DCE 25

6th DOCTORAL CONGRESS IN ENGINEERING

DOCTORAL CONGRESS IN ENGINEERING

Book of Abstracts

Symposium on Industrial Engineering and Management & Engineering and Public Policy

U.PORTO
FEUP FACULDADE DE ENGENHARIA
UNIVERSIDADE DO PORTO

DCE 25 6th DOCTORAL CONGRESS IN ENGINEERING

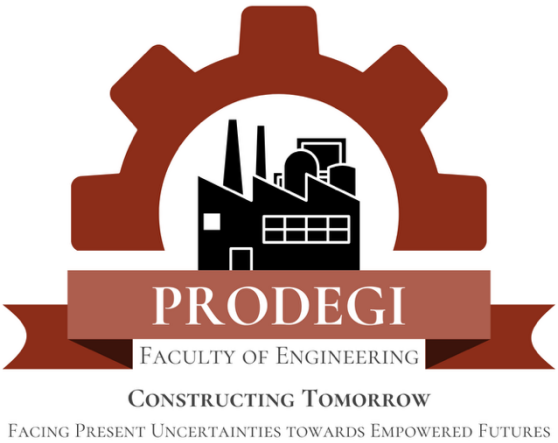
Book of Abstracts

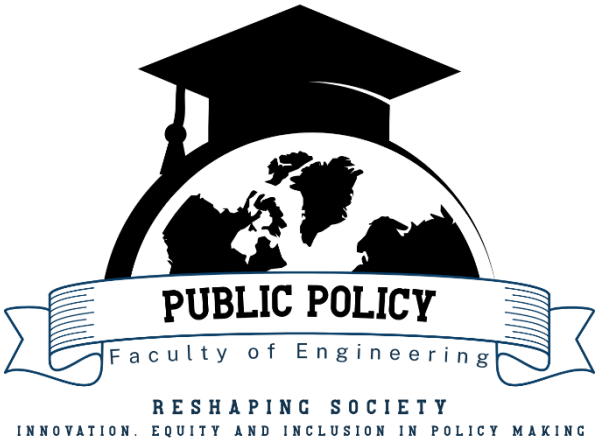
of the

Symposium on Industrial Engineering and Management & Engineering and Public Policy

Editors:
Anny Sarea, Alessia Serafini, Bianca Bănică, João Antunes, João Claro, Marcella Mendes, Maria Antónia Carravilla, Muhammad Fuzail, Rui Sousa, Sandra Monteiro

Porto
June 2025





This volume contains the peer-reviewed and accepted abstracts presented at the Symposium on Industrial Engineering and Management & Engineering and Public Policy of the 6th Doctoral Congress in Engineering – DCE25, held at the Faculty of Engineering of the University of Porto (FEUP), between June 30th and 1st July, 2025.

Title: Book of Abstracts of DCE25 Symposium on Industrial Engineering and Management & Engineering and Public Policy
Edited by Anny Sarea, Alessia Serafini, Bianca Bănică, João Antunes, João Claro, Marcella Mendes, Maria Antónia Carravilla, Muhammad Fuzail, Rui Sousa, Sandra Monteiro

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WELCOME

Message from the Organizing Committee

The Symposium on Industrial Engineering and Management & Engineering and Public Policy, part of the 6th Doctoral Congress in Engineering (DCE25), will take place at FEUP, Porto, Portugal, on June 30th and 1st of July 2025.

This Symposium is organized by PhD students of the Doctoral Program in Industrial Engineering and Management (PRODEGI) and Doctoral Program in Engineering and Public Policy (PDEPP) at FEUP, with the support of the Institute for Systems and Computer Engineering, Technology and Science (INESC TEC).

The Symposium Organizing Committee is pleased to invite everyone interested in expanding and sharing their knowledge and expertise in the field of Industrial Engineering and Management to submit their work. This invitation is open to PhD and MSc students, as well as other researchers and professionals in this field.

Topics for submission for Industrial Engineering and Management include (but are not limited to):

- **Optimization, Operational Research, and Decision Support Systems**
- **Data Science, Machine Learning, and Forecasting**
- **Sustainability and Innovation**
- **Digital Transformation and Smart Systems**
- **Open track**

Topics for submission for Engineering and Public Policy include (but are not limited to):

- **Climate change adaptation and mitigation strategies**
- **Engineering ethics, regulations, and societal implications**
- **Inclusive engineering and gender policies**
- **Technological innovations and policy adaption**
- **Open Submissions**

We are truly grateful to our invited speakers for accepting our invitation and sharing their expertise, thereby enhancing the quality and impact of the Symposium.
The Symposium received 16 submissions, reviewed with the support of the Scientific Committee, resulting in 11 oral and 5 poster presentations.

We would like to take this opportunity to express our sincere appreciation to all authors for their valuable contributions, as well as to the Symposium Organizing Committee, the Scientific Committee and INESC TEC for their invaluable support.

Porto, June 2025

The Symposium Organizing Committee

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The city of **Porto**, known as "Cidade Invicta" (the invincible city), is the second largest city of **Portugal**, the capital of the Porto district and the northern region. Porto is built along hillsides overlooking the mouth of the Douro River, and it is an outstanding urban landscape with a 2,000-year history.

Porto's continuous growth is related to the sea (the Romans gave it the name Portus, or port). It was declared a World Heritage Site by UNESCO in 1996 and considered the European Best Destination in 2014 and 2017.

Explore Porto's charming streets, historic landmarks such as the Sé Cathedral, Clérigos Tower and Dom Luís I Bridge, and savor local culinary favorites like the "Francesinha" (a must-try hearty sandwich for any visitor), "bacalhau" dishes (cod fish), and "pastel de nata" (creamy custard tart with a crisp, flaky crust).

Across the Douro River lies Vila Nova de Gaia, famed for its port wine cellars and stunning views of Porto's skyline. Visit the cellars to discover the region's rich winemaking heritage and the history of port wine production, from the historic lodges to the modern tasting rooms.

Don't miss the opportunity to witness the stunning sunset from Jardim do Morro or visit the Serra do Pilar, a UNESCO World Heritage Site offering panoramic views of Porto and the Douro River.

Together, Porto and Vila Nova de Gaia offer a unique mix of culture, history, and gastronomy. For details on accommodation, public transport, sightseeing tours, gastronomy, nightlife and culture may be found in the Official Portal of Porto Tourism and Visit Porto and the North Portal.

PROGRAMME

Monday, June 30th, 2025

07h20 – 08h20 *Lobby*	**REGISTRATION**
	DCE 25 General Program
08h20 – 08h45 *Main Auditorium**	**OPENING CEREMONY** **Jaime Cardoso**, *President of the DCE25 Scientific Committee, Vice-President of FEUP's Scientific Council, Head of Research Area and Doctoral Affairs*, FEUP **Vítor Vilar**, *DCE25 Chair, Principal Researcher*, LSRE-LCM/AliCE, FEUP
08h45 – 09h10 *Main Auditorium**	**KEYNOTE LECTURE** *Chair:* **Rita Lado**, *DCE25 Co-Chair, Principal Researcher*, LSRE-LCM/ALiCE, FEUP *Author Workshop: A Whistlestop Tour of Common Ethical Pitfalls of Well-Intentioned Researchers* **Kay Tancork**, *Executive Publisher, Chemical Engineering*, Elsevier
09h10 – 10h00 *Main Auditorium**	**LIFE AFTER A PhD: WHAT CAN YOU DO?** *Chairs:* **Tânia Lopes**, *DCE25 Co-Chair, Assistant Researcher*, LEPABE/ALiCE, FEUP **Jaime Cardoso**, *Vice President of FEUP Scientific Council*, FEUP
09h10 – 09h35	*Carrer Horizons for Early-Stage Researchers* **Bruno Béu**, *Advisor to FCT's Board of Directors*, FCT **Rui Munhá**, *Science Officer*, FCT
09h35 – 10h00	*CoLABs and CTIs: A Catalyst for Doctorates and the Innovation Ecosystem* **João Lobo Ferreira**, *Head of Interface Mission*, ANI
10h00 – 10h30 *B Corridor*	**COFFEE BREAK & POSTER SESSION & EXHIBITION**
10h30 – 12h20 *Main Auditorium**	**ROUND TABLE WITH CoLABs, CTIs AND INDUSTRY: DRIVING INNOVATION, SHAPING THE FUTURE** *Chairs:* **João Lobo Ferreira**, *Head of Interface Mission*, ANI **Adélio Mendes**, *Full Professor*, FEUP **Pedro Ávila**, *Director of Operational Sustainability*, REN **Luís Seca**, *Director*, AAET (Association Alliance for the Energy Transition) **Marco Ferraz**, *Head of Upstream and Industrial Innovation Center*, Galp

Monday, June 30th, 2025

	Joana Maria, *Executive Director*, Vortex-CoLAB **Simão P. Cardoso**, *Product Manager*, Paralab Engineering **Jaime Gabriel Silva**, *Head of innovation area*, Águas do Douro e Paiva S.A. and SimDouro S.A. (both AdP Group), and *Invited Teacher*, ISEP **Luís Filipe Santos**, *Product Prescription and Technical Support*, FIBRAN **Ricardo Rato**, *Executive Director*, HyLab **Luís Tiago Ferreira**, *Responsible for the Smart Cities, Public Lighting, and Open Data*, E-Redes **Mónica Read**, *Projects and Works Engineer*, Águas e Energia do Porto **Joana Monte**, *R&D and Innovation Senior Consultant*, KPMG **Luís Seca**, *Member of the Executive Board*, INESC TEC
12h20 – 12h30 *FEUP Central Garden*	**DCE25 OFFICIAL PHOTO**
12h30 – 14h00 *FEUP Central Garden*	**LUNCH BREAK**
14h00 – 15h20	**WORKSHOPS**
14h00 – 14h35 (1st Session) 14h45 – 15h20 (2nd Session) *Auditorium B001*	*Workshop 1 – "Depression and anxiety in PhD students: Preventing emotional exhaustion and burnout"* **Fernanda Mendes**, *FEUPs GOI-Orientation and Integration Unit* **Helena Lopes**, *FEUPs GOI-Orientation and Integration Unit*
14h00 – 14h35 (1st Session) 14h45 – 15h20 (2nd Session) *Auditorium B002*	*Workshop 2 – "My career with a PhD: to open up or close a gap?"* **João Henrique Almeida**, *FEUP Talent Unit*
14h00 – 14h35 *Auditorium B003*	*Workshop 3 – "La Caixa: Funding Opportunities?"* **Gisela Coromines i Calders**, *Doctoral Fellowships Programme Manager*, Fundació "la Caixa" **Inês Claro**, *Doctoral INPhINIT Fellow*, Fundació "la Caixa"
14h45 – 15h20 *Auditorium B003*	*Workshop 4 – "The ERC and the ERC-Portugal Programme: How Preparation Meets Opportunity"* **Bruno Béu**, *Advisor to FCT's Board of Directors*, FCT **Rui Munhá**, *Science Officer*, FCT

Monday, June 30th, 2025

Symposium on IEM & EPP	
15h30 – 16h30 *Room B326*	***SESSION I: BRIDGING PERCEPTIONS AND PATTERNS: RETHINKING FIRE RISK AND GOVERNANCE*** *Chairs:* **Jorge Grenha Teixeira**, *Assistant Professor,* FEUP **Sandra R. Alves Monteiro**, *PhD Student,* FEUP
	ORAL COMMUNICATIONS
Max. 15 min presentation + 5 min Q&A per communication	**OC 1.** Do we really know what communities think about the risks linked to the traditional use of fire? — A comparative study in central and northern Portugal (Presented by **Mayara Souza**) **OC 2.** Wildfire ignitions and leisure activities: dissonances in laypeople's risk awareness, uncovered by a mental model's approach (Presented by **Fábio Martins da Silva**)
16h30 – 17h00 *B Corridor*	**COFFEE BREAK & POSTER SESSION & EXHIBITION**
17h00 – 18h30 *Room B326*	***SESSION II: NAVIGATING TRANSFORMATION: EDUCATION, INNOVATION, AND DECISION-MAKING FOR SUSTAINABLE FUTURES*** *Chairs:* **João Claro**, *Associate Professor*, FEUP **Marcella Mendes**, *PhD Student*, FEUP
	ORAL COMMUNICATIONS
Max. 15 min presentation + 5 min Q&A per communication	**OC 3.** Assessing Educational Quality for Sustainable Development Goal 4: Insights from PISA Data (Presented by **Barbara Andrade**) **OC 4.** A Robust Conditional Assessment Of Performance Trends In Education And Training Systems Of European Regions (Presented by **Fernando Osório**) **OC 5. I**ndustry 4.0 Open Innovation Ecosystems: Transformations Induced by Digitalization (Presented by **Francisca M. Albuquerque**) **OC 6.** Multi-Criteria Decision Analysis for Sustainable Systems: A Comprehensive Review (Presented by **Bruna Moura**)
18h30 – 19h30 *FEUP Central Garden*	**SOCIAL EVENT** **WELCOME DRINK (TUNAFE & TEUP)**

**Main Auditorium: Auditorium Prof. Dr. José Marques dos Santos*

Tuesday, July 1st, 2025

08h00 – 09h00 *Lobby*	**REGISTRATION**
	Symposium on IEM & EPP
09h00 – 10h30 *Room B326*	***SESSION III: OPERATIONAL INTELLIGENCE: BUILDING RESILIENT SYSTEMS THROUGH DIGITALIZATION*** *Chairs:* **Pedro Amorim**, *Full Professor*, FEUP **Anny Sarea**, *PhD Student*, FEUP
Max. 15 min presentation + 5 min Q&A per communication	**OC 7.** Towards a Hierarchical Framework for Digital Twin Integration in Complex Operations Environments (Presented by **Raziyeh Ghanbarifard**) **OC 8.** Logistics Digital Twin Control Tower for Supply Chain Visibility (Presented by **Lou Verónica**) **OC 9.** Last-mile Delivery with Crowdshipping: a multi-objective approach (Presented by **Tiago Monteiro**) **OC 10.** Evaluating Generative AI for Scenario Planning: Comparing Prompt Strategies, Analysis Quality, and Narrative Generation Against Human Benchmarks (Presented by **Jongmin Han**)
10h30 – 11h00 *B Corridor*	**COFFEE BREAK & POSTER SESSION & EXHIBITION**
11h00 - 12h30 *Room B326*	***SESSION IV: ROUND TABLE - TRASH TALK: COLLABORATIVE PATHS TO SUSTAINABLE WASTE MANAGEMENT*** *Chairs:* **Joana Maia Dias**, *Associate Professor*, FEUP **João Alexandre Antunes**, *PhD Student*, FEUP
11h00 - 12h30	**KEYNOTE LECTURE**
23 min per intervention	**Soraia Taipa**, *Head of Innovation Management Unit*, Lipor **Tânia Ramos**, *Associate Professor*, IST **José Matos**, *Waste Management and Street Cleaning Specialist*, Maiambiente
10 min	**Discussion**
12h30 – 14h00 *FEUP Central Garden*	**LUNCH BREAK**
	DCE 25 General Program
14h00 – 14h20 *Main Auditorium**	**SCIENCE COMMUNICATION** *Chair:* **António Coelho**, *Associate Professor*, DEI/FEUP
14h00 – 14h05	*Hackathon Program* **António Coelho,** *Associate Professor*, DEI/FEUP

Tuesday, July 1st, 2025

	Five-Minute Pitch for 3 teams of PhD Students
14h05 – 14h10	**Team 1 –** *Dino e a Cadeia da Vida* **Ana Camarinha**, Idea and Sketching **Jorge Ferreira**, Game Development **Raushan Mukhamejanova**, Idea and Sketching **Rosana Oliveira**, Narrative
14h10 – 14h15	**Team 2 –** *Time Travelers* **Ana Cristina,** Organization and Creation **Bárbara Bender**, Organization and Creation **Diana Sousa**, Website and App **Jadna da Cruz**, Website, App, Gps, and Image Recognition **Miguel Guimarães**, Website, App, Gps, and Image Recognition
14h15 – 14h20	**Team 3 –** *God Save the Carbon* **Elizaveta Osipovskaya**, Storytelling Wizard **Fernando Osório**, Calculations **Mariam Conceição**, Sparkler **Priscila Reinaldo**, PR Developer **Sebastião Ventura**, Researcher **Safa Vakili**, UI Magician
14h20 – 15h40 *Main Auditorium**	**VENTURE SCIENTISTS** *Chair*: **Liliana Antão**, *PhD Student (PRODEI)*, FEUP
14h20 – 14h30	*What is Conception X?* **Carrie Baptist**, *Chief Strategy Officer*, ConceptionX
14h30 – 14h35	*FTNanoAD-Targeted-Nanocarriers for Brain Diseases* **Joana Loureiro**, *Assistant Professor*, FEUP
14h35 – 14h45	*School of Startups at UPTEC* **Raphael Stanzani,** *Entrepreneurship Programs Manager*, UPTEC
14h45 – 14h55	*A Success Case of a Spin-Off FEUP: AddVolt* **Bruno Azevedo,** *CEO*, AddVolt
14h55 – 15h40	***Five-Minute Pitch for PhD Students*** *LogloTrix, Smart Inventory Management* **Amir Hossein Farzamiyan**, *PhD Student, Doctoral Program in Telecommunications*, FEUP *FertiGo – Wastewater in. Fertilizer out.* **Luiza Sena**, *PhD Student, Doctoral Program in Environmental Engineering*, FEUP

Tuesday, July 1st, 2025

	EcoWires – Plastic-free smart packaging **Rita Martins**, *PhD Student, Doctoral Program in Chemical and Biological Engineering*, FEUP **Inês Freitas**, *PhD Student, Doctoral Program in Chemical and Biological Engineering*, FEUP *MyKneeRecovery – Precision Monitoring for Better Rehabilitation* **Joana Cerqueira**, *PhD Student, Doctoral Program in Biomedical Engineering*, FEUP *UPWIND – Portable, Clean and Affordable Electrical Energy for All* **Manuel Fernandes**, *PhD Student, Doctoral Program in Electrical and Computer Engineering*, FEUP *BodyBoost – Stop Injuries Before They Stop You* **Ana Teixeira**, *PhD Student, Doctoral Program in Informatics Engineering*, FEUP *Triple-Action Cutaneous Device for Skin Cancer Treatment* **Rita Barros**, *PhD Student, Doctoral Program in Chemical and Biological Engineering*, FEUP
15h40 – 16h10 *FEUP Central Garden*	**COFFEE BREAK & POSTER SESSION & EXHIBITION**
16h10 - 17h00 *Main Auditorium**	**PLENARY LECTURE** *Chair*: **Miguel Madeira**, *Full Professor*, LEPABE/ALiCE, FEUP *Leadership at the Intersection of Academia, Policy, and Development: Bridging Knowledge to Impact Society* **Margarida Mano,** *Vice-Rector*, Universidade Católica Portuguesa (Former Minister of Education and Science, Portugal, 2015)
17h00 - 17h30 *Main Auditorium**	**AWARDS** *Chairs:* **Jaime Cardoso**, *Vice-Dean for Research and Doctoral Affairs*, FEUP **Francisco Vasques**, *Coordinator of FEUP's Special Project to Upgrade Doctoral Education*, FEUP *Best Oral and Poster Communication (Per Symposium)* *Science Communication* *Venture Scientists* *Sponsors*
17h30 - 18h00 *Main Auditorium**	**CLOSING CEREMONY** *Chair:* **Jaime Cardoso**, *Vice-Dean for Research and Doctoral Affairs*, FEUP **Ana Maria Camanho**, *Vice-Rector*, University of Porto

	Tuesday, July 1st, 2025
	Rui Calçada, *Dean*, FEUP
18h00 – 21h00 *FEUP Central Garden*	**SOCIAL EVENT** **SUNSET**

**Main Auditorium: Auditorium Prof. Dr. José Marques dos Santos*

INVITED SPEAKERS

DCE25 General Programme

KEYNOTE LECTURE

Kay Tancock
*Executive Publisher, Chemical Engi*neering, Elsevier

Author Workshop: A Whistlestop Tour of Common Ethical Pitfalls of Well-Intentioned Researchers

The talk will walk the audience through the 'Top 10 Ethics Pitfalls of Well-Intentioned Researchers'. We will consider a number of typical items that honest researchers often get wrong, and how you can avoid them. The session looks beyond plagiarism and other intentional breaches in publishing ethics and examines some of the key pitfalls you may not have considered. The aim is to assist new authors by making their publishing journey as straightforward as possible and helping them to submit articles that will appeal to journal editors and reviewers. Join us for a half-hour countdown of everything you must *not* do if you want to get published!

Biography

Kay Tancock is the Executive Publisher overseeing a prestigious portfolio of Chemical and Environmental Engineering journals at Elsevier, including the *Journal of Environmental Chemical Engineering*, *Chemical Engineering Journal*, and *Chemical Engineering Science*. With 12 years of experience at Elsevier, she has managed journals across diverse subject areas, from geography to control engineering. Based in the UK office in Oxford, Kay is dedicated to supporting early career researchers and will be available at DCE25 to engage with attendees about their publishing aspirations. Her presentation will focus on essential best practices for ethically sound publishing, and she welcomes further discussions on all publishing and journal-related topics during the conference. Attendees are more than welcome to plan conversations with Kay regarding their research publication plans.

LIFE AFTER A PHD: WHAT CAN YOU DO?

Bruno Béu
Advisor to FCT's Board of Directors, FCT

Rui Munhá
Science Officer, FCT

Career Horizons for Early-Stage Researchers

Fostering high-quality research careers and broadening the diversity of career pathways – including through integrated approaches to collaborative, disciplinary, geographical and intersectoral mobilities – are key priorities for strengthening the competitiveness of research systems. Public policy has a critical role in shaping more inclusive, collaborative, and internationalised research ecosystems, and FCT has been translating these objectives into new and innovative approaches, in view of establishing an effective continuum between national and European frameworks. The relevance of career planning, investment in networking, or horizontal skills development and other capacity building initiatives, gains new momentum with the ongoing transformation of how research is assessed and the transition to a new paradigm of evaluation models. This presentation explores the present and future national, European and international funding schemes with particular emphasis on structured career planning and progression, mobility, and cross-sectoral collaboration. It also highlights models that support talent circulation, engagement with non-academic sectors, and institutional capacity-building to attract and retain researchers.

Biography

Bruno Béu holds a PhD in Philosophy from the University of Lisbon. His academic work focused on philosophy of language, literature, aesthetics and linguistics, and he has taught in several of these fields at the School of Arts and Humanities of the University of Lisbon. He was the principal investigator of an interdisciplinary research line in comparative studies, developed in collaboration with national institutions, and is the author or editor of two books and numerous articles and book chapters.

He has held various roles in science and research policy, including senior scientific officer for the Humanities and Social Sciences at the Evaluation Office of the Fundação para a Ciência e a Tecnologia (FCT), advisor to the Lisbon City Council in the field of education, and executive coordinator of the academic open access publishing house Imprensa de História Contemporânea.

He currently serves as advisor to the FCT Board of Directors in the areas of strategy and evaluation and is director of the ERC-Portugal programme. He is the national delegate to the ERC Programme Committee and to the OECD's Committee for Scientific and Technological Policy (CSTP), and the designated focal point for the Portuguese delegation to all OECD bodies in the field of STI. He also co-chairs the Portuguese National Chapter of the Coalition for Advancing Research Assessment (CNP-CoARA).

LIFE AFTER A PHD: WHAT CAN YOU DO?

Rui Munhá has been a Science Officer in the Department of International Relations of the Portuguese Foundation for Science and Technology (FCT) since 2014. He is currently Co-Coordinator of the National Contact Points of the European Programme for Research and Innovation Horizon Europe, and he also represents FCT and Portugal in different governing bodies in the context of the European Union or International Organisations. Rui Munhá obtained a PhD in Chemistry in 2011, and he developed his scientific activity at the University of Lisbon, University of British Columbia (Vancouver, Canada), University of California (Irvine, USA) and the University of Aveiro. Rui was born in Lisbon, in 1979.

João Lobo Ferreira

Head of Interface Mission, ANI

CoLABs and CTIs: A Catalyst for Doctorates and the Innovation Ecosystem

Collaborative Laboratories (CoLABs) and Centers for Technology and Innovation (CTIs) play a critical role in advancing doctoral research and fostering innovation. By bridging academia and industry, these institutions provide doctoral students with practical research opportunities, access to state-of-the-art infrastructures, and collaborative networks that drive knowledge transfer and economic growth. This presentation explores their impact, challenges, and future potential in the innovation ecosystem.

Biography

João Lobo Ferreira has been part of ANI since 2007. Since 2023, he has led the Interface Mission sub-unit, which focuses on supporting institutions that bridge academia and companies. Throughout his career, he has played a key role in monitoring the implementation of public policy measures to support R&D, business innovation, and capacity building of interface institutions. He holds a degree in Economics.

ROUND TABLE WITH COLABS, CTIS AND INDUSTRY: DRIVING INNOVATION, SHAPING THE FUTURE

REN's challenges of Energy Transition and Climate Change

REN – Redes Energéticas Nacionais is an exclusive TSO (Transmission System Operator) in Electricity and Gas Systems and 2sd largest gas DSO in Portugal, with 70-year track record as a leading energy infrastructure operator, with international presence. REN acts in accordance with the energy goals of the European Union and Portugal, helping the planet combat climate change to enable energy transition, without forgetting the security and quality of energy supply, the digitalization and innovation, and integrating new renewable capacity such as wind, solar and renewable gases. REN have a significant investment plan for 2024-27 1,5-1.7 B€ investment.

REN Award, specifically in the context of academia, is indeed one of the oldest scientific awards in Portugal. It was established in 1995 to recognize and encourage excellence in energy-related research among Master's and Doctoral theses in Portuguese higher education. REN will continue to foster internal people excellence, attract and retain talent.

Pedro Ávila
Director of Operational Sustainability, REN

Biography

Pedro Ávila is a seasoned executive with extensive experience in the energy sector, having worked at the three largest energy companies in Portugal. He currently serves as Director of Operational Sustainability at REN. With a degree in Mechanical Engineering, has strengthened his academic background with top-tier executive education, including an MBA from Porto Business School and the Advanced Management Program at AESE.

Throughout his career, he has led multiple national and international projects in both the gas and electricity sectors, consistently demonstrating strong expertise in project and operations management across various markets. His work is marked by a deep commitment to environmental responsibility and the mitigation of environmental impacts.

Beyond his professional life, Pedro is passionate about travel, music, design, and contemporary art. He strives to be an innovative leader, dedicated to team development and building a more sustainable future.

ROUND TABLE WITH COLABS, CTIS AND INDUSTRY: DRIVING INNOVATION, SHAPING THE FUTURE

Bridging knowledge and innovation: The role of the Alliance for the Energy Transition (ATE) Agenda in connecting industry, SMEs, and academia

This presentation explores the ATE Agenda's role in bridging industry, SMEs, and academia to accelerate the shift to sustainable energy. It focuses on how integrating highly qualified resources enhances innovation, research, knowledge transfer and the development of cutting-edge solutions. The presentation also addresses AAET's role in sustaining these partnerships after ATE funding.

Luís Seca

Director, AAET (Association Alliance for the Energy Transition)

Biography

Luís Seca is a senior researcher at the Centre for Power and Energy and member of the Board of Directors of INESC TEC. His research areas are distributed electrical resources integration (renewable based electricity generation, electric vehicles, storage, etc.) in distribution and transmission grids, dynamic analysis of electrical systems, smart grids and energy efficiency. Luís is also one of the Directors of AATE, an Association created to support the coordination, management and communication activities of the ATE Agenda, maximizing the value delivered and ensuring the success of ATE projects. AATE also aims to lay the foundations for an energy cluster, through a dynamic and competitive ecosystem for the energy transition.

ROUND TABLE WITH COLABS, CTIS AND INDUSTRY: DRIVING INNOVATION, SHAPING THE FUTURE

Bridging Science and Industry: Leading Upstream and Industrial Innovation at Galp

Galp's Upstream and Industrial Innovation Center focuses on developing new solutions to enhance Galp's core business, aiming to reduce carbon intensity in exploration and production activities. The center leverages advanced technologies to optimize operations and asset value, while also supporting the decarbonization of Galp's industrial assets by promoting low-carbon technologies. Collaboration with startups, academia, and technology partners ensures a market-oriented approach to innovation. Specific projects include the development of inspection tools for operations at depths greater than 2000 meters, intelligent well completion technologies, and advancements in low-carbon fuels, carbon capture, and carbon utilization.

Marco Ferraz
Head of Upstream and Industrial Innovation Center, Galp

Biography

After starting his career as a researcher in Portugal, **Marco Ferraz** moved to San Francisco to work as a visiting researcher at the USGS, in collaboration with NASA. In 2009, he relocated to Australia to pursue a PhD at the University of Sydney, where he also served as a lecturer at the School of Geosciences. Upon returning to Portugal in 2012, Marco joined Galp as a Geoscientist in Exploration and Production, contributing to some of the company's most prominent assets. Today, he leads the Upstream & Industrial Innovation Center at Galp, managing over 60 research, development, and innovation projects in Portugal and Brazil. These initiatives span oil and gas production, refining processes, and energy transition topics such as hydrogen, low-carbon fuels, carbon capture, utilization and storage (CCUS), and energy storage. Marco is also chairman of the board of the Net4CO2 collaborative laboratory and board member of Bioref.

ROUND TABLE WITH COLABS, CTIS AND INDUSTRY: DRIVING INNOVATION, SHAPING THE FUTURE

VORTEX-CoLAB: Turning Research into Impact

VORTEX-CoLAB bridges the gap between scientific research and real-world technology, focusing on cybersecurity, safety, and embedded systems — the core enablers of connected, autonomous technologies that shape how we live, move, and communicate. We bring together researchers, engineers, and industry partners to co-develop fast, practical solutions. Our projects combine applied research with hands-on prototyping, ensuring bold ideas are translated into tools companies can use. Students and PhD researchers are central to our work — not just observing, but contributing through thesis work, training, and active development. Through our affiliate program, companies gain early access to emerging technologies and help shape our innovation agenda. This model reduces risk, accelerates deployment, and keeps our work aligned with real-world needs. By advancing high-impact technologies, VORTEX is helping position Portugal as a relevant player in strategic sectors such as defense, semiconductors, and smart mobility — within Europe and beyond.

Joana Maria

Executive Director, Vortex-CoLAB

Biography

Joana Maria is Executive Director of VORTEX-CoLAB, a nonprofit collaborative laboratory focused on applied research in AI, cybersecurity, and embedded systems. With a PhD in Materials Science and Engineering from the University of Illinois at Urbana-Champaign, she brings over 20 years of experience across academia and industry, leading a team of nearly 40+ researchers and engineers developing safety and security solutions for next-generation cyber-physical systems in sectors such as mobility, aerospace, and critical infrastructure. Her career includes over a decade at IBM Research, where she co-founded the AI4Good Fellowship Program and led research initiatives spanning from fundamental science to commercial applications, including breakthrough work that contributed to the development of the world's first AI-designed fragrance. She holds 10 issued patents and has authored 27 peer-reviewed publications. A strong advocate for applied research with societal impact, she brings a systems-level perspective to building innovation ecosystems that connect science, industry, and policy.

ROUND TABLE WITH COLABS, CTIS AND INDUSTRY: DRIVING INNOVATION, SHAPING THE FUTURE

From Research to Innovation: Paralab Engineering as a Bridge Between Academia and Industry

Paralab Engineering has established itself as the partner of excellence in the development of customized, scalable and high-performance equipment. Over the last three decades, it has maintained a close and continuous collaboration with all research units, supporting researchers in the development of tailor-made solutions, from laboratory prototypes to semi-industrial equipment. This close link to research means not only the creation of technology adapted to the real needs of the academic and scientific world, but also success stories where the paths of the client and the company merge – as in the case of a researcher who, after completing his doctorate, joined the Paralab Engineering team.

Simão P. Cardoso
Product Manager, Paralab

Biography

Simão P. Cardoso holds an Integrated Master's Degree in Chemical Engineering (MIEQ) from FEUP (2005-2010) and a PhD in Chemical Engineering (Branch in Chemical Products and Processes Engineering) from the University of Aveiro. Since February 2021, he has been product manager at Paralab, a company that distributes scientific equipment for laboratory and industrial applications and is responsible for several international brands in this field in the North of Portugal.

ROUND TABLE WITH COLABS, CTIS AND INDUSTRY: DRIVING INNOVATION, SHAPING THE FUTURE

Águas do Douro e Paiva (AdDP) – a commitment to innovation, knowledge and transformative solutions

AdDP is the utility responsible for the bulk drinking water system that supplies 20 municipalities in the Porto region. The company foresees that present and future challenges require collaborative, innovative, and creative responses, which must also be anchored in knowledge. Having been created in 1995 – and celebrating its 30th anniversary – AdDP is a place of continuous evolution, where water continues to be an engine of progress, equity, and hope for future generations.

Jaime Gabriel Silva

Head of innovation area, Águas do Douro e Paiva S.A. and SimDouro S.A. (both AdP Group), Invited Teacher, ISEP

Biography

Born in Porto (1963). Civil engineer (FEUP / 1986); MSc (FEUP / 1997); currently, FEUP PhD student (PRODEC), in Asset Management field. He joined AdDP in 1998, where he was Engineering Director between 2000 and 2009, when he started management functions in the board of different Águas de Portugal Group companies, namely: Simlis (Leiria), Águas do Mondego (Coimbra), Simria (Aveiro), Águas do Centro Litoral (aggregated company of the former three) and Águas de Santo André. In 2020, he returned to AdDP, coordinating the innovation area for AdDP and SimDouro, as well as leading some enterprise projects. Before 1998, he worked at Fase (1991-98), at CICCOPN Laboratory (1991), at IBM (1989-90) and at Com. Coord. Região Norte (1987-89). Invited teacher at ISEP, since 1990.

ROUND TABLE WITH COLABS, CTIS AND INDUSTRY: DRIVING INNOVATION, SHAPING THE FUTURE

FIBRAN – What we do, challenges we face, and proximity with the academia

FIBRAN is a leading manufacturer of XPS insulation panels. In addition to standard products, we offer a wide range of custom shapes and tailor-made solutions to meet specific project needs. Our products are well-established in the construction industry, although some technical challenges remain due to the material's intrinsic characteristics. To address these, FIBRAN is actively collaborating with academic institutions to further study and improve its performance, while continuing to deliver effective solutions for specialized applications.

Luís Filipe Santos
Product Prescription and Technical Support, FIBRAN

Biography

Luís graduated in Civil Engineering from FEUP in 2013. He began his career as an Assistant Project Manager on construction sites, contributing to the development of a new school and the renovation of a luxury hotel. He then joined a furniture manufacturer, where he managed FF&E assembly teams in Belgium and Luxembourg. Within the same company, he later oversaw proposal management, coordinating with both technical and commercial departments. Moving on, he took on the role of supporting project prescribers—mainly architects—providing technical guidance throughout the design process. Currently at FIBRAN, Luís plays a key role in technical support for prescribers, closely aligned with marketing and production, contributing to the development of new products for new challenges.

ROUND TABLE WITH COLABS, CTIS AND INDUSTRY: DRIVING INNOVATION, SHAPING THE FUTURE

Ricardo Rato
Executive Director, HyLab

HyLab - Green Hydrogen Collaborative Laboratory

Presentation will introduce HyLab – the Collaborative Laboratory for Green Hydrogen – and its role in accelerating the development of innovative, science-based solutions for decarbonization. With a strong link between research and industry, HyLab contributes to the energy transition through applied R&D, technology integration, and support for industrial implementation.

Biography

Ricardo Rato is a Mechanical Engineer with a specialization in Energy from Instituto Superior Técnico (IST).
Passionate about Energy Transition and Innovation, he has built a career dedicated to helping companies navigate and lead in these transformative domains. His experience spans both national and international contexts, where he has successfully combined strategic consulting with hands-on research and development.
Over 15 years at the Welding and Quality Institute (ISQ), he progressed from Energy Consultant to Director of R&D and Innovation, leading high-impact projects and fostering cross-sector innovation.
Since September 2023, Ricardo has been serving as Executive Director of HyLab, where he continues to drive forward the hydrogen economy and clean energy solutions.

ROUND TABLE WITH COLABS, CTIS AND INDUSTRY: DRIVING INNOVATION, SHAPING THE FUTURE

Open Data, Open Innovation: The Experience of Creating E-REDES Open Data

The energy transition requires more than just technology — it demands collaboration. E-REDES Open Data was created as a sharing tool and serves as a mechanism for open innovation and collaboration between E-REDES and the community. In this pitch, I share the experience of developing this open data portal and real-world use cases by municipalities, mobility operators, and researchers. From planning charging networks to creating energy communities, data has become a tool for local action.

Luís Tiago Ferreira

Responsible for the Smart Cities, Public Lighting, and Open Data, E-REDES

Biography

With more than 20 years of experience, including the support office to the General and Supervisory Board of EDP, Regulation and Energy Policy, strategic consulting, and network engineering. Graduated in Electrical and Computer Engineering from Instituto Superior Técnico.

ROUND TABLE WITH COLABS, CTIS AND INDUSTRY: DRIVING INNOVATION, SHAPING THE FUTURE

Room for PhDs in Companies? Here's what we think

At Águas e Energia do Porto, we believe PhDs bring unique value to the future of water management.
As we rise to the challenges of the green transition, we're turning our treatment plants into living labs. And we don't ask whether there's space for PhDs – we ask how far their knowledge can take us.
Innovation needs both generalists and deep specialists. And we welcome both.

Mónica Read
Projects and Works Engineer,
Águas e Energia do Porto

Biography

Mónica Read works in the Wastewater Treatment Department at Águas e Energia do Porto, where she currently manages public works contracts and leads the department's involvement in R&D and innovation projects, including Horizon Europe initiatives.
With over 17 years of experience in process and electromechanical design for water and wastewater treatment plants, she has led or contributed to national and international projects across Europe and Africa during her time at Efacec.
She holds a pre-Bologna degree in Environmental Engineering from the University of Lisbon and an Executive MBA from the Católica Porto Business School.

ROUND TABLE WITH COLABS, CTIS AND INDUSTRY: DRIVING INNOVATION, SHAPING THE FUTURE

KPMG Incentives: What It's Like to Be a PhD in a Big4 Company

What happens when a researcher steps into the corporate world? In this talk, I'll share my journey from PhD to Consultant at KPMG Incentives, highlighting challenges, growth, and surprising overlaps. I'll also introduce KPMG and our R&D Incentives team, offering a glimpse into how academic skills can thrive—and drive impact—within a Big4 environment.

Joana Monte
R&D and Innovation Senior Consultant, KPMG

Biography

Joana Monte holds a PhD in Chemical and Biochemical Engineering from NOVA University Lisbon. She combines strong scientific knowledge with economic analysis skills. Following her PhD, Joana started her career pathway by working with companies, supporting them to obtain financial and tax incentives in Portugal. Specialized in guiding businesses to discover new growth opportunities, Joana supports companies in identifying and preparing applications for national funding programs. Over the past years, Joana accumulated expertise in the manufacturing industry, ICT, aerospace and automative sectors.

ROUND TABLE WITH COLABS, CTIS AND INDUSTRY: DRIVING INNOVATION, SHAPING THE FUTURE

Bridging Innovation Gaps: How INESC TEC Transforms PhD Excellence into Societal Impac

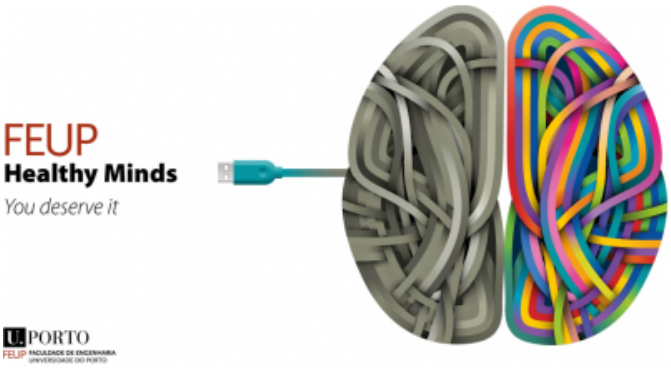
This presentation explores INESC TEC's core innovation challenges bridging our 8 research domains (AI, Computer Science, Communications, Power & Energy Systems, Robotics, Photonics, Bioengineering, Systems Engineering) with societal applications through TEC4 initiatives: TEC4INDUSTRY, TEC4ENERGY, TEC4HEALTH, TEC4AGRO-FOOD, and TEC4SEA. We showcase our collaborative academic model and comprehensive PhD integration strategy that develops tomorrow's leaders, demonstrating how our PhD graduates transition from university research to driving real-world societal impact.

Luís Seca
Member of the Executive Board,
INESC TEC

Biography

Luís Seca is a senior researcher at the Centre for Power and Energy and member of the Board of Directors of INESC TEC. His research areas are distributed electrical resources integration (renewable based electricity generation, electric vehicles, storage, etc.) in distribution and transmission grids, dynamic analysis of electrical systems, smart grids and energy efficiency. Luís is also one of the Directors of AATE, an Association created to support the coordination, management and communication activities of the ATE Agenda, maximizing the value delivered and ensuring the success of ATE projects. AATE also aims to lay the foundations for an energy cluster, through a dynamic and competitive ecosystem for the energy transition.

WORKSHOPS



Orientation and Integration Office – GOI

Fernanda Mendes and **Helena Lopes**

Psychologists, FEUPs GOI-Orientation and Integration Unit

Depression and Anxiety in PhD Students: Preventing Emotional Exhaustion and Burnout

Program:

1. Depression and anxiety: what is it and what are its most common issues
2. Mental Health and Well-Being: tips to deal with worry, rumination, distress and emotional exhaustion

Biography

Fernanda Mendes is Psychologist at Faculdade de Engenharia da Universidade do Porto – Orientation and Integration Office Master Degree and First Degree in Psychology (Faculdade de Psicologia e de Ciências da Educação da Universidade do Porto). Full Member of the Portuguese Board of Psychologists. Specialty College of the Portuguese Board of Psychologists: General Specialty in Clinical and Health Psychology; Advanced Specialty in Psychotherapy.

Helena Lopes is Psychologist at Faculdade de Engenharia da Universidade do Porto – Orientation and Integration Office. PhD in Educational Sciences (Faculdade de Psicologia e de Ciências da Educação da Universidade do Porto). First Degree in Psychology (Faculdade de Psicologia e de Ciências da Educação da Universidade do Porto). Post-graduation studies: a) Motivation Psychology (Faculdade de Psicologia e de Ciências da Educação da Universidade de Coimbra); b)Training Systems Assessment (Faculdade de Psicologia e de Ciências da Educação da Universidade do Porto). Full Member of the Portuguese Board of Psychologists. Specialty College of the Portuguese Board of Psychologists: General Specialty in Educational Psychology.

WORKSHOPS

João Henrique Almeida
Psychologist, FEUP Talent Unit

My Carrer with a PhD: to Open UP or Close a Gap

Program: FEUP Talent Unit is responsible for promoting the interaction between students and companies at the academia and the management of Alumni relations. One of our main goals is to promote different projects and initiatives to help students and graduates develop or enhance their skills. With this session you'll have the opportunity to get to know some of the projects that are being held by FEUP Talent Unit, namely some specific projects specifically designed for PhD students. Also, at this session you will have the chance to have a moment to think about where your PhD is as part of your career path and life design.

- What can I do with it?
- Is this a step to open up, or am I looking to close a gap?
- Do I need a plan B?

Biography

João Henrique Almeida is Psychologist, 33 years old and born in Viseu – a small city in the heart of Portugal. Working at the Faculty of Engineering of University of Porto, certified in career management and holding a master in Clinical and Health Psychology from University of Aveiro as well as a specialization in advanced coaching from University of Porto. Experienced trainer in topics such as career design, personal and professional development, leadership, communication, among others.

WORKSHOPS

La Caixa: Funding Opportunities

The objectives of the session are to inform the audience about the different funding opportunities that the "la Caixa" Foundation offers through its various Fellowship Programmes, which cover the entire path of a researcher (undergraduate, postgraduate, PhD, and postdoctoral research) and highlight their main features. The workshop will focus on explaining the range of benefits that the programmes offer: financial support, training programmes on transversal skills, and networking opportunities. What does it mean to be a "la Caixa" Foundation fellow? One Doctoral INPhINIT fellow and one Junior Leader fellow will share their experiences with the audience.

Topics Covered:

- Postgraduate abroad fellowships programme
- Doctoral INPhINIT fellowships programme
- Postdoctoral Junior Leader fellowships programme
- Other funding opportunities
- Q&A.

Gisela Calders
Doctoral Fellowships Programme Manager, Fundació "la Caixa"

Biography

Gisela Coromines holds a bachelor's degree in Chemical Engineering (Universitat Politècnica de Catalunya, UPC), a bachelor's degree in Art History (Universitat de Barcelona, UB) and a master's degree in Humanities (Universitat Oberta de Catalunya, UOC). She has long experience in research management and funding. She joined the "la Caixa" Foundation in 2017 where she is part of the Research Fellowships programmes team.

WORKSHOPS

The ERC and the ERC-Portugal Programme: How Preparation Meets Opportunity

The European Research Council (ERC) plays a pivotal role in enabling breakthrough research and fostering scientific leadership across all fields. This session focuses on the career development opportunities provided by the various ERC funding schemes and illustrate how these contribute to establishing independent research trajectories. It will also present the ERC-Portugal programme, launched by FCT as a national initiative to strengthen Portugal's participation in the ERC. The programme offers targeted support to researchers at different career stages and is structured around three complementary pillars:

ERC-PT Pre-Assessment – an innovative initiative that offers peer-review services through an Annual College of Reviewers composed exclusively of former ERC panel members, aiming to improve the quality and success rate of ERC proposals;

ERC-PT A-Projects – a scheme that funds the early development of top-rated but unfunded proposals, helping prepare for future ERC resubmissions;

ERC-PT Careers – a programme that promotes the recruitment and long-term integration of ERC grantees in Portuguese institutions, through attract-and-retain mechanisms.

Together, these mechanisms create a coherent national strategy that enhances researcher competitiveness, reinforces institutional capacity, and aligns with broader goals for research excellence and talent attraction. The session will explore synergies between European and national instruments and offer practical guidance for navigating the ERC landscape.

Rui Munhá
Science Officer, FCT

Biography

Rui Munhá has been a Science Officer in the Department of International Relations of the Portuguese Foundation for Science and Technology (FCT) since 2014. He is currently Co-Coordinator of the National Contact Points of the European Programme for Research and Innovation Horizon Europe, and he also represents FCT and Portugal in different governing bodies in the context of the European Union or International Organisations. Rui Munhá obtained a PhD in Chemistry in 2011, and he developed his scientific activity at the University of Lisbon, University of British Columbia (Vancouver, Canada), University of California (Irvine, USA) and the University of Aveiro. Rui was born in Lisbon, in 1979.

WORKSHOPS

Bruno Béu

Advisor to FCT's Board of Directors, FCT

Biography

Bruno Béu holds a PhD in Philosophy from the University of Lisbon. His academic work focused on philosophy of language, literature, aesthetics and linguistics, and he has taught in several of these fields at the School of Arts and Humanities of the University of Lisbon. He was the principal investigator of an interdisciplinary research line in comparative studies, developed in collaboration with national institutions, and is the author or editor of two books and numerous articles and book chapters.

He has held various roles in science and research policy, including senior scientific officer for the Humanities and Social Sciences at the Evaluation Office of the Fundação para a Ciência e a Tecnologia (FCT), advisor to the Lisbon City Council in the field of education, and executive coordinator of the academic open access publishing house Imprensa de História Contemporânea.

He currently serves as advisor to the FCT Board of Directors in the areas of strategy and evaluation and is director of the ERC-Portugal programme. He is the national delegate to the ERC Programme Committee and to the OECD's Committee for Scientific and Technological Policy (CSTP), and the designated focal point for the Portuguese delegation to all OECD bodies in the field of STI. He also co-chairs the Portuguese National Chapter of the Coalition for Advancing Research Assessment (CNP-CoARA).

SCIENCE COMMUNICATION | Hackathon Program

António Coelho
Associate Professor, DEI/ FEUP

Hackathon Program

Goals: Science communication is a very relevant competence for researchers, promoting greater impact, relevance and innovation. More specifically:

- Develop Real Solutions: Create prototypes that help companies communicate effectively with different audiences, particularly at stands, fairs or events.
- Bringing the Academic Community and Companies Closer Together: Fostering collaboration between doctoral students and company professionals, establishing bridges for sharing knowledge and innovation.
- Train and Inspire: Provide an intensive learning, teamwork and networking experience where participants will have access to expert mentors who will support the development process.
- Promote the Doctoral Symposium: Integrate the best projects and teams into the Doctoral Symposium program, reinforcing the connection between academia, research and the business sector.

Biography

Associate Professor with Habilitation at the Department of Informatics Engineering, Faculty of Engineering (FEUP), University of Porto (UP), director of the Doctoral Program in Digital Media at the University of Porto and academic leader of the EUGLOH European University Alliance.
Senior Researcher at the Center for Human-Centered Computing and Information Science (HumanISE) of INESC TEC with research interests in the areas of Computer Graphics, Extended Reality, Serious Games, and Accessibility.

SCIENCE COMMUNICATION | Five-Minute for 3 Teams of PhD Students

Team 1 – ***Dino e a Cadeia da Vida***

Dino e a Cadeia da Vida is an educational game for children aged 8 to 12, designed to promote sustainable habits in a playful and effective way. Dino, a dinosaur who has traveled through time, discovers that the future of humanity is threatened by environmental destruction, caused by humans themselves! Determined to prevent life on Earth from suffering the same fate as his species – extinction – he mobilizes children to encourage sustainable habits on the planet. Through three interactive mini-games based on the 3 R's (Reduce, Reuse, Recycle), players face real environmental challenges. With the guidance of Dino and his friends Kiki (the turtle), Akua (the blue whale) and Vinee (the polar bear), each action transforms the the game and the planet itself. In the end, the positive impact of the children's choices makes it possible to divert the course of the meteor from extinction, reinforcing the message that small actions generate big changes.

– Project Description
– Logo
– Poster
– Team Photo

The Meteorite Busters

- Ana Camarinha – Idea and Sketching
- Jorge Ferreira – Game Development
- Raushan Mukhamejanova – Idea and Sketching
- Rosana Oliveira – Narrative

SCIENCE COMMUNICATION | Five-Minute for 3 Teams of PhD Students

Team 2 – ***Time Travelers***

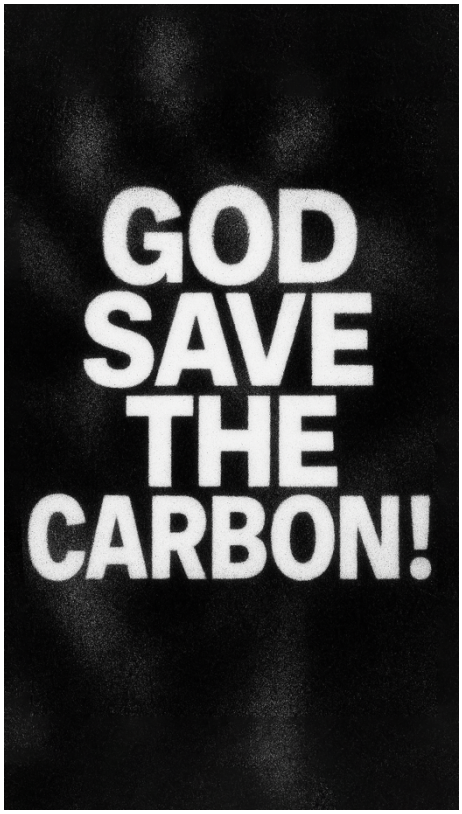
Time Travelers is a mobile application designed to transform the way tourists experience the city of Porto. It offers an immersive, user-centered journey through historical landmarks using geolocation, image recognition, and soundscapes. By simply pointing their phone at a monument or taking a selfie with it, users are instantly immersed in rich, verified historic
al content drawn from credible sources. With personalized routes and real-time notifications, the app enables users to explore at their own pace, avoiding crowded tours and unreliable information. It combines storytelling, cultural authenticity, and digital innovation to deliver a memorable and educational experience — ideal for tourists like Ashley, seeking depth, authenticity, and convenience.

– Project Description
– Logo

Team

- Ana Cristina (organization, creation)
- Bárbara Bender (organization, creation)
- Diana Sousa (website, app)
- Jadna da Cruz (website, app, gps, image recognition)
- Miguel Guimarães (website, app, gps, image recognition)

SCIENCE COMMUNICATION | Five-Minute for 3 Teams of PhD Students



Team 3 – ***God Save the Carbon***

Carbon emission levels are steadily rising, as is the average global temperature. Also, evidence shows that "greening education" and "green skills" are increasingly necessary. This project aims to encourage behavioral change among Gen Z FEUP students and raise awareness about sustainable transportation habits. Combining self-reported routines with gamified learning, we create a simple yet effective system to nudge users toward more eco-conscious decisions based on the Self-determination Theory and the Fogg Behavior Model. The "God Save the Carbon" app, designed with an eco-punk style, is simple, fast, shareable, educational, and career-worthy. Users can log their daily transportation eco-choice, take quick quizzes (learning through micro-challenges), and be awarded badges and LinkedIn certificates. There are two punctuation mechanisms. One is related to the user's transportation habits, where the points are measured in comparison to the CO2 emission of a standard fuel car, which is reflected in the user's avatar evolution. The other concerns the user's correct answers to the daily quizzes, allowing them to unlock new levels and gain badges and shareable certificates.

– Project Description
– Logo

Atomic

- Elizaveta Osipovskaya – Storytelling Wizard
- Fernando Osório – Calculations
- Mariam Conceição – Sparkler
- Priscila Reinaldo – PR Developer
- Sebastião Ventura – Researcher
- Safa Vakili – UI Magician

VENTURE SCIENTISTS

Carrie Baptist

Chief Strategy Officer, Conception X

What is Conception X?

Conception X empowers PhD students to become Venture Scientists – PhD founders who bridge the gap between academia and industry. Whether you're already working on a startup or interested in learning how to translate and commercialize your research, our program supports accelerating your understanding of entrepreneurship.

Biography

Carrie is Chief Strategy Officer of Conception X, Europe's largest PhD deeptech venture programme. Conception X works with PhD scientists from 65+ Universities across Europe, providing a large cross-University platform for PhD founders, unlocking innovations from the lab and accelerating early stage research commercialisation.

Joana Loureiro

Assistant Professor, LEPABE/ALiCE, FEUP

A Success Case: FTNanoAD-Targeted-Nanocarriers for Brain Diseases

BNanoTech, Inc. was founded on 02/03/2025 by Joana Loureiro and Maria do Carmo Pereira. The company's technology originated from research conducted at the Laboratory for Process Engineering, Environment, Biotechnology and Energy (LEPABE), thus reinforcing the company's strong connection with FEUP. The company develops controlled release systems for transporting drugs to the brain. The target market of BNanoTech, Ltd. includes pharmaceutical and biomedical industries interested in advanced therapies for neurodegenerative diseases, with potential for strategic partnerships and commercialization at national and international levels. Our participation in the Conception X program resulted directly in XTX Ventures proposing a £100,000 investment in our technology, which led to the faster creation of BNanoTech.

Biography

Joana A. Loureiro is an Assistant Professor at the Faculty of Engineering of the University of Porto (FEUP) and a senior researcher at the Laboratory for Process Engineering, Environment, Biotechnology, and Energy (LEPABE). She earned her Ph.D. in Chemical and Biological Engineering from the University of Porto. Her research focuses on nanotechnology, particularly the development of functionalized nano-drug delivery systems for therapeutic applications, studies on amyloidogenic peptides, and the design of nanoparticles targeting the blood-brain barrier. She is/was involved in several projects (>17) for developing nanoengineered structures for the controlled delivery of bioactive molecules and has been in active collaboration with several national and international research groups. Dr. Loureiro has contributed to numerous scientific publications in these fields and supervised over 25 PhD and Master's students.

VENTURE SCIENTISTS

Raphael Stanzani
Entrepreneurship Programs Manager, UPTEC

School of Startups at UPTEC

At the School of Startups, UPTEC – Science and Technology Park of the University of Porto offers dedicated programs that support different innovation pathways for entrepreneurs, researchers, students, and corporations. It's a 3-month business idea acceleration program that provides the boost your idea needs to thrive. With 90+ hours of intensive hands-on training and personalized mentorship from industry experts, this program will help you validate your idea within the market.

Biography

Raphael, the Entrepreneurship Programs Manager at UPTEC, designs and executes startup acceleration workshops to transform innovative ideas into sustainable businesses that can scale and attract investment. He graduated from UFSCar (Brazil) with an MBA from Quantic School of Business (US). Has experience as Supply Chain Projects Manager at Procter & Gamble in Brazil and Territory Sales Manager for the Oral-B brand at Procter & Gamble Portugal. He also co-founded Connect Robotics, a drone delivery startup that received funding from ESA and EU. The startup was incubated at UPTEC, accelerated by Carnegie Mellon University, and a spin-off from the University of Porto.

Bruno Azevedo
CEO, AddVolt

A Success Case of a Spin-Off FEUP: AddVolt

AddVolt is a technological company that developed the world's 1st plug-in electrical system targeted for transportation markets. With our technology, refrigeration trucks can perform their cold operation in electric mode, reducing diesel dependence, the level of noise, and CO2 emissions.

Biography

Bruno is the CEO and co-founder of AddVolt, the powerhouse that developed the world's first solution to replace the 4.5 million diesel engines used in refrigerated transport. He and his three co-founders have been dedicated to this innovative project since their university days. During the past ten years, he has also honed his commercial acumen, propelling Addvolt to the forefront of sustainable transport technology. Bruno holds a Master's in Electrical Engineering from FEUP – University of Porto. He further enhanced his expertise by completing a business and management program at Carnegie Mellon University. In recognition of his achievements, Bruno was honoured by Forbes in 2020, being named to the 30 Under 30 list in the Manufacturing & Industry category.

VENTURE SCIENTISTS | Five-Minute Pitch for PhD Students

Amir Hossein Farzamiyan

PhD Student, Doctoral Program in Telecommunications, FEUP

LogloTrix, Smart Inventory Management

LogIoTrix is a smart inventory management system that uses connected sensors to monitor stock levels automatically. The data is sent to the cloud, where it's analyzed using AI to predict demand and optimize inventory. This allows businesses to make faster, data-driven decisions, reduce waste, and ensure the right products are always available—without relying on manual tracking.

Luiza Sena

PhD Student, Doctoral Program in Environmental Engineering, FEUP

FertiGo – Wastewater in. Fertilizer out.

Compact and automated system for the recovery of nutrients from wastewater. It works by mixing wastewater rich in nutrients with chemicals to produce solid fertilisers. The entire process takes place in a small (< 1 m3) transportable unit that can be moved between plants as needed. This portable unit incorporates patented technology characterised by an efficient mixing mechanism which significantly increases heat and mass transfer in continuous mode. This enables precise control of the physical and chemical properties of the resulting fertiliser.

VENTURE SCIENTISTS | Five-Minute Pitch for PhD Students

Rita Martins
PhD Student, Doctoral Program in Chemical and Biological Engineering, FEUP

Inês Freitas
PhD Student, Doctoral Program in Chemical and Biological Engineering, FEUP

EcoWires – Plastic-free smart packaging

EcoWires offers a new printing technology for flexible electronic circuits, taking advantage of abundant, affordable and renewable sources, unlike conventional electrical conductors. A conductive ink made of carbon nanoparticles is printed inside the final substrate, a transparent cellulose film, avoiding the need for an extra insulation layer deposition. Using EcoWires technology, we are developing plastic-free smart packages with chipless RFID antennas integrated during the manufacturing process. With EcoWires, businesses can embrace the IoT era sustainably, providing distributors and retailers the dual benefit of a reduced carbon footprint through plastic-free packaging and enhanced profitability by enabling advanced product tracing and improved consumer engagement.

Joana Cerqueira
PhD Student, Doctoral Program in Biomedical Engineering, FEUP

MyKneeRecovery – Precision Monitoring for Better Rehabilitation

MyKneeRecovery is an innovative system that helps to monitor a patient's knee recovery after surgery by providing accurate, real-time data on movement and muscle activity. It includes wearable sensor-embedded stockings equipped with motion sensors (IMUs), temperature sensors, and EMG sensors that track how the knee is moving and how the muscles are working during rehabilitation exercises. The system also features a 3D thermal imaging tool that captures the shape and temperature of the knee to assess inflammation and healing. All this information is sent to a mobile app, where patients and clinicians can easily view progress, detect problems early, and adjust recovery plans as needed. Unlike traditional systems, MyKneeRecovery is portable, affordable, and easy to use at home or in a clinic, making recovery monitoring more objective and available to more people.

VENTURE SCIENTISTS | Five-Minute Pitch for PhD Students

Manuel Fernandes

PhD Student, Doctoral Program in Electrical and Computer Engineering, FEUP

UPWIND – Portable, Clean and Affordable Electrical Energy for All

UPWIND is developing a portable wind-powered generator based on Airborne Wind Energy (AWE) technology. The core of the technology is a fixed-wing drone (resembling a kite) that is tethered to a ground station by a cable. This cable winds around a rotating drum connected to an electric generator. As the drone flies at high altitudes (200-300m) where winds are stronger and more consistent, it harnesses wind energy, causing the cable to unwind and turn the drum, thus generating electricity. Once the cable fully extends, the generator retracts it, and the cycle repeats. A key innovation of UPWIND is its unique automatic Circular Take-Off and Landing (CTOL) system, which allows for fully autonomous operation without sacrificing efficiency.

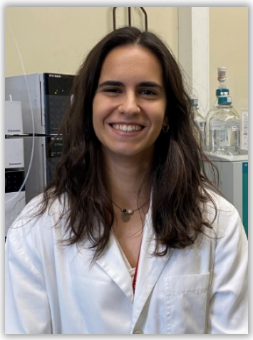
Ana Teixeira

PhD Student, Doctoral Program in Informatics Engineering, FEUP

BodyBoost – Stop Injuries Before They Stop You

BodyBoost is a discreet, smart wearable worn on the lower back that continuously monitors posture and movement throughout the day. It quietly detects when someone starts falling into poor postural habits and responds instantly with a gentle vibration, just enough to prompt a quick, natural correction without interrupting their work. What sets BodyBoost apart is how it turns these moments into meaningful insights. Workers can track their own progress through a simple mobile app, helping them build better habits over time. At the same time, employers can access anonymised team-level data that highlights broader trends and risks, allowing for safer work environments without compromising individual privacy. Designed to be practical for everyday use, BodyBoost fits seamlessly into any routine, offering real-time support and long-term improvement, without adding complexity.

VENTURE SCIENTISTS | Five-Minute Pitch for PhD Students



Rita Barros

PhD Student, Doctoral Program in Chemical and Biological Engineering, FEUP

Triple-Action Cutaneous Device for Skin Cancer Treatment

The proposed technology is a skin patch designed to treat skin cancer in a targeted and non-invasive way. It works like a glucose monitor, but instead of tracking blood sugar levels, it triggers photo and biocatalytic reactions that can harm the tumour cells when exposed to light. The patch is composed of three main components:

- Graphitic Carbon Nitride (GCN): A metal-free semiconductor activated by visible light that can generate toxic radicals to kill cancer cells.
- Glucose Oxidase (GOx): An enzyme that consumes glucose from the tumour microenvironment, starving the cancer cells of essential nutrients and producing hydrogen peroxide as a by-product.
- Haemoglobin (Hb): An iron-containing protein found in red blood cells that helps convert hydrogen peroxide into highly reactive species (through Fenton reactions) that can destroy cancer cells.

When the patch is applied to the skin and exposed to light, it simultaneously activates three powerful therapies, all at once: Photodynamic Therapy (PDT), Chemodynamic Therapy (CDT) and Starvation Therapy (ST). These therapies deliver precise, effective, and localised cancer treatment with minimal harm to healthy tissue.

PLENARY LECTURE

Margarida Mano
Vice-Rector, Universidade Católica Portuguesa

Leadership at the Intersection of Academia, Policy, and Development: Bridging Knowledge to Impact Society

In the fast-paced world we live in, where uncertainty and unpredictability make context and its complexity more evident, solving society's new (old) problems seems more challenging than ever. Yet, how is that so? It is true that the interconnections between problems are now clearer and denser. It's also true that the development of new approaches is always slower than reality. But something new is the awareness that, more than ever, solutions must respond to seemingly contradictory tensions. How can one, by specializing, strive to gain more breadth and still be a generalist? In society, as in the markets, how can we create space for fantasy and creativity in a world of hierarchies? To what extent does critical freedom strengthen scientific or political leadership?

In this lecture, we will look at some ways of helping to balance these tensions. This is the case with knowledge and the role of academic freedom in its development. This is the case of interdisciplinarity and the potential for effective dialog between fields and experts. It's the case of a liquid society where people, audiences, actors and influencers attract each other and move around. It's the case of researchers who, with their knowledge, determine scientific impacts and drive real changes in society.

Biography

Margarida Mano with a PhD in Management from the University of Southampton, she is currently Vice-Rector for Continuous Improvement and Development at the Universidade Católica Portuguesa and President of the Board of TI-Portugal, the Transparency and Integrity Association. She is also Chairwoman of the General Assembly of FORGES (https://aforges.org/) and a member of the Supervisory Board of the Order of Engineers. Minister of Education and Science in the XX Government of the Republic (2015) and Member of the Portuguese Parliament, in the XIII Legislature, with responsibilities in the areas of Education, Higher Education, Science, Culture, Communication, Youth and Sport, and represented the Portuguese Parliament in the Parliamentary Assembly of the Union for the Mediterranean, where she chaired the Committee on Economy, Finance, Social Affairs and Education. She has been Vice-Rector of the Portuguese Catholic University since 2020. Until 2015 has held management positions in Banking and at the University of Coimbra as Vice-Rector, Pro-Rector and Administrator. Professor at the Faculty of Economics of the University of Coimbra since 1986 in the areas of Economics and Management. Strategic Management (prospective analysis, scenario), Change Management, Quality and Governance Models stand out as areas of scientific interest.

Symposium on IEM & EPP

Round Table - Trash Talk: Collaborative Paths to Sustainable Waste Management

The shifting consumption patterns are giving rise to critical levels of waste generation. Given this, issues about the sustainability of the environment and societies are becoming a daily concern of businesses, policymakers and scholars alike. Considering the current situation, it is imperative that socio-technical changes are implemented that drive us to a more sustainable future. Join us in this deep dive into the current and future landscape on urban waste management. During this time, we will bring together members of the high and low management of waste management organizations with key members of academia working the forefront of waste management problems. Leveraging this pool of expertise, we will reflect on how we must change to achieve a more sustainable future for the environment and societies and how can academia and research contribute to that change.

Joana Maia Dias
Associate Professor, FEUP

Biography

Joana Maia Moreira Dias, PhD in Environmental Engineering, is an Associate Professor of the Department of Mechanical Engineering and Director of FEUP's Bachelor's and Master's degree courses in Environmental Engineering. She coordinates continuing education courses in Circular Economy, is a member of FEUP's sustainability commission and belongs to the executive committee of the Education for Sustainable Development project at FEUP. She integrates LEPABE research unit and has a large number of scientific publications having supervised several thesis in the field of Environmental Sciences and Technologies, in particular sustainable waste management and the production of renewable fuels, in collaboration with various companies and with international connections.

Round Table - Trash Talk: Collaborative Paths to Sustainable Waste Management

Soraia Taipa
Head of Innovation Management Unit,
Lipor

Biography

Soraia Taipa leads the Innovation Management Unit at LIPOR, driving bold thinking and value creation. She holds a degree in Environmental Engineering from Universidade Católica and a Mini MBA in Sustainable Project Management. Currently, she is attending the Business Leadership Program at AESE Business School. She is certified in Project Management (IPMA, GPM) and trained in Creative Leadership and Design Thinking. Her work reflects a strong commitment to innovation, sustainability, and strategic development.

Tânia Ramos
Associate Professor, IST

Biography

Tânia Ramos is an Associate Professor at the Engineering and Management Department at IST – University of Lisbon, and President of the Research Unit CEGIST – Centre for Management Studies of IST. She received her Bachelor's degree in Management from ISCTE-IUL, her Master's degree in Operations Research and Systems Engineering from IST and her PhD in Engineering and Management from IST. Tânia's research focuses mainly on modelling and solving real-world problems related with logistics systems planning, routing, sustainability, reverse logistics and waste management systems. She has several papers published in international journals. She is also the co-author of books in the field of logistics. She has coordinated several national projects on the fields of logistics and waste management.

Round Table - Trash Talk: Collaborative Paths to Sustainable Waste Management

José Matos
Waste Management and Street Cleaning Specialist, Maiambiente

Biography

With a degree in Environmental Engineering from FEUP, ***José Bartiloti Matos*** is a specialist in urban waste management and cleaning services. With 11 years of experience at Maiambiente, he has held responsibilities in urban cleaning, waste collection, recycling center management, and environmental compliance. Focused on innovation, operational efficiency, and data analysis, he has contributed to the company's key projects. He currently serves as Director of the Urban Cleaning Unit and oversees part of the waste collection operations in the municipality of Maia.

ORAL COMMUNICATIONS

List of Oral Communications

OC 1. Complexity, high-impact: fire axis and extinction pattern mapping for policy integration

Rui Almeida[1,2], Abílio Pereira Pacheco [1]

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[2]ICNF, *Av. Dr. Alfredo Magalhães Ramalho 1 1495-165 Algés,* Portugal
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Abstract

Portugal has one of the highest rural fire frequencies in Europe, with over 3 million hectares burned since the 1970s. Despite a recent decline in fire numbers, the strong link between fire activity and weather remains. This study presents a simple, precise alternative to complex simulators for identifying fire behavior patterns that support wildfire mitigation and governance.

Using public data on burned area perimeters from 1980–2024 across continental Portugal, the study reveals spatial patterns and recurrence probabilities of fire activity. A key innovation is the development of a practical methodology to identify two strategic elements: main fire propagation axes and extinction zones. These elements inform fuel management, infrastructure planning, and operational strategies.

The method employs geographic skeletonization, a technique adapted from landslide analysis [1] that captures the central structure of shapes [2] and is used to extract fire propagation axes. Combined with fire perimeter frequency data, it highlights areas where fires consistently gain and lose intensity, offering critical insights for managers.

The validation, based on severity data from Severus project [3], assessed severity differences across axes, perimeters, and other burned areas based on descriptive and non-parametric tests. The simplified method, requiring no detailed fuel models or meteorological inputs, offers an operationally accessible alternative to complex fire simulations [4], enabling managers to anticipate fire behavior based on land use and topography.

Due to its simplicity, the method can be integrated into global and regional systems such as the Global Wildfire Information System, continental platforms like the European Forest Fire Information System, and national systems like the Portuguese wildfire platform. This integration enables the inclusion of detailed local information in large-scale fire management tools, enhancing decision-making for authorities. By bridging scientific analysis with operational needs, the method supports the development of more robust and informed fire policies at both local and national levels.

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OC 2. Do we really know what communities think about the risks linked to the traditional use of fire? — A comparative study in central and northern Portugal

Mayara Souza[1], Cátia Santos[2], Abílio Pereira Pacheco[1,2], Jorge Grenha Teixeira[1]

[1]INESC TEC, Faculdade de Engenharia, Universidade do Porto, Rua Dr. Roberto Frias, 4200-465 Porto, Portugal
[2]ForestWISE, Collaborative Laboratory for Integrated Forest & Fire Management. Quinta de Prados, Campus da UTAD, 5001-801, Vila Real, Portugal

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Abstract

Fire plays a crucial role in rural landscape management, yet it also carries risks. This study aims to design effective risk communication strategies for traditional fire use in Portugal, by exploring community perceptions of the risks associated with these practices in two different sampling regions, Lousã and Vale do Sousa. To achieve this, the CMU mental models' approach [1] was employed, and the research was structured in three phases. First, the expert's mental model was systematized, mapping the main risks, motivations, alternative solutions, mitigation factors, potential impacts, and contextual variables related to traditional burning. Second, the laypeople's mental model was developed through individual interviews with rural community members who practice traditional burning. Finally, we validated and expanded these findings through a structured survey (n=423), which allowed us to assess the generalizability of knowledge gaps and misunderstandings – termed here as "dissonances" – between expert and laypeople's mental models. This study seeks to better understand traditional burning practices through a more inclusive and context-sensitive lens, guided by two innovative methodologies: (1) participatory actions were introduced to reach and actively engage laypeople prior to individual interviews, ensuring that their perspectives were grounded in meaningful interaction and trust-building; (2) the interview guide was expanded to include the socio-economic valorization of forested areas, allowing respondents to connect fire-related practices with broader rural development concerns. This research underscores the importance of a bottom-up approach in aligning local practices with appropriate fire management policies and risk communication strategies, extending the results of a previous study [2]. Evaluating "dissonances" between expert and laypeople's knowledge contributes to improving risk communication and fostering a quantitative/qualitative data-driven approach to forest fire management. Moreover, supporting rural territories contributes to long-term wildfire risk mitigation and sustainable land management.

Acknowledgments

This work was supported by the European Horizon 2020 research and innovation programme under grant agreement nº 101037419, through a project called FIRE-RES - Innovative technologies and socio-economic solutions for fire-resistant territories in Europe. This work was also supported by FCT - Fundação para a Ciência e Tecnologia, I.P. by project reference and DOI https://doi.org/10.54499/2023.05533.BD.

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OC 3. Wildfire ignitions and leisure activities: dissonances in laypeople's risk awareness, uncovered by a mental model's approach

Fábio Martins da Silva[1], Abílio Pereira Pacheco[1,2], Jorge Grenha Teixeira[1]

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[2]ForestWISE, Collaborative Laboratory for Integrated Forest & Fire Management. Quinta de Prados, Campus da UTAD, 5001-801, Vila Real, Portugal

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Abstract

Wildfires are an increasing threat to forested areas close to human settlements, with recreational activities frequently associated with ignition sources. As patterns of land use and climate evolve, and as outdoor leisure becomes more prevalent, the vulnerability of fire-prone areas continues to grow. Understanding the extent to which laypeople's perceptions align with—or differ from—those of experts (both academics and practitioners) is crucial for designing risk communication strategies that are both effective and socially responsive. This research applied the CMU mental models methodology to explore existing gaps and misunderstandings ("*dissonances*") in how laypeople perceive wildfire risks associated with recreational behavior. To support this, an expert-based influence diagram was constructed by integrating scientific findings on ignition causes, behavioral patterns, and fire propagation processes. Subsequently, semi-structured interviews were used to elicit laypeople's mental models and identify common misaligned beliefs. A follow-up confirmatory survey was then designed and administered to a geographically and demographically heterogeneous sample from wildfire-prone areas, aiming to validate and quantify the qualitative insights. The qualitative stage uncovered significant differences in how risks were perceived. Although laypeople recognized that activities involving fire during leisure time (such as barbecues or bonfires) carry potential hazards, they often disregarded other ignition factors, including motorized recreation and structural contributors like fuel buildup and weather patterns. Laypeople's interpretations were also shaped by culturally rooted narratives (or "myths"), such as negative perceptions of specific vegetation types or blaming wildfire occurrence on institutional failures. This study also incorporated the analysis of communication gaps between experts and laypeople as a secondary theme within the interview framework. Initial results emphasize two key insights: lay participants tend to prioritize their safety during leisure activities over concerns about causing wildfire ignitions, and there is a general lack of awareness regarding how such actions may contribute to fire outbreaks. These observations suggest that laypeople's understanding of wildfire risks remains incomplete and, in some cases, inaccurate. Such findings can inform more tailored and empirically grounded communication strategies, while also contributing to the development of more effective wildfire prevention policies.

Acknowledgments

This work was also supported by the European Horizon 2020 research and innovation programme under grant agreement nº 101037419, through a project called FIRE-RES - Innovative technologies and socio-economic solutions for fire-resistant territories in Europe.

OC 4. Assessing Educational Quality for Sustainable Development Goal 4: Insights from PISA Data

Barbara Andrade[1], Ana Camanho[1], Conceição Silva[3]

[1]Faculdade de Engenharia, Universidade do Porto, Rua Dr. Roberto Frias 4200-465, Porto, Portugal
[2]Universidade Católica Portuguesa, R. de Diogo Botelho, Porto, Portugal
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Abstract

Quality education is the foundation of Sustainable Development Goal 4 (SDG 4), which seeks to ensure inclusive and equitable education and promote lifelong learning opportunities for all [1]. However, despite its recognized importance, educational quality is often narrowly defined by cognitive outcomes such as standardized test scores, overlooking the broader, multidimensional nature of learning and development [2,3]. In contrast, UNICEF [4] advocates for a holistic vision of quality education, structured around five interconnected dimensions: Learners, Environments, Content, Processes (e.g., pedagogy and teacher quality), and Outcomes. UNESCO [5] similarly emphasizes a systemic approach, affirming that "a quality education system delivers quality education equitably and efficiently." Building on these perspectives, this study introduces a monitoring framework designed to assess educational quality in alignment with the vision of SDG 4. While rooted in the broader definitions proposed by UNICEF and UNESCO, the framework is operationalized using data from the Programme for International Student Assessment (PISA). Cognitive outcomes serve as an entry point, but the framework extends beyond them by mapping PISA indicators onto the additional dimensions of quality. In doing so, it offers a more integrative and nuanced tool for evaluating educational progress. This approach contributes to the development of a multidimensional, evidence-based monitoring model that supports policymakers and educators in improving both the effectiveness and equity of education systems.

Acknowledgments

This work is financed by National Funds through the FCT - Fundação para a Ciência e a Tecnologia, I.P. (Portuguese Foundation for Science and Technology) within the project EduBEST, with reference 10.54499/2022.08686.PTDC

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OC 5. A Robust Conditional Assessment Of Performance Trends In Education And Training Systems Of European Regions

Fernando Osório[1], Flávia Barbosa[1], Giovanna D' Inverno[2,3], Ana S. Camanho[1]

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Abstract

Most studies on educational performance rely on Data Envelopment Analysis (DEA) to measure the efficient conversion of resources into educational outcomes against an empirical frontier defined by best practices. In particular, the studies dedicated to evaluating European education systems in the context of the "Education and Training 2030" (ET2030) strategic framework, defined by the European Union (EU), synthesize the multidimensionality of the framework into a single composite indicator using DEA under the 'Benefit-of-the-Doubt' (BoD) approach. This paper extends these studies and its contribution is twofold. From a methodological perspective, we not only account for the unique context of each European education system through a robust conditional BoD approach, but we also account for the strategic goals set *a-priori* by experts or decision-makers to define a more ambitious reference for improvement when the best practices observed fall behind. First, the robust version of the model is obtained following a Monte Carlo simulation procedure to overcome the deterministic nature of BoD by making the model less susceptible to atypical observations. Second, the conditional version of the robust BoD estimator addresses the heterogeneity among European regions subject to different regulatory contexts. Contextual variables are included to condition the Monte Carlo procedure to a higher probability (based on an estimated kernel density function) of drawing European regions with more similar contexts to the region under analysis. From an empirical perspective, we monitor the evolution of performance in the education systems of 190 European NUTS-level regions, offering a more granular perspective on educational progress. The robust results indicate that, on average, the performance of regions improved from 2018 to 2022, primarily due to efficiency gains. However, Europe seems not to have yet recovered to the levels of educational performance observed before the COVID-19 pandemic, and disparities all across Europe still remain. Overall, capital regions tend to perform better, while islands display the worst performances. Moreover, the Northen and Western regions exhibit the best performances, while the Eastern ones showcase the poorest results. The conditional results show that Turkish, Romanian, Italian, and Spanish regions, improve remarkably when their context is considered, demonstrating how crucial it is to support these specific regions.

Acknowledgments

The authors acknowledge financial support from the Institute for Systems and Computer Engineering, Technology and Science, INESC TEC, and from the Portuguese Foundation for Science and Technology (FCT - Fundação para a Ciência e a Tecnologia) within the project EduBEST, with reference 2022.08686.PTDC

OC 6. Industry 4.0 Open Innovation Ecosystems: Transformations Induced by Digitalization

Francisca M. Albuquerque[1]

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Abstract

Digitalization has, throughout the last decade, increasingly gained attention from scholars and practitioners, due to its possibly redefining role for the economy and society. Previous studies have demonstrated that due to the 4th industrial revolution, organisations would face challenges and opportunities, ultimately leading to business model innovation. Concurrently, it has been proved that the University-Industry linkages can boost businesses' innovation capabilities. However, very little information is available regarding how Industry 4.0 is altering the Portuguese open innovation ecosystem. Additionally, it is lacking research on novel Industry 4.0 business models and how Universities can participate as strategic partners, in the development of business model innovation.

Therefore, based on an in-depth qualitative methodology, an analysis is performed on the current state of University-Industry linkages surrounding the University of Porto, as well as an assessment of how Industry 4.0 can affect these linkages. In addition, it is analysed a business model prompted by transformations Industry 4.0-related. The findings will provide managerial and University level decision-makers with supporting evidence for policy suggestions.

Overall, the findings suggest that, currently, firms are more available to engage in partnerships with Universities, specifically to attract talent and knowledge. Both University and Industry agents consider Industry 4.0 as a potential disruptor which will lead to the approximation of both organisations, via joint research, development and innovation projects, multidisciplinary academic consulting services and capacity building initiatives. Regarding business model innovation, the selected business model seems to fit the characteristics of Industry 4.0 business models. It is a Software as a Service (Saas) that results from the integration of differente Industry 4.0 technologies across the fashion industry value chain, providing data-driven personalized solutions to the end-users.

Consequently, business policy makers who aim to reinforce their innovation capabilities, in an increasingly competitive business landscape, should consider including Universities as key strategic partners, when engaging in business model innovation strategies. University policy makers should take action to showcase the knowledge (namely technologies and services) created internally, in order to help firms increase their innovation capabilities, accelerate the 4th industrial revolution and, consequently, catalyse the region’s economic growth

Acknowledgments

I would like to acknowledge the contribution of all the interviewees. The knowledge shared was vital for the development of this research project. Above all, I hope I can contribute to their practice with the results. Additionally, I acknowledge the financing provided by FCT - Fundação para a Ciência e Tecnologia, on the scope of the project DigEcoBus - NORTE-01-0145-FEDER 028540 - Dinâmicas Concorrenciais e Inovação no Modelo de Negócio na Era Digital: teoria e aplicações.

OC 7. Multi-Criteria Decision Analysis for Sustainable Systems: A Comprehensive Review

Bruna Moura[1,2], Helena Monteiro[1], Américo Azevedo[2]

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Abstract

Decision-making is essential in daily life, and assessing the sustainability of different systems can be a difficult task [1]. Studies that integrate environmental and economic factors are key to supporting stakeholders' decision-making. Life Cycle Assessment (LCA) may evaluate several environmental impacts in different units. Combining Life Cycle Cost (LCC) results increases the complexity, making it challenging to aggregate these criteria and find a viable solution. Recent literature denotes a meaningful increase in research whose aim is to combine LCA and LCC frameworks [2]. Multi-criteria Decision Analysis (MCDA) may be an effective approach for achieving this integration. Different review papers in the literature examine the application of this methodology. However, most of them focused on specific sectors, *e.g.,* agriculture, water and wastewater, or only on different criteria from the environmental point of view. In this context, this systematic review seeks a more comprehensive overview of the use of MCDA. It addresses this gap by answering the following research questions: What multi-criteria decision-making (MCDM) methods, indicators, and parameters are being used to improve decision-making across environmental and economic sustainability? Although a focus was given on these pillars due to the scarcity and uncertainty of social LCA, studies assessing social indicators were found and analysed. Results showed that the main sectors studied were energy, building and construction. Environmental indicators were the most studied, followed by economic and social, *e.g.,* carbon footprint, costs and jobs. Moreover, some authors simultaneously considered other parameters, namely technical, policy or political, and circular indicators. MCDM methods used include the analytical hierarchy process and the technique for preference by similarity to the ideal solution. Overall, MCDA proved to be a valuable approach by providing insights to stakeholders and policymakers and contributing to informed, evidence-based decision-making. Nonetheless, some relevant sectors are still underexplored, *e.g.,* materials and manufacturing, and textiles.

Acknowledgments

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OC 8. Towards a Hierarchical Framework for Digital Twin Integration in Complex Operations Environments

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Abstract

Complex Operations Environments (COEs), found in sectors such as manufacturing, logistics, and production, are large-scale systems with numerous interacting components and intricate interdependencies [1]. Operating under volatile, uncertain, complex, and ambiguous (VUCA) conditions [2], they pose significant challenges for real-time decision-making and control. Digital Twin (DT) technology, which creates real-time digital replicas of physical systems [3], holds promise for improving the monitoring, control, and optimisation of COEs. However, the absence of a comprehensive and structured definition of COEs limits effective DT implementation [4].

This research addresses this gap by proposing a hierarchical framework for COE conceptualisation to guide tailored DT integration. A two-phase methodology was applied: first, a Systematic Literature Review (following PRISMA) was used to extract COE characteristics, identifying eight key categories—Process and System Interoperability, Human Relationships, Behaviour and Nature, Products and Services, Multi-processes, Performance, System Structure, and Management and Skill Requirements. Second, semi-structured interviews with experts from a global cork manufacturing leader were analysed using Grounded Theory to validate and enrich the framework.

The resulting conceptualisation offers a robust foundation for DT implementation that reflects COE complexities, supporting operational efficiency, enhanced resilience, and proactive decision-making.

Acknowledgments

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OC 9. Logistics Digital Twin Control Tower for Supply Chain Visibility

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Abstract

Modern supply chains are intricate, multimodal networks integrating road, rail, and maritime corridors, disrupted by fluctuating demand, geopolitics, and extreme weather [1]. Yet, many organizations still rely on outdated tools, manual processes, and fragmented data systems, resulting in siloed information and limited real-time visibility [2], which hinders proactive decision-making [3]. This research aims to enhance supply chain visibility, resilience, and data-driven decision-making by developing a Logistics Digital Twin Control Tower—a platform for real-time monitoring and control. The system integrates three key components: (1) a logistics ontology to represent assets, routes, events, and stakeholders; (2) a Neo4j graph database to map dynamic, evolving supply chain relationships through contextual real-time data management; and (3) a Large Language Model interface enabling natural-language queries and intelligent alerts. The research employs a two-phase methodology: a systematic literature review to identify visibility metrics and integration challenges, guiding the system's design; second, a case study implementing the system with maritime and road shipments to evaluate functionality and performance. By delivering a unified architecture for proactive monitoring and data-driven decision support, this work advances supply chain efficiency, situational awareness, and adaptability, laying the foundation for next-generation logistics management in volatile global markets.

Acknowledgments

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OC 10. Last-mile Delivery with Crowdshipping: a multi-objective approach

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Abstract

Crowdshipping has emerged as an innovative solution for last-mile delivery, in which customers can receive their groceries, parcels, or other purchases delivered by ordinary individuals (occasional couriers), instead of by a professional courier. Well-known examples include platforms such as Amazon Flex [1] and Roadie [2], which rely on this delivery strategy since it provides a quicker and cheaper same-day delivery and the flexibility to adjust delivery capacity in response to demand. Occasional couriers (OCs) can be classified into two categories based on their level of commitment to the platforms: dedicated OCs, who proactively register in a platform, provide availability schedules, and accept delivery tasks for compensation, and en-route OCs, who are in-store customers that agree to deliver goods along their usual travel routes, also in exchange for compensation. Most research has targeted delivery costs as the objective to optimize. However, customer satisfaction plays also an important role in the success of this delivery model. To incorporate customer satisfaction, in this study we adopt a multi-objective approach that considers both the minimization of total delivery cost and the maximization of service level. The first objective function encompasses professional fleet, en-route OC, and dedicated OC costs. The second objective maximizes the service level by minimizing total time window deviations. To solve the problem, we developed a bi-objective heuristic based on the Greedy Randomized Adaptive Search Procedure (GRASP) [3], integrating multi-directional improvement strategies. The heuristic combines intra-route operators (such as relocate, exchange, and 2-opt) with inter-route operators (including insert, crossover, and swap) to explore the solution space during the local search phase. This approach enables effective approximation of the Pareto front, allowing us to capture the trade-offs between the objectives.

Acknowledgments

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OC 11. Evaluating Generative AI for Scenario Planning: Comparing Prompt Strategies, Analysis Quality, and Narrative Generation Against Human Benchmarks

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Abstract

Scenario planning is a vital tool for strategic foresight, particularly crucial for navigating complex public policy challenges and informing engineering decisions with significant societal impacts. Yet traditional methods face limitations in time, resources, and potential biases. Generative Artificial Intelligence (Gen-AI) presents opportunities to augment this process, but concerns remain regarding the reliability and depth of its outputs, especially for structured analyses like Impact/Uncertainty Grids and Cross-Impact Analysis, which are frequently employed in policy analysis and strategic planning for public infrastructure or technological transitions. Effectively applying Gen-AI to these techniques, potentially through a hybrid approach integrating AI capabilities with structured methodologies, depends critically on the interaction method used. Therefore, understanding the influence of specific prompting strategies on the quality and nature of AI-generated analysis is crucial for realizing this potential. This research evaluates the outputs of Gen-AI models (specifically Gemini and ChatGPT) using different prompting strategies (simple direct prompts vs. complex multi-persona simulations) for Impact/Uncertainty Grid and Cross-Impact Analysis. First, we compare the results from AI (using different prompting methods) with findings from established human-led studies. Based on this, we hypothesize that the specific type of prompt used actually influences this comparison. In other words, the prompt affects how closely the AI's analysis matches or diverges from what human experts found. The study will utilize qualitative and quantitative metrics to evaluate both the intermediate analyses (focusing on factor diversity, relationships, consistency, and faithfulness) and the final scenario narratives generated from these analyses (focusing on aspects like plausibility, coherence, and reflection of the core analysis findings). This comparison will benchmark outputs against each other and, where feasible, against documented results from relevant prior human-led scenario planning studies. Findings are expected to provide empirical evidence on the role of prompt engineering in shaping Gen-AI's contributions across the scenario planning process, from analysis to narrative generation. This research aims to inform best practices for utilizing Gen-AI effectively and contribute to a better understanding of human-AI collaboration in complex decision-making contexts, especially within engineering and public policy domains where foresight is critical.

Acknowledgments

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POSTER COMMUNICATIONS

List of Poster Communications

PC 1. A Conceptual Framework for ESG-OPEX Integration: Bridging Strategy and Execution in Industrial Sustainability

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Abstract

The integration of Environmental, Social, and Governance (ESG) principles into industrial operations has become a strategic priority, driven by regulatory pressure, stakeholder expectations, and sustainability imperatives. Meanwhile, Operational Excellence (OPEX) methodologies—such as Lean, Six Sigma, and Kaizen—remain essential for improving efficiency, quality, and continuous improvement. Despite their complementarity, ESG and OPEX have evolved in parallel, with limited integration in theory or practice. This study addresses that gap by presenting a conceptual framework designed to align ESG objectives with OPEX capabilities through a coherent, practically oriented structure. Developed through a systematic literature review, the framework synthesises key theoretical constructs, empirical findings, and implementation gaps. It is structured around two core domains: Strategic Alignment and Integration.

The Strategic Alignment domain ensures that ESG priorities—environmental, social, and governance—are embedded within the organisation's strategic direction and supported by OPEX capabilities such as Lean Six Sigma tools, Kaizen culture, stakeholder management, maturity assessment, and change leadership. ESG goals are translated into measurable initiatives (e.g., reducing GHG emissions, improving workforce inclusion, or strengthening compliance), using specific OPEX methodologies like DMAIC, PDCA, and visual management. Hoshin Kanri cascades these objectives into concrete actions and KPIs, promoting coherence and accountability across organisational levels.

The Integration domain focuses on how aligned ESG priorities are executed in day-to-day operations. It leverages two types of enablers closely tied to OPEX: (i) Managerial mechanisms, including stakeholder routines, KPI systems, and project selection grounded in structured problem-solving; and (ii) Digital capabilities, such as data governance, predictive analytics, digital twins, and automation, which support scenario analysis, performance control, and continuous ESG improvement.

The framework articulates both intermediate outcomes—such as stakeholder engagement, community legitimacy, and investor confidence—and long-term strategic impacts: (1) enhanced ESG performance via structured OPEX deployment, (2) strengthened organisational sustainability capabilities, and (3) sustainable value creation and stakeholder trust.

Designed for empirical validation through case studies, the framework offers both a theoretical foundation and a practical tool for embedding ESG principles into continuous improvement ecosystems, helping organisations bridge strategy and execution in the pursuit of sustainability-driven operational excellence.

PC 2. Can energy-transition intermediaries really transition? The case of tackling energy poverty in Romania

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Abstract

Transition intermediation is viewed as a key approach through which actors can broadly support sustainability transitions, specifically energy transitions. This can involve diffusion of technology and knowledge, mediation, policy advocacy, or community engagement, to name a few. This study explores the extent to which intermediaries can successfully navigate role transitioning and whether they have the agency to do so. We focus on a case of diffusion-to-systemic intermediaries in energy transition, within an Eastern European context. Using a case-study approach, we analyze the activity of a Romanian NGO that has facilitated electrification in isolated communities since 2014, connecting households to the grid or providing PV panels through a full process, from acquisition to implementation and maintenance. Data sources include in-depth interviews and text documents. Through qualitative analysis, we identify key barriers to intermediaries' transition from diffusion to systemic, such as capacity building, power inequalities, and conflicting actors' goals. Additionally, we highlight energy poverty-related challenges—energy literacy, risk of exclusion or entrenchment, resilience, and social relations—that must be addressed when designing diffusion-to-systemic mechanisms for energy transition.

This study contributes to the transition literature by addressing the underexplored empirical context of Eastern Europe, focusing on Romania. Additionally, it sheds light on energy poverty—a pressing issue, particularly in Eastern Europe, where structural inequalities and socio-economic constraints exacerbate vulnerabilities in the energy transition. By examining the diffusion-to-systemic transition of intermediaries, the study provides valuable empirical insights into the difficulties they encounter, offering a more nuanced and realistic perspective. It highlights that, in some cases, this transition may be hindered by structural barriers, power imbalances, or a lack of institutional support, challenging the assumption that intermediaries can seamlessly evolve from one role to another.

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PC 3. Enhancing Urban Mobility Sustainability through Optimizing Electric Carsharing and Grid Load Management

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Abstract

Rapid urbanization intensifies pressure on transportation networks, contributing to increased greenhouse gas emissions and challenging sustainability objectives [1]. European cities are dedicated to lowering greenhouse gas emissions by 2030 [2], which requires innovative solutions. Electric vehicle (EV) car-sharing systems present a promising option for more sustainable urban mobility by decreasing greenhouse gas emissions [3]. These systems promote sustainable mobility but face operational challenges, particularly in managing electricity demand for charging [4]. Increased EV adoption can strain the electrical grid, risking instability during peak demand [5]. This study presents a multi-stage optimization framework aimed at improving the sustainability and efficiency of EV car-sharing systems while maintaining grid stability. It comprises three steps, each adding complexity to align with real-world business scenarios. A deterministic optimization model will be developed in the first step to combine renewable energy sources with traditional grid power, incorporating effective grid management strategies. A key feature will be communication mechanisms between car-sharing companies and distribution system operators, addressing an often overlooked component. Given the expected complexity and scale of real-world scenarios, approximate solution methods such as metaheuristics will be employed to solve the optimization problem. The second step will extend this model by adding stochastic elements, uncertainty variables, and probability distributions to reflect real-world variability. Scenario generation and stochastic optimization will enhance the model's robustness. In the third step, the stochastic model will be refined to consider multimodal interactions between EV car-sharing and other urban transport modes, promoting a holistic approach to urban mobility. This framework is expected to increase the network hosting capacity criteria, which is the maximum number of EVs that can be accommodated in the distribution network without compromising its reliability and efficiency. It also supports the scalability of EV car-sharing systems and promotes sustainable urban transportation in line with European climate goals.

Acknowledgments

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PC 4. Research & Development and Innovation in Related Diversified Context

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Abstract

This study investigates the intricate processes of Research, Development, and Innovation (RDI) within related diversified organizations, defined as companies composed of multiple business units (BUs) operating in distinct industries or markets yet connected through technological, knowledge-based, or operational complementarities. Related diversification enables organizations to pursue economies of scope and exploit synergies across units. However, it also increases the complexity of internal collaboration, introducing coordination and integration challenges that require context-sensitive approaches.

The research aims to understand how collaboration unfolds across internal RDI initiatives by longitudinally analyzing micro-level processes (decision-making, leadership, and actor mobilization), while accounting for contextual factors, including relatedness, complementarity, complexity, and complementarities between BUs. These dynamics are explored through three interrelated studies. The first study investigates internal collaboration in RDI projects, identifying key micro-mechanisms and how they differ depending on project characteristics and their origin, whether initiated top-down or bottom-up. This study highlights the influence of project trajectory and strategic framing on collaboration paths. The second study examines the relationship between the organizational RDI network and the architecture of individual projects, building on the mirroring hypothesis. It explores the extent to which cross-unit collaboration patterns align with the structure of project interdependencies. The third study evaluates the efficiency of innovation activities across BUs applying a Data Envelopment Analysis (DEA) model complemented by stepwise regression. This analysis reveals how contextual variables impact innovation performance, with complexity and relatedness enhancing efficiency, while excessive decomposability may lead to fragmentation and coordination overhead. These studies contribute to a better understanding of RDI collaboration within complex organizational frameworks. The research provides theoretical and practical insights to inform strategic decision-making, support the planning of intra-organizational collaborations, and promote synergies across units, aiming to improve innovation outcomes in related diversified environments.

Acknowledgments

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PC 5. The Front-End of Innovation in the context of Research Centers

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Abstract

This study addresses how research activities are organized at the early stages of a research project. It focuses on nonprofit research centers that perform "Applied Research" and identifies research pathways in the Front-End of Research. This Front-End of Research precedes the Front-End of Innovation (FEI) in the sense that it is about identifying research opportunities that may lead to "future technologies". While there is significant literature on the Front-End of Innovation of for-profit companies, the discussion on the Front-End of Research is limited. Therefore, this study contributes to closing this gap. The Front-End Research is the stage immediately before the conception of a research project. At the Front-End Research, researchers and R&D managers look at what they have and try to make sense of the best way ahead. Considering the nature of the described research problem, which addresses a problem research centers face to produce innovation, the present study introduces the Ontology of the Front-End of Research, using the principles of Design Science Research. Drawing upon existing FEI frameworks, the ontology incorporates agile methodologies and integrates insights from forty experts across various domains. It adapts commercial innovation models to academic and nonprofit contexts, highlighting unique success measures such as societal impact, alignment with institutional goals, and interdisciplinary collaboration. Based upon an extensive, integrative literature review and on expert feedback to iteratively design and validate the ontology, this work provides contributions such as the formalization of empirical knowledge into a replicable framework for managing research activities, the extension of the "Technology-to-Product-to-Market" linkage model to early-stage research contexts, the usage of an adapted double diamond model, which fosters divergent-convergent creativity in early research stages, and the extension of concepts from the Front-End of Innovation to the distinct needs of the research sector. This adaptation opens a new avenue in the FEI literature by establishing a structured, actionable approach tailored to the processes and objectives specific to academic and nonprofit research settings. The ontology was validated in two consecutive phases. In the first one, experts answered a questionnaire that validated each subontology and concept. All subontologies received high or very high scores, and the feedback provided was crucial for further improving the ontology. The second phase was performed via a focus group, where another set of experts evaluated each subontology and the competency questions. The results indicate that the ontology fulfills its purpose, which is enough evidence to claim the validation of the work. A case study using a research and development project demonstrates ontology's applicability to a real scenario. The instantiation process helped in validating and improving the ontology. The study concludes by recommending ontology's applicability in diverse

research contexts, including social sciences and corporate R&D environments, as future work, highlighting its potential to organize the early innovation processes.

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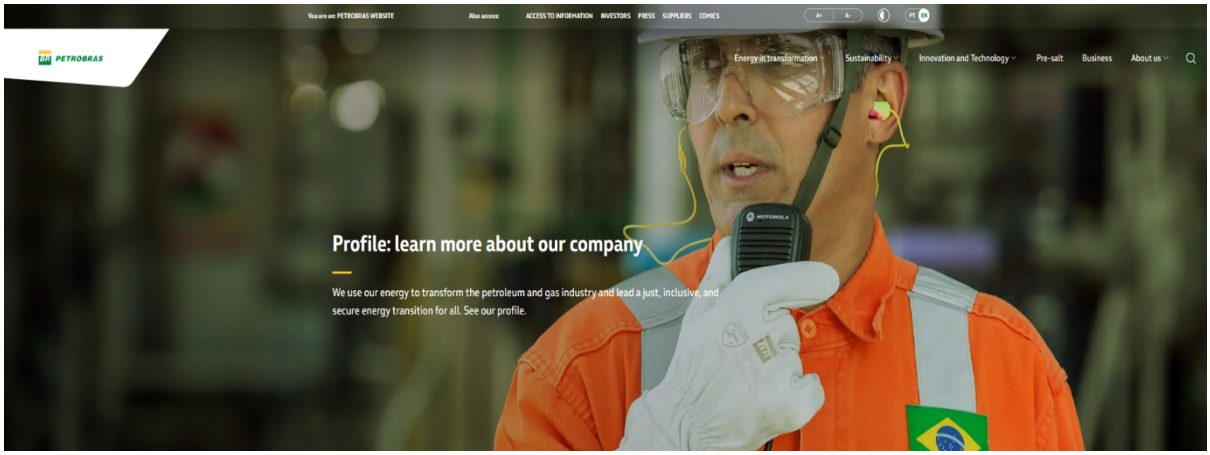

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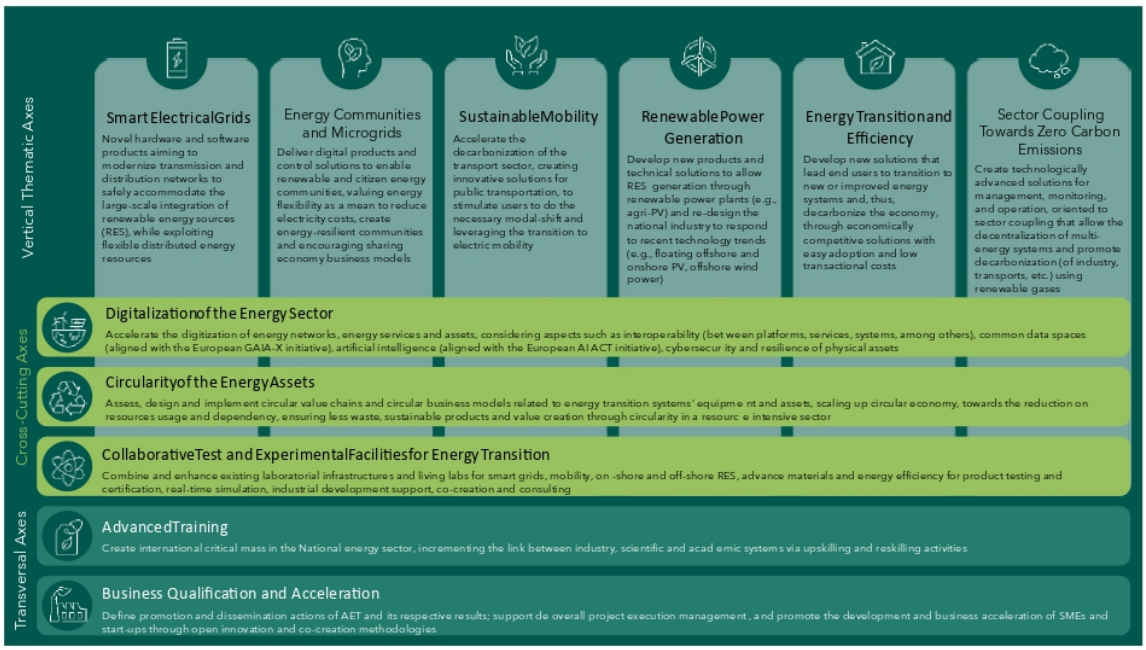
ATE – Alliance for Energy Transition

The Alliance for Energy Transition (ATE) is one of the largest Mobilizing Agendas funded by the Portuguese Recovery and Resilience Program (PRR) and was created to strengthen the competitiveness and resilience of the national energy value-chain, particularly in sight of innovative export-oriented product/service development and consolidation.

This strategic goal is being achieved through a sustained series of strategic objectives, including an increase of goods and services exports, higher investment in R&D and reduction of CO_2 emissions, by allocating a total investment of 274 M€ in added-value activities that are generating around 46 new products and services. This objective is only possible due to the commitment of a total of 58 companies and public entities and 19 Research & Innovation (R&I) centers and universities, indeed crucial to structure an entire ecosystem aiming at energy transition. Furthermore, the ATE promotes the creation of about 700 qualified jobs.

ATE proposes a comprehensive plan for the Portuguese energy transition, based upon the experience and strategic vision of the various players in the energy sector that operate both national and internationally, which results in the creation of a structural ecosystem without precedents for the national energy sector. In this context, 11 thematic axes were defined:



ATE is led by EFACEC ENERGIA, involving organizations with complementary expertise from the research and industrial areas across Portugal. The strong relationship between the scientific and industrial entities in ATE is one of the key distinctive factors of the consortium. National R&I institutes and collaborative laboratories work together with some of the most prominent industrial partners to address market needs. The synergies that are part of ATE enhance the success of all the consortium's initiatives as science is brought together with industry to solve needs and challenges of the energy sector. By covering the whole energy value chain, ATE has a unique positioning in the Portuguese panorama, in a domain that is of utmost relevance as energy impacts the whole economy.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WORLD WATER DAY
2025 Glacier Preservation
We preserve what the future reserves
TOMORROW MATTERS
Bondalti Water transforms seawater and lake water from Antarctica into drinking water to support the Brazilian Research Station.
Learn more at:
BONDALTI.COM

Packaging of the future (Embalagem do Futuro®) **+ecological +digital +inclusive**

https://embalagemdofuturo.pt/en

Project mobilizes a total of 79 entities, committed to transforming the Portuguese industrial fabric of the Packaging Sector. Project Leader: VANGEST - Engenharia Financeira e Gestão, S.A.

An innovative project that aims to produce market packaging solutions on a global scale that are greener, more digital, and more inclusive; envisages the creation of new products, services, and production lines capable of producing sustainable packaging, from raw materials to product design, engineering, molds and tools, processing and manufacturing, information systems, and digital transition, social marketing, collection, and recycling.

Start Date | 01-04-2022; End Date | 30-06-2026; Total funding amount| 104 113 760,36€

Subprojects: The activities and initiatives of the Embalagem do Futuro® project are materializing in 19 new Products, Processes, and Services (PPS) with full integration of the solutions developed and tested.

PPS01 - Food packaging made of recycled polyethylene from fossil and biological origin

PPS02 - Clean Delivery – Lunchboxes of the Future for a Circular economy

PPS03 - REDUCE - REDesigned sUstainable ContainErs and pallets

PPS04 - New glass containers for food and beverage products more sustainable

PPS05 - New Co-Injection process for manufacturing plastic packaging incorporating recycled materials

PPS07 - Biofilm Plant + multi-layer bags with barrier to O2 100% recycled

PPS08 - Recovery of Residues with a High Degree of Purity

PPS09 - Develop new light 100% natural packaging in wood for food sector

PPS10 - New cardboard packages with unique properties for food contact and e-commerce

PPS11 - Intelligent Sustainable Fishery Transport System

PPS12 - Bgreen2Pack -New premium packaging from natural origin with incorporated fragrances

PPS13 - A New Solution for Smart Package Tracking

PPS14 - Traceability farm to fork

PPS15 - New Paradigm of Waste Collection and Citizen Awareness

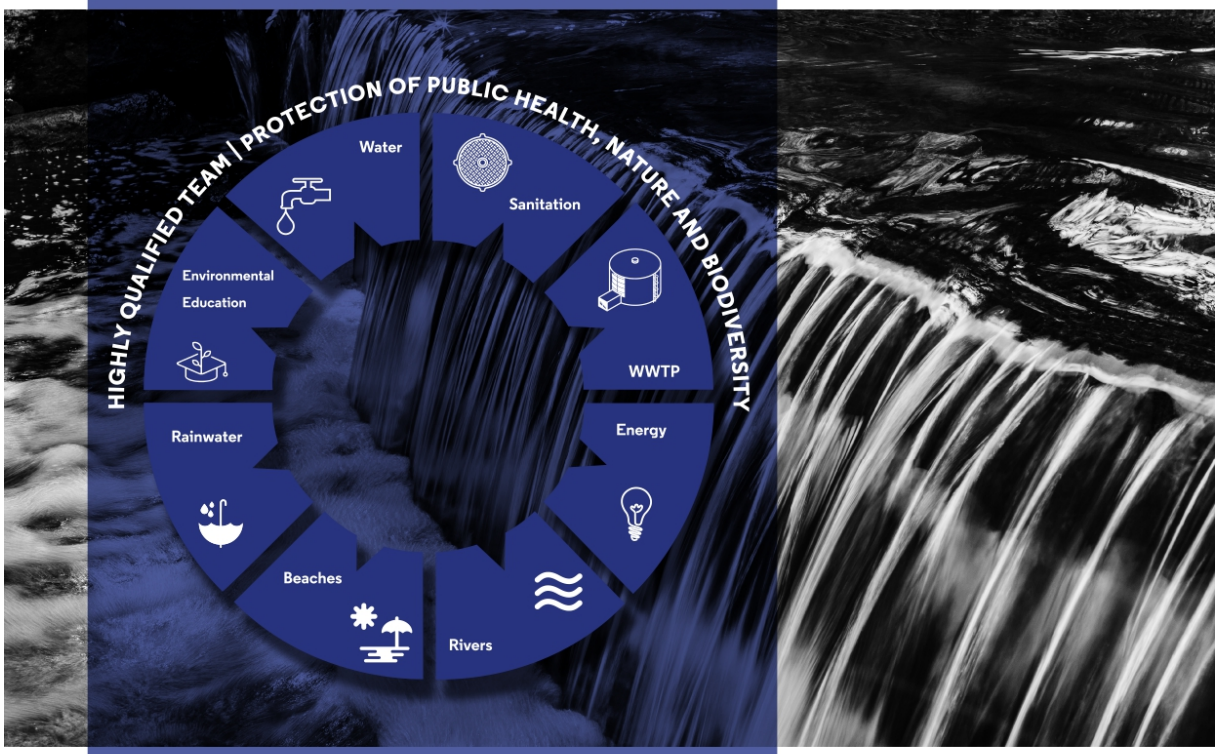
PPS16 - Predictive and Preventive Maintenance Tower

PPS17 - CENTRE FOR LIFE CYCLE ASSESSMENT AND SUSTAINABILITY (CLICAS)

PPS18 - SUSTAINABLE PACKAGING CERTIFICATION

PPS19 - Human Resources Training and Upskilling - Skills for the Future

PPS20 - Project Management, Promotion and Dissemination of the results



WHATWEDO

Integrated and sustainable management of the entire **urban water cycle in the municipality of Porto**

Water distribution

Wastewater drainage and treatment

Rainwater drainage

Management of **urban rivers and streams**

Seafront management

Promotion of **environmental education and sustainability**

Analytical control of **water quality** throughout the urban cycle (**accredited Laboratory**)

Responsible for the **municipal energy management**

+Info: **www.aguasdoporto.pt**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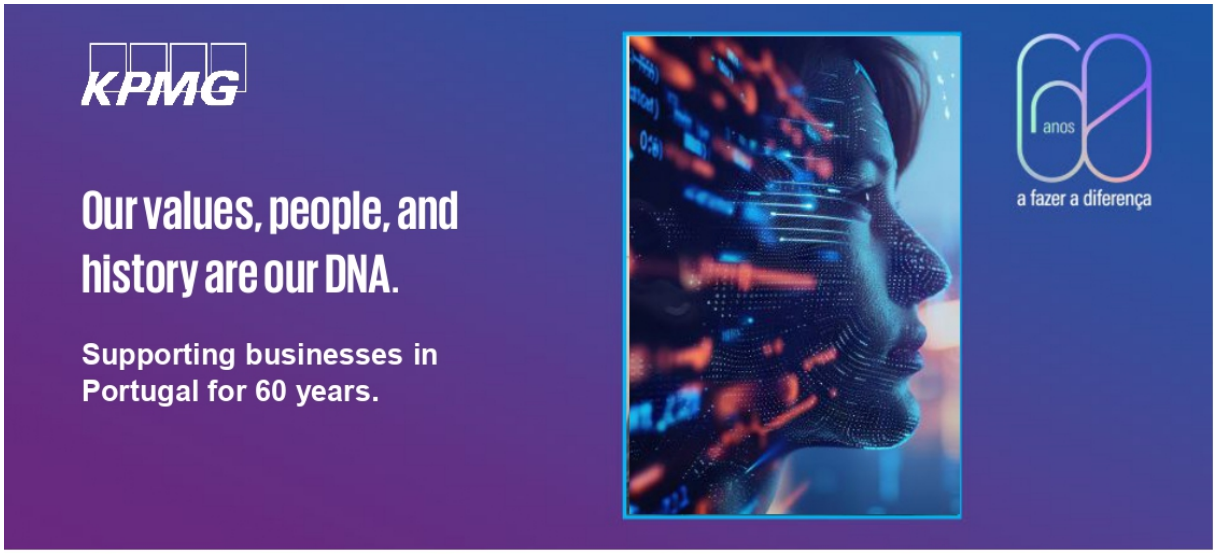

About us

KPMG operates in 142 countries and territories and, in FY23, collectively employed over 275,000 people, serving the needs of businesses, governments, public sector agencies, non-profit organizations, and capital markets around the world.

KPMG Portugal has offices in Lisbon, Porto, and Évora with 90 members of the Partnership and over 1700 employees. We provide Audit & Assurance, Tax, and Advisory services, supporting our clients in identifying and managing risks and maximizing opportunities.

Our values form the basis of everything we do. These are:

Integrity Excellence Courage Together For better

Passionately and purposefully, we work side by side with our clients, combining innovative approaches with extensive experience, and we are prepared to deliver truly distinctive results.

Careers at KPMG Portugal

More Information

weimpact

PIONEERING INNOVATION IN LEACHATE TREATMENT FOR A SUSTAINABLE FUTURE

AST Ambiente is internationally recognised for its cutting-edge technological solutions in complex water treatment, with a particular emphasis on **leachate management** — one of the most demanding environmental challenges faced by the waste sector

With over 25 years of applied expertise, AST has developed proprietary systems that combine **reverse osmosis, ultrafiltration, and advanced automation** to treat highly contaminated leachates with precision, efficiency, and cost- effectiveness.

As the **only Portuguese manufacturer** of integrated leachate treatment units using high-performance membrane technologies, AST delivers fully modular and compact solutions deployed across Europe, South America, and Africa. These systems are designed not only to meet the strictest discharge standards but also to promote the **recovery and reuse of water**, contributing directly to the circular economy.

TECHNOLOGICAL EDGE, ENVIRONMENTAL IMPACT

- **Reverse osmosis systems** tailored for landfill leachates and high-load effluents
- **Energy-efficient, low-footprint designs** reducing operational costs and environmental impact
- **Custom-built solutions** for both mobile and stationary installations
- **Reclaimed water** reintegrated into industrial or irrigation systems, reducing pressure on freshwater sources

NEW PROJECTS

Our progress in tackling **micropollutants**, particularly **pharmaceuticals, water reuse strategies, nutrient recovery**, and **PFAS removal**, reflects AST's commitment to anticipating the next generation of environmental challenges. By integrating **advanced treatment technologies** and cutting-edge **membrane systems**, we've developed solutions that go beyond compliance — aiming for true **sustainability**. Our current **R&D projects** focus on **circular approaches** that not only remove emerging contaminants but also recover valuable resources, positioning AST at the forefront of **innovation** in complex **water treatment**.

SUSTAINABILITY IN PRACTICE

AST's technologies have enabled municipalities and private operators to **divert millions of litres of contaminated leachate** from watercourses, significantly reducing **greenhouse gas emissions, groundwater contamination risks,** and **environmental liabilities.**

Whether deployed as standalone systems or integrated into broader treatment frameworks, AST's solutions are a **benchmark in sustainable infrastructure.**

Rua do Bairro, 400, 4485-010 Aveleda, Portugal
+351 220 163 277

OFFICE@AST-AMBIENTE.COM
WWW.AST-AMBIENTE.COM

Nynas premium mineral oil based transformer oils have outstanding dielectric properties, enabling quality transformer design. Our oils superior heat transfer properties provide efficient cooling, and good flow properties make sure that you can start the transformer even in sub-zero climates. Nynas premium transformer oils are extremely stable and resistant to oxidation: there are transformers still in operation today, more than 50, 60 or 70 years after first being filled with Nynas transformer oil.

In 2028 we celebrate our centenary. And while we can look back on an interesting history, we prefer to look forward to a long an innovative future. That's why we no longer restrict ourselves to traditional naphthenic transformer oils, but we also promote the use of biogenic and circular alternatives.

- 100% biogenic insulating fluid - Probably the worlds coolest transformer fluid, NYTRO® BIO 300X,
- Re-refined with unmatched performance - Join the circular economy with NYTRO® RR 900X,

NYNAS

Lutz-Jesco GmbH

About

Lutz-Jesco is a renowned manufacturer of components for monitoring and treating water quality in the drinking water, swimming pool water, municipals and industrial waste water treatment.

Foundation 2003 | **Head office** Wedemark

Product range

Dosing pumps & accessories | Chlorinators up to 200 kg/h | Measuring and control technology | Disinfection systems | Centrifugal pumps | System and process technology | Filter systems

Areas of use

Water treatment | Waste water treatment/ sewage treatment plants | Municipal indoor and outdoor swimming pools | Private swimming pools | Chemical industry | Electroplating and surface treatment | Paint and varnish industry | Ceramics industry | Paper and cellulose industry | Industrial pipeline construction

Chlorinators up to 200 kg/h

Chlorinators
- Chlorinators and vacuum regulators
- Chlorine evaporator
- Flow meter
- Regulation valves
- Changeover switch
- Ejectors / Non-return valves

Room and protective equipment
- Gas warning devices
- Pressure safety shutoff valves
- Crane cross beams / crane scales
- Drum scales / drum supports
- Chlorine scrubber
- Valve closing system

Accessories and more

Measurement and Control Technology

TOPAX® - Single and multi-channel controller

Water sampling stations for
- Drinking & bath water
- Industrial applications

Gas warning devices for
- Chlorine gas / dioxide
- Ozone

Sensors
- Optical measuring cells
- Amperometric measuring cells for disinfection measurement
- Diaphragm-covered measuring cells
- Conductivity measuring cells
- pH/redox single-rod measuring cells
- Temperature / Gas sensors

Software, accessories and more

Disinfection Systems

Chlorine dioxide systems
- EASYZON 5 (diluted solution)
- EASYZON D (diluted solution)
- EASYZON C (concentrated solution)
- EASYZON L/M/H

Sodium hypochlorite systems
- EASYCHLORGEN
- MINICHLORGEN

Calcium hypochlorite systems
- EASYCHLORMIX
- SAFETYCHLORMIX

Flow-trough chlorine electrolysis systems
- TECHNOMAT (private)
- TECHNOSTAR (commercial)

System and Process Technology

Standard systems
- Small dosing stations
- Mobile dosing systems
- Transportable dosing systems
- Polymer preparing and dosing station EASYPURE

Special solutions
- Skid systems
- Container systems

Lutz-Jesco GmbH
Am Bostelberge 19 | DE-30900 Wedemark |
Phone +49 5130 5802-0 | info@lutz-jesco.com |
www.lutz-jesco.com

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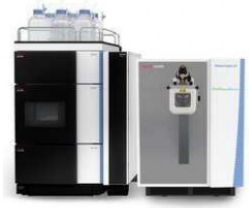
Engineering Manager
"Plate Heat Exchangers: Overview and Applications"

CROMATOGRAPHY - SPECTROMETRY

THERMO UNICAM PORTUGAL is a specialist in Chromatography and Spectrometry, representing cutting-edge technologies from Thermo Scientific.
We present the revolutionary Orbitrap Analyzer®, the most advanced technology for the analysis and identification of environmental contaminants. This system enables precise quantification of both persistent and emerging contaminants with the highest analytical confidence, while also offering a unique qualitative dimension for the detection and investigation of unknown substances.
We are also experts in microwave digestion and synthesis, as well as in mercury analyzers from Milestone, a recognized leader in these technologies.
We understand that working with top-tier scientists requires more than just advanced instruments — it demands deep expertise. That's why we continually invest in technical training, both internally and externally, to ensure high-level support.
Our multidisciplinary technical team is ready to meet all analytical challenges and contribute to the success of your projects.
Contact us:

thermounicam@thermounicam.pt
www.thermounicam.pt
Follow us on LinkedIn: UNICAM Portugal



HPLC – HPLC MS – GC – GCMS – ICP – ICPMS – MICRO-FTIR – UV-VIS- IRMS

cecolab
CIRCULAR ECONOMY

Who We Are

Association CECOLAB – Collaborative Laboratory Towards Circular Economy is the Collaborative Laboratory (CoLAB) for the Circular Economy, headquartered in Oliveira do Hospital in the central interior region of Portugal. With more than 40 highly qualified human resources, through specialized research, we develop sustainable market solutions in a model of CIRCULAR ECONOMY for strategic value chains of the Portuguese economy and with high international impact. We provide innovation management Consulting services high quality advice and transfer knowledge to the MARKET.

In addition, we cordinate the Portuguese Strategic Research Network in Circular Economy (Order No. 4157/2019).

Innovation chains

Florest | Agro-food | Urban Waste | Water | Manufacturing | Construction | Servitization

Mission

(i) Support the transition from a linear economic model to:

-An economy that is responsible towards resources and people;

-An economy that is more efficient in its life cycle.

(ii) Developing and transferring knowledge and technology to the market;

(iii) Creating qualified and scientific employment; and

(iv) Taking the lead, and positioning Portugal in the Circular Economy.

Vision

Development of solutions and knowledge to respond to the market transition to a CIRCULAR ECONOMY centred on national strategic value chains.

Services

Consulting in circular economy;
Circular (re)design;
(Des)classification of waste and by-products;
Circular design group;
Legal studies; and
Training.

Business Centre
Rua Nossa Senhora da Conceição, 2
3405-155 OLIVEIRA DO HOSPITAL

circular@cecolab.pt

+351) 238 011 400

IT'S NOT IMPOSSIBLE

BioShoes4All

Innovation and empowerment of the footwear industry for a sustainable bioeconomy

Promote the transition of the footwear industry to bioeconomy and sustainable circular economy

New **bio and eco materials, components,** and production **processes**.

Functional, durable, circular footwear and leather goods with a lower environmental impact.

Advanced and digital production technologies (automation, robotics).

Solutions for the **valorization of production waste and post-consumer products.**

Reducing the environmental footprint of the sector/products (carbon, water, fossil fuels, chemicals).

Implementation of **industrial pilot production lines,** dissemination of innovations.

Involvement and awareness-raising of consumers for sustainable consumption.

bioshoesforall.pt

Bioeconomia FUNDO AMBIENTAL PRR REPÚBLICA PORTUGUESA Financiado pela União Europeia NextGenerationEU

Bio shoes 4all

BioShoes4All — Partners

Lead Partner **Coordinator**

Footwear, Leather Goods & Retail

Leather

Chemical products and Bio-resources

Materials and Components

Production Technologies and Software

ENESII

Association / SME


Mais três,
outra vez
Pelo segundo ano consecutivo,
os prémios são todos nossos.
Aliás, vossos. Obrigado.
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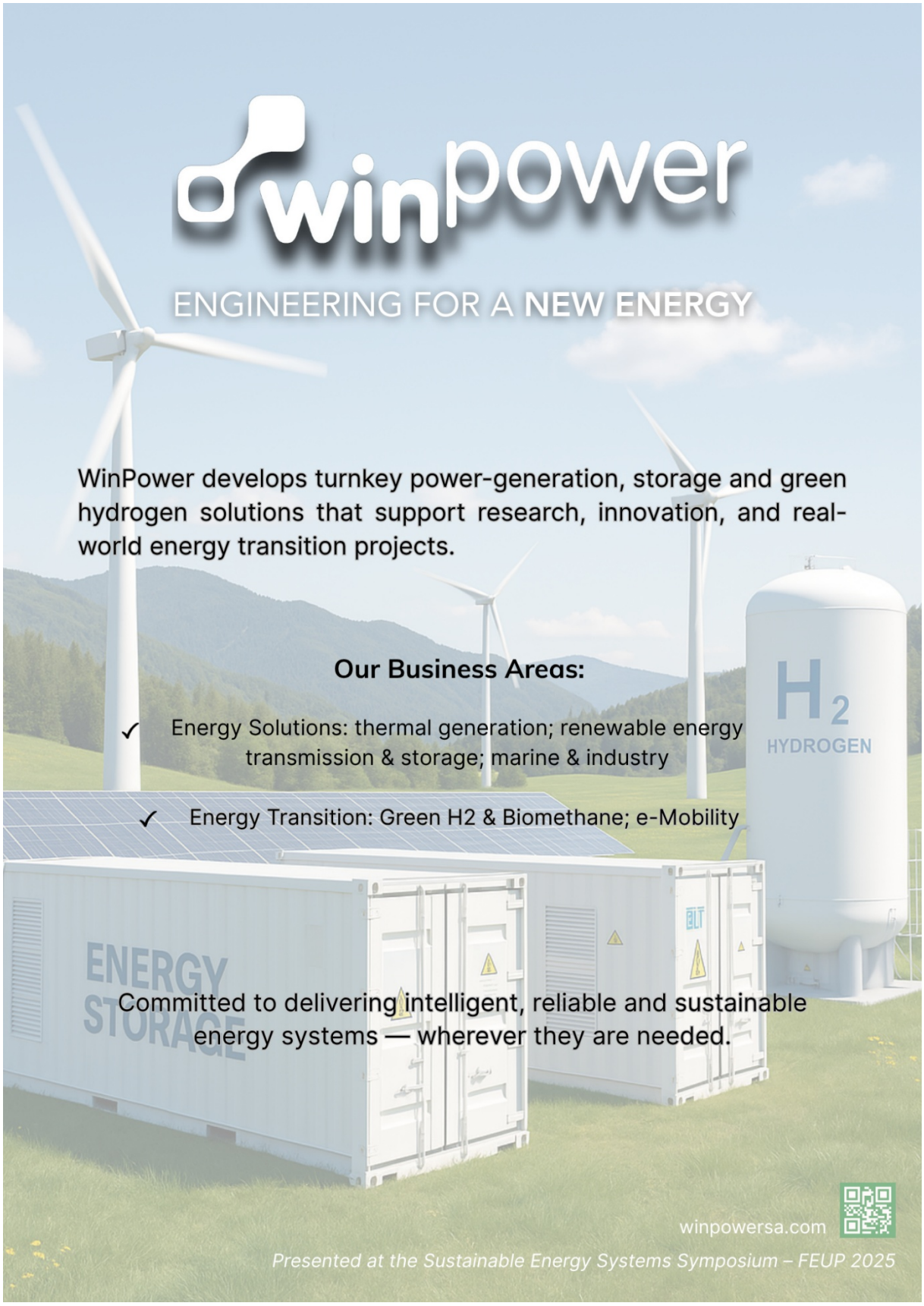
winpower
ENGINEERING FOR A NEW ENERGY
WinPower develops turnkey power-generation, storage and green hydrogen solutions that support research, innovation, and real-world energy transition projects.
Our Business Areas:
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BASF
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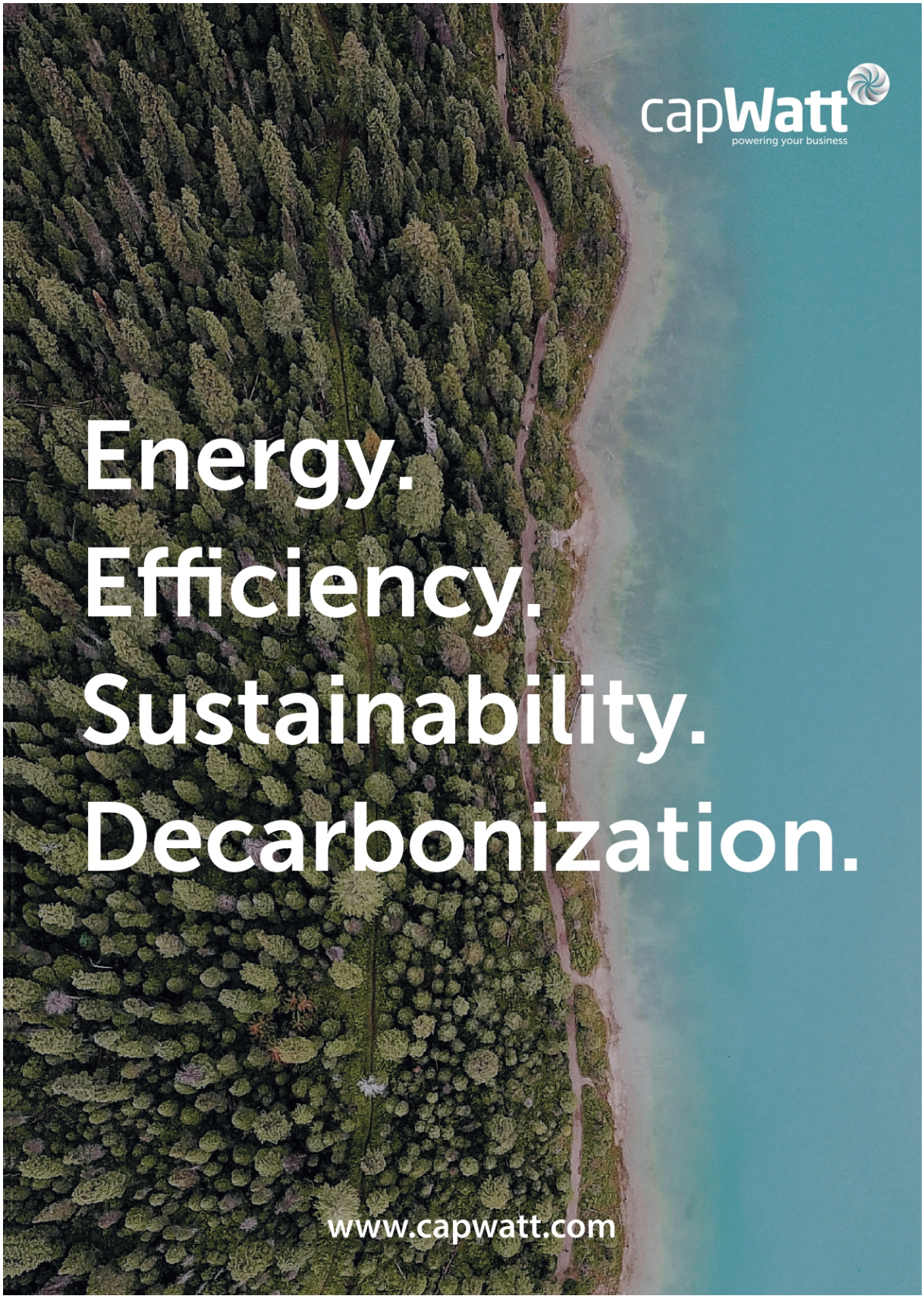
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Climate change is one of the most urgent challenges facing humanity, placing significant strain on both society and the environment. In response, **CoLAB Net4CO2 is committed to advancing innovative decarbonization solutions that bridge scientific research with real-world market applications**. The institution focuses on accelerating the development and deployment of competitive, disruptive technologies for CO_2 capture, utilization, and storage, contributing to a more sustainable and resilient future for both society and the planet.

CoLAB Net4CO2's work centers on economically viable decarbonization through cutting-edge technologies. These include capturing and separating CO_2 from industrial combustion gases, converting CO_2 into valuable products such as synthetic fuels, chemicals, and construction materials, and enabling CO_2 transportation and geological storage. By developing integrated solutions across various industrial sectors in Portugal and Europe, CoLAB is positioning itself as a key player in decarbonization efforts. The institution also plays a vital role in shaping regulatory policies that support the adoption of CO2 reduction technologies.

CoLAB is involved in a range of initiatives, including the **engineering and construction of pilot prototypes** for CO_2 capture and valorization, as well as providing **consulting services** to industries seeking to reduce their carbon footprint. Its engagement in national and international R&D projects ensures it remains at the forefront of innovation. CoLAB also organizes and participates in **advanced training programs** to raise awareness and deepen understanding of CO_2 capture, utilization, and storage (CCUS), ensuring the next generation of professionals is equipped to tackle climate change.

The institution is committed to **scientific dissemination**, publishing research, attending national and international conferences, and hosting outreach events to share its findings with the broader scientific community and the public. CoLAB's collaborative approach extends to partnerships with academia, industry, and policymakers, driving innovation and ensuring meaningful impact in decarbonization efforts across Europe and beyond.

CoLAB Net4CO2 is deeply invested in **developing highly skilled professionals** in decarbonization. The center offers numerous opportunities for PhD students, MSc candidates, and early-career researchers to engage in internships, thesis projects, and hands-on research, providing invaluable experience in a dynamic environment. CoLAB also runs internal and external training programs that enhance professional development, further solidifying its leadership in the transition to a low-carbon economy.

For students passionate about addressing climate change, CoLAB Net4CO2 offers an inspiring and impactful environment where they can contribute to meaningful solutions, gain expertise in cutting-edge technologies, and shape the future of sustainable practices and policies.

ARCP CoLAB

REDE DE COMPETÊNCIA EM POLÍMEROS

Research to Innovate Create to Produce

Presentation

ARCP – Associação Rede de Competência em Polímeros (Polymer Competence Network Association) was founded on February 26th, 2007, with the aim of overcoming the challenges of conducting joint research between universities and industry, and of enhancing the use of emerging knowledge. In 2022, it was granted the title of CoLAB – Collaborative Laboratory by the FCT (Portuguese Foundation for Science and Technology).

Combining the expertise of its members, ARCP's activity enables cutting-edge developments not only in the creation and optimisation of new products and processes, but also in more fundamental research.

As such, ARCP positions itself as a shared workspace where members carry out research and development (R&D) projects in a coordinated and interactive way. It stands as a Centre of Excellence in polymer science and technology, with the main goal of promoting innovation and increasing competitiveness.

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SOLAR • WIND • HYDRO • BIOMASS • STORAGE

New Business
Development & Research Center
创新业务发展与研究中心

CTGI New Business Development & Research Centre (CTGI NBDRC)
A Strategic Innovation Hub of China Three Gorges Corporation

Located in **Lisbon, Portugal**, the **CTGI New Business Development & Research Centre** represents China Three Gorges Corporation's (CTG) commitment to driving the global energy transition through cutting-edge R&D, cross-continental collaboration, and sustainable innovation.

Our Mission:

To bridge CTG's know-how with European R&D excellence, enabling innovation that scales, serving real business needs, producing demonstrable outcomes, and generating long-term value.

Our Vision:

To lead CTG's R&D activity across six strategic domains: 1) Business Origination; 2) Technical Operation; 3) Asset Management; 4) Digital Transformation; 5) Technology Research and Validation; 6) Environmental, Social and Governance.

Why CTGI NBDRC?

✓ Co-creation with European entities for projects with real impact within CTG's operation;
✓ CTG's group >120 GW clean energy portfolio (including >2 GW in Spain);
✓ Strategic positioning at the intersection of China, Europe, and South America.

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