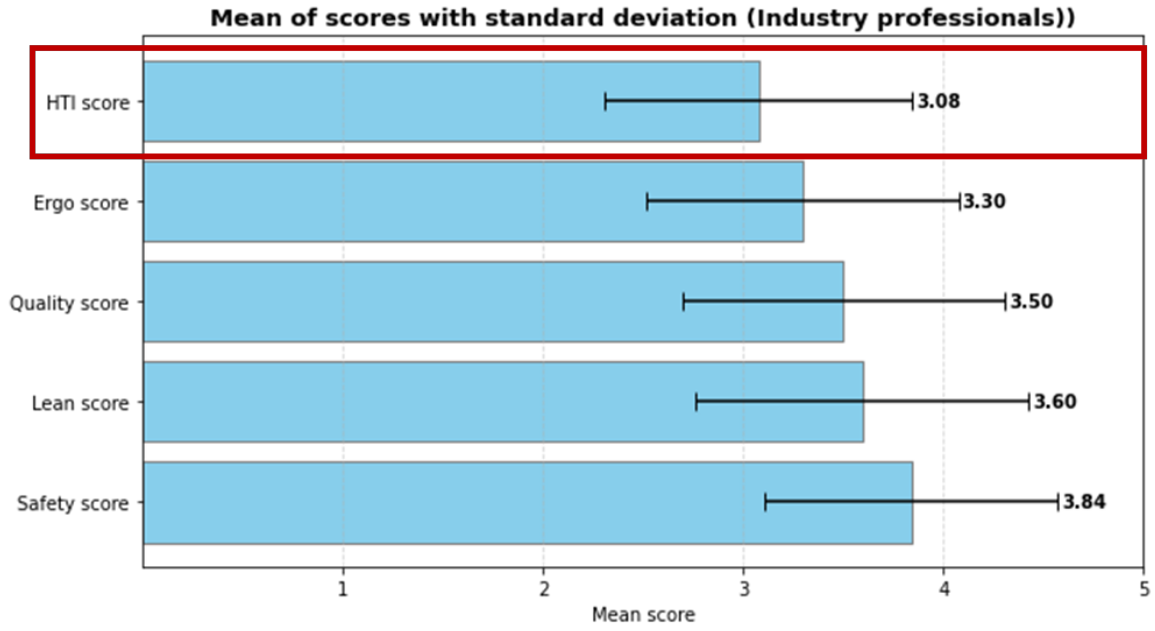
The Survey was prepared in the five languages of the consortium, and mostly targeted respondents in the five countries: Ireland, Italy, Finland, Serbia and Greece.

The final cleaned dataset consisted in a total of 195 responses. The dataset was obtained by applying the quality-control protocol (consent check, target occupation check, completion speed, straightlining, check for gibberish text and inconsistency check).

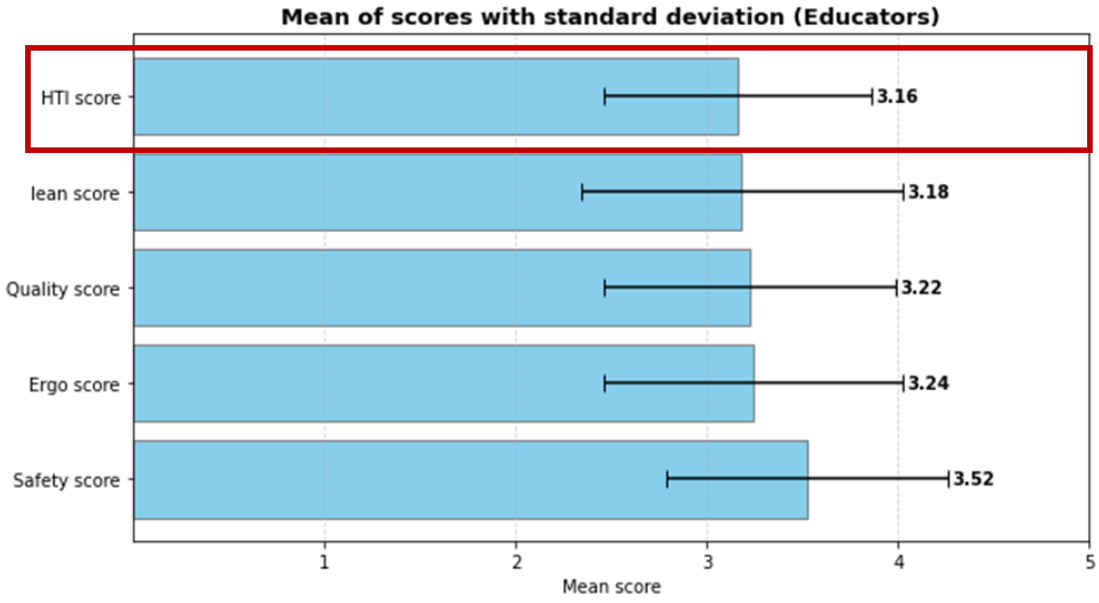
Most respondents fall within the 31-50 years old age range, with around 66% male respondents, the majority with a master's degree and with around 31% educators versus 56% industry professionals.



Key findings – scoring of manufacturing competency domains skill levels



Human-Technology interaction (HTI) competency domain was the lowest scored for both Industry Professionals and Educators, indicating that both the workforce and students are not fully meeting the level needed for Human-technology interaction skills (E.g., Basic data analytics and data-driven decisions skills, Effective interaction with AI-enabled systems, Understanding of interactions between tech, humans, organisations & environment, Effectively working with emerging tech, etc.)



Participants scored if the workforce/students skill level met the need for the skill in Industry.

Definitions for response options:

1 -Strongly Disagree: The need for this skill is largely unmet

2 - Disagree: There is a meaningful gap in ability to meet the need for this skill

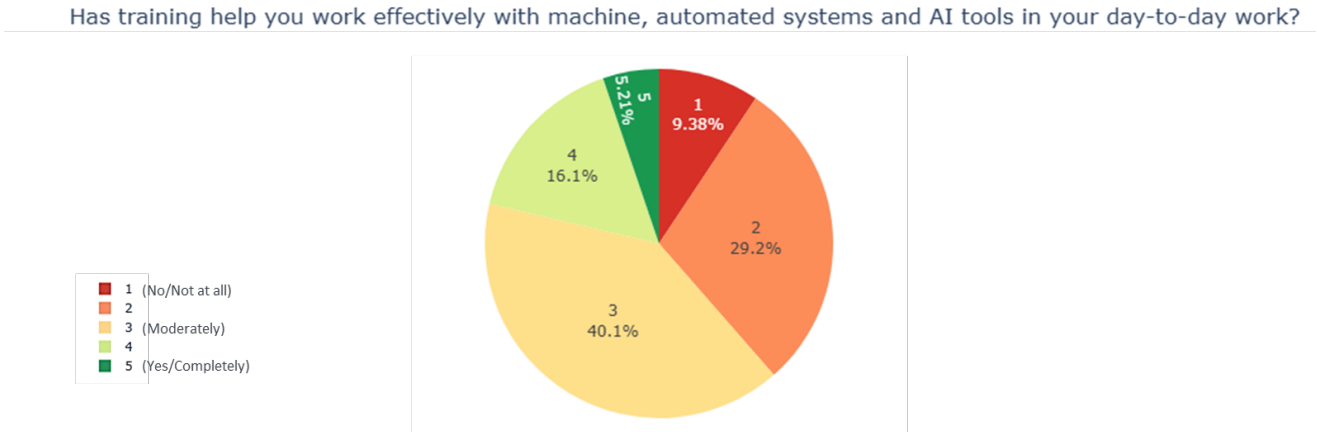
3 - Neither agree or disagree: Unclear if the need for this skill is met/Not applicable to my organisation/company

4 - Agree: The need for this skill is generally met

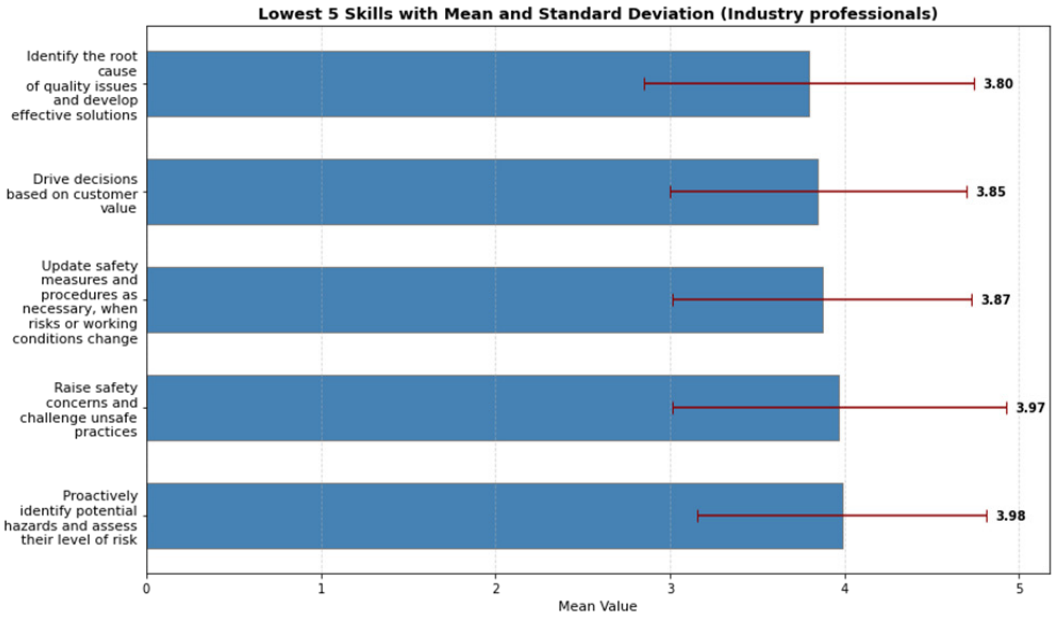
5 - Strongly Agree: The need for this skill is fully met

Key findings – effectiveness of training in HTI

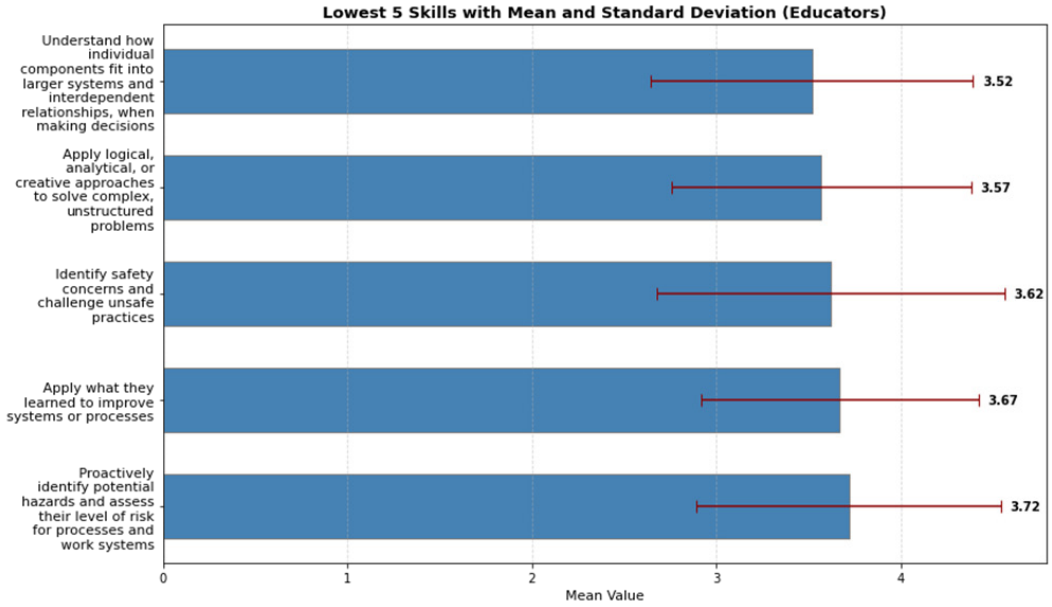
In addition, approximately 39% of the surveyed Industry professionals reported that training they have received was not effective for Human-Technology interaction (HTI), including working effectively with machines, automated systems and AI tools in their day-to-day work, while other 40.1% reported that training was only moderately effective.



Key findings – priority of specific manufacturing skills



The skills scored with lowest skill level in the current workforce suggest a gap in the ability to adapt processes and decisions under dynamic conditions and quality/customer requirements.



The skills scored with lowest skill level in the current student body suggest a gap in system-level thinking and ability to apply knowledge to complex systems.

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More information about the Erasmus+ programme: www.oph.fi/en/erasmusplus

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