



## CONFERENCE BOOKLET

# PRO-VE 2024

25th IFIP/SOCOLNET Working  
Conference on Virtual Enterprises  
October 28-30 - Albi, FRANCE



# Summary

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## 25th PRO-VE Conference

### Navigating Unpredictability: Collaborative Networks in Non-linear Worlds

The present course of our 'non-linear world' highlights the profound unpredictability in modern environments, economies, and societies.

The intricacies of our economic and industrial dynamics are interwoven with various dimensions, including political, sociological, and ecological crises, resulting in continuous periods of unpredictable fluctuations reflected in the VUCA acronym (volatile, uncertain, complex, and ambiguous).

This unpredictability challenges conventional linear models of systems control and management. To tackle these systemic dynamics, the concept of 'navigation' metaphorically represents novel approaches to designing and managing organisations and ecosystems. Successful navigation requires a delicate balance between establishing clear and stable directions for our collective journey and embracing strong adaptability to carve effective paths into the future.

This needed approach thrives on adaptability, nurtures innovative thinking, and relies on interconnected relationships among the key stakeholders of our ecosystems. The 25 years of scientific background developed by PRO-VE in designing and managing collaborative networks is a key response to non-linear challenges.

Collaboration becomes the linchpin for fostering resilience, embracing change, implementing agile management, and working at the convergence and synergy between quantitative and qualitative management approaches, as well as between engineering and socio-human sciences, addressing the multifaceted challenges of our ever-evolving world.

**PRO-VE 2024** is a forum for sharing and discussing current developments and experiences regarding the role of collaborative networks in managing non-linear Ecosystems and Societies.

Contributions from multiple and diverse disciplines such as Engineering, Managerial, and Socio-Human sciences foster the debate on topics like: AI and digital transformation for collaborative systems; Distributed cognition in agile and resilient collaborative systems; Collaboration in untrustworthy environments; Collaborative cognitive cyber-physical systems; Agile design and management of collaborative networks; Smartness and adaptability of collaborative logistics and transportation networks; Human-machine collaboration for agile processes; Society 5.0 and collaborative networks; Complex hybridisation of collaboration – organisations, people, machines, intelligent systems; Resilience, sustainability, and antifragility of networked organisations; Digital twins for adaptable, collaborative networks; Ethics, security, and trust in a changing world; Collaborative risk and crisis management; VUCA management in collaborative networks; CN applications and case studies in multiple fields.

**PRO-VE 2024**, organized in **Albi, France**, is the **25<sup>th</sup> event of 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), PROVE 2015 (Albi, France), PRO-VE 2016 (Porto, Portugal), PRO-VE 2017 (Vicenza, Italy), PROVE 2018 (Cardiff, UK), PRO-VE 2019 (Torino, Italy), PRO-VE 2021 (Valencia, Spain), PROVE 2021 (Saint-Etienne, France), PRO-VE 2022 (Lisbon, Portugal), and PRO-VE 2023 (Valencia, Spain).

## Welcome (back) to Albi

Dear all,

On behalf of the Industrial Engineering Center at IMT Mines Albi, it is my pleasure to welcome you to the **25th edition of the PRO-VE conference**, held in Albi, France. We are particularly proud to host this conference for the second time, following a successful edition in 2015. This year also marks a special milestone—the **25th anniversary of PRO-VE**—and allows us to reflect on the advances made in collaborative networks over the past decades.

IMT Mines Albi is a distinguished engineering school recognised for its strong commitment to research, innovation, and collaboration with industry. The Industrial Engineering Center plays a pivotal role in this mission, advancing research in key areas such as logistics, healthcare, and crisis management—topics that resonate strongly with this year's conference theme.

The theme, "**Navigating Unpredictability: Collaborative Networks in Non-linear Worlds**," addresses the increasing complexity and unpredictability of today's environments, economies, and societies. Our world is characterized by volatility, uncertainty, complexity, and ambiguity (VUCA), and new approaches to management and control are essential. Collaborative networks provide a vital framework for fostering resilience, adaptability, and innovation in response to these challenges.

PRO-VE 2024 offers a rich and unique platform for exploring **how collaboration can help organizations and societies** navigate these complexities. With contributions from **various disciplines**, including engineering, management, and socio-human sciences, this event is a valuable opportunity to engage in meaningful exchanges, discover cutting-edge research, and forge new collaborations.

We are honoured to welcome you to **Albi, a UNESCO World Heritage site** renowned for its rich history and vibrant culture. I hope you find this conference stimulating and enjoyable and that you take some time to explore our beautiful city. Should you need assistance throughout the event, members of IMT Mines Albi can be easily recognized by their orange lanyards, and they will be more than happy to help.

I would like to extend my sincere thanks to the Program Committee, Luís Camarinha-Matos, Ángel Ortiz, and Xavier Boucher, for their invaluable support, as well as the entire organizing team here at IMT Mines Albi, whose dedication and hard work have made this event possible, embodying the very essence of collaboration. I would also like to sincerely thank the Occitanie Region and the SAGIP for supporting this project.

I wish you all a successful and memorable PRO-VE 2024, and a happy 25<sup>th</sup> anniversary!



Anne-Marie Barthe-Delanoë  
*General Chair*

## Welcome to PRO-VE 2024

With this **25<sup>th</sup> edition**, PRO-VE offers an exciting program centered on **Navigating Unpredictability: Collaborative Networks in Non-linear Worlds**. Since its first edition in Porto, Portugal, in 1999, PRO-VE has played a fundamental role in advancing the field of Collaborative Networks (CN) and its associated research community. Over the years, PRO-VE has become known for several distinctive features: providing a space for lively discussions on cutting-edge topics, encouraging inspiring interactions among experts from different backgrounds and disciplines, promoting an **interdisciplinary perspective** to address collaborative networks challenges, and pursuing excellence by applying scientific solutions to real-world problems, thereby contributing to the development of sound theories, methods, and tools.

The main theme of this edition focuses on the role of Collaborative Networks in addressing the profound unpredictability of modern environments, economies, and societies—characterized by volatility, uncertainty, complexity, and ambiguity (VUCA). Over the past 25 years, the PRO-VE conference series has been instrumental in the evolution from CN 1.0 to CN 5.0, establishing a strong foundation for collaborative networks science. This body of work, highlighted in the 25th anniversary proceedings, offers a stable anchor amid the uncertainty of our times. As we move towards Society 5.0, the complexity of interactions between economic, political, sociological, and ecological factors intensifies.

With the support of the SOCOLNET international Society of Collaborative Networks and IFIP (International Federation of Information Processing), especially through the WG 5.5 COVE, PRO-VE has contributed not only to the consolidation of the research community of Collaborative Networks but also to the identification of future research directions. We hope that this 25th edition continues this tradition, encouraging your active involvement in all its activities.

A special word of thanks goes to the members of the International Program Committee, who undertook the heavy task of evaluating the large number of submissions. Lastly, we extend our gratitude to the local organizing committee, coordinated by Anne-Marie Barthe-Delanoë, and to the various sponsors whose support made this year's event possible.

We wish you a productive and memorable working conference experience in Albi.



Luis M. Camarinha-Matos  
*Program Committee Chair*



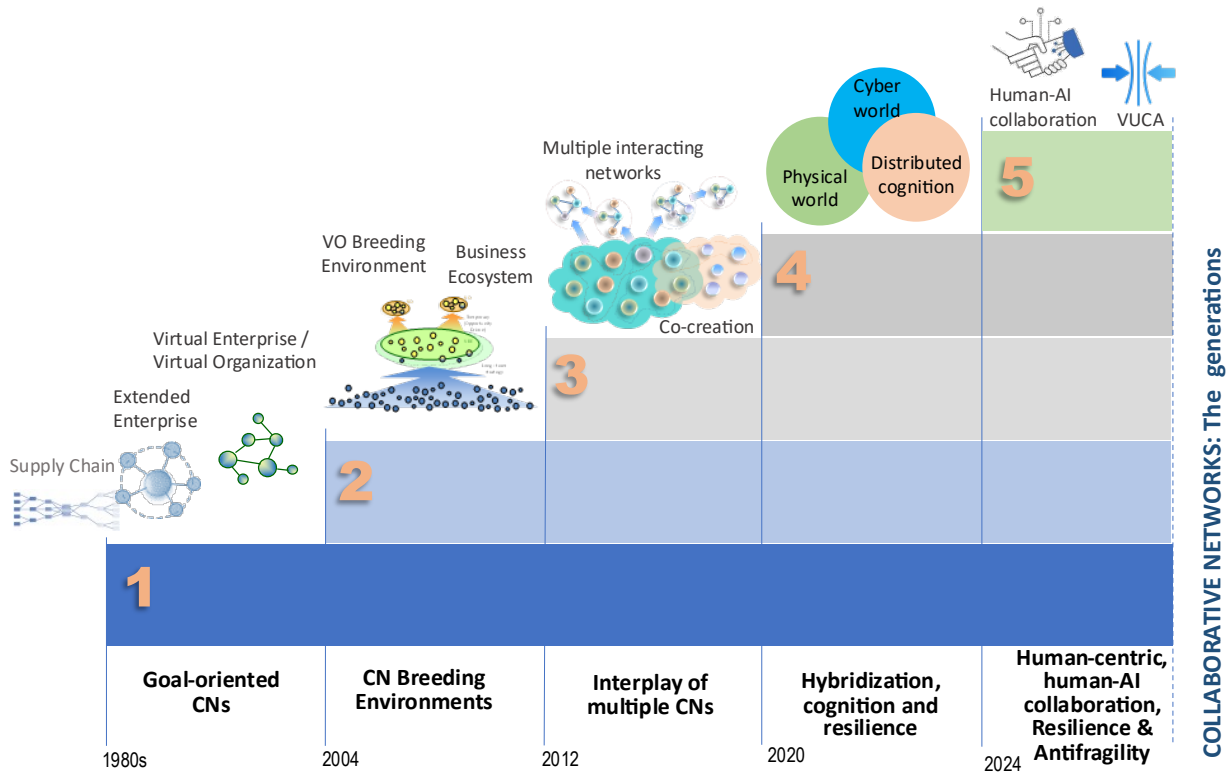
Ángel Ortiz  
*Program Committee Co-chair*



Xavier Boucher  
*Program Committee Co-chair*

# PRO-VE – 25 years!

PRO-VE	Theme / proceedings	
1999 Porto, Portugal	Infrastructures for Virtual Enterprises	Collaborative Networks 1.0
2000 Florianopolis, Brazil	E-Business and Virtual Enterprises	
2002 Sesimbra, Portugal	Collaborative Business Ecosystems and Virtual Enterprises	
2003 Lugano, Switzerland	Processes and foundations for virtual organizations	
2004 Toulouse, France	Virtual Enterprises and Collaborative Networks	Collaborative Networks 2.0
2005 Valencia, Spain	Collaborative networks and their breeding environments	
2006 Helsinki, Finland	Network-centric collaboration and Supporting Frameworks	
2007 Guimarães, Portugal	Establishing the foundation of collaborative networks	
2008 Poznan, Poland	Pervasive Collaborative Networks	
2009 Thessaloniki, Greece	Leveraging Knowledge for Innovation in Collaborative Networks	
2010 St. Etienne, France	Collaborative Networks for a Sustainable World	
2011 São Paulo, Brazil	Adaptation and Value Creating Collaborative Networks	Collaborative Networks 3.0
2012 Bournemouth, UK	Collaborative Networks in the Internet of Services	
2013 Dresden, Germany	Collaborative Systems for Reindustrialization	
2014 Amsterdam, Netherlands	Collaborative Systems for Smart Networked Environments	
2015 Albi, France	Risks and Resilience of Collaborative Networks	
2016 Porto, Portugal	Collaboration in a Hyperconnected World	
2017 Vicenza, Italy	Collaboration in a Data-Rich World	
2018 Cardiff, UK	Collaborative Networks of Cognitive Systems	
2019 Turin, Italy	Collaborative Networks and Digital Transformation	Collaborative Networks 4.0
2020 Valencia, Spain	Boosting Collaborative Networks 4.0	
2021 Saint-Étienne, France	Smart and Sustainable Collaborative Networks 4.0	
2022 Lisbon, Portugal	Collaborative Networks in Digitalization and Society 5.0	
2023 Valencia, Spain	Collaborative Networks in Digitalization and Society 5.0	
2024 Albi, France	Navigating Unpredictability: Collaborative Networks in Non-linear Worlds	Collaborative Networks 5.0
...		



Based on "The Evolution Path to Collaborative Networks 4.0"  
[https://doi.org/10.1007/978-3-030-81701-5\\_7](https://doi.org/10.1007/978-3-030-81701-5_7)

## 25 YEARS OF PROCEEDINGS

PRO-VE 1999 PRO-VE 2000 PRO-VE 2002 PRO-VE 2003 PRO-VE 2004 PRO-VE 2005 PRO-VE 2006 PRO-VE 2007 PRO-VE 2008 PRO-VE 2009

PRO-VE 2010 PRO-VE 2011 PRO-VE 2012 PRO-VE 2013 PRO-VE 2014 PRO-VE 2015 PRO-VE 2016 PRO-VE 2017 PRO-VE 2018 PRO-VE 2019

PRO-VE 2020 PRO-VE 2021 PRO-VE 2022 PRO-VE 2023 PRO-VE 2024

A major contribution to the discipline of Collaborative Networks

<https://link.springer.com/conference/pro-ve>



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### Program Co-Chair

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### Program Co-Chair

Xavier Boucher, Ecole des Mines de Saint Etienne, France

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Yohann Chasseray, IMT Mines Albi, France

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### **Collaborative Ecosystems: Skills for Resilient Futures**

Thomas Schuster, Hochschule Pforzheim, Germany  
Eda Marchetti, CNR-ISTI, Italy  
José Barata, NOVA University of Lisbon, Portugal  
Sanaz Nikghadam-Hojjati, NOVA University of Lisbon, Portugal

### **Collaborative Manufacturing Systems in the Digital Era**

Ege Duran, University College Cork, Ireland  
Cemalettin Ozturk, Munster Technological University, Ireland  
Barry O'Sullivan, University College Cork, Ireland

### **Collaborative Networks as Driver of Innovation in Organizations 5.0**

Arkadiusz Jurczuk, Politechnika Białostocka, Poland  
Thomas Süße, Bielefeld University of Applied Science, Germany  
Adrian Florea, 'Lucian Blaga' University of Sibiu, Romania  
Fabiana Pirola, Università degli Studi di Bergamo, (Italy)

### **Empowering Vulnerable Populations Well-being through Collaborative Networks**

Ana Inês Oliveira, NOVA University of Lisbon, Portugal  
Filipa Ferrada, NOVA University of Lisbon, Portugal  
Patrícia Macedo, Polytechnic Institute of Setubal, Portugal

### **Fostering Collaborative and Interoperable Digital Models for Digital Twins**

Aurélie Congès, IMT Mines Albi, France

Sina Namaki Araghi, UTTOP, France

### **Trust and Trustworthy Technologies in Collaborative Networks**

Bernd-Friedrich Voigt, South Westphalian University of Applied Sciences, Germany

Thomas Schlösser, South Westphalian University of Applied Sciences, Germany

Stefan Lier, South Westphalian University of Applied Sciences, Germany

### **Zero Defects and Zero Waste Strategies in Industrial Collaborative Networks**

Francisco Fraile, Polytechnic University of Valencia, Spain

Lario Femenia Joan, Polytechnic University of Valencia, Spain

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La Région Occitanie Pyrénées-Méditerranée

# Detailed Program Schedule

	Monday 28th October 2024	Tuesday 29th October 2024	Wednesday 30th October 2024	
08:30	Registration	<b>D1:</b> Fostering Collaborative and Interoperable Digital Models for Digital Twins: Cases	<b>D2:</b> Collaborative Manufacturing Systems in the Digital Era	
09:00	Opening ceremony	<b>D3:</b> CNs as Driver of Innovation in Organizations 5.0: Participation	<b>E1:</b> Trust and Trustworthy Technologies in Collaborative Networks	
09:30	Keynote C. Maurin (GEODIS) <i>Data sharing for collaborative logistics</i>	Coffee Break	<b>E2:</b> Uncertainty and Collaboration in Supply Chain	
10:00			<b>E3:</b> Posters session	
10:30	Coffee Break	Round table – Industry	Coffee Break	
11:00	<b>A1:</b> AI and Collaboration		<b>A2:</b> Collaborative Ecosystems: Skills for Resilient Futures	Keynote F. Bénaben (IMT) <i>Physics of Decision - A physics-inspired theoretical approach for complex systems performance modeling, visualization and management</i>
11:30			<b>A3:</b> CNs as Driver of Innovation in Organizations 5.0: Models	
12:00				
12:30	Lunch	Lunch	Lunch	
13:00				
13:30				
14:00	<b>B1:</b> Fostering Collaborative and Interoperable Digital Models for Digital Twins: Models	<b>B2:</b> Empowering Vulnerable Populations Well-being through CNs	<b>B3:</b> Human-Machine Collaboration	
14:30		Keynote K. Blomqvist (LUT) <i>Leveraging trust and digitalization for dynamic collaboration in the VUCA world</i>	<b>F1:</b> Design of Collaborative Environments	
15:00		Round table – Academics	<b>F2:</b> Collaborative Decision Making	
15:30	Coffee Break		<b>F3:</b> Zero Defects and Zero Waste Strategies in Industrial Collaborative Networks	
16:00	<b>C1:</b> Emotions and Collaborative Networks		Closing ceremony (+ awards)	
16:30	<b>C2:</b> Collaborative Ecosystems: Technologies for Resilient Futures	Coffee Break		
17:00	<b>C3:</b> Simulation Frameworks			
17:30	Free time: go to city center (hotels) with public transportation + walk to check-point for the social event	Projects forum		
18:00				
18:15				
18:30	Old city center visit, Tapas dinner at <i>Ô Vents d'Ange</i> (old city center)	Bus transfer		
22:30		Visit and Gala dinner at <i>Château de Mauriac</i>		

## Monday – 28 Oct 2024

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08:30 Registration (*Ground Floor*)

09:00 Opening Ceremony (*Amphithéâtre 1*)

09:30 Keynote (*Amphithéâtre 1*)

**Data sharing for collaborative logistics**

Christophe Maurin, IT Customer Solution manager, GEODIS, France

10:30 Coffee break (*2<sup>nd</sup> floor*)

11:00 Parallel Sessions A:

**A1: AI and Collaboration (1A31)**

Chair: Beatriz Andres Navarro

**Hybrid Collaborative Networks in Energy Ecosystems**

Kankam Okatakyie Adu-Kankam, Luís M. Camarinha-Matos and Eric Obeng

**Integrating AI in Supply Chain Management: Using a Socio-technical Chart to Navigate Unknown Transformations**

António Lucas Soares, Jorão Gomes Jr., Ricardo Zimmermann, Donna Rhodes and Verena Dorner

**Towards the Integration of Conversational Agents through a Social Media Platform to Enhance the Agility of BPM**

Lala Aïcha Sarr, Paul Komlan Ayite, Anne -Marie Barthe-Delanoë, Dominik Bork, Guillaume Macé-Ramète and Frédérick Bénaben

**A2: Collaborative Ecosystems: Skills for Resilient Futures (1A33)**

Organizers: Thomas Schuster, Eda Marchetti, José Barata, Sanaz Nikghadam-Hojjati

**Design of a Collaborative Network for Mapping Digital Skills for Industry 5.0**

Maria Gustavsson, Oliviu Matej, Laura Andreica, Agneta Halvarsson Lundkvist and Daniel Persson Thunqvist

**Collaborative Ecosystems for Increasing Automation in Accounting Processes in Small Firms**

Heli Kortesalmi, Lili Aunimo and Eija-Leena Kärkinen

**The Innovation Challenge Bootcamp Model**

Daniel Cortés, Jose-Bernardo Rosas-Fernandez and Arturo Molina

**A3: Collaborative Networks as Driver of Innovation in Organizations 5.0: Models (1A35)**

Organizers: Arkadiusz Jurczuk, Thomas Süße, Adrian Florea, Fabiana Pirola

**Leveraging Collaboration for Industry 5.0: Needs, Strategies and Future Directions**

Vlad Toncian, Adrian Florea, Alin David, Daniel Morariu and Radu Cretulescu

**Towards A Conceptual Model for Enhancing Efficiency and Collaboration in Agile Ramp-Up Projects Planning**

Qussay Jarrar, Cheikh S-A-M Taleb, Shervin Kadkhoda-Ahmadi and Khaled Medini

**Utilizing Natural Language Processing for Enhancing Collaborative Value-Driven Design of Smart Product Service System: Smart E-Vehicle Application**

Yan Zhang, Andreas Larsson, Tobias Larsson, Wenchong Tian, Lan Zhang and Wei Wang

12:30 Lunch

**14:00 Parallel Sessions B:**

**B1: Fostering Collaborative and Interoperable Digital Models for Digital Twins: Models (1A31)**

*Organizers: Aurélie Congès, Sina Namaki Araghi*

**Requirements derived from Digitalization Patterns**

*Anna Sumereeder, Robert Woitsch and Bernhard Bürger*

**Software Testing Approach for Digital Twin Verification and Validation**

*Milad Zahediyami, Simon Gorecki and Mamadou Kaba Traoré*

**DMFDT: Data Management Framework for Digital Twin**

*Zeeshan Ali, Milad Poursoltan and Mamadou Kaba Traore*

**B2: Empowering Vulnerable Populations Well-being through Collaborative Networks (1A33)**

*Organizers: Ana Inês Oliveira, Filipa Ferrada, Patricia Macedo*

**Closing the Gap: Leveraging Mass Collaboration to Support People with Disability**

*Patricia Macedo, Ana Inês Oliveira, Filipa Ferrada*

**Integrating Social Interaction within Senselife Framework**

*Ghassen Frikha, Xavier Lorca, Hervé Pingaud, Adel Taweel, Christophe Bortolaso, Katarzyna Borgiel and Elyes Lamine*

**Collaborative Communication and Monitoring Ecosystem for Elderly Care**

*Thais A. Baldissera, Cristiano De Faveri, Maria A. Oliveira and Luís M. Camarinha-Matos*

**B3: Human-Machine Collaboration (1A35)**

*Chair: Sobah Abbas Petersen*

**Human and Machine Complementary Roles in Collaborative Evaluation of Creative Speech**

*Sepideh Kalateh, Sanaz Nikghadam Hojjati and José Barata*

**Continual Learning for Human-Machine Collaboration in VUCA Environments**

*Yuchen Fan, Dario Antonelli and Alessandro Simeone*

**Associations Between Gender Attributions and Social Perception of Humanoid Robots**

*Sarah Mandl, Jonna S. Laß, and Anja Strobel*

**15:30 Coffee break (2<sup>nd</sup> floor)**

**16:00 Parallel Sessions C:**

**C1: Emotions and Collaborative Networks (1A31)**

*Chair: Paula Urze*

**Emotions in Human-AI Collaboration**

*Filipa Ferrada and Luis Camarinha-Matos*

**Do There Exist an Emotion Trend in Scientific Papers? PRO-VE Conference as a Case**

*Rishitha Venumuddala, Lai Xu and Paul de Vrieze*

**Integrating Perception and Systemic Theories in Collaborative Networks - Enhancing Adaptability and Resilience in a Nonlinear World**

*Javad Jassbi, Mahmood Alborzi and Hamed Jassbi*

**C2: Collaborative Ecosystems: Technologies for Resilient Futures (1A33)**

*Organizers: Thomas Schuster, Eda Marchetti, José Barata, Sanaz Nikghadam-Hojjati*

**Evaluating Privacy Patterns within Collaborative Frameworks for AI Ecosystem Development**

*Lukas Waidelich, Marian Lambert and Thomas Schuster*

**Towards a Reference Architecture for Collaborative Decision Support Systems for Natural Disasters Management**

*Pedro S. Zanchett and Ricardo J. Rabelo*



**Asset Administration Shell Approach for Modular and Configurable Internet of Things Devices**

*Miguel Arvana, Nelson Freitas, Andre Dionisio Rocha and Jose Barata*

**C3: Simulation Frameworks (1A35)**

*Chair: Luis Osório*

**Simulation-Based Framework for Assessing Synchronodal Transportation Solutions in Low-Density Ecosystems**

*Thibaut Cerabona, Liz Araceli Cristaldo, Imane Bouab, Eva Petitdemange, Xavier Lorca and Matthieu Lauras*

**Simulation-based Learning for Agri-food Industry: A Literature Review and Bibliometric Analysis**

*Anca Şipoş, Ionela Maniu and Adrian Florea*

**CitySIM - Agent-Based System for Modelling and Simulating Cities as Complex Adaptive Systems for Collaborative Governance**

*André Fosvold and Sobah Abbas Petersen*

**17:30** **Free time** to go to the city center (hotels) with public transportation (bus line R, stop in the city center at 'Jean Jaures') and walk to the checkpoint for the social event.

**18:15** **Old city center tour** followed by the **tapas dinner** (*Ô Vent d'Ange*)

**22:30** **End**

## Tuesday – 29 Oct 2024

### 08:30 Parallel Sessions D:

#### **D1: Fostering Collaborative and Interoperable Digital Models for Digital Twins: Cases (1A31)**

*Organizers: Aurélie Congès, Sina Namaki Araghi*

##### **Contributions of Digital Twins Services to the Implementation of the Circular Economy**

*Sirajeddine Aouani, Pascale Marangé, Vincent Robin and Mamadou Kaba Traore*

##### **Digital Twin for Sustainable Systems Methodology: Application in Water Network Management**

*Mariza Maliqi, Damien Lamy and Frédéric Grimaud*

##### **Bidirectional Integration of Digital Product Passports into Information Systems of Production Planning and Control**

*Maria Spiß, Stefanie Berninger, Martin Perau, Jokim Janßen, Wolfgang Boos and Tobias Schröer*

#### **D2: Collaborative Manufacturing Systems in the Digital Era (1A33)**

*Organizers: Ege Duran, Cemalettin Ozturk, Barry O’Sullivan*

##### **Exact and Heuristic Methods for Planning and Scheduling Collaborative Manufacturing Systems**

*Ege Duran, Cemalettin Ozturk, Barry O’Sullivan*

##### **Design and Development of a Marketplace-based Collaborative Ecosystem for Software Integration and Distribution within Manufacturing**

*Antonio Monte Pegado, Andre Dionisio Rocha and José Barata*

##### **Bibliometric Analysis of Immersive Technologies in Supply Chain Strategy: Knowledge-Based Systems Case**

*Beatriz Andres, Rocio de la Torre and Ana Mojica*

#### **D3: Collaborative Networks as Driver of Innovation in Organizations 5.0: Participation (1A35)**

*Organizers: Arkadiusz Jurczuk, Thomas Süße, Adrian Florea, Fabiana Pirola*

##### **Participation as Fuel for Transformation - An Approach to the Interrelations between Digitalization, Participation and Values in NPOs**

*Julia Friedrich, Vanita Römer and Christian Zinke-Wehlmann*

##### **Digital Leadership from the Perspective of Organization 5.0: An Analysis of Key Action Fields towards Green, Resilient, and Human-centered Digitalization**

*Philipp Korte, Maria Kobert and Thomas Süße*

##### **Skills, Technical and Organizational Support Needed for Collaborative Networks 5.0**

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

### 10:00 Coffee break (2<sup>nd</sup> floor)

### 10:30 Round Table: Industry (*Amphithéâtre 1*)

*Moderator: Éva Petitdemange*

*Nicolas Krabal (AMARENCO)*

*Christophe Maurin (GEODIS)*

*Colonel Florent Courrèges (SDIS 62)*

*Bertrand Debuisser (MAJOR 5)*

### 12:30 Conference Group Photo (all participants)

Lunch

- 14:00** **Keynote** (*Amphithéâtre 1*)  
**Leveraging trust and digitalization for dynamic collaboration in the VUCA world**  
*Kirsimarja Blomqvist, LUT Business School, Finland*
- 15:00** **Round Table: Academic** (*Amphithéâtre 1*)  
*Moderators: Luís M. Camarinha-Matos, Ángel Ortiz, Xavier Boucher*  
*Pr. Antonio Lucas Soares*  
*Pr. Jose Barata*  
*Pr. Valérie Botta-Genoulaz*  
*Assoc. Pr. Beatriz Andres Navarro*
- 16:30** **Coffee break** (*2<sup>nd</sup> floor*)
- 17:00** **Projects Forum** (*2A71 & 2A73*)  
*Chair: Raphaël Oger*
- Virtual Exchange for Collaborative Learning (VE-Collab)**  
*Christian Zinke-Wehlmann*
- TBDK (Toolbox Datenkompetenz | Toolbox Data Literacy)**  
*Julia Friedrich*
- Greensmartmed project**  
*Fabiana Pirola*
- RAMP-UP II – Supporting agile ramp-up and ramp-down in service and manufacturing industries**  
*Cheikh S. A. M. Taleb & Khaled Medini*
- Flexibilization of complex Ecosystems using Democratic AI based Decision Support and Recommendation Systems at Work**  
*Christian Muck*
- Change2Twin – Create and Harvest Offerings to support Manufacturing SMEs to become Digital Twin Champions**  
*Anna Sumereeder*
- CoDEMO 5.0: Co-Creative Decision Makers for 5.0 Organizations**  
*Iulia Vaidian*
- 18:30** **Bus transfer** to Château de Mauriac (*Gymnasium*)
- 19:00** **Visit and Gala Dinner** at **Château de Mauriac**
- 22:30** **Bus transfer** back to Albi (bus stops: *city center* and *IMT Mines Albi*)

## Wednesday – 30 Oct 2024

### 9:00 Parallel Sessions E:

#### **E1: Trust and Trustworthy Technologies in Collaborative Networks (1A31)**

*Organizers: Bernd-Friedrich Voigt, Thomas Schlösser, Stefan Lier*

##### **Navigating Trust: A Morphological Analysis of Blockchain-as-a-Service Providers**

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

##### **AI-Enhanced QOC-Analysis: A Framework for Transparent and Insightful Decision-Making**

*Lambert Schmidt, Marcel Pehlke and Marc Jansen*

##### **Sovereign Citizen on Digital Regulated Services Ecosystem**

*A. Luís Osório, Luis M. Camarinha-Matos, Carlos Gonçalves and Tiago Dias*

##### **Personal Data Sovereignty in Virtual Enterprises: Implementing Data Capsules for Enhanced Privacy and Compliance**

*Vijon Baraku, Iraklis Paraskakis, Simeon Veloudis and Poonam Yadav*

#### **E2: Uncertainty and Collaboration in Supply Chain (1A33)**

*Chair: Dario Antonelli*

##### **Integrating Uncertainty into a Supply Chain Network for Adaptive S&OP Process**

*Jean Baptiste Vidal, Raphaël Oger, Matthieu Lauras and Jacques Lamothe*

##### **How Best Practices of SCOR DS Model Support Short Supply Chains Management: A Bibliometric Analysis**

*Gaia Sassone, Taha Arbaoui and Valérie Botta-Genoulaz*

##### **Impact of a Set of Factors on Order Lead Time: A Case Study of an Apparel Company**

*Giulio Mangano, Valérie Botta-Genoulaz and Massimo Rebuglio*

##### **Who Controls the Physical Internet? A Review of Protocols and Algorithms**

*Massimo Rebuglio, Andrea Ferrari, Giovanni Zenezini, Giulio Mangano and Filippo Maria Ottaviani*

#### **E3 : Posters session (2A71 & 2A73)**

*Chair: Thais Baldissera*

##### **Bridging the Gap in Access to Health and Care Services for Vulnerable Populations: The E-Help Approach**

*Ana Inês Oliveira, Filipa Ferrada, Sanaz Nikghadam-Hojjati and Eda Marchetti*

##### **Towards Adaptive and Collaborative Framework: Application to Crisis Management and Project Portfolio Contexts**

*Clara Le Duff, Alexis Evain, Frederick Benaben, David Panzoli and Benoit Montreuil*

##### **A Participative, Inclusive and Collaborative Approach for 5.0 Organizational Transformation**

*Elena Elias, Xavier Boucher, Ghislain Mugisha, Raksmei Phan and Nathalie Douard*

##### **Advancing Collaborative Situational Awareness: Introducing a Territory Digital Twin for Improved Shared Understanding and Collaboration**

*Audrey Fertier, Aurélie Congés and Yohann Chasseray*

##### **Digitalization - Consortium for Advanced Management International CAM-I**

*Andrew Crossley*

##### **Emotional Reactions to Untrustworthiness and Withheld Trust Dependent on Relative Performance-based Status within Teams**

*Carolina Dahlhaus, Thomas Schlösser, Detlef Fetchenhauer and David Dunning*

### 11:00 Coffee break (2<sup>nd</sup> floor)

### 11:30 Keynote (Amphithéâtre 1)

#### **Physics of Decision - A physics-inspired theoretical approach for complex systems performance modeling, visualization and management**

*Frédéric Bénaben, IMT Mines Albi, France*

**12:30 Lunch**

**14:00 Parallel Sessions F:**

**F1: Design of Collaborative Environments (1A31)**

*Chair: Ricardo Rabelo*

**Canvas as Tools for Digital Platform Design: Analysis, Comparison & Evolution**

*Henrique Diogo Silva and António Lucas Soares*

**A Study of the Impact of Organisational Territoriality on Collaborative Networks: A Case of Project Reservation in State Grid**

*Shuxu Chen, Wenxin Mu, Xianing Jin, Minghong Liu and Juanqiong Gou*

**Cell Zooming in LTE-R as a Potential Game**

*Evangelos D. Spyrou and Chrysostomos Stylios*

**Social Dimension of a Sovereign Digital Citizenship: the SCOD Framework**

*A. Luis Osório, Emilia Araújo, Paula Urze and José Cavaleiro Rodrigues*

**F2: Collaborative Decision Making (1A33)**

*Chair: António Lucas Soares*

**Managing Risks in Collaborative Network Organizations within Sales and Operations Planning: A Maturity Model**

*Danielle Fakhry, Raphaël Oger, Matthieu Lauras and Vincent Pellegrin*

**Collaborative Multi-Criteria Decision-Making: Evaluation of Design Scenarios for PSS Heating Systems**

*Mariza Maliqi, Xavier Boucher, Jonathan Villot and Damien Lamy*

**A Proposal for Automatic Demand Forecast Model Selection**

*Wassim Garred, Raphaël Oger, Anne-Marie Barthe-Delanoë, and Matthieu Lauras*

**Value Systems for the Parallel Implementation of Value-Retention Circular Strategies in the White Goods Industry**

*Martin Perau, Antoine Gaillard, Daniel Spindler, Florian Schuldt, Can Özkan, Tobias Schröer and Wolfgang Boos*

**F3: Zero Defects and Zero Waste Strategies in Industrial CN (1A35)**

*Organizers: Francisco Fraile, Lario Femenia Joan*

**Human-Centered Solutions based on Automated Visual Inspection System**

*Joan Lario, N. P. García-de-la-Puente, Eric López, Manuel Olbrich and Valery Naranjo*

**Integration of Artificial Intelligence in Manufacturing Companies for Achieving Zero Waste – A Systematic Literature Review**

*Ludovica Miele, Francisco Fraile, Ana Estesó and Roberto Rocca*

**Smart Master Production Scheduling by Deep Reinforcement Learning: An Exploratory Analysis**

*Julio C. Serrano-Ruiz, Josefa Mula, Raúl Poler and Manuel Díaz-Madroñero*

**A Methodology for Designing a Decision Support System for Hyperconnected Circular Supply Chain Network Design**

*Ziqing Wu, Raphaël Oger, Matthieu Lauras, Louis Faugère and Benoit Montreuil*

**16:00 Closing ceremony and Awards (*Amphithéâtre 1*)**

**16:30 End of the conference**

# Keynotes

## Data sharing for collaborative logistics

**Christophe Maurin**

IT Customer Solution Manager, GEODIS, France

He will talk about the complexity to organize collaborative digitalization in a very fragmented environment. Sustainability and industry efficiency, depend on the improvement of the collaboration between the stakeholders processing logistics chains. In large and fragmented communities like Logistics, are standardization, common language and trust, key foundations for digital collaboration, process optimization, AI usage, Physical Internet...?



*Christophe Maurin, based in Île-de-France, France, is currently an IT Customer Solution Manager at GEODIS.*

*Christophe Maurin brings experience from previous roles at Geodis BM and Capgemini, with a robust skill set that includes Change Management, Management, Transport and more.*

## Leveraging trust and digitalization for dynamic collaboration in the VUCA world

**Kirsimarja Blomqvist**

Professor in Knowledge Management, LUT Business School, Finland

In her keynote she talks about the opportunities that advanced digital collaboration technologies provide for the sustainable future of work and organizing. She believes that many of the complex organizational problems and wicked societal problems can be solved, if we are able to build trust, and organize dispersed expertise efficiently and effectively across time and space. She shares practical case examples of organizing and leading Fast Expert Teams, a digital form of organizing expertise in temporary digital communities and teams, she has been developing together with her research group.



*Kirsimarja Blomqvist (PhD, Professor in Knowledge Management, LUT Business School, Finland) is an expert in trust, knowledge management, and collaboration. She has published over 200 research papers on her research topics in journals, books, and peer-reviewed conferences. She has worked previously in the industry in large and small tech firms and continues engaged in scholarship at academia. She participates actively in academic conferences, speaks regularly to management about her research topics, and serves on boards. She enjoys traveling and nature in her free time, especially hiking and cross-country skiing.*

## Physics of Decision - A physics-inspired theoretical approach for complex systems performance modeling, visualization and management

### Frédéric Bénaben

Professor at IMT Mines Albi, France,

Adjunct Professor at Georgia Tech, USA,

Adjunct Professor at Beijing JiaoTong University, China

In a world where instability is the norm, this presentation focuses on an approach inspired by the paradigms of physics to represent the performance of systems, systems of systems or networks of systems as trajectories. The risks and opportunities that surround these systems, whether (partially or totally) manageable or inflicted, can then be modeled as physical forces that can impact this trajectory (deviate it, accelerate it, slow it down, etc.). This conceptual metaphor is presented in three stages. First, a theoretical presentation of the concepts and associated mechanisms, then the benefits in terms of visualization, and finally, the exploitation perspectives and benefits associated with the use of this approach.



*Frédéric BÉNABEN is Professor MT Mines Albi Centre Génie Industriel. He is the head of the “Security and Crisis Management” research team. He is adjunct Professor at the School of Industrial and Systems Engineering of the Georgia Institute of Technology (USA) where he is the co-director of the SIREN Lab. He is in charge of several long terms research common laboratories with industrial partners (AIRBUS, DASSAULT SYSTEMES, EPSI, SCALIAN). His research works focus on data management, through model-driven engineering for decision support. He stands at the crossroads of industrial engineering, information systems, decision support, and artificial intelligence applied to crisis management, supply chain management, and risk management.*

# Conference venue

Interactive PRO-VE 2024 Google Map with the points of interest:

<https://www.google.com/maps/d/u/0/edit?mid=1twN4TP5fwVCOXCRBPmsUP9f1zZfWRiY>

**Main building, ground floor:** Registration Desk, Help Desk.

**Main building, 1<sup>st</sup> floor:**

- **Amphithéâtre 1:** opening and closing ceremonies, keynotes, roundtables,
- **1A31:** sessions A1, B1, C1, D1, E1, F1.
- **1A33:** sessions A2, B2, C2, D2, E2, F2.
- **1A35:** sessions A3, B3, C3, D3, F3.
- **1A29:** quiet room (for calls, meetings, etc.).

**Main building, 2<sup>nd</sup> floor:**

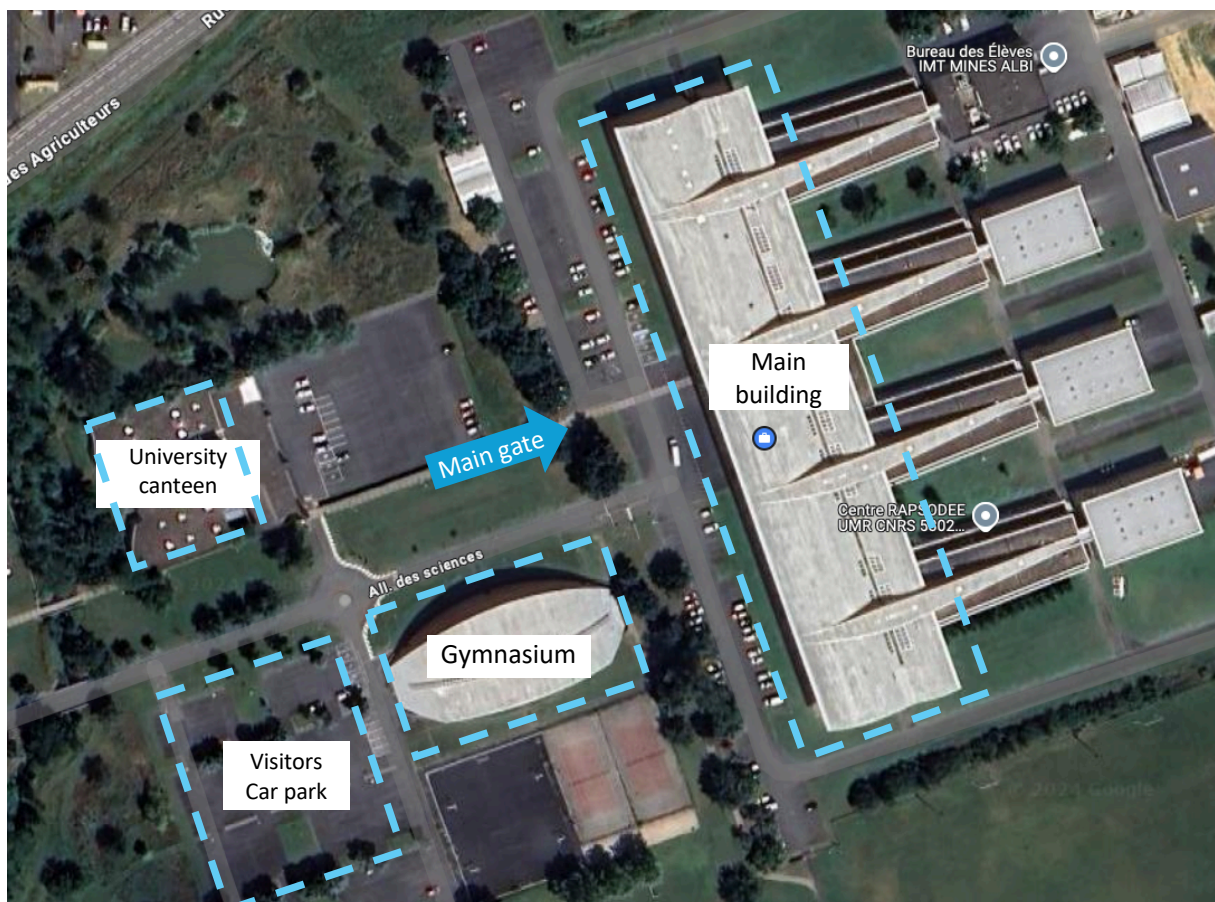
- **Hall of Amphithéâtres 1 & 2:** coffee breaks.
- **Amphithéâtre 1:** opening and closing ceremonies, keynotes, roundtables.
- **2A71 & 2A73:** session E3 Projects forum, Posters session.

**University canteen building:**

- Lunches (seated lunch).

**Gymnasium building:**

- Pick-up point for the bus transfer to the Gala Dinner (on Tuesday 29).





## Social Events

**Monday night, the 28th of October 2024, 6:15 pm**

### **Old city tour and tapas dinner**

We'll start by exploring the historic charm of Albi, a UNESCO World Heritage Site.

***Meeting point in front of the Ibis Styles Le Teatro hotel (Place Jean Jaurès 81000 Albi)  
The tour starts at 6:15 p.m.***

Known for its rich history and southern French identity, Albi's stunning episcopal city and historic center, with their red brick and tiled roofs, overlook the picturesque Tarn River. Our stroll will take us through the largest heritage-protected district in southern France, where you'll marvel at beautiful half-timbered houses, Renaissance pastel townhouses, and a romantic, flower-adorned medieval cloister. We'll also visit the residences of famous figures like Lapérouse and Toulouse-Lautrec.

After our walk, we'll gather at the "*Ô Vent d'Ange*" restaurant for a festive and relaxed evening. Enjoy local wines and homemade tapas made with fresh, local ingredients in the heart of Albi's episcopal center.

***Ô Vent d'Ange (9 place Saint-Julien 81000 Albi)  
Dinner starts at 7:00 p.m.***

Don't miss this opportunity to unwind and connect with fellow attendees in a charming, historic setting!



Palais de la Berbie and Sainte Cécile Cathedral (Photo credits: AM Barthe-Delanoë)

**Tuesday night, the 29th of October, 2024, 6:30 p.m.**

### **Conference Gala dinner at *Château de Mauriac***

Classified as a historical monument and awarded 1 Michelin star, *Château de Mauriac* (13th century) invites you to an evening steeped in history, heritage, and artistry.

***The bus transfer departs at 6:30 p.m. from the IMT Mines Albi (Gymnasium).  
There is a stop in the city centre at 6:45 p.m. (Boulevard Édouard Andrieu 81000 Albi).***

***If you prefer to come by car, look for “Château de Mauriac, Lieu dit, 81600 Senouillac” on your GPS.***

***A free public car park is available in the village centre between the church and the castle.***

Nestled in the heart of the Tarn, within the triangle of Albi-Gaillac-Cordes, this château was originally commissioned by Guiraudus de Mauriaco, a Templar knight. Over the past half-century, the painter Bernard Bistes and his family have overseen its restoration, which has breathed new life into its ancient walls. For decades, they have melded their love for art and history with their expertise in construction and decoration, passionately restoring the château, including rebuilding its medieval ramparts.

Your journey begins with a guided tour led by the châtelain and his team. Explore this exceptional site, once home to Alexis Tapié de Celeyran, a young cousin of the renowned painter Henri de Toulouse-Lautrec. Throughout your visit, immerse yourself in an exhibition showcasing the paintings of Bernard Bistes.

Following this, indulge in a gala dinner celebrating fine cuisine and wines, served in the magnificent grand hall of the château

***The bus transfer departs at 10:30 p.m. from the *Château de Mauriac* and stops in the city centre (Boulevard Édouard Andrieu 81000 Albi) and then at IMT Mines Albi.***



Château de Mauriac (Photo credits: Château de Mauriac)

## Région Occitanie

The **Occitanie / Pyrénées-Méditerranée region** (short: Occitanie) is home to **13 departments** (including the Tarn department) and over **4,500 local districts**. The region boasts a rich variety of landscapes and microclimates, including **two mountain ranges and 220km of Mediterranean coastline**.

- 6 million inhabitants;
- +50,000 new residents per year;
- A territory larger than 12 European countries;
- 1st French region in terms of GDP share dedicated to R&D;
- 10 UNESCO sites;
- 1st French tourist region.

In Occitanie, **public higher education is accessible throughout the region**, with academic programs connected to the centers of excellence of the Universities of Toulouse and Montpellier. With **270,000 students**, including **16,000 engineers and 7,000 PhD candidates**, Occitanie positions itself as a major player in higher education.

Occitanie is at the forefront of education and research in strategic European sectors such as **aerospace, hydrogen, AI, cybersecurity, biotechnology, agroecology, New Space, water systems, and tourism**. In terms of research, the region boasts recognized scientific excellence, with innovative projects such as the decarbonization of aviation and the establishment of cutting-edge research centers (e.g., the **UNESCO International Water Centre in Montpellier**).

Occitanie, a **land of innovation and diversity**, is a hub of attraction for students, thanks to its international openness, fostering **university exchanges, global partnerships**, and enabling young people to enrich their educational journey.

- 12% international students (32,000 students);
- 1,800 cooperation agreements;
- 12,000 outbound mobility students;
- 6,000 students funded by the Occitanie Region;
- 7 European universities in Occitanie;
- 3,000 international PhD candidates.

Housing, mobility, sports, culture, healthcare, excellence: For several years, **Toulouse and Montpellier** have ranked among the **top five student cities** in the major French educational platforms and media outlets' rankings.



## Taking a Step Toward a More Responsible Conference

At PRO-VE 2024, we acknowledge that we are not a "green conference" and do not claim to be. However, we are taking meaningful steps to limit this event's environmental and social impacts, knowing there is still room for improvement. These actions are part of an ongoing effort here at IMT Mines Albi.

While international travel—especially by air—remains a challenge for a global conference like PRO-VE, we believe we can make a difference by focusing on what we can control locally here in Albi.

Below are some of the initiatives we have implemented:

- **Digital communication materials:** To reduce electronics, plastic, and paper waste, we have decided to forgo printed programs and USB drives, which are often discarded after the event. All proceedings and communication materials are provided digitally through the conference website (starting with this booklet!).
- **Reusable event items:** The lanyards and badge holders will be collected at the end of the conference for reuse in future events. To facilitate this, they have been designed to be neutral without PRO-VE 2024 branding. These items are often discarded—or forgotten in a drawer for years—but we aim to avoid the typical one-time use of event materials. Of course, you can keep the printed paper badge as a souvenir!
- **Reusable packaging:** Each participant has received a notebook and pen wrapped in a [furoshiki](#). This reusable cloth can be repurposed for daily use (tea towel) or gift wrapping, making it practical and sustainable.
- **Sustainable, locally sourced goodies:** We have worked with local businesses, such as [Les Toiles de la Montagne Noire](#), to provide furoshiki cloth made from natural and high-quality materials. These items are designed to be long-lasting and are produced entirely (from weaving to embroidering) in a 60-km area around Albi, supporting the local economy.
- **Use of existing infrastructure:** The scientific sessions will be held on the school premises, utilising the existing facilities to minimise additional resource consumption.
- **Sustainable dining choices:** Social events will take place in Albi (walkable distance) or nearby locations, and the menus will be based on seasonal, locally sourced products as much as possible. We have also opted for a vegetarian gala dinner and vegan lunches to reduce the event's carbon footprint further.

*While these actions are not enough to make the event fully sustainable, they are a step in the right direction towards a more responsible conference experience.*