X-HuLog4.0

EXCELLENCE IN HUMAN-CENTERED LOGISTICS 4.0

Newsletter #1

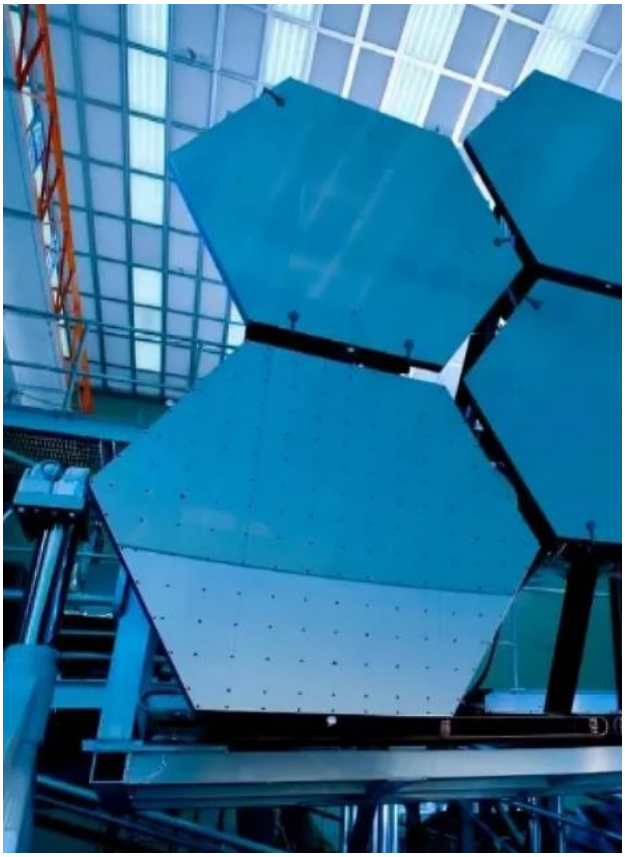
2025 May

Funded by the European Union

This Project is funded by the European Union under Horizon EU project X-HuLog4.0, 101159664. However, views and opinions expressed are those of the author(s) only and do not necessarily reflect those of the European Union or European Research Executive Agency. Neither the European Union nor the granting Authority can be held responsible.

The X-HuLog4.0 Project

Why?



As logistics systems evolve through Industry 4.0, the sector faces a paradox: while automation and digitalization improve efficiency, they often neglect the human element, leading to gaps in adoption, resistance to change, and ethical concerns. The X-HuLog4.0 (Extended Human-Centric Logistics 4.0) project addresses this disconnect by placing humans at the center of digital logistics transformation.

Human-centric innovation is a competitive differentiator. By leading in responsible, human-focused logistics, Europe can shape the global standard for future supply chains.

In this project, we focus on how to enlarge competences on the topic for all stages of researchers.

How?

X-HuLog4.0 includes work packages (WPs) to enlarge competences. These WPs cover curricular design, content creation, establishment of e-learning resources, as well as a validation loop to collect feedback. Besides, a joint workshop for staff, multiple events and summer schools are planned. Management, quality, and dissemination and exploitation activities complete the workplan.

Workplan

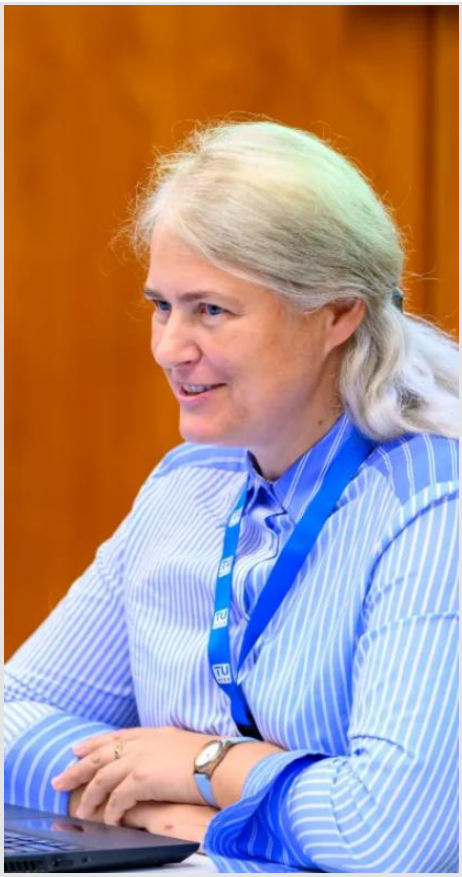
- WP1 Management
- WP2, WP3, WP4 Topic Skills
- WP5, WP6 & WP7 Skills to Develop & Research Project
- WP8 Dissemination & Sustainability

Human-centricity

Anywhere, anytime

In the era of Industry 4.0 and Logistics 4.0, the paradigm is shifting from purely technology-driven systems toward integrated, **human-centered ecosystems**. The concept of **X-HuLog4.0** (Extended Human-Centric Logistics 4.0) emphasizes that the **human is not just a user, but a central, adaptive component** of smart logistics environments. Human-centricity "anywhere and anytime" means that workers, operators, and decision-makers are **empowered across locations and timeframes**, with digital technologies flexibly supporting their needs, well-being, and performance.

In X-HuLog4.0, logistics workers operate within interconnected cyber-physical systems, where mobile devices, wearables, and augmented reality (AR) tools extend human capabilities on shop floors, in warehouses, or during transport. Smart interfaces enable seamless human interaction with automated equipment and decision-support systems—from remote coordination to on-site intervention. This "anywhere" capability supports not only decentralized logistics operations but also inclusive employment models, enabling remote management, adaptive workstations, and geographically flexible task execution.



X-HuLog4.0 Project Manager
Prof. Dr. Aurelija Burinskiene

For your reading

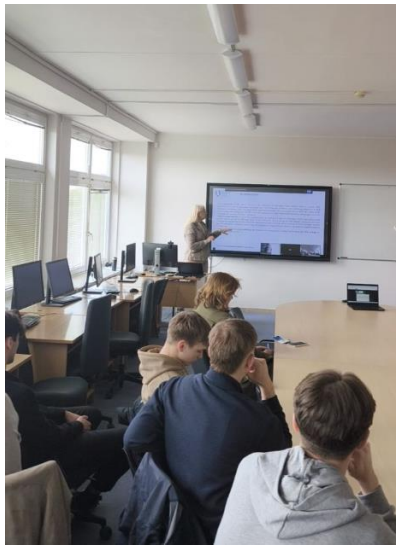
The project team summarized publications on the human-centricity topic and published a detailed overview on the project website called

“Human-Centricity in Industry 4.0 versus Industry 5.0: A Business Perspective“

Download here

Project Outputs

Highlight from the X-HuLog4.0 project!
Prof. Dr. Aurelija Burinskiene, project manager of X-HuLog4.0, recently delivered a compelling public lecture at the Faculty of Business Management at VILNIUSTECH.
The topic, **"Framework for Strategic Decision Making in the Application of Digital Technologies,"** offered deep insights into how businesses can harness digital technologies for strategic growth and decision-making.
During the lecture, Prof. Dr. A. Burinskiene presented key outcomes from the X-HuLog4.0 project, sharing valuable frameworks for leveraging digital tools in today's rapidly evolving business environment.
A big thank you to everyone who joined us for this enriching session! If you couldn't make it, feel free to reach out for more details or insights from the presentation.



Exciting News!

The **Special Session: Resilient Workforce, Successful Transformation: Human Factors in the Digital Shift** organised by the X-HuLog4.0 Steering committee team for **MIM 2025** has successfully reached **five strong submissions**! 🎉 These papers explore the intersection of **technology, workforce resilience, and digital transformation**, addressing critical topics such as **psychosocial challenges, ethical dimensions of digitalization, human-centric robotics, worker monitoring, and coaching strategies**.

🔹 **Special Session Submissions:**

✅ *Psychosocial Challenges of Older Workers in the Age of Technological Advancement* – Mihael Nedeljko, Nataša Vidnar, Boris Miha Kaučič
✅ *Responsible Digital Transformation: Ethical Dimensions in Operator 4.0, 5.0, and Human Digital Twins* – Thilini Ranasinghe, Eric Grosse, Chris MacDonald, W. Patrick Neumann
✅ *A Human-Centric Evaluation of Robotic Solutions in Production and Intralogistics* – Amir Zare, Yüksel Değirmencioğlu Demiralay, Sotirios Panagou, Fabio Sgarbossa
✅ *From Sensors to Decisions: EMG and ECG Applications in Intralogistics Worker Monitoring* – Thilini Ranasinghe, Eric Grosse, Stefan Morana, W. Patrick Neumann
✅ *Coaching as a Human-Centered Strategy for Successful Digital Transformation* – Michael C. Bauer, Eric Grosse

🔹 **VILNIUS TECH Contributions to MIM 2025**

We are proud that **at least five submissions** from **VILNIUS TECH** have been accepted for **various MIM 2025 sessions**, covering logistics innovation, sustainability, and business competitiveness:

✅ *Distribution Logistics Technologies for Business Competitiveness* – Diana Daskevic, Aurelija Burinskiene
✅ *Innovation in the Logistics Sector: SME Impact Analysis* – Olga Lingaitienė, Aurelija Burinskiene
✅ *Environmentally Friendly Technologies in Manufacturing Competitiveness* – Gintarė Byčenkaitė, Aurelija Burinskiene
✅ *Innovation in Logistics: Necessity vs. Inevitability* – Olga Lingaitienė, Aurelija Burinskiene
✅ *Productivity, Growth, and ROI in Estonia's Logistics Sector: A Panel Data Analysis* – Burinskas Arūnas, Aurelija Burinskiene

Doctoral Seminar at MIM 2025 – June 30

We are also pleased to announce that **two participants from VILNIUS TECH** will take part in the **Doctoral Seminar** at MIM 2025:

✅ *A Decision-Making Framework for Enhancing Competitiveness in Logistics* – Diana Daškevič
✅ *National Culture and Sustainability Impact on MNE Management* – Edita Leonavičienė

🗓️ **MIM 2025 Conference, which is organised by X-HuLog4.0 Steering Committee member prof. dr. Fabio Sgarbossa** will take place at **NTNU** – an exciting opportunity to exchange knowledge and advance research in digital transformation and logistics innovation!

🔗 **Explore the full list of conference sessions here:**
👉 MIM 2025 Sessions

Looking forward to engaging discussions and collaborations at **MIM 2025**! 🚀 #MIM2025 #DigitalTransformation #LogisticsInnovation #Research #HumanCentricTechnology #DoctoralSeminar

Project Consortium (1)

Norwegian University of Science and Technology (NTNU) [Norway]

NTNU

Go to website!

NTNU is the largest university in Norway, with a history dating back to 1910, and its tradition is rooted in the Royal Norwegian Society of Sciences and Letters, established in 1767. NTNU is headquartered in Trondheim, with campuses in Gjøvik and Ålesund, and has around 39,700 students and 6,900 full-time equivalent staff. NTNU is Norway's premier institution for higher education in technology and the education of engineers, offering a broad academic curriculum across various fields including natural sciences, social sciences, medicine, and the arts. NTNU has a strategic focus on three enabling technologies—biotechnology, ICT, and nanotechnology—that involve interdisciplinary research to develop new industries, products, and solutions. NTNU is ranked number one globally for collaboration with industrial partners, largely due to its strong cooperation with SINTEF, Scandinavia's largest independent research institution, and other industry leaders like Statoil.

Technical University of Darmstadt (TUDa) [Germany]

Technical University of Darmstadt (TUDa) is one of Germany's leading universities of technology, consisting of 13 departments and offering 118 degree programs to approximately 24,000 students. The university focuses on international leadership in the fields of energy and mobility, information and communication, and digital transformation, with an emphasis on engineering and natural sciences in close cooperation with humanities and social sciences. TUDa is part of the TU9 group, which comprises Germany's leading technical universities, and it plays a key role in advancing excellence in engineering and the natural sciences on a national level. In 2022, TUDa received a total of 538.5 million € in funding, reflecting its strong research reputation and success in securing national and international grants. TUDa holds a top position in the Humboldt ranking, making it the most attractive German university for foreign visiting scholars and researchers in the field of engineering.

TECHNISCHE UNIVERSITÄT DARMSTADT

Go to website!

Saarland University (USAAR) [Germany]

UNIVERSITÄT DES SAARLANDES

Go to website!

Saarland University (USAAR) is a mid-sized, dynamic, research-oriented university in Southwest Germany, located near France, Luxembourg, and Belgium, with campuses in Saarbrücken and Homburg. The university is known for its highly interdisciplinary scientific profile, with strong collaborations across institutes and with non-university research institutions on campus, including Max Planck, Helmholtz, Leibniz, and Fraunhofer institutes. USAAR offers a wide spectrum of disciplines in research and education, including medicine, law, economics, humanities, natural sciences, and engineering, with a focus on "Computer Sciences", "NanoBioMed Sciences", and "European Studies and Internationality". Saarland University has a strong international presence, with 19% of its 16,900 students being international, representing over 120 nations, and a quarter of its researchers and scientists being non-German, making it one of the most international universities in Germany. The university actively participates in national and international research collaborations, supported by its Department for Research Management and Transfer, which helps in securing and managing research projects and translating research into business applications.

Project Consortium (2)

Vilnius Gediminas Technical University (VILNIUS TECH) [Lithuania]

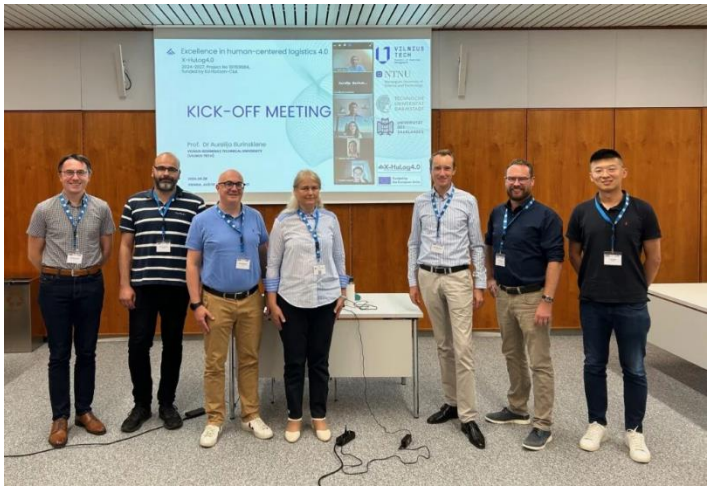
VILNIUS TECH is an innovative Lithuanian University, educating highly qualified and creative specialists, and is the leader among institutions of technological science education in Lithuania. The University is proud of its Civil Engineering Research Centre, the most modern in Eastern Europe, and the Mobile Applications Laboratory, the largest in Lithuania. VILNIUS TECH has over 500 international higher education institutions as partners, offering a wide range of international studies and internships, and is the leader in Lithuania by the number of students studying under the Erasmus Exchange Programme. The University has participated in numerous EU Framework Programmes, including 15 H2020 projects, 24 FP7 projects, and 11 FP6 projects, with a strong focus on multidisciplinary research in areas like electronics, ICT, transport, and social sciences.

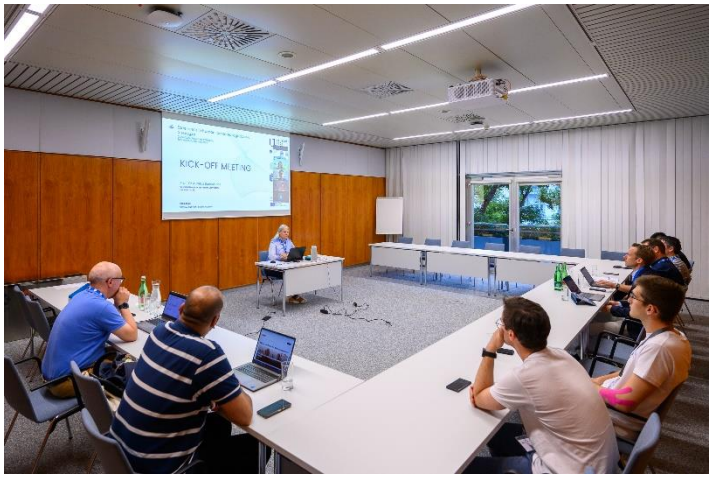
VILNIUS TECH
Vilnius Gediminas Technical University

Go to website!

First in-person meeting

On August 28th, 2024,the X-HuLog4.0 consortium met in Vienna (Austria), during the INCOM conference. In the kick-off meeting, the team discussed live the project activities that will be carried out throughout the project.





The author of the photos is INCOM conference photographer Matthias Heisler.

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Funded by the European Union

Project reference number: 101159664

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