

PRO-VE 2025

26th IFIP / SOCOLNET Working Conference on Virtual Enterprises



Hybrid Human-AI Collaborative Networks

PROGRAMME

Porto, Portugal
27 – 29 October 2025

Hybrid Human-AI Collaborative Networks

Artificial Intelligence (AI) is deeply transforming working modes, opening new ways to achieve a very large diversity of operational tasks where human expertise and artificial intelligence work synergistically. In a worldwide interconnected economy, where collaboration is constantly reinforced as a key pillar of development, the design, support, management and supervision of hybrid human-AI organisation networks open strong scientific challenges. At the organisational level, hybrid intelligence requires (i) the integration of artificial systems in the redefinition of organisational and human goals, roles and skills distribution, (ii) the consistent alignment of AI with the ambition of human-centric organisations or (iii) the management of new hybrid collaborative processes, including overcoming human resistance. At the technological level, a hybrid organisation first requires enhanced interoperability at the level of cognitive processes with strong challenges of data quality and availability, scalability and adaptability of algorithms, as well as trust and transparency in decision making.

The 25 years of scientific background developed by PRO-VE in designing and managing collaborative networks stand as the basis to build hybrid collaborative intelligence. The multidisciplinarity of the science of collaborative networks makes it possible to address a range of organisational and technical challenges, each of which demands careful thought and innovative solutions. On the technical side, ensuring effective human-AI integration, scaling AI systems, and fostering trust are key hurdles. Organizationally, addressing the need for skills development, managing change, and creating governance frameworks are all critical components. Balancing these challenges while maintaining ethical standards is essential for long-term success.

PRO-VE 2025 is a forum for sharing and discussing current developments and experiences regarding the role of collaborative networks in the age of synergic intelligence between human and AI. Contributions are invited from multiple and diverse disciplines such as Engineering, Managerial and Socio-Human sciences: industrial engineering, computer science, manufacturing, organisation science, logistics, management, and social sciences, among others.

PRO-VE 2025, this year organised in Porto, Portugal, is the 26th event in this series of successful conferences, including:

PRO-VE 1999 (Porto, Portugal), PRO-VE 2000 (Florianopolis, Brazil), PRO-VE 2002 (Sesimbra, Portugal), PRO-VE 2003 (Lugano, Switzerland), PRO-VE 2004 (Toulouse, France), PRO-VE 2005 (Valencia, Spain), PRO-VE 2006 (Helsinki, Finland), PROVE2007 (Guimarães, Portugal), PRO-VE 2008 (Poznan, Poland), PRO-VE 2009 (Thessaloniki, Greece), PRO-VE 2010 (St. Etienne, France), PRO-VE 2011 (São Paulo, Brazil), PRO-VE 2012 (Bournemouth, UK), PRO-VE 2013 (Dresden, Germany), PROVE 2014 (Amsterdam, The Netherlands), PRO-VE 2015 (Albi, France), PRO-VE 2016 (Porto, Portugal), PRO-VE 2017 (Vicenza, Italy), PRO-VE 2018 (Cardiff, UK), PRO-VE 2019 (Torino, Italy), PRO-VE 2021 (Valencia, Spain), PRO-VE 2021 (Saint-Etienne, France), PRO-VE 2022 (Lisbon, Portugal), PRO-VE 2023 (Valencia, Spain), and PRO-VE 2024 (Albi, France).

WELCOME MESSAGES

Welcome to Porto!

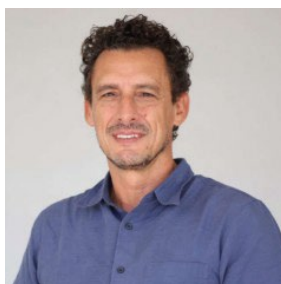
The Institute of Systems Engineering, Technology and Science (INESC-TEC) and the University of Porto - Faculty of Engineering, warmly welcome you to Porto for the 26th PRO-VE IFIP/Socolnet Working Conference on Virtual Enterprises. This year's theme, "Hybrid Human-AI Collaborative Networks could not be more timely and significant for future research and innovation. So, we challenge the academic, research, and industry communities to lead the way in this important discussion during the three days of this gathering.

The PRO-VE 25 venue is the Edifício Abel Salazar — named after the prominent Portuguese physician, lecturer, researcher, writer and painter Abel Salazar (1889-1946) — has a rich historical background within the equally rich history of the University of Porto. Rising from an old convent, it started its service to the university in 1883, being considered the cradle of medical education in Porto, functioning today as one of the places for the multidisciplinary training programs of the University of Porto. It is situated right in the historical centre of Porto, close to the Rectorship (also historical) building and to the numerous tourist attractions of the city.

INESC TEC is a leading Research and Technology organisation driving innovation at the intersection of academia and industry. Celebrating its 40th anniversary this year, it tackles bold challenges in science and technology, fostering talent, collaboration, and impactful solutions for society and the economy. Through multidisciplinary research and strong partnerships, INESC TEC advances knowledge and transforms ideas into real-world applications. INESC TEC's participation in PRO-VE goes back to the very first edition, which was held in Porto in 1999, hosting it again this year for the third time (after 2016).

Our organising team is here to make your experience as smooth and enjoyable as possible. If you have any questions about conference logistics or anything else, we're happy to help. While you're here, we hope you take time to enjoy the charm of our city and its surroundings, alongside engaging conversations on the challenges of Hybrid Human-AI Collaborative Networks. Please feel free to reach out to us anytime during the conference.

Looking forward to welcoming you at PRO-VE 2025 in Porto.



António Lucas Soares
Conference Chair

Welcome to PRO-VE 2025

The **26th edition of PRO-VE IFIP Working conference** offers a strong scientific program, focused on the rapid emergence of Artificial Intelligence (AI) as a transformation lever for the design and management of Collaborative Organisational Networks. **Hybrid Human-AI collaborative networks** open new research horizons for the development of the discipline of Collaborative Networks (CNs) and its associated research community. Decades of scientific groundwork developed by PRO-VE in the design and management of collaborative networks provide a strong foundation for building such a hybrid collaborative intelligence. Over the years, PRO-VE has been clearly recognised as a powerful contributor to CNs community: providing space for lively discussions of leading-edge topics, serving as a forum for sharing the latest scientific advances to renovate the role of collaborative networks, with the openness of an **interdisciplinary perspective** where **the scientific excellence looks for constant validation** through real-world applications and case studies.

With Artificial Intelligence deeply transforming work practices in every field, **a global interconnected economy is pushed forward, where collaboration is increasingly reinforced** as a key pillar of development. The emergence of hybrid Human-AI collaborative networks opens new scientific challenges embedding the design, support, management, and supervision of such hybrid organizational networks. At a socio-technical level, the impacts of AI on human actors require a profound analysis to anticipate multi-factorial risks and to manage human resistance to changes. At the organisational level, key issues concern the integration of artificial systems in the redefinition of goals, roles, and skill distribution or the alignment of AI capabilities with the values and objectives of human-centric organisations. At the technological level, the advances of two decades of interoperability and platform development should address today the ability to collaborate among hybrid cognitive processes, where trust and transparency in decision-making processes become critical challenges.

With the support of the SOCOLNET international Society of Collaborative Networks and IFIP (International Federation of Information Processing), the IPC Committee hopes that this 26th edition will bring you strongly innovative perspectives for scientific and applicative works on next generation of collaborative networks.

A special word of thanks goes to the members of the International Program Committee who carried out the heavy task of evaluating the large number of submissions. Finally, we also want to express our gratitude for the work of the local organising committee coordinated by Prof. Antonio Lucas Soares, as well as for the support of the various sponsors of this year's event.

We wish you a great and memorable working conference in Porto.



Luis M. Camarinha-Matos
Program Committee Chair



Angel Ortiz
Program Committee Co-chair



Xavier Boucher
Program Committee Co-chair

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Special Session on People-Centred and AI-Driven Processes and Environments of Tomorrow

Elena Pessot, University of Siena, Italy
 Daniele Spoladore, National Research Council of Italy
 Raksmei Phan, Mines Saint-Etienne, France

Special Session on Multi-Agent Systems for Hybrid Human-AI Collaboration in Industry

Davide Rua Carneiro, INESC TEC, Portugal
 Henrique Diogo Silva, INESC TEC, Portugal

Special Sessions on Collaborative Healthcare Networks: (1) Design, (2) Decision Systems

Franck Fontanili, Mines Albi, France
 Safa Layeb, Mines Albi, France
 Marius Huguet, Mines Saint-Etienne, France
 Sondes Hammami, EniCar, Tunisia

Special Session on Human-Robot Collaboration in Future Enterprises

Sanaz Nikghadam-Hojjati, CTS- UNINOVIA, Portugal
 Alexandre do Nascimento Silva, Universidade Estadual de Santa Cruz, Brazil
 Eda Marchetti, ISTI "A. Faedo" CNR, Italy

Jose Barata, CTS- UNINOVA, NOVA University Lisbon, Portugal

Special Session on Future Collaborative Workspaces in Organizations 5.0

Arkadiusz Jurczuk, Bialystok University of Technology, Poland
Thomas Süße, Bielefeld University of Applied Science, Germany
Adrian Florea, Lucian Blaga University of Sibiu, Romania
Fabiana Pirola, University of Bergamo, Italy

Special Sessions on Transition towards Collaborative Organizations 5.0: (1) Methods, (2) Case Studies

Arkadiusz Jurczuk, Bialystok University of Technology, Poland
Thomas Süße, Bielefeld University of Applied Science, Germany
Adrian Florea, Lucian Blaga University of Sibiu, Romania
Fabiana Pirola, University of Bergamo, Italy

Special Session on Trust and Trustworthiness in Hybrid Human-AI Collaborative Networks

Bernd-Friedrich Voigt, South Westphalia Univ. of App. Science, Germany
Wico Mulder, TNO, The Netherlands
Thomas Süße, Bielefeld University of Applied Science, Germany

Special Session on AI-Driven Manufacturing-as-a-Service

Miguel Ángel Mateo Casali, Polytechnic University of Valencia, Spain
José Ferreira, CTS-UNINOVA, Portugal
Joan Lario Femenia, Polytechnic University of Valencia, Spain

Special Session on AI and Simulation-Supported Decision-Making in Collaborative VUCA Environments

Alessandro Bertoni, Blekinge Institute of Technology, Sweden
Marco Bertoni, Blekinge Institute of Technology, Sweden
Koteshwar Chirumalla, Mälardalen University, Sweden

Special Session on AI-driven Sliding Work Sharing for Human-Robot / Human-AI Collaboration

Ana Correia, ATB, Germany
Sebastian Scholze, ATB, Germany

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VENUE

Edifício Abel Salazar

Largo do Prof. Abel Salazar, Porto



The building that housed the Institute of Biomedical Sciences Abel Salazar, which once housed the Medical-Surgical School of Porto and later the Faculty of Medicine, was built in the former Largo da Escola Médica, now Largo do Professor Abel Salazar, adjoining the extinct Nossa Senhora do Carmo Convent (Barefoot Carmelites).

Designed by architects Rogério dos Santos Azevedo (1898-1983) and Baltazar Castro (1891-1967) to address the limited facilities of the Faculty of Medicine of the University of Porto, it was inaugurated in 1935. It combines the Neo-Classical style in its façade with "Art Déco" inside the building.

Ground-floor:

Registration Desk

Poster Exhibition

Room D. Luís: Sessions 2

Room D. Maria: Sessions 3

First-floor:

Room Douro: Plenary, sessions 1

Room Arrábida: Projects Forum I

Room S. João: Projects Forum II

Fourth-floor:

Infante Dom Henrique room (4th floor): Coffee-breaks, Lunches and Welcome Reception

Note: There is a lift available for people with reduced mobility.

DETAILED PROGRAM SCHEDULE

Monday - 27 Oct 2025				Tuesday - 28 Oct 2025				Wednesday - 29 Oct 2025			
08:30	Registration			09:00	<u>Douro room</u> (1st floor)	<u>D. Luís room</u> (ground floor)	<u>D. Maria room</u> (ground floor)	09:00	<u>Douro room</u> (1st floor)	<u>D. Luís room</u> (ground floor)	<u>D. Maria room</u> (ground floor)
09:00	Opening Session				C1	C2	C3		E1	E2	E3
09:30	<u>Douro room</u> (1st floor) Keynote 1 Human-AI Coevolution - <i>Dino Pedreschi</i>				AI for Logistics and Supply Chain Management	Human-Robot Collaboration in Future Enterprises	Collaborative Healthcare Networks: Design		Trust and Trustworthiness in Hybrid Human-AI Collaborative Networks	People-Centred & AI-Driven Processes and Environments of Tomorrow	Technologies for Adaptable Collaborative Networks
10:30	Coffee break <u>Infante Dom Henrique Room</u> (4th floor)			10:30	Coffee break <u>Infante Dom Henrique Room</u> (4th floor)			11:00	Coffee break <u>Infante Dom Henrique Room</u> (4th floor)		
11:00	<u>Douro room</u> (1st floor) A1 Society 5.0 and Collaborative Networks	<u>D. Luís room</u> (ground floor) A2 Collaborative Risk and Crisis Management	<u>D. Maria room</u> (ground floor) A3 Transition towards Collaborative Organizations 5.0: Methods	11:00	<u>Douro room</u> (1st floor) Industry Round Table			11:30	<u>Douro Room</u> (1st floor) Keynote 3 Bridging Intelligence: Human-in-the-loop - <i>Bruno Silva</i>		
12:30	Lunch <u>Infante Dom Henrique Room</u> (4th floor)			12:30	Lunch <u>Infante Dom Henrique Room</u> (4th floor)			12:30	Lunch <u>Infante Dom Henrique Room</u> (4th floor)		
14:00	<u>Douro room</u> (1st floor) Research Challenges Panel			14:00	<u>Douro room - 1st floor</u> Keynote 2 Process Mining, AI and Collaboration with Decision Makers to Make Sustainable Valued Base Healthcare Systems - <i>Vicente Traver</i>			14:00	<u>Douro room</u> (1st floor) F1 AI and Simulation-Supported Decision-Making	<u>D. Luís room</u> (ground floor) F2 AI-driven Sliding Work Sharing for Human-Robot	<u>D. Maria room</u> (ground floor) F3 Future Collaborative Workspaces in Organizations 5.0
15:30	Coffee break <u>Infante Dom Henrique Room</u> (4th floor)			15:00	<u>Douro room</u> (1st floor) D1 AI-Driven Manufacturing-as-a-Service	<u>D. Luís room</u> (ground floor) E2 Multi-Agent Systems for Hybrid Human-AI Collaboration	<u>D. Maria room</u> (ground floor) E3 Collaborative Healthcare Networks: Decision Systems	15:30	Coffee break <u>Infante Dom Henrique Room</u> (4th floor)		
16:00	<u>Douro room</u> (1st floor) B1 AI as a Driver for Collaboration	<u>D. Luís room</u> (ground floor) B2 Impact of Collaboration in Sustainability	<u>D. Maria room</u> (ground floor) B3 Transition towards Collaborative Organizations 5.0: Case Studies	16:30	Coffee break <u>Infante Dom Henrique Room</u> (4th floor)			16:00	<u>Douro Room</u> (1st floor) Closing ceremony and Awards		
18:00				17:00	<u>Arrábida room</u> (1st floor) Projects Forum & Posters I	<u>S. João room</u> (1st floor) Projects Forum & Posters I	<u>Douro Room</u> (1st floor) IFIP WG5.5 (COVE) Members Meeting				
19:00	Welcome Reception <u>Infante Dom Henrique Room</u> (4th floor)			18:30	Bus Transfer (one way)						
				19:00	Casa da Música: Guided Tour and Conference Dinner						

Monday – 27 Oct 2025

08:30 Registration (*Ground floor*)

09:00 **Opening session** (*Douro Room – 1st floor*)

09:30 **Keynote 1** (*Douro Room – 1st floor*)

Human-AI Coevolution - *Dino Pedreschi, University of Pisa, Italy*

Session chair: *Xavier Boucher*

10:30 Coffee break (*Infante D. Henrique – 4th floor*)

11:00 Parallel Sessions A

A1: Society 5.0 and Collaborative Networks (*Douro Room – 1st floor*)

Chair: *Julia Friedrich*

Hybrid Human-AI Performance Evaluation System for Collaborative Business Ecosystems

Paula Graça, Luís M. Camarinha-Matos

Extending Personal Data Sovereignty by Enabling Governance of AI Training on Personal Data

Vijon Baraku, Iraklis Paraskakis, Simeon Veloudis and Poonam Yadav

Learning Factory 5.0: An Open Design Model for Human-Centric, Sustainable, and Flexible Technical Education

Rita Amaral, Hélio Castro, Filipe Pereira, João Bastos, Joaquim Moreira, Alzira Mota and Paulo Ávila

A2: Collaborative Risk and Crisis Management (*D. Luís room – ground floor*)

Chair: *Ricardo Rabelo*

Study on the Identification of Risk Elements of Collaborative Networks Based on Power Grid Feasibility Study Reports

Yanan Xiao, Wenxin Mu, Minghong Liu, Xianing Jin and Juanqiong Gou

Research on Risk Management System of Grid Reserve Project Based on Human-Computer Collaboration

Xina Zhu, Wenxin Mu, Wanyu Li, Xianing Jin and Juanqiong Gou

Enhancing Organizational Antifragility through Financial and Market Strength Capabilities

Ariane Avila, Gustavo Dalmarco, Ricardo Zimmermann and Rossana Fornasiero

A3: Transition towards Collaborative Organizations 5.0: Methods (*D. Maria room – ground floor*)

Chairs: *Arkadiusz Jurczuk, Fabiana Pirola*

Regionally Conditioned Development Paths in Hybrid Collaborative Networks

Arkadiusz Jurczuk, Luca Carminati, Fabiana Pirola, Chiara Cimini, Alexandra Lagorio and Xavier Boucher

Comparison of Interfirm Collaboration Forms Based on Risk Assessment: Toward a Functional Economy

Claire Fabrer, Thècle Alix, Laurent Mora, and Nicolas Perry

Transition to Organisation 5.0 - Barriers and Enablers of AI Adoption in Accounting and Finance

Heli Kortessalmi, Lili Aunimo, Mariitta Rauhala, Stephan Schlögl

12:30 Lunch (*Infante D. Henrique – 4th floor*)

14:00 **Research Challenges Panel** (*Douro Room – 1st floor*)

Moderator: *Ricardo Rabelo, Federal University of Santa Catarina*

Participants:

Sobah Abbas Petersen, Norwegian University of Science and Technology

Jorge Martinez-Gil, Software Competence Center Hagenberg GmbH

Radosław Wolniak, Silesian University of Technology

Rosanna Fornasiero, Italian National Research Council

15:30 Coffee break (*Infante D. Henrique – 4th floor*)

16:00 Parallel Sessions B

B1: AI as a Driver for Collaboration (*Douro Room – 1st floor*)

Chair: *Christian Zinke-Wehlmann*

A Brief Survey on Human-AI Collaboration for Architecture Design of Industrial Systems
Antonio Monte Pegado, Luis M. Camarinha-Matos and Andre Dionisio Rocha

The Collaborative Role of Generative Artificial Intelligence in Enterprise Architecture Modelling - Experience from Students
Sobah Abbas Petersen

RELIA: Empathetic Reading Guide with Generative Artificial Intelligence
Rômulo Sherman and Sílvia Araújo

Bridging the Gap: Identifying AI-Suitable Problems and Matching with Solution Providers
Thomas Schuster and Marian Lambert

B2: Impact of Collaboration in Sustainability (*D. Luís room – ground floor*)

Chairs: *Patrícia Macedo, Paula Graça*

The Role of Digital Twins in Building Climate Change Resilience
Carl Nils Konrad Toller Melén, Marco Bertoni, Giulia Wally Scurati and Scott Young

Virtually Connected: How Do Older Adults Perceive Telepresence Systems in Terms of Social Dimensions and Trust?
Valeska Vitt, Sarah Mandl, Jennifer Brade, Philipp Klimant and Anja Strobel

Promoting ESG Performance in Collaborative Networks: A Systematic Literature Review
Livia Maria Bettini de Miranda, Fábio Müller Guerrini and Jó Ueyama

Digital Technologies for the Transition to Collaborative Circular Economy through R-strategies – Insights from European Ventures
Rosanna Fornasiero, Gustavo Dal Marco and Ricardo Zimmermann

B3: Transition towards Collaborative Organizations 5.0: Cases Studies (*D. Maria room – ground floor*)

Chairs: *Adrian Florea, Arkadiusz Jurczuk*

Augmented Reality-based Human-AI Remote Collaboration Model for Industry 5.0
A Case Study on the Inspection of Pressed-Metal Components
Rui Neves Madeira, Gabriel Marques, Pedro Albuquerque Santos, and Patricia Macedo

Nursing Home 5.0: A Case Study of Collaborative Approach for Working Organization Co-design
Elena Elias, Raksmei Phan, Xavier Boucher, Ghislain Mugisha, Nathalie Douard, and Theodora Yonkova

Democratizing Software Development: Low-Code as an Educational Pathway towards Sustainable and Collaborative Organizations
Monika Sońta, Damian Kedziora

Facilitating Agile Transformation Through Business Process Standardisation – a Case Study
Khaled Medini, Sandrine Berger-Douce

19:00 **Welcome reception** (*Infante D. Henrique – 4th floor*)

Tuesday – 28 Oct 2025

09:00 Parallel Sessions C

C1: AI for Logistics and Supply Chain Management (*Douro Room – 1st floor*)

Chair: *Rosanna Fornasiero*

Socio-Technical AI Maturity in Supply Chains: Insights from the Pulp and Paper Sector
Fernanda Freitas, Ricardo Zimmermann, Gaudencio Freires, Fabio Couto, Cristiano Fontes, António Lucas Soares, Gustavo Dalmarco, Donna Rhodes and João Gomes Jr.

Collaborating with Algorithms: AI for Collaborative Supply Chain Management
Fábio Couto, Mariana Curado Malta and António Lucas Soares

A Conceptual Framework to Design Patterns of Horizontal Collaboration in Coopetitive Logistics Partnerships
Leandro Carvalho, Jorge Freire de Sousa and Jorge Pinho de Sousa

C2: Human-Robot Collaboration in Future Enterprises (*D. Luís room – ground floor*)

Chairs: *Sanaz Nikghadam, José Barata*

Enabling Proactive Industrial Cobots: An Artificial Intelligence Approach to Enhanced HRC
Dario Antonelli

Application of AI-Enhanced Processes for Industrial Stone Scanning Machines
Jorge S. Calado, Luka Boljević, Anja Zdovc Derbashi, Gerardo Minella, Pedro Alfaro, Bruno Rêga, João Mendonça and José Ferreira

Methods for Measuring the Effectiveness of Human-AI Collaboration in an Organization
Radosław Wolniak, Agnieszka Kowalska-Styczeń, Izabela Jonek-Kowalska and Aneta Michalak

C3: Collaborative Healthcare Networks: Design (*D. Maria room – ground floor*)

Chair: *Marius Huguet*

Collaborative Processes for the Deployment of Rural Medical Homes: Simulation Study
Huguet Marius, Boucher Xavier, Augusto Vincent, Mezni Nour and Chloé Gouttefangeas

Interoperable Tools for Deploying Patient Deterioration Collaborative Monitoring during Hospitalization
Joan Lario, Miguel Ángel Mateo, Llanos Cuenca, and Ángel Ortiz

Design of a Sustainable Food Waste Management System for Collaborative Healthcare Facilities
Safa Chabouh, Imen Bouajila, Ghassen Abid, Helmi Ben Amara and Sondes Hammami

10:30 Coffee break (*Infante D. Henrique – 4th floor*)

11:00 **Industry Round Table** (*Douro Room – 1st floor*)

Facilitator: *José Carlos Caldeira, Advisor to the Chairperson at INESC Technology and Science - Associate Laboratory*

Participants:

Bernardo Almada Lobo, Co-Founder & Partner at LTPlabs

José Nóbrega de Lima, Global Head of Digital Acceleration at EDP

Pedro Bastardo, Digital Transformation Manager | R&D Group Manager KEENFINITY Group

Marta Godinho, Senior International Consultant at KPMG

12:30 **Conference Group Photo (all participants)** – building entrance stairs

Lunch (*Infante D. Henrique – 4th floor*)

14:00 **Keynote 2** (*Douro Room – 1st floor*)

Process Mining, IA And Collaboration with Decision Makers to Make Sustainable Value Based Healthcare Systems – *Vicente Traver, Universitat Politècnica de València, Spain*

Session chair: *Angel Ortiz*

15:00 Parallel Sessions D

D1: AI-Driven Manufacturing-as-a-Service (*Douro Room – 1st floor*)

Chair: *Joan Lario*

A Recommendation System-based Framework for Enhancing Human-Machine Collaboration in Industrial Timetabling Rescheduling: Application in Preventive Maintenance
Kévin Ducharlet, Liwen Zhang, Sara Maqrot and Housseem Saidi

Machine Passport: Transforming Industrial Equipment Lifecycle Management through Integrated Data and AI
Grigorios Tzionis, Georgia Kougka, Ilias Gialampoukidis, Stefanos Vrochidis, Ioannis Kompatsiaris and Maro Vlachopoulou

Manufacture of Metal Parts as a Service
Ángel Ortiz Perez, Miguel A. Mateo-Casali, Pablo Rocamora Montoro and Angel Ortiz

D2: Multi-Agent Systems for Hybrid Human-AI Collaboration in Industry (*D. Luís room – ground floor*)

Chair: *Davide Carneiro*

An Agentic Framework for Rapid Deployment of Edge AI Solutions in Industry 5.0
Jorge Martinez-Gil, Mario Pichler, Nefeli Bountouni, Sotiris Koussouris, Marielena Márquez Barreiro and Sergio Gusmeroli

A Human-Centric Agent Architecture for Hybrid Industrial Collaboration in Industry 5.0
José Sousa, Filipe Oliveira, Davide Carneiro, António Soares and Bruno Silva

Generative AI as a Catalyst for Collaborative Knowledge Management: Impacts Across Individual, Intra, and Inter-Organizational levels
Rosalina Ribeiro Silva, Henrique Diogo Silva, António Lucas Soares

D3: Collaborative Healthcare Networks: Decision Systems (*D. Maria room – ground floor*)

Chair: *Safa Layeb*

Generative Responsiveness in Assistive Care Ecosystem - GRACE
Thais A. Baldissera, Cristiano De Faveri, and Luis M. Camarinha-Matos

Territorial Collaboration and Personalisation to Improve Healthcare Pathways: The Case Study of Hip or Knee Arthroplasty
Ahmed Bakali El Kassimi, Marianne Sarazin, Xavier Boucher, Ghada Ben Meriem, and Pierre Luc Fresard

Towards a Data-driven Decision Support System for Enhanced Healthcare Collaboration
Safa Bhar Layeb, Leah Rifi, Audrey Fertier, Sébastien Rebière, Nicolas Salatgé, Olivier Oger, Philippe Olivier, and Franck Fontanili

16:30 Coffee break (*Infante D. Henrique – 4th floor*)

17:00 Parallel Sessions

Projects Forum & Posters I (*Arrábida room – 1st floor*)

Chair: *Raksmey Phan*

Project - DiMAT-Digital Modelling and Simulation for Design, Processing and Manufacturing of Advanced Materials, EU Consortium
Presentation by University Politecnica de Valencia, Spain

Project - PRIN 4.0 - Paths and bundles in industry 4.0, EU Consortium
Presentation by University of Siena, Italy

Project - Fraunhofer FLAGSHIP Project EMOTION: Empathetic Technical Systems for Resilient Manufacturing Systems
Presentation by Fraunhofer Institute for Production Systems and Design Technology, Germany

Project - 4InnoPipe2- The Collaborative and Innovative Network for Academic Entrepreneurship, EU Consortium

Presentation by Kozminski University, Poland

Project - Digital Evidence Preservation in Consumer Protection: A DLT-Based Solution with Crowd Verification

Presentation by Hochschule Pforzheim, Germany

Project – DATAWiSE - Intelligent and Sustainable Building Management powered by Cross-Sectoral Lifecycle

Presentation by University Politecnica de Valencia, Spain

Projects Forum & Posters II (*S. João room – 1st floor*)

Chair: *Ricardo Zimmermann*

Poster - Towards Sustainable AI Readiness: Introducing the FLOWER Framework

Zofia Pietka-Danilewicz, Syrine Ben Aziza and Paolo Pileggi, Netherlands.

Project - CoDEMO 5.0: Co-Creative Decision Makers for 5.0 Organizations, EU Consortium

Presentation by OMiLAB, Germany.

Project - Artificial Human Intelligent (KMI - Künstlich Menschlich Intelligent)

Presentation by Institute for Applied Informatics (InfAI), Germany.

Project - MultiAI-PASS- AI-Enhanced Adaptive Learning, EU Consortium

Presentation by Politecnico Di Torino, Italy.

Project - Robo-Rally: Use of Telepresence Systems in collaborative task handling

Presentation by Chemnitz University of Technology, Germany.

Project - Human-Centric Systems pillar of CHEDDAR

Presentation by University of York, United Kingdom

IFIP WG 5.5 (COVE) Members meeting (*Douro Room – 1st floor*)

Chair: Luis Osório

(COVE Members only)

18:30 Bus transfer to Casa da Música (one way only, leaving from the entrance building)

19:00 Casa da Música guided tour

20:00 Conference dinner at Casa da Música Restaurant

Wednesday – 29 Oct 2025

09:00 Parallel Sessions E

E1: Trust and Trustworthiness in Hybrid Human-AI Collaborative Networks (*Douro Room – 1st floor*)

Chair: *Wico Mulder*

Conditions of Trust and Trustworthiness in Top Executive-AI Teaming: Insights from a Qualitative Study among German Top Managers

Bernd-Friedrich Voigt, Klemens Bleyer

Faulty Trust: A Pilot Study on Trust in the Social Robot Navel in a Collaborative Task

Sarah Mandl, Valeska Vitt, and Anja Strobel

Think Like a Doctor: Theory of Mind and Common Ground for Justification and Trust in Human-AI Collaborative Clinical Decision-making

Andra Cristiana Minculescu, Wico Mulder, and Harmen de Weerd

Understanding the Dynamics of Blockchain Implementation: A Comprehensive Analysis of Adoption Factors and Barriers Including Trust

Marc Hübschke, Tobias Hünemeyer, Eugen Buss, Stefan Lier, and Elmar Holschbach

E2: People-Centred & AI-Driven Processes and Environments of Tomorrow (*D. Luís room – ground floor*)

Chair: *Daniele Spoladore*

A Method to Design Human-Centered AI Teammates

Wenqiang Li, Juanqiong Gou, Luis M. Camarinha-Matos, and Fangcong Zhang

Co-Designing Digitally-Enhanced and Inclusive Patient Pathways in Dental Care: A Case Study Combining Modelling, Simulation and Collaborative Innovation

Raksmey Phan, Edlecio Moreno, and Xavier Boucher

Centralised or Decentralised? Decision Factors for Healthcare Supply Chain Configurations

Elena Pessot, and Jacopo Lolli

Interdisciplinary Collaboration for Designing with Intelligence: A Qualitative Study on the Development of AI Tools for Home Adaptation for Older Adults

Daniele Spoladore, Federica Romagnoli, Atieh Mahroo, Teresa Villani, Tiziana Ferrante, and Marco Sacco

E3: Technologies for Adaptable Collaborative Networks (*D. Maria room – ground floor*)

Chair: *Heli Kortessalmi*

A Digital Twin System to Enable better Healthcare Management

Simone Gitto, Ginevra Giuliani, Alberto Lasciarrea

IT Applications, Systems, and Services Towards an Agnostic Digital Ecosystem

A. Luís Osório, Carlos Gonçalves, Paula Urze, Mário Pinheiro

A Blockchain-Integrated Deep Learning Approach for Robust Anomaly Detection in IoT Systems

Chaima Khalfaoui

Unified Model for Complex IT Infrastructures Governance: SSAFE Case Study

Rabia Azzi, Punita Raj, Ioana Filipas, François Marmier, Chaima Khalfaoui, Mathieu Gros, and Bertrand Rose

11:00 Coffee break (*Infante D. Henrique – 4th floor*)

11:30 **Keynote 3** (*Douro Room – 1st floor*)

Bridging Intelligence: Human-in-the-Loop AI for Predictive Quality in Industrial Operations

– Bruno Silva, Muvu Technologies, Portugal

Session chair: *António Lucas Soares*

12:30 Lunch (*Infante D. Henrique – 4th floor*)

14:00 Parallel Sessions F

F1: AI and Simulation-Supported Decision-Making in Collaborative VUCA Environments (*Douro Room – 1st floor*)

Chair: *Luis Osório*

Clarifying the Concept of Meta-Models for Collaborative Decision-Making in Engineering Complex Systems

Mubeen Ur Rehman, Alessandro Bertoni, and Johan Wall

An Intelligent Collaborative Decision Support System for Climate Disaster Management

Pedro S. Zanchett, Gustavo R. Lemos, Ricardo J. Rabelo

Leveraging AI Data Analytics Methodology for Social Sustainability of Working Environments: An Integrated Framework

Diletta Tosetto, Andrea Zangiacomi, David F. Nettleton, Giulia Perin¹ and Rosanna Fornasiero

F2: AI-driven Sliding Work Sharing for Human-Robot / Human-AI Collaboration (*D. Luís room – ground floor*)

Chair: *Sebastian Scholze*

Context Aware Sliding Work Sharing for Human-AI Collaboration in Logistics Domain

Sebastian Scholze, Ana Correia, and Gunnar Große Hovest

Identifying Relevant Digital Skills in Collaborative Network of Jobs using Eigenvectors and Eigenvalues Analysis

Laura Andreica, Oliviu Matei, and Văduva Bogdan

A Recommendation System for Stress Management at the Workplace Using RAG-based LLM

Panagiotis Mavrogiannis, Christos Panagopoulos, Andreas Menychtas, Paris Gallos, and Ilias Maglogiannis

F3: Future Collaborative Workspaces in Organizations 5.0 (*D. Maria room – ground floor*)

Chairs: *Thomas Süße, Adrian Florea*

Navigating the Future of AI Integration: Competency Development, Ethical Considerations, and Workforce Adaptability in „Organizations 5.0”

Adrian Florea, Vlad Toncian, Radu Cretulescu, Alin David, Daniel Morariu, Razvan Toghe and Catalin Stan

A Process-Oriented Framework for Operationalising Agile Transformation

Cheikh S-A-M Taleb, Khaled Medini, Gaya El Dib, Antoine Zimmermann

Educational Pathways for Industry 5.0: Development and Evaluation of a Collaborative Learning Cube Defining Learning Objectives, Curriculum Structure, and Certification Processes across Different Professional Levels

Philipp Korte, Luca Carminati, Thomas Süße, Maria Kobert, Chiara Cimini, Alexandra Lagorio, and Fabiana Pirola

15:30 Coffee break (*Infante D. Henrique – 4th floor*)

16:00 **Closing Session and Awards** (*Douro Room – 1st floor*)

Human-AI Coevolution

Prof. Dino Pedreschi, University of Pisa, Italy

Abstract

Human-AI coevolution, a process in which humans and AI algorithms continuously influence and adapt to each other, increasingly characterises our society. AI-based recommender systems, including generative-AI-based tools, play a prominent role in human-AI coevolution, as they permeate many facets of daily life and influence human behaviour on online platforms, such as social media, online marketplaces, geographic mapping and chatbots. The interaction between humans and AI-based recommenders generates a feedback loop: users' choices shape the data used to train algorithms, and in turn, these algorithms influence future user choices, initiating a potentially never-ending cycle. This feedback loop may lead to unexpected and often unintended social consequences; nonetheless, it is understudied in AI and complexity science. Our research aims at forging a synergy between AI and complexity science to address several challenges:

1. understanding human-AI coevolution studying the feedback loop's effect on the structure and dynamics of AI-aided complex systems;
2. modelling the fundamental mechanisms of human-AI coevolution to capture specific and universally emerging patterns;
3. governing human-AI coevolution developing complexity-informed machine learning models to manage the systemic feedback loop's effects;
4. designing a framework of responsible and transparent AI-based recommenders to dynamically balance individual and collective goals.

These research activities are grounded in empirical and simulation-based experiments on four key human-AI ecosystems: social media, geographic mapping, online retail, and chatbots based on large language models. We aim at advancing an open science of human-AI coevolution able to understand the impact of AI-based recommenders on society and develop potential tools to manage it.



Bio

Dino Pedreschi is a professor of computer science at the University of Pisa, and a pioneering scientist in data science and artificial intelligence. He co-leads the [Pisa KDD Lab - Knowledge Discovery and Data Mining Laboratory](#), a joint research initiative of the University of Pisa, Scuola Normale Superiore and the Italian National Research Council - CNR. His research contributions span on big data analytics and mining, machine learning and AI, and their impact on society: human mobility and sustainable cities, social network analysis, complex social and economic systems, data ethics, bias and discrimination analysis, privacy-preserving data analytics, explainable AI, governance of AI. His scientific production has received more than 20K citations, with an h-index of 69 (source: GS, October 2024). He is currently shaping the research frontier of Human-centered Artificial Intelligence, as a leading figure in the European network of research labs Humane-AI-Net (scientific director of "Social AI") and proponent of the research line on human-AI coevolution. He is a founder of [SoBigData.eu](#), the European H2020 Research Infrastructure "Big Data Analytics and Social Mining Ecosystem". Dino is currently Italy's nominated expert of the Responsible AI working group of GPAI – the Global Partnership on AI, the director of the Italian National PhD Program in Artificial Intelligence, and the coordinator of the project "Human-centered AI" within the Next Generation EU Partnership "FAIR – Future AI Research".

Process Mining, IA And Collaboration With Decision Makers To Make Sustainable Value Based Healthcare Systems

Prof. Vicente Traver, Universitat Politècnica de València, Spain

Abstract

Process mining is essential to move beyond isolated data analysis and uncover the real operational pathways in healthcare systems. Unlike data mining, process mining leverages AI techniques to extract and model end-to-end processes, offering insights into how care actually works and should work. This approach empowers collaboration with decision makers to identify and optimize value-generating pathways. By engaging stakeholders in co-creating sustainable process designs, we can achieve better health outcomes and contribute to the sustainability of our healthcare systems, making it easier to adopt innovations identified in these collaborative processes. The keynote will showcase real-world examples of value generation and share key lessons learned that can be scaled to other fields.



Bio

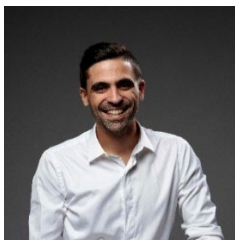
Ph.D. (2004) in Telecommunications Engineering by Universitat Politècnica de Valencia. Head of innovative Technologies for Health & Wellbeing (SABIEN) at the ITACA Institute. Assistant Professor at Universitat Politècnica de Valencia. He has participated in more than 65 EU funded projects (from IV till H2020, Erasmus+ and EIT Health), Spanish funded projects and taken part in multiple research agreements with companies, dealing most of them with digital health. He has published more than 140 technical papers in national and international journals and has participated in several seminars and conferences as invited speaker. Member of international scientific congresses committees. WHO expert for related aspects dealing with digital health and organizer of WHO training camps on big data and innovation adoption. Associated Editor of IEEE-JBHI Conference Full list of publications available [here](#).

Bridging Intelligence: Human-in-the-Loop AI for Predictive Quality in Industrial Operations

Bruno Silva, Head of Research Muvu Technologies, Portugal

Abstract

In industrial environments, the effective application of Artificial Intelligence requires more than data and algorithms, it demands the integration of people. This keynote explores how Human-in-the-Loop AI systems can enhance predictive quality in manufacturing, based on real-world implementations in factory settings. Drawing from practical experience, it examines how engineers, shift supervisors, operators, and AI systems can collaborate in hybrid networks to improve decision-making, adaptability, and trust in AI. The session reflects on the organizational, cultural, and technological challenges of embedding AI in production processes, and how collaborative design is key to unlocking its full potential.



Bio

Bruno Lopes e Silva is the Head of R&D at [Muvu Technologies](#). He earned his PhD in Artificial Intelligence for Production Processes from UPC Barcelona Tech (Spain) and was awarded the prestigious National Young Engineer Prize 2024 by the Portuguese Order of Engineers. He holds a MSc in Electrical and Computer Engineering from the Polytechnic of Leiria (Portugal), where he also serves as a visiting Assistant Professor in the Department of Electrical Engineering. Additionally, he is a Researcher at IRI CSIC-UPC (Barcelona). With strong experience in Digitalization, Machine Learning, and Industry 4.0, his work focuses on deploying real-world predictive-quality AI systems on factory shopfloors.

SOCIAL EVENTS

27th October, 7pm - Welcome Cocktail

Edifício Abel Salazar (conference venue)
Kick off PRO-VE 2025 with a relaxed cocktail at the conference venue.



Visit and Conference Dinner at Casa da Música



Avenida da Boavista, 604-610, 4149-071 Porto

6.30 pm— Bus transfer to Casa da Música (one way only)

7pm — **Guided tour to Casa da Música**

8pm — **Conference dinner at Casa da Música Restaurant**



The Casa da Música project was confirmed in 1999 as the result of an international architectural competition that chose the solution presented by Rem Koolhaas – Office for Metropolitan Architecture.

An icon of Porto designed by Rem Koolhaas/OMA. Discover its daring architecture on a guided tour, followed by dinner at the on-site restaurant.

Imagined to mark the festive year of 2001, when the city of Porto was European Capital of Culture, Casa da Música was the first building constructed in Portugal exclusively dedicated to music, encompassing both its presentation and public enjoyment, as well as the fields of artistic training and creation.

The Casa da Música project was confirmed in 1999 as the result of an international architectural competition that chose the solution presented by Rem Koolhaas – Office for Metropolitan Architecture.

Come and discover the Casa inside and out – an icon of the city of Porto that goes far beyond its impressive architecture. Explore the vast and daring architecture of Casa da Música through a guided tour led by specialised guides, which will enable you to explore the corners of the Casa, venturing through the building and also introducing its various functionalities, as well as its artistic, cultural, and social programming. A journey that will offer a new perspective on the Casa.

<http://www.pro-ve.org>