TRIPLEHELIX CONFERENCE MONTERREY2025

Tecnológico de Monterrey

Clusters of Innovation:
Building Resilient Ecosistems
for Prosperity and Sustainable Progress

CONFERENCE BULLETIN & GUIDE

TRIPLEHELIX UNIVERSITY INDUSTRY GOVERNMENT association

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MONTERREY

Strategically located in the heart of México, Monterrey is a key player in the cross-border logistics operations with the United States. Located just 150 miles from the U.S. border, Monterrey enjoys proximity to major American markets. This geographic advantage facilitates the efficient operation of cross-border trade and logistics operations. Monterrey is an industrial powerhouse with a robust manufacturing sector, making it an integral part of cross-border supply chains. The city's technological advancements and skilled workforce contribute significantly to innovation in logistics practices.

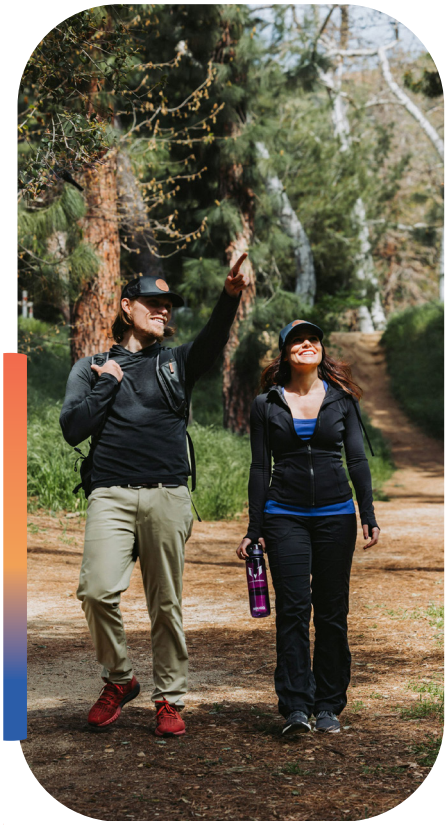
To know where to go and what to do in Monterrey, visit the Official Tourist Information website. If you would like to learn more about Mexico, visit the official website of the Ministry of Tourism: Visit Mexico.

Airport Taxi

Airport-Hotel-Airport Transfers By Tours in Monterrey

Reliable and safe airport transfer service. Our experienced drivers guarantee you a stress-free travel experience. Book in advance to secure your transfer and enjoy a smooth and punctual trip to the airport. Av Hidalgo #300, 64000, Monterrey, Nuevo León, Mexico.

FOR MORE INFORMATION: Office: | M +52 8135815240 | M +52 8123536703 | M +52 8186879403



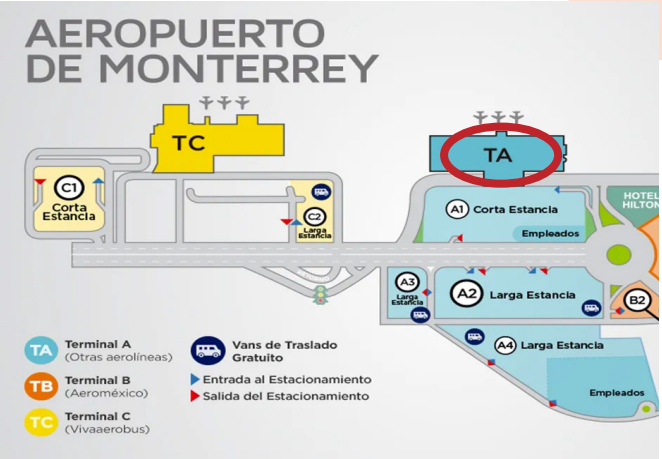
Tours In Monterrey

Company that organizes excursions and offers adventure packages in the state of Nuevo León and its surroundings. It also offers guided cultural tours of the city, the Magical Town of Santiago, the García Caves, Cola de Caballo, and Chipinque, among others.

More Information:
- 81 2353 6703
- info@toursinmonterrey.com
- https://toursinmonterrey.com/

From the airport to your hotel

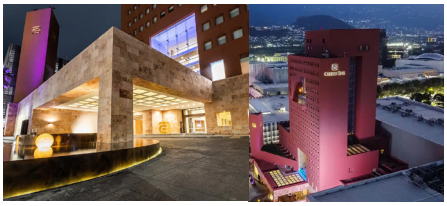
The modules for hiring authorized taxis are operated by the company "OMA" located in Terminal "A" of the airport. If you do not know the municipality or the exact location of your hotel, call the place where you will be staying directly so they can give you the precise address and you can tell the airport shuttle driver where to go. **(The airport does not accept Uber.)**



The areas that make up the Monterrey metropolitan area are divided into different municipalities, each with its own identity and administration. **Tecnológico de Monterrey (Monterrey Campus) is located in the municipality of Monterrey, Nuevo León, within the area known as the Tec District,** a modern and vibrant sector that combines academic, business, cultural, and residential spaces, ideal for students, visitors, and entrepreneurs.

Hotels

Camino Real Fashion Drive
Phone: 81 1223 3200
Web: https://www.caminoreal.com/caminoreal/camino-real-fashion-drive-monterrey

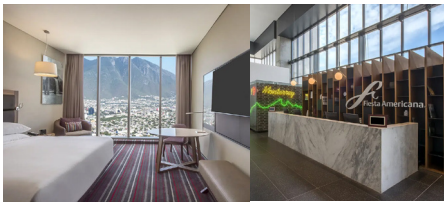


Camino Real Monterrey Valle
Phone: 81 8133 5400
Web: https://www.caminoreal.com/caminoreal/camino-real-monterrey

CHN Monterrey Aeropuerto
Phone: 81 2279 1800
Web: https://www.chnhoteles.com/chn-monterrey-aeropuerto

One Monterrey Tecnológico
Phone: 81 2525 0072
Web: https://www.onehoteles.com

Crowne Plaza Monterrey Aeropuerto
Phone: 81 8196 1500
Web: https://www.ihg.com/crowneplaza/hotels/us/es/monterrey/mtycp/hoteldetail



Fiesta Americana Monterrey Pabellón M
Phone: 81 1642 0600
Web: https://www.fiestamericana.com/hoteles-y-resorts/fiesta-americana-monterrey-pabellon-m

Restaurants

(External)

El Gran Pastor Garza Sada
Direction: Av. Eugenio Garza Sada 3431, Arroyo Seco, 64740 Monterrey, N.L.
Phone: 81 1090 1733

Camino Real Monterrey Valle
Direction: Av. Eugenio Garza Sada 2410,
Tecnológico, 64700 Monterrey, N.L.
Phone: 81 1358 4746

Mia Italia
Direcction: Garza Sada 2850-S,
Alta Vista,
64840 Monterrey, N.L.
Phone: 81 2710 7214

(Campus)

El señor latino
In front of Classrooms 2

Chilaquiles Tacos TEC
Below the student center

Grill Team
Below the student cente

Night Life

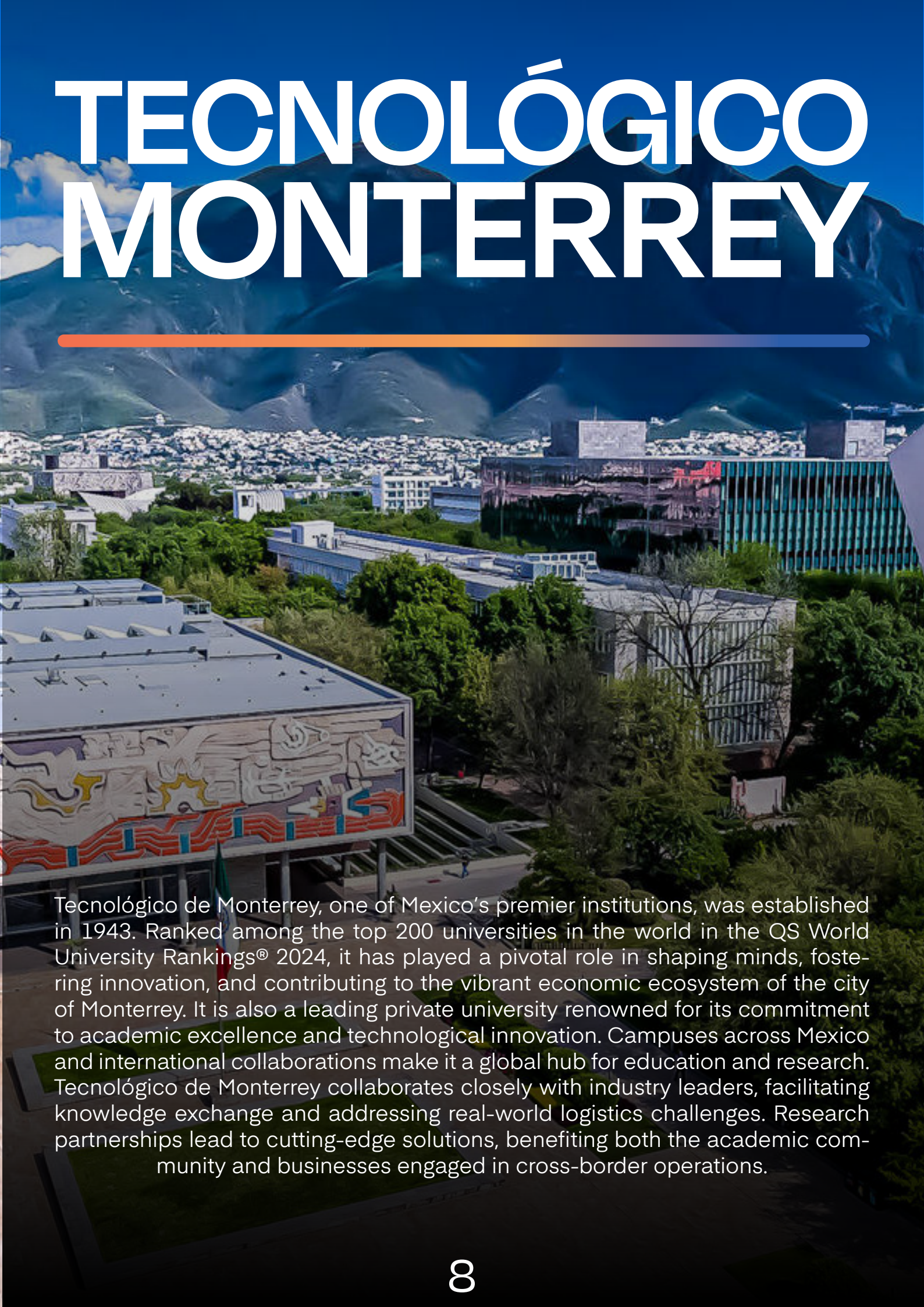
When night falls, Monterrey transforms into a vibrant city, full of lights, music, and flavor. Its nightlife offers options for all tastes, from terraces with spectacular views to bohemian corners steeped in history.

Bars with city views
Terraces are an essential part of Monterrey's charm. In the San Pedro and downtown areas, you'll find bars with unique panoramic views, perfect for enjoying a drink while watching the city lights. Kūhiō Bar stands out for its location on one of the highest rooftops, while Amanecer Rooftop offers an unbeatable view of Cerro de la Silla, ideal for nighttime photos. If you prefer a more relaxed atmosphere, TOP by Camposagrado combines good music, cocktails, and a chill vibe.

Paseo Santa Lucía at night
One of the most enjoyable activities is to stroll along the Santa Lucía Promenade, a canal almost 2.5 km long that connects Fundidora Park with downtown Monterrey. At night, the path is illuminated with soft lights that create a romantic and peaceful atmosphere. You can walk or take a boat, and at the end, explore the nearby museums, galleries, or restaurants that stay open late.

Live music in Barrio Antiguo
Barrio Antiguo is the cultural and bohemian heart of the city. Its cobbled streets come alive with music ranging from jazz and trova to rock and electronic. Among the must-see venues are Café Iguana, famous for its alternative concerts; La Tumba, ideal for classic rock lovers; and Salón Morelos, where music mixes with urban art and an eclectic atmosphere.

TECNOLÓGICO MONTERREY



Tecnológico de Monterrey, one of Mexico's premier institutions, was established in 1943. Ranked among the top 200 universities in the world in the QS World University Rankings® 2024, it has played a pivotal role in shaping minds, fostering innovation, and contributing to the vibrant economic ecosystem of the city of Monterrey. It is also a leading private university renowned for its commitment to academic excellence and technological innovation. Campuses across Mexico and international collaborations make it a global hub for education and research. Tecnológico de Monterrey collaborates closely with industry leaders, facilitating knowledge exchange and addressing real-world logistics challenges. Research partnerships lead to cutting-edge solutions, benefiting both the academic community and businesses engaged in cross-border operations.

Campus Map

Tecnológico de Monterrey

TECNOLOGÍCO DE MONTERREY, AV. EUGENIO GARZA SADA 2501 COL. TECNOLÓGICO C.P. 64700 MONTERREY, NUEVO LEÓN, MÉXICO

GENERAL INFORMATION

Triple Helix movement, launched by Prof. Henry Etzkowitz and Prof. Loet Leidesdorff, began in 1996 when a workshop was organized in Amsterdam to discuss the Triple Helix model. This first workshop brought together of 90 researchers and attracted participation from Latin America, Europe, North America, Australia and Asia.

The workshop was subsequently referred to as the first international conference on the Triple Helix. The conference explored scientific research in the field of: the relationship of science, industry, and government and their role in creating the conditions for future innovation; the importance of location; the capitalization of knowledge; cognitive, economic, social and cultural aspects of innovation; emerging models for the entrepreneurial university; regional diversities and global convergence; boundary spanning interactions, linking the different national cultures and innovation system.

The Conference aims to serve as a hub for academics to showcase their research, enhance their knowledge, and foster professional connections. Over the years, our conference has been hosted in various global locations, including New York, Barcelona, London, and our latest event took place in São Paulo.

It also provides an international and multidisciplinary venue with outstanding scholars, policy makers and practitioners for discussing and advancing our understanding of current challenges and solutions based on innovation, and the relationship between entrepreneurial Universities, smart Governments, efficient Industry and committed Civil Society.

PRESIDENT'S MESSAGE

It is with great pleasure that I welcome you to the Triple Helix Conference 2025, hosted by Tecnológico de Monterrey in the dynamic city of Monterrey, Mexico. This year's theme, "Clusters of Innovation: Building Resilient Ecosystems for Prosperity and Sustainable Progress," captures the spirit of our times — a call to reimagine collaboration among universities, industry, government, and society to address global challenges through local action.

The Triple Helix model has always been about synergy and co-creation — about bringing together knowledge, enterprise, and policy to generate transformative impact. In Monterrey, a city recognized for its entrepreneurial energy and forward-thinking institutions, we find an inspiring example of how innovation clusters can drive sustainable development and inclusive growth.

I want to extend my deepest appreciation to all researchers, practitioners, entrepreneurs, policymakers, and students who contribute to this conference. Your participation reflects a shared commitment to shaping a future where science and innovation work hand in hand with social responsibility and environmental stewardship.

Let us use these days to connect, exchange ideas, and build bridges across disciplines and borders. Together, we continue strengthening the global Triple Helix community and advancing a vision of innovation that serves humanity and the planet.

Welcome to Monterrey — and welcome to a space where ideas become action.

Warm regards,
Dr. Moacir de Miranda Oliveira Junior

PRESIDENT'S MESSAGE

The Triple Helix Conference 2025 is a celebration of the work of the many people who are making the vibrant Triple Helix Ecosystem of Nuevo Leon a reality. This is the result of more than 20 years of work of innumerable people in Nuevo León. In the early 2000s, the first industry clusters emerged in Nuevo Leon, including Csoft, the software industry cluster, and CLAUT, the automotive industry cluster. Now, they are a national and international reference in industry collaboration. Then, in 2009, Nuevo Leon started the construction of the PIIT, the first technology park in the region, with joint efforts from two great universities like Tecnológico de Monterrey and the Universidad Autónoma de Nuevo Leon, representative companies like Metalsa, Katcon, Motorola, Prolec and SIGMA, and national laboratories such as CIDESI, CIMAV, CIAD and CICESE. In 2017, Nuevo Leon 4.0 launched, a government initiative to promote the digital and smart transformation of industry. This initiative revolutionised the academic curricula of local universities, pushing them to fully embrace the digital transformation and emerging technologies, and introduced companies to new digital technologies, state-of-the-art automation, and artificial intelligence. Fast forward to the present, Nuevo Leon has more than 13 industry clusters ranging from software to construction, bioengineering, services, tourism, health, consumer electronics and more. The PIIT (technology park) hosts more than 140 companies and research centres, and new initiatives such as MIT REAP Monterrey and MTYUF (Monterrey Universities for Founders) continue to enrich the ecosystem. New spaces such as the Monterrey Digital HUB, the Expedition FEMSA and the soon-to-arrive Innovation HUB at the Tecnológico de Monterrey are reshaping the landscape of possibilities for established companies and entrepreneurs alike.

During the coming four days we will embark on a journey of ideas and exchange. We will hear from recognized voices in innovation, entrepreneurship and policy-making; engage in rigorous research dialogues; examine real-world cases of innovation clusters and ecosystems; and draw connections between theory and practice.

On behalf of the organising committee of the Triple Helix Conference 2025 — held 28-31 October in the vibrant city of Monterrey, Nuevo León — it is my pleasure and privilege to welcome you to a gathering dedicated to "Clusters of Innovation: Building Resilient Ecosystems for Prosperity and Sustainable Progress."

Warm regards,
Dr. Azael Jesús Cortés Capetillo
National Programme Director, Innovation & Development Engineering
Director, Innovaction GYM – Tecnológico de Monterrey
Organising Chair, Triple Helix Conference 2025

WORKSHOPS

TripleHelix Ecosystems

Harness the power of collaboration between academia, industry, and government to drive innovation. This one-day intensive workshop offers a strategic insights to the Triple Helix model—a globally recognized framework that fosters innovation through synergy between universities, business, and government. Designed for academic leaders, policymakers, innovation executives, and entrepreneurs, the session provides actionable tools to design, activate, and scale innovation ecosystems.

Participants will explore key stakeholder roles, learn how to build effective partnerships, generate shared value, and co-develop impactful projects with a systems-thinking approach.

Through real-world case studies, collaborative exercises, and strategic guidance, you'll leave with a clear roadmap to energize your local or sector-based ecosystem. Ideal for those looking to turn innovation into a driver of sustainable development.

Corporate Venture Capital

Whether you're leading corporate M&A, seeking funding as an entrepreneur, managing assets, or exploring venture capital—this one-day Venture Capital Workshop offers a unique introduction to the world of VC and Silicon Valley insights.

In this intensive session, you'll learn what investors look for, understand core investing principles, explore deal sourcing and selection, and grasp the fundamentals of VC deal structures and strategies. Tailored for diverse professional backgrounds, the workshop equips you with the essential tools to confidently engage with venture capital and accelerate your success.

COMMITTES

Steering Committee

» Azael Capetillo, *Chair, Tecnológico de Monterrey, México.*
» Moacir de Miranda Oliveira Junior, *THA President, University of Sao Paulo.*
» Aline Figlioli, *THA General Manager.*
» Christiane Gebhardt, *Member o fthe THA Board - Director Integrated Urban Solutions, Zürich.*
» Tatiana Schofield, *Head of Knowledge Exchange at Royal College of Art, London.*
» Josep Piqué, *Past President of THA/ La Salle University/ Barcelona, Spain.*

Scientific Committee

» David Güemes Castorena
Tecnologico de Monterrey (ITESM- Campus Monterrey), México/ Research Professor of Strategic Management of Technological Innovation, México.
» Marcelo Amaral
Fluminense Federal University, Brazil / Graduate Program in Administration / Triple Helix Research Group, Brazil.
» Ekaterina Vainberg
University of Sao Paulo, Brazil / GLORAD Research Associate, Invited professor, Brazil.
» Rafael Popper Villarroel
Universitat Ramon Llull, Spain / Director of the Centre for Funding & Innovation (CFI-Barcelona / Director of Futures Capacity Academy, UK.
» Sergio Camacho-León
Tecnologico de Monterrey (ITESM- Campus Monterrey), México/ Research Professor of Information Technology, México.

Local Organizing Committee

» Tecnológico de Monterrey
» Azael Capetillo, *Organising chair*
» Ricardo Swain, *University Chair*
» José Alfredo Galván, *Faculty Chair*
» David Guemes, *Science Chair*
» José Manuel Aguirre, *Entrepreneurship Chair*
» Abraham Tijerina, *Industry-Government Chair*
» *José Rivas, Postgrad Chair*
» *Enrique Díaz de León, Academia Chair*
» *Daniel Zavala, Student Affairs Chair*
» *Juan Veloz, Finance Chair*
» *Lilia Gómez Flores, Design Coordinator*
» *Ross A. Martínez, Graphic Design*
» *Isa Morales, Graphic Design Intern*
» *Gloria Chapa, Logistics Coordinator*
» *Laura Valadez, Special Affairs*
» *Diana Mireles, Event Production*
» *Javier Salinas, Finance Coordinator*

Day 1 - 29th October

Riccardo**Viale**

Jerry**Engel**

Tamara**Carleton**

Lourdes**Casanova**

Dr. Moacir de Miranda **Oliveira Junior**

Day 2 - 30th October

Fernando**Turner**

Aline**Figlioli**

Joseph M.**Pique**

Yuzhuo**Cai**

Michael**Fung**

Dr. Moacir de Miranda **Oliveira Junior**

Emanuel**Loo**

KEY NOTE SPEAKERS

REVIEW PANEL

Scientific Committee Reviewers
(in alphabetical order)

Adán López-Miranda
Adrian Solomon
Adriana Ferreira de Faria
Alfonso Ávila-Robinson
Aline Figlioli
Andréa Mineiro
Ángel Contreras Cruz
Annika Steiber
Antonio Hidalgo
Armando Elizondo-Noriega
Azael Capetillo
Brett Trusco
Carlos Arellano-Esparza
Carlos López-Monsalvo
Clarisa Stefani . Daniel Camacho Leal
Daniel Guajardo
Daniel Zavala-Salazar
David Campbell
David Güemes-Castorena
Devrim Göktepe-Hultén
Edilane do Reis Carraro
Eduardo da Silva Fernandes
Ekaterina Vainberg
Elisa Vázquez
Enrique Díaz de León López
Erika Burkowski
Han Woo Park
Helen Lawton Smith
Henrique Azevêdo Carvalho
Hernani Vidigal
Irina Dezhina
James Sefe Dzisah
Jasmina Berbegal Mirabent
Joaquín María Azagra Caro
Jorge Luis Nicolas Audy
Jorge Luis Tonetto
José Alfredo Galván
José Manuel Aguirre-Guillén
Josep Pique
Karen Barranon
Leandro Lima
Luciana Maines
Magnus Gulbrandsen
Magnus Klofsten
Marcela ayume de Souza Ito
Marcelo Amaral
Marcelo Ikeda
Marco Bellandi
Marcos Lima
María de los Ángeles Ortíz Espinoza
Michele Coletti
Mónica-Vanessa López-de-la-O
Montserrat Pareja
Nadhiely Martínez
Natan Marques
Naveen Tiruvengadam
Rafael Popper
Rahmat Ullah-Gill
Ricardo Swain
Ricardo Thielmann
Sabrina Tomasi
Sergio Camacho
Sofia Louise Martinez-Martinez
Tariq Durrani
Virginia Trigo
Yuzhuo Cai

DAILY AGENDAS

DAY 1
29th october

7:30 8:25 **Reception & Registration**
8:25-8:30 **Welcome At Tecnológico De Monterrey**
8:30-8:45 **Message From The Dean Of School Of Engineering Tecnológico De Monterrey**
8:45-9:00 **Message From The Dean Of Campus Tecnológico De Monterrey**
9:00-9:15 **Message From The Director Of The Triple Helix Association**
9:15-9:30 **Inauguration By The Secretary Of Economy Of The State Of Nuevo Leon**
9:30-10:15 **Keynote Session**
Innovation Assessment: A New Framework For Experimentation
Riccardo Viale, University Of Milano Bicocca Department Of Economics
10:15-11:00 **Keynote Session 2**
Clusters Of Innovation: In The Age Of Ai
Jerry Engel, University of California Berkeley Haas School of Business
11:15-12:00 **Keynote Session 3**
A Regional Ecosystem Of Industrial Clusters
Nuevo León Industry Clusters
12:00-12:45 **Keynote Session 4**
Re-Imagining The Triple Helix Model Of Innovation And Partnerships
Tamara Carleton, Tecnológico De Monterrey Distinguished Global Professor Of Radical Innovation
Active Networking Lunch
13:45-14:30 **Semi Plenary**
14:30-16:15 **Parallel Sessions**
16:30-17:15 **Keynote Session 5**
The Brazilian Digital Payment Ecosystem, A Comparison With India And China
Lourdes Casanova Cornell, University Director of the Emerging Markets Institute
17:15-17:30 **Wrap up Message**
Dr. Moacir de Miranda Oliveira Junior
19:30-22:30 **Special Dinner & Cultural Exposition**

DAILY AGENDAS

DAY 2
30th october

7:30-8:25 **Reception & Registration**
8:30-9:15 **Keynote Session 6**
Innovation, Economic Growth And Public Policy
Fernando Turner. Chairman of Katcon
9:15-10:00 **Keynote Session 7**
The Evolution Of The Triple Helix
Aline Figlioli, Executive Director of Triple Helix Association
Joseph M. Pique, Executive President of La Salle Technova Innovation
Yuzhuo Cai, Education Policy University of Hong Kong
10:30-11:15 **Semi Plenary**
11:30-13:00 **Parallel Sessions**
13:00-14:00 **Active Networking Lunch**
14:15-15:00 **Semi Plenary**
15:30-16:15 **Keynote Session 8**
Reinventing The Future University
Michael Fung, Tecnológico de Monterrey Director of the Institute of the Future of Education.
16:15-17:00 **Triple Helix Awards**
Dr. Moacir de Miranda Oliveira Junior, President of the Triple Helix Association
17:00-17:15 **Clossing Message**
Emanuel Loo
18:30-20:00 **Startup Competition**
IEEGLG

PARALLEL SESSIONS

DAY 1
29th october

CEDES Builging 10th floor/CD-1004/**15:00-15:15**

How Do Motivations To Interact With Industry Relate To Academic Engagement?

Alexandre Dias, Camilly Melo Garcia Ferreira, Flávia Vicentin.
School of Economics, Business Administration and Accounting, USP, Ribeirão Preto, São Paulo, Brazil.
Blood Center of Ribeirão Preto, USP, Ribeirão Preto, São Paulo, Brazil.
USP Innovation Agency, University of São Paulo.

This study examines the motivations and engagement of faculty members at the University of São Paulo (USP) in university–industry interaction activities, analyzing how individual and institutional characteristics influence participation. Using a three-group typology—skeptics, aware, and highly motivated—the research classifies faculty by their level of academic engagement (AE). Based on 436 complete responses, the results show that gender, previous experience in the private sector, and seniority significantly affect AE propensity. Male professors and those with prior industry experience display higher involvement, revealing both gender disparities and the importance of accumulated social and scientific capital. The main outcomes of AE include increased private funding and patent attainment, demonstrating tangible collaboration benefits. The study offers strategic insights to strengthen university–industry partnerships and highlights the need to align institutional incentives with faculty profiles to promote innovation and knowledge transfer.

CEDES Builging 10th floor/CD-1004/**15:15-15:30**

The role of tecnoPARQ in an Innovation District development

Mônica Santana Moreira, Daiana Francisca Quirino, Josimar Aparecida da Silva, Jaqueline Akemi Suzuki, Jucélia Maria Lopes Maia Roberto, Adriana Ferreira de Faria.
Technology Park of Viçosa, Federal University of Viçosa, tecnoPARQ-UFV, Viçosa, Brazil.
Department of Production and Mechanical Engineering, Federal University of Viçosa, DEP- UFV, Viçosa, Brazil.

Innovation ecosystems are collaborative environments in which different actors cooperate to promote innovation and economic development. The interrelationship between institutions and people is enhanced due to the actors' proximity. As a networking agent, tecnoPARQ provides its stakeholders with a suitable environment for the attraction and establishment of technology-based companies. With its physical structure nearing full capacity, tecnoPARQ demonstrates its maturity and potential to consolidate as an Innovation District within the Brazilian context. The park's strategic location, infrastructure, and continuous growth in resident companies and jobs position it as a strong candidate to anchor regional innovation. By fostering collaboration between academia, industry, and government, tecnoPARQ also strengthens regional competitiveness and drives sustainable economic development, serving as a model for future innovation-driven territorial transformation in Brazil.

PARALLEL SESSIONS

DAY 1
29th october

CEDES Builging 10th floor/CD-1004/**15:30-15:45**

Innovation Hubs: The Intersection of Public Policy and Private Sector Collaboration for Sustainable Economic Growth
Unlocking Local Potential Through Triple Helix Synergy

Eucharia Oluchi Nwaichi, ThankGod Egbe, Olusiji Godwin Aina, Peter Ikechukwu Nwaichi, Abdulmalik Halilu, Tombari Emeka-Duruzor, and Silas Omomehin Ajimijaye.
Department of Biochemistry, University of Port Harcourt, Choba, Rivers State, Nigeria
Academic Planning, Research & Control Unit, University of Port Harcourt, Choba, Rivers State, Nigeria.
CypherCrescent Ltd, Port Harcourt, Rivers State, Nigeria.
Kogi State Government of Nigeria.
Universiti Malaysia Pahang Al-Sultan Abdullah, Lebuhraya Persiaran Tun Khalil Yaakob 26300 Kuantan, Pahang, Malaysia.
Nigerian Content Development and Monitoring Board (NCDMB), Yenagoa, Bayelsa State, Nigeria.

Innovation hubs act as dynamic ecosystems linking public policy, academic research, and entrepreneurial activity to drive inclusive and sustainable economic growth. It also highlights the crucial role of innovation hubs in nurturing creative talent, supporting start-ups, and scaling local solutions to global challenges, proposing a framework to optimize their overall effectiveness through coherent policy design, strong industry engagement, and scalable commercialization models.

CEDES Builging 10th floor/CD-1004/**15:45-16:00**

From Concept to Practice: Implementing a One Health–Driven Innovation Ecosystem to Address AMR in Brazil

Alex Yuri S. Sato, Marcelo Augusto K. Ikeda, Leandro Lima dos Santos, Felipe Borini, Moacir M. de Oliveira Jr.
CEPID ARIES, São Paulo, Brazil.
Federal University of Sao Paulo (UNIFESP), Sao Paulo, Brazil.
School of Economics, Business and Accounting, University of Sao Paulo (USP), Sao Paulo, Brazil.

Antimicrobial resistance (AMR) is a global health threat that transcends borders and sectors, demanding integrated action under the One Health framework. This study examines the Antimicrobial Resistance Institute of São Paulo (ARIES) as a case showing how innovation ecosystems—multi-actor networks for systemic value—apply One Health principles to address AMR. Drawing from innovation studies, biotechnology, and health governance, the research supports an ecosystemic approach based on modularity, co-evolution, and cross-sector collaboration. ARIES links academia, industry, and public health to co-develop diagnostics, therapies, and surveillance systems via decentralized governance and advanced biotechnologies such as CRISPR and phage therapy. These collaborations connect innovation with policy while promoting equity. The study concludes that adaptive, inclusive ecosystems offer scalable models to tackle AMR and other complex challenges like climate change and pandemics.

PARALLEL SESSIONS

DAY 1
29th october

CEDES Builging 10th floor/CD-1004/**16:00-16:15**

Bidirectional Orchestration between Entrepreneurial Universities and Industry: Mechanisms Shaping Joint Support Organizations in Entrepreneurship Ecosystems

Rodríguez-Aceves, L., Minola, T., Silveyra-León, G., Amorós, E., Carlos-Mancilla, M.
Faculty of Economics and Business, Universidad Panamericana, Zapopan, Mexico.
Department of Management, Information and Production Engineering, University of Bergamo, Bergamo, Italy.
School of Business, Tecnologico de Monterrey, Zapopan, Mexico.
EGADE Business School, Tecnologico de Monterrey, Mexico City, Mexico.
Center for Research, Innovation, and Technological Development, Universidad del Valle de Mexico, Zapopan, Mexico.

This study explores how Entrepreneurial Universities (EUs) engage in bidirectional orchestration with ecosystem actors to support Joint University-Industry Entrepreneurial Support Organizations (JESOs) in emerging economies. Drawing on an in-depth case study of "Pairing" —a JESO in Mexico focused on institutionalizing and professionalizing firms— the research highlights mechanisms through which EUs and industry co-create value beyond traditional, unidirectional knowledge flows. The study contributes to the EU literature by advancing understanding of mutualistic collaboration in entrepreneurship ecosystems and offering a framework for EU engagement beyond early-stage firm support, especially in resource-constrained contexts.

CEDES Builging 10th floor/CD-1005/**15:00-15:15**

A Research Model for Individual Growth for Improvement of Indicators

Analia Gonzalez-Cantu, and Cesar Vargas-Rosales.
Tecnologico de Monterrey, School of Engineering and Science, Monterrey, Mexico.

Indicators are commonly used to quantify the impact and benefits of innovation and research models. Although these indicators primarily capture the external transformation of a region and impose compliance requirements, the motivation and personal development of individuals within the executing institutions are equally essential to achieving these outcomes. This paper presents an exploratory and conceptual design phase of a foundational framework aimed at supporting individual development and extending toward collaborative initiatives and productivity enhancement. The framework defines a set of core processes through which individual profiles and follow-up actions are implemented to foster both personal growth and collaboration. These processes enable institutions to more clearly assess their personnel and gain deeper insight into individual progress-ultimately contributing to the achievement of future performance indicators. By placing human flourishing at its center, the framework not only strengthens institutional performance but also nurtures purpose, autonomy, and well-being-key elements for sustainable and meaningful innovation.

PARALLEL SESSIONS

DAY 1
29th october

CEDES Builging 10th floor/CD-1005/**15:15-15:30**

Mapping the trucking industry through DEMATEL- a systemic analysis perspective of actors

Pamela Torres-Nuñez, David Güemes-Castorena, Armando Elizondo Noriega, Horacio Ahuett Garza, Angel Contreras Cruz.
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The trucking industry is a vital sector in any country's economy, ensuring efficient movement of cargo from point A to point B so customers receive their products on time. Representing 70% of total cargo transported in the U.S. in 2023, this sector faces persistent challenges such as driver shortages, increasing fuel costs, and frequent road accidents involving heavy-duty trucks. Despite advances like digitalization, automation, and improved safety technologies, there is still limited holistic understanding of the key drivers shaping its performance. This research identifies and analyzes these factors using the Decision-Making Trial and Evaluation Laboratory (DEMATEL) methodology to determine each variable's role within the triple helix framework. Findings reveal 13 variables, with nine categorized as causes and four as effects. Policy implementation highlights the crucial influence of government actions on the industry's evolution, while safety emerges as the most affected variable, reinforcing the importance of innovation and regulation for sustainable growth.

CEDES Builging 10th floor/CD-1005/**15:30-15:45**

Designing Workshops for the Strategic Integration of Futures Thinking in Design Students
Case study, design students at Tec de Monterrey

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This research examines a gap in contemporary design education, where a focus on immediate problem-solving and limited futures thinking leads to unsustainable practices, short-lived product cycles, and reactive design approaches that fail to consider long-term impacts. Despite 89% of employers demanding foresight skills, 73% of design projects fail due to inability to anticipate future disruptions. The study proposes a structured futures-thinking workshop for product design students at Tec de Monterrey, using scenario building and PESTLE analysis to cultivate strategic, forward-looking design skills, proactive decision-making, and adaptive problem-solving. Employing a qualitative-exploratory-descriptive approach, the research evaluates the intervention through observations, interviews, and project analysis. By empirically applying Futures Literacy theory to design education, the study offers a replicable pedagogical model that fosters sustainable, resilient, and future-aligned product design. Findings aim to inform curriculum development and university-industry collaboration, promoting designers who are proactive architects of the future rather than reactive problem-solvers.

PARALLEL SESSIONS

DAY 1
29th october

CEDES Builging 10th floor/CD-1005/**15:45-16:00**

Futures Literacy Laboratory
Lab to explore and anticipate: "The Future of Entrepreneurship".

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Everyone can develop the capacity to use the future. This document presents the results of a practical experience with emphasis on future implications about entrepreneurship through a Futures Literacy Laboratory Lab (FLL) for empowering individuals with skills and long-term vision. This lab was held considering a documented core process design by UNESCO Foresight Area, which was adapted within an academic context with students' participation at Tecnológico de Monterrey from diverse discipline areas. The lab followed a five steps for conceiving a FLL: start, co-design, rehearse, implement, and follow through.

CEDES Builging 10th floor/CD-1005/**16:00-16:15**

Cooperation and Complexity:
Toward a Systemic Governance Framework

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In a global context characterized by increasing complexity, dynamism, and social plurality, the management of public goods and common resources faces challenges that exceed the capacity for unilateral action by the state. This article proposes a governance model for the Marine Prosperity Areas Network, based on cooperation between diverse actors operating in complex socio-ecological systems. Using a public policy network approach, it analyzes the social dilemmas that emerge in the interaction between individual rationalities and collective well-being, as well as the conditions necessary to sustain cooperation in contexts of high heterogeneity and interdependence. The proposed model is based on principles of progressive institutionalization, systemic management, and adaptive governance to strengthen the sustainability and legitimacy of these networks over time. The study identifies key elements for institutional design, examines different models of network governance, and characterizes the critical stages of network development, thus contributing to a deeper understanding of the mechanisms that enable effective collective action in marine-coastal environments.

PARALLEL SESSIONS

DAY 1
29th october

CEDES Builging 10th floor/CD-1006/**15:00-15:15**

Situating innovation districts within the Helix Framework
An exploratory study of the innovation districts of Monterrey, Mexico and Lund, Sweden

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Department of Human Geography and CIRCLE, Lund University, Lund, Sweden.

To address a gap in the literature on innovation district (ID) comparisons across regions and nations at different development levels, this paper presents an exploratory study of two leading IDs: Monterrey, Mexico, and Lund, Sweden. Using a qualitative methodology based on interviews with key informants, the study applies the helix framework to analyze challenges and opportunities in planning, execution, and stakeholder integration. Findings reveal structural differences and highlight universities' central role, as well as interactions among actors in ID development. The study explores how IDs emerge and evolve in countries with varying development levels amid global competition for markets and resources. Results show both cases advance regional innovation systems but face challenges aligning stakeholder goals, while civil society and sustainability remain marginalized. The study is limited to these sites and its qualitative scope; future research should compare other contexts and stages of development.

CEDES Builging 10th floor/CD-1006/**15:15-15:30**

Review of Reviews on the Entrepreneurial University: a Bibliometric Mapping of the Scientific Literature

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FAF Department, Rio de Janeiro State University (UERJ), Rio de Janeiro, Brazil.
FEN Department, Rio de Janeiro State University (UERJ), Rio de Janeiro, Brazil.
GOVCOPP, ESTGA, University of Aveiro, Aveiro, Portugal.

This study offers a bibliometric mapping of the literature on the entrepreneurial university concept, focusing on reviews published between 2000 and 2024. Using a systematic review, 25 unique articles were identified from the Web of Science and Scopus databases. VOSviewer software was applied to map keyword co-occurrence and co-authorship networks. Findings show a growing research field, with a notable rise in publications from 2018 to 2022, reflecting its steady maturation. The term "entrepreneurial university" stands as the core concept, around which thematic clusters are organized, covering knowledge transfer and socioeconomic impact. Co-authorship analysis reveals active collaborations, highlighting Carla Mascarenhas as a key connector in the Lusophone context. Despite progress, gaps remain, particularly in assessing the links between innovation, entrepreneurship, and integration among universities, industry, and government. The study contributes to the field's theoretical consolidation and supports future research and policy development.

PARALLEL SESSIONS

DAY 1
29th october

CEDES Builging 10th floor/CD-1006/**15:30-15:45**

Strategic management of innovation hubs
An integrative literature review and research agenda

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School of Economics, Business Administration and Accounting at Ribeirão Preto, University of São Paulo, USP, Ribeirão Preto, Brazil.

Innovation hubs have grown rapidly since 2018, yet their strategic management remains understudied. This article fills this gap by identifying and systematizing their key management components through a systematic review of 41 Scopus and WoS articles. Using the Balanced Scorecard framework, we analyzed four dimensions: i. customers (beneficiaries, value proposition, services); ii. internal processes (innovation, technology transfer, network orchestration, governance); iii. learning and growth (organizational culture, continuous improvement); and iv. financial (funding strategies, revenue streams). Our findings offer valuable insights for public policy and business strategy development.

CEDES Builging 10th floor/CD-1006/**15:45-16:00**

Identifying and Evaluating Multidimensional Impact Indicators for Academic Research and Graduate Work
The case of Tecnologico de Monterrey's School of Engineering and Sciences.

Abraham Tijerina-Priego, David Güemes-Castorena, Dagoberto Garza-Núñez, Ricardo A. Ramírez-Mendoza.
School of Engineering and Sciences, Tecnologico de Monterrey, Monterrey, Mexico.
Universidad del Caribe (UNICARIBE) Santo Domingo, Dominican Republic.
Tecnologico Nacional de Mexico, Santiago Suchilquitongo Oaxaca, Mexico.

This paper presents the identification and evaluation of impact indicators for academic research and graduate work within the School of Engineering and Sciences at Tecnologico de Monterrey, expanding beyond traditional metrics to address broader societal goals. The study developed indicators across five dimensions—academic, scientific, technological, economic, and social/environmental—to provide a holistic understanding of research and graduate outcomes. A multi-method approach was used, starting with a literature review to compile potential internal and external indicators. Professors and directors prioritized them, followed by a final ranking by a larger stakeholder group selecting the top three per dimension. This integrative and participatory framework offers an inclusive perspective on the school's impact, serving as a strategic tool for continuous assessment, transparent communication of achievements, and enhancement of research and graduate programs while supporting innovation, societal well-being, and academic excellence.

PARALLEL SESSIONS

DAY 1
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CEDES Builging 10th floor/CD-1006/**16:00-16:15**

Elevating SME Productivity
The Role of the ALI Produtividade in Brazil's Entrepreneurial Ecosystem

Gustavo Simas da Silva, Caio Zucchinali, Frederico Cabaleiro, Thiago Cunha Soares, Mateus Bernardino Neto.
Universidade Federal de Santa Catarina, Florianópolis, Brazil.
Impact Hub, Florianópolis, Brazil.
Serviço Brasileiro de Apoio às Micro e Pequenas Empresas (Sebrae), Brasília, Brazil.
MB Consultoria, Florianópolis, Brazil.

This paper analyzes productivity dynamics of Brazilian small and medium-sized enterprises (SMEs), examining challenges to growth and initiatives like the ALI Produtividade project, a Sebrae program enhancing SME efficiency and competitiveness through innovation. Using qualitative data from project agents, literature review, and economic and policy documents, the study provides an overview of SME productivity in Brazil, including sectoral variations and digital maturity, alongside case studies. Findings reveal that Brazilian SMEs face productivity gaps compared to larger firms, slow growth, and uneven digital adoption. Some initiatives show positive outcomes, with increased productivity, adoption of innovative solutions, and improved management practices. Enhancing SME productivity requires ecosystemic approaches addressing systemic challenges, promoting innovation, and providing targeted support. Strategic interventions can drive positive change, contributing to sustainable economic development.

CEDES Builging 10th floor/CD-1007/**15:00-15:15**

Knowledge Transfer in a Public Research Organization in Argentina: A Multidimensional Evaluation of CONICET

Yesica Soledad Dilernia, Carolina Pasciaroni, David López Villegas, Verónica Bucalá.
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Departamento de Economía (UNS) - IIESS (UNS-CONICET), Bahía Blanca, Argentina.
Gerencia de Vinculación Tecnológica (CONICET), Bahía Blanca, Argentina.

This study offers a multidimensional evaluation of knowledge transfer at CONICET, Argentina's leading public research organization. Based on data from 2014–2023, it analyzes revenue, disciplinary patterns, transfer mechanisms, and institutional performance across 309 institutes. Findings show no single model for successful transfer— the active institutes differ in their strategies depending on context and opportunities—but all demonstrate adaptive responses to demand. The study highlights the value of understanding differentiated dynamics to design more effective institutional policies.

PARALLEL SESSIONS

DAY 1
29th october

CEDES Builging 10th floor/CD-1007/**15:15-15:30**

Uncovering the Microfoundations of Innovation: Evidence from Mexico's Manufacturing Sector

Héctor Francisco Alcantara García. Tecnológico de Monterrey, Escuela de Gobierno y Transformación Pública, México.
Alfonso Avila Robinson. Tecnológico de Monterrey, EGADE Business School. México.
Román A. Mendoza Urdiales. Quantum Analytic, México.

As Mexico seeks to enhance its innovation capabilities, there is a growing need to understand how innovation unfolds at the firm level. While prior research has focused on regional dynamics, few studies examine firm-level pathways driving innovation. Using microdata from the 2014, 2019, and 2024 economic censuses by Mexico's National Institute of Statistics and Geography, this study analyzed over 90 innovation-related dimensions across diverse contexts for more than 600,000 manufacturing units. Cross-sectional regression with time-fixed effects identified key innovation drivers across internal, regional, spatial, and institutional contexts. Results show firms in dynamic, institutionally dense regions are more likely to engage in complex innovation, while smaller firms pursue incremental or non-technological innovation. Collaborations with external actors consistently predict higher innovation outcomes than reliance on internal resources alone. Policies fostering innovation must account for firm-level heterogeneity, linking micro-level firm behavior with broader innovation systems.

CEDES Builging 10th floor/CD-1007/**15:30-15:45**

The Productivity of Technological Networks in the Amazon Innovation System
An Analysis of the Triple Helix System in the State of Pará.

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Departamento de Licitações e Aquisições (DLA), Pró-Reitoria de Administração e Finanças (PROAF),
Univeridade Federal Rural da Amazônia (UFRA), Belém-PA, Brazil.
Núcleo de Altos Estudos da Amazônia (NAEA); Professor of the Faculdade and Programa de Pós-Graduação em Economia do Instituto de Ciências. Sociais Aplicadas, Universidade Federal do Pará (FACECON-PPGEUFPA), Belém-PA, Brasil.
National Researcher Level 2 (SNII), Secretaría de Ciencia, Humanidades, Tecnología e Innovación (SECIHTI).
México; Professor of the Facultad de Economía, Universidad Autónoma de Nuevo León, Monterrey, N.L., México.

One of the biggest challenges in Economic Science is understanding sustainable innovation practices. We analyzed factors contributing to the continuity of partnerships between university, government, and industry. Institutional partnerships in Pará (Amazon region) were examined using the Triple Helix model. Data Envelopment Analysis (DEA) measured technological productivity. The insufficiency of the Transformation Industry may have limited universities' entrepreneurial potential. This study contributes to knowledge about the Amazon Innovation System (AIS) and addresses calls to adapt traditional models to diverse realities of technological collaboration.

PARALLEL SESSIONS

DAY 1
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CEDES Builging 10th floor/CD-1007/**15:45-16:00**

An exploratory intervention to test Venture Café Monterrey's connector role in the innovation district: a penta-helix lens approach

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Operations and Logistics Manager, Venture Café Monterrey, Innovation District MTY, Monterrey, Mexico.
Experience Design Coordinator, Venture Café Monterrey, Innovation District MTY, Monterrey, Mexico
School of Engineering and Sciences, Tecnologico de Monterrey, Mexico.

This article reports on a single World Café workshop convened by Venture Café Monterrey to identify shared needs and near-term actions for collaboration within the Monterrey Innovation District. Participants represented four helices (academia, industry, civil society/community, and creative/community actors), with government and environmental organizations absent; the Penta Helix serves as an analytical lens rather than literal composition. Data from table worksheets, facilitator notes, and plenary pitches were coded to identify recurrent barriers and actionable proposals. Findings highlight the need for clear participation pathways, visible spokespersons, and continuity mechanisms combining in-person connection with light digital tools. The study clarifies Venture Café's role as a district activator and offers pilot-ready interventions for early-stage innovation districts, noting limitations of a single event and sampling bias, and suggesting next steps via pilots and mixed-methods follow-up.

CEDES Builging 10th floor/CD-1007/**16:00-16:15**

Entrepreneurial Photonics Workshop
Bridging Academy and Industry in Photonics

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Dept of Science and Technology Policy, University of Campinas & Facti, Campinas, Brazil.
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Instituto de Investigaciones en Materiales, UNAM, México City, México.
Atacama Optics & Electronics, Santa Barbara, California, USA.
IFGW, University of Campinas, Campinas, Brazil.

We present the experience of creating and realizing Workshops to foster entrepreneurship in Photonics within the academic environment. Supported by the IEEE Photonic Society, the workshop has been held three times at University of Campinas (UNICAMP) in Brazil and one time at Tec de Monterrey in México. The events have brought together students, faculty, researchers, local and external entrepreneurial ecosystem stakeholders. The workshops have provided a means to disseminate the entrepreneurial culture within academy, promoting student training in creating technology-based business, as well as through exposing the academic environment to local and international systemic and individual innovating and entrepreneurial experiences.

PARALLEL SESSIONS

DAY 1
29th october

CEDES Builging 10th floor/CD-1008/**15:00-15:15**

The Future of Work and Education Innovation as the Catalyst to Build a Future-Ready Workforce

Natalia Kalife Dieck
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In recent years, the world has experienced changes that have transformed economies, work, and education. The surge and democratization of new technologies and tools, such as ChatGPT, considerably altered interactions. Adding to this the burgeon of Generative AI and the reality that eventually Gen Alpha will be joining the workforce, the future of work inevitably implies considerable change.

CEDES Builging 10th floor/CD-1008/**15:15-15:30**

A System Dynamics-Based Study of Engineering Change Impacts on Assembly Errors: A Case of Academia–Industry Collaboration

A.A. Castillo-Paz, A. Elizondo-Noriega, R. Cervantes, G.L. Emmett, J. Rouen, A. Topp, R. Linan.
A.S. Perez, L. Duarte-Pacheco, J.F. Piñal-Moctezuma, J. L. Ceciliano-Meza.
School of Engineering and Sciences, Tecnologico de Monterrey, Monterrey, N.L., Mexico.
Independent collaboration with no academic affiliation.

In the rapidly evolving automotive industry, managing engineering changes during serial production is critical, as poor coordination can disrupt operations and impact financial performance. This study analyzes the effects of engineering changes on the General Assembly process and identifies strategies to enhance responsiveness and minimize disruptions. Using a System Dynamics modeling approach, we simulate dynamic interactions, variability, and feedback loops inherent in real-world assembly operations. Simulation results highlight key variables that influence coordination delays and system risks, offering actionable insights to improve planning and reduce disruptions. The originality of this research lies in the integration of theoretical modeling with practical industrial data, creating a tool that supports proactive decision-making in complex manufacturing systems. While the model is currently focused on a single assembly plant, future research should explore its scalability across different production contexts and incorporate supply chain and workforce dynamics. This work contributes to operational excellence in the automotive sector and offers a replicable foundation for future Double and Triple Helix innovation initiatives aimed at improving productivity, quality, and resilience in manufacturing.

PARALLEL SESSIONS

DAY 1
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CEDES Builging 10th floor/CD-1008/**15:30-15:45**

Innovation in micro and small Brazilian enterprises: evaluation of an university-industry collaboration policy

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Department of Science and Technology Policy, University of Campinas (UNICAMP), Campinas, Brazil.

Numerous scholars defend R&D for innovation as the most effective route to development. Voices from the Global South, in the other hand, have raised concerns about its adaptation within the context of the deep social and economic inequalities faced by less developed nations. Brazil, like several other countries in Latin America, continues to face significant challenges in advancing technological innovation, even after years of implementing tax incentive policies. Our study evaluates Embrapii, an organisation established in 2013 by the Brazilian government to promote collaborative research between Research Organisations (ROs) and industry. Based on a sample of 106 projects involving micro and small enterprises, we administered questionnaires to the stakeholders involved, obtaining responses from one third of them. With the preliminary finding that three quarters of the projects resulted in innovation, and considering the Latin American context, we argue that collaborative models that go beyond mere fiscal incentives are better suited to the Brazilian reality and have the potential to overcome the stagnation scenario in science and technology.

CEDES Builging 10th floor/CD-1008/**15:45-16:00**

A Systematic Literature Review of How Open Innovation Is Implemented Across Contexts and Over Time

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Open innovation (OI) has emerged as a key paradigm in innovation management, yet its implementation remains scarse from a temporal and processual perspective. This paper addresses this gap by conducting a systematic literature review (SLR) of 27 high-quality, peer-reviewed studies to analyze how OI unfolds over time across different organizational contexts. It examines phases, triggers, actors, and organizational levers involved in the OI journey, moving beyond static models toward a dynamic understanding of implementation. The study identifies three dominant frameworks that conceptualize OI implementation in phases and reveals five common triggers driving the transition from closed to open models. The findings underscore the role of strategic alignment, cultural shifts, and structural adaptations in shaping OI trajectories, while also mapping the involvement of Quadruple Helix actors. The paper concludes by highlighting gaps in temporal theorization and calls for future research on co-evolution of capabilities, governance, and actor engagement throughout the OI implementation journey in organizations.

PARALLEL SESSIONS

DAY 1
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CEDES Builging 10th floor/CD-1008/**16:00-16:15**

Lessons learned on the Development of new electrified pick up truck platform
Lessons learned

Ricardo Prado Gamez, Jorge J. Lozoya, Juan Carlos Tudon , Edgar Fernandez Montoya.
Tecnologico de Monterrey, School of Engineering, Mechatronics, Monterrey, Mexico.
Tecnologico de Monterrey, Electromobility Center, Monterrey, Mexico.
Metalsa, Chief Technology Officer, Monterrey, Mexico.

In the middle of the Industry Transformation towards Electrification, the demand for talented people, Industry know-how, chain networking and Industry capabilities does not happen overnight. It is not a seamless task to invest in a portfolio of projects in which the benefits must be foreseen in several years with uncertainty. Considering factors such as competition, low margins, undefined anticipated volumes and Electrification technology not yet mature, the risk that a Tier 1 supplier has to digest is huge, as such key alliances in partners and sponsors that forms the Triple Helix are crucial. This paper shares how the legacy of a flagship project (2010–2014) contributed substantially to the development of talented people, business awarded, and chain network. The main purpose of this paper is to present a case of success highlighting the contribution of each participant, lessons learned from the Triple Helix point of view, things gone wrong/well, what could have been avoided, and the benefits rewarded eleven years after the project conclusion.

CEDES Builging 9th floor/CD-904/**15:00-15:15**

Sber's Triple Transformation: Forging a Post-Banking Innovation Cluster in the Age of AI
A New Model of Ecosystem Formation from the Eurasian Frontier

Ekaterina Vainberg, Research Associate, GLORAD, Silicon Valley, USA.

This study examines Sber's unprecedented transformation from a Soviet-era bank into a platform-based, AI-native technology ecosystem, demonstrating how a legacy financial institution can lead innovation cluster formation from within. Through three radical transformations—bureaucratic bank to lean financial enterprise, then to multi-industry digital ecosystem, and finally to human-centric AI platform—Sber challenges conventional views that ecosystems emerge only from startups, universities, or state programs. Drawing on in-depth interviews, proprietary data, and firsthand involvement in the transformation, the study highlights Sber's hybrid identity as a regulated financial actor, national AI champion, and developer of public digital infrastructure, enabling it to orchestrate innovation across sectors. By leveraging ten systemic levers, including deep-tech R&D, platform economics, agile governance, and talent cultivation, Sber created a full-stack innovation environment, catalyzing cluster effects. Its evolution demonstrates that legacy institutions can redefine themselves as ecosystem architects, offering a model for emerging economies to leapfrog industrial paradigms, anchor indigenous tech clusters, and rethink innovation policy through platform-sovereign strategies.

PARALLEL SESSIONS

DAY 1
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CEDES Builging 9th floor/CD-904/**15:15-15:30**

Mexican states in the face of Industry 4.0: a measurement proposal

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Industry 4.0 (I4.0) encompasses a set of disruptive technologies linked to productive development, originating not only from technical and business contexts but also from a public policy launched by the German government in 2011. This study develops a pre-Industry 4.0 Conditions Index (ICI 4.0) at the state level in Mexico to assess current conditions and examine potential relationships between state-level planning policies and readiness for I4.0. Using a mixed-methods approach, the research first conducted a theoretical and documentary review of the state development plans (PEDs) of all Mexican states, then generated an index composed of 18 variables across five dimensions or sub-indices. Results reveal clear regional differences in the adoption of disruptive technologies in the economic sphere, independent of sector or company size, and suggest that rather than reducing inequalities, the deployment of these technologies may exacerbate existing vulnerabilities. The findings underscore the importance of coordinated public policy, targeted investment, and capacity-building initiatives to ensure equitable technology adoption and maximize the socio-economic benefits of Industry 4.0 across regions.

CEDES Builging 9th floor/CD-904/**15:30-15:45**

Research Commercialisation through Triple Helix Nigeria (THN) Vision 10 10 10 10: A Triple Helix and Technology Readiness Level Approach

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MD, CypherCrescent L&D Limited, Port-Harcourt, Nigeria.
Technical Director/CEO, CypherCrescent Limited, Port-Harcourt, Nigeria.
Senior Lecturer/Co-Director, Oxford Brooks Business School, Oxford Brooks University, Oxford, UK.

Nigeria faces persistent challenges in research commercialisation due to fragmented innovation ecosystems and weak links among academia, industry, and government. The Triple Helix Nigeria (THN) Vision 10 10 10 10 initiative leverages a modified NASA TRL framework to guide academic innovations toward economically viable enterprises, integrating stakeholder readiness, policy alignment, market relevance, and institutional support. Using crowdsourced insights, structured pipelines, and STEAM perspectives, the initiative has developed a blueprint, engaged multiple stakeholders, and refined its framework iteratively. This evolving THN-TRL model provides a replicable pathway to accelerate research commercialisation in Nigeria and comparable developing economies.

PARALLEL SESSIONS

DAY 1
29th october

CEDES Builging 9th floor/CD-904/**15:45-16:00**

Advancing the Double Helix Model: Multicampus Competitions as a Bridge Between Academia and Industry

Luis F. Reséndez-Maqueda, Armando Elizondo-Noriega, Claudia V. Acedo-Ruis, Fabiola-Salas-Diaz.
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This study examines a multicampus competition-based learning (CBL) initiative as a Double Helix collaboration between academia and industry, co-developed with a national coffee chain to optimize water consumption across retail branches. Engaging senior Industrial Engineering students from six campuses in Mexico, the initiative combined agile project management, virtual collaboration, and mentorship from instructors and industry experts. Anchored in an Action Research framework and enriched by a Storytelling approach, the study shows how students developed problem-solving, teamwork, and critical thinking skills while the company implemented student-designed solutions with measurable water savings. The structured yet adaptive format promoted equity and sustained engagement across campuses, enabling meaningful interactions between students, faculty, and industry partners, while fostering a culture of innovation and applied learning. This research provides a replicable framework for educational-industry collaborations and highlights CBL as a mechanism to activate Double and potentially Triple Helix dynamics, guiding future policy-aligned innovation, skill development, and learning strategies in higher education.

CEDES Builging 9th floor/CD-904/**16:00-16:15**

Enhancing Supplier Assessment Through UniversityIndustry Collaboration
A Methodological Innovation for Evaluating Intangible Factors

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Tecnologico de Monterrey, Escuela de Ingeniería y Ciencias, Monterrey, México.

This study explores how structured qualitative methodologies combined with advanced analytics can improve supplier evaluation practices by addressing intangible, often overlooked factors in traditional assessment models. This study, conducted as part of a university-industry collaboration with a leading manufacturer, applies the Repertory Grid technique to capture tacit expert knowledge. It integrates it with data analysis tools to identify key constructs driving supplier quality and strategic alignment. The findings demonstrate how structured elicitation of intangible factors can enhance transparency, consistency, and development-focused supplier management. This methodology is particularly relevant for innovation-driven ecosystems where strategic partnerships and qualitative evaluation are essential for long-term competitiveness.

PARALLEL SESSIONS

DAY 1
29th october

CEDES Builging 9th floor/CD-905/**15:00-15:15**

Technological Training and Social Innovation The Experience of tecnoPARQ Social and tecnoMAKER.lab

Celso Oliveira, Barcelos, Brasil, tecnoPARQ.
Caroline Novais Rocha, Carvalho, Brasil, tecnoPARQ.
Pedro Henrique Reis Cupertino, Cupertino, Brasil, tecnoPARQ.
Jucélia Maria Lopes Maia, Rothe, Brasil, tecnoPARQ.
Claudinei Heleno da Silva, , claudinei.silva@ufv.br, Brasil, tecnoPARQ.
Adriana Ferreira de Faria, Brasil, tecnoPARQ.

This article presents the proposal for technical training in electricity, automation and educational robotics offered by tecnoPARQ Social and TecnoMAKER.lab to public high school students. The initiative aims to promote technological inclusion and professional qualification through free courses based on active methodologies, with a focus on practice and the use of accessible platforms such as Arduino. Based on a theoretical-methodological approach that values meaningful learning and the development of technical and cognitive skills, the project seeks to reduce the gap between traditional teaching and the demands of the job market. The expected results involve expanding access to technological knowledge, strengthening the maker culture and encouraging critical thinking, creativity and innovation among young people in basic education.

CEDES Builging 9th floor/CD-905/**15:15-15:30**

Pursuing SDGs via co-creation
GET-AHED: Co-creating a sustainability self-assessment and educational tool for higher education institutions

Egor Burda, Verena Regent, Roi Avila.
WPZ Research GmbH, Vienna, Austria.

With only 17% of Sustainable Development Goals (SDGs) currently on track worldwide, Higher Education Institutions (HEIs) are increasingly recognized as key drivers of sustainability. However, existing sustainability assessment tools (SATs) often fall short for HEIs, as they tend to focus on outcomes rather than the processes that support lasting change. The GET-AHED project was developed to address these shortcomings through an online platform co-created by stakeholders from Austria, Bulgaria, Ireland, Portugal, EU regulatory bodies, and EURASHE. GET-AHED offers a comprehensive solution by integrating a tailored sustainability assessment tool, targeted training materials, and a best practices database for energy efficiency. Distinctively, the platform adopts a process-oriented approach, supporting HEIs in their ongoing improvement journeys and aligning with their individual strategies rather than promoting competitive benchmarking. Importantly, GET-AHED is free to use, enabling HEIs to monitor their sustainability progress over time without financial barriers. Through this co-created and sector-specific approach, GET-AHED demonstrates how collaborative innovation can foster meaningful organizational change toward sustainability goals.

PARALLEL SESSIONS

DAY 1
29th october

CEDES Builging 9th floor/CD-905/**15:30-15:45**

Bridging Methodological Divides: A Comparativem Analysis of Thermodynamic and Triple Helix Approaches to Mexico's Innovation Systems

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Innovation systems are complex and dynamic, requiring robust methodologies for accurate evaluation. This paper compares two approaches applied to Mexico's innovation systems: a thermodynamic "value pump" model that measures efficiency through energy-based analogies, and an information-theoretic triple helix model that quantifies synergies among university, industry, and government actors. The analysis shows that the thermodynamic approach measures economic efficiency but overlooks systemic interactions, while the triple helix model captures knowledge dynamics yet lacks precision in assessment. To address these limitations, the study proposes a hybrid framework integrating both methodologies, combining thermodynamic efficiency metrics with triple helix synergy analysis. This integrated model offers a holistic tool for assessing innovation systems, providing policymakers insights to identify weaknesses and strengthen innovation ecosystems.

CEDES Builging 9th floor/CD-905/**15:45-16:00**

Technology transfer pathways for innovation within the context of the triple helix.

Luis M. Rodríguez-Martínez, Josefina G. Rodríguez-González, Jonathan D. Aguirre-Peña, María del C, Jiménez-Fernández, Rocío Verdeja-García, José L. Chavelas-Reyes, Carlo F. Medina-Ramírez.
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The document highlights technology transfer (TT) as essential for innovation and development. It emphasizes the role of Technology Transfer Offices (TTOs) and addresses barriers like funding and academia-industry gaps. Successful cases such as Stanford and BioNTech illustrate TT's real-world impact, showing how effective management and collaboration enhance outcomes, and how such practices can be adapted to diverse contexts.

PARALLEL SESSIONS

DAY 1
29th october

CEDES Builging 9th floor/CD-905/**16:00-16:15**

A New Era Of The Brics+ Network For Achieving The Sdgs In Health

Syahrul Aminullah, Asnawi Abdullah, Etik Retno Wiyati, Oscar Primadi, Riati Anggriani

The BRICS+ network (Brazil, Russia, India, China, South Africa, and other participating countries) has great potential to enhance international cooperation in achieving the Sustainable Development Goals (SDGs) in health. Indonesia has shown progress in achieving several targets of SDG 3 (Healthy and Prosperous Lives), although several challenges remain to be addressed. A United Nations report on Indonesia shows that the maternal mortality ratio decreased from 311.2 per 100,000 live births in 2000 to 140.5 in 2023. Furthermore, the proportion of deliveries attended by skilled health personnel increased from 66.3% in 2003 to 96.8% in 2024. Health Reform, the efforts are underway to strengthen the national health system, including improving the quality of primary and referral health services. This article examines the role of BRICS+ in improving global health access through multilateral cooperation and knowledge sharing. Using policy analysis and a literature review, this study finds that BRICS+ can be an effective platform for enhancing global health capacity through health innovation and technology. The results of this study are expected to contribute to the development of global health policies and raise awareness of the importance of international cooperation in achieving the SDGs in health.

CEDES Builging 9th floor/CD-906/**15:00-15:15**

Theoretical Framework for the Design of Frugal Innovations
Analyzing Key Factors for Innovations and Local Collaboration

Estefany Garza-Andrade, Azael Capetillo, David Güemes-Castorena.
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Frugal innovation is an approach focused on designing solutions for users in resource-constrained environments. Despite the extensive research on defining frugal innovations, limited studies have explored how to systematically design these innovations for successful global reach and sustainability, leading to reverse innovation, and the impact of academia, government, and industry collaboration. This study conducts an analysis of 10 frugal product cases, drawn from 17 research articles, to identify key factors that affect sustainability and market reach of these products. The findings reveal that cost efficiency, accessibility, performance, and functionality are crucial in the design of frugal innovations. These factors further benefited from local academic, government, and industry collaboration providing a deeper understanding of the target user and facilitating the manufacture of frugal products. The study proposes a theoretical framework that integrates these factors to serve as a guide for the design of frugal innovations through a holistic approach centered on the user to achieve sustainability and reverse innovation while addressing human needs in remote or resource-constrained settings.

PARALLEL SESSIONS

DAY 1
29th october

CEDES Builging 9th floor/CD-906/**15:15-15:30**

Decentralized Digital Governance: Blockchain as a Framework for Intellectual Property Protection in Open Innovation Ecosystems

Jakson Luís Dalago, Luiz Dalago Júnior, Cristiani Fontanela, Thaís Cristina Alves Costa, Andréa de Almeida Leite Marroco, Rodrigo Barichello and Claudio Alcides Jacoski.
Universidade da Região de Chapecó, Unochapecó, Chapecó, Brazil.

This article analyzes the impacts of digital transformation, particularly blockchain technology, on the management of intellectual property in open innovation environments, with emphasis on technology parks structured according to the Triple Helix model. The study investigates how blockchain can be employed as a mechanism for certification, protection, and decentralized governance of intellectual property, providing security, traceability, and transparency in the sharing of sensitive data and intangible assets. Using the deductive method, a qualitative approach, survey data, and bibliographic research techniques, the study seeks to understand the potential and legal implications of a blockchain-based system capable of enabling the immutable registration of innovations, ensuring authorship, and fairly distributing rights resulting from collaborative creation. It concludes that the adoption of emerging technologies such as blockchain strengthens intellectual property protection, fosters trust among stakeholders, and enhances the performance of regional innovation systems.

CEDES Builging 9th floor/CD-906/**15:30-15:45**

There´s no "I", in AI
Female STEM Students Perception on AI Gender Bias and How to Mitigate It

Daniel Camacho, Azael Capetillo, David Güemes Castorena, Sara Elisa Galván Brull, Gabriela Sofía Muñoz Treviño, Gabriela Zamora Carmona.
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School of Government and Public Transformation, Tecnologico de Monterrey, Monterrey, N.L., México.
Secretariat of Equity & Inclusion, Nuevo León Government, Monterrey, N.L., México.

This study investigates the perceptions of female STEM students regarding gender bias in Generative AI, specifically within large language models like ChatGPT. The research highlights the persistent issue of gender bias in AI responses, particularly when gender-specific language is used. Through a combination of qualitative and quantitative methods, the study explores how inclusive or non-sexist language can mitigate these biases, though not fully eliminate them. The findings reveal that AI systems often reinforce traditional gender roles, contributing to a sense of invisibility among female STEM students. The study proposes strategies for addressing these biases, including the adoption of gender-neutral language as a prompting technique to ensure fair representation. These strategies aim to create more inclusive and equitable AI systems that better represent all users, particularly those in underrepresented groups.

PARALLEL SESSIONS

DAY 1
29th october

CEDES Builging 9th floor/CD-906/**15:45-16:00**

EEG-Based Biometric Feedback for Prototype Validation: Enhancing Experimental Design Education through Biometric Learning Analytics

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Institute for the Future of Education, Tecnologico de Monterrey, Monterrey 64700, Nuevo Leon, Mexico.

This study investigates the perceptions of female STEM students regarding persistent gender bias in Generative AI, specifically within advanced large language models like ChatGPT. The research highlights the persistent issue of gender bias in AI responses, particularly when subtle gender-specific language is used. Through a combination of qualitative and quantitative methods, the study carefully explores how inclusive or non-sexist language can mitigate these biases, though not fully eliminate them. The findings reveal that AI systems often reinforce traditional gender roles, contributing to a sense of invisibility among female STEM students. The study proposes practical and effective strategies for addressing these biases, including the adoption of gender-neutral language as a prompting technique to ensure fair representation. These strategies aim to create more inclusive and equitable AI systems that better represent all users, particularly those in underrepresented groups.

CEDES Builging 9th floor/CD-906/**16:00-16:15**

Prompt Theory
Nature & Behavior, Towards a Framework

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This research introduces Prompt Theory, a behavioral and cognitive framework for understanding prompt engineering in large language models (LLMs). Prompt engineering, defined as the structured design of inputs to elicit desired outputs from LLMs, has typically been approached through technical classifications. However, this study argues for a more systemic view grounded in human-computer interaction (HCI). Drawing on foundational HCI principles, specifically task structure and mental models, the research proposes a behavioral matrix with two intersecting axes: logic (concrete to abstract) and purpose (process- to objective-oriented). This matrix yields four distinct prompting natures, each reflecting strategies in interaction design. By aligning existing prompt literature within this behavioral framework, the project offers a principled approach to organizing, evaluating, and refining prompt techniques. The findings not only redefine prompts as communicative behaviors but also establish the groundwork for a comprehensive prompt classification system, ultimately leading to better understanding of this phenomenon. Future work will extend this model through literature mapping and empirical analysis to define the state of the art in prompt engineering.

PARALLEL SESSIONS

DAY 1
29th october

CEDES Builging 9th floor/CD-907/**15:00-15:15**

Smart Territories in Transition: Comparative Insights from Cities and Villages Towards a Sustainable Future

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Business, Universidad Fernando III, CEU Universities, Sevilla, Spain.
Geography, University Pablo de Olavide, Sevilla, Spain.

The concept of "Smart" has mainly emerged from urban studies, focusing on technological infrastructure and data-driven governance, but the rise of rural revitalization has introduced Smart Villages as a complementary framework. This paper examines smartness in urban and rural contexts through a multi-case study approach guided by the Quintuple Helix Model, analyzing two urban cases (#eCity-Sevilla and the Hermitage Museum project in Barcelona) and two rural cases (La Graciosa and Smart Rural 21). Urban initiatives emphasize digitalization, urban planning, and public-private collaboration, while rural initiatives focus on community resilience, economic sustainability, and strategic connectivity. Findings show that technology alone is insufficient; successful Smart initiatives require inclusive governance, aligned stakeholder interests, and adaptable frameworks. This research advances sustainable development discourse by contrasting Smart City and Smart Village paradigms and proposing context-sensitive strategies for policy and practice.

CEDES Builging 9th floor/CD-907/**15:15-15:30**

A Systemic Diagnosis In A Smart City

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Center for Complexity Sciences, National Autonomous University of Mexico, C3, UNAM, México City, México.

Constantly evolving smart cities must adapt to the climate change phenomena, searching for an efficient response in all its dimensions and focusing on the well-being of its inhabitants. Climate Change effects represent a threat to all who inhabit the cities; it is imperative to develop multidisciplinary research that allow us to face those phenomena integrally and consider all interactions between its elements. This research work is aimed to make a diagnosis through microanalysis of a smart city. The first step in applying this method consisted of identifying the problem in the smart city system for that purpose, the issue of the smart city system was conceptualized, describing the actual situation of a city system and the desired situation being sought. The second step was designing the smart city system using systemic construction by decomposition method. Objectives, functions, and goals were identified using systemic construction by composition method to find the problem that impedes an efficient response of the smart city system. The problems identified in this diagnosis are the lack of follow-up, knowledge, and adoption by the Society subsystem of the plans and programs issued by the Governance subsystem.

PARALLEL SESSIONS

DAY 1
29th october

CEDES Builging 9th floor/CD-907/**15:30-15:45**

Electric Wheel Conversion of Light Vehicles: A Strategy to Address Urban and Rural Mobility Challenges
Smart Cities and Urban/Rural Futures: Evolving Sustainable Communities

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The rapid growth of urban congestion, energy overuse, and pollution in Mexican cities highlights the need for sustainable urban transport solutions. The main goal of this project is to enable a cost-effective and low-emission electrification option for light vehicles, through a patented, easy-to-install electric wheel module integrated with an AI-driven controller. Experiments conducted on retrofitted bicycles, tricycles, and rickshaws intend to estimate the reductions in fuel consumption, greenhouse gas emissions, and operational costs, compared to traditional combustion vehicles and commercial retrofits. With mechanical and energy performance testing supported by telemetry, simulation tools, and optimization algorithms, we are advancing from TRL 4 by validating two working prototypes that can provide measurable environmental, economic, and mobility benefits in urban freight contexts, demonstrating the potential scalability of this solution.

CEDES Builging 9th floor/CD-907/**15:45-16:00**

Towards a Theoretical Synthesis:
Integrating Triple Helix and Innovation Ecosystems Models for Organizational and Institutional Innovation

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Existing innovation models lack a sufficiently comprehensive framework for understanding innovation at both organizational and institutional levels. This study proposes a theoretical synthesis integrating Triple Helix and Innovation Ecosystem perspectives. The research combines prior conceptual analysis with a Design Science Research approach to develop a new framework. The findings highlight a dynamic interaction between innovation, knowledge, and entrepreneurial ecosystems, forming a multi-layered structure that explains innovative processes. The proposed model advances theoretical connections between systemic and organizational innovation research. It also provides practical insights for policymakers and managers to design adaptive and dynamic strategies fostering regional and national innovation.

PARALLEL SESSIONS

DAY 1
29th october

CEDES Builging 9th floor/CD-907/**16:00-16:15**

Person-Centered Design 4.0: Humanising Industry 4.0 for Socially Responsible and Sustainable Technological Innovation

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School of Engineering and Sciences, Tecnológico de Monterrey, Nuevo Leon, Mexico.

This paper introduces the Person-Centered Design 4.0 (PCD 4.0) framework as a response to the exclusion of ageing populations from Industry 4.0 innovations. Through a mixed-methods approach involving expert evaluation and field testing, the framework establishes twelve evidence-based design principles that improve accessibility and reduce interaction errors by about 20% compared to standard interfaces. Drawing on usability studies in domestic appliances, it demonstrates how older adults experience recurring challenges in everyday technology use, while the proposed Interactive Digital Compass envisions adaptive, IoT-enabled interfaces aligned with users' evolving abilities. The study also advocates for policy actions such as an EU AgeTech Certification Standard to promote inclusive design, positioning AgeTech as both a social imperative and an economic opportunity. Ultimately, it shows how emerging technologies can be humanized through inclusive design and policy mechanisms, fostering socially responsible and sustainable innovation.

CEDES Builging/CD-908/**ONLINE/15:00-15:15**

Performance Evaluation of Innovation Environments: Organization and Evolution of the International Literature (2000–2025)

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Centro de Inovação, Empreendedorismo e Tecnologia, CIETEC, São Paulo, Brazil.

The article conducts a bibliometric analysis of the international literature on innovation environments from 2000 to 2025, focusing on their impacts and performance indicators. The research identifies the field's evolution, key concepts and methodologies used, revealing a growing yet fragmented body of work. The most commonly used indicators include economic, institutional, and technological metrics, with recent emphasis onperformance, sustainability, and the quality of interactions. The study highlights the need for standardization and proposes pathways to improve the evaluation of these environments.

PARALLEL SESSIONS

DAY 1
29th october

CEDES Builging/CD-908/**ONLINE/15:15-15:30**

Partnership Configurations for Greater Success in the Business Maturity Process of Startups

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This manuscript aimed to verify which partnership combinations may increase the likelihood of success in terms of achieving higher levels of maturity, such as operation, traction, and scaling, for startups within the Brazilian context. Drawing on a dataset of 2,033 Brazilian startups, and applying the qualitative comparative analysis (QCA), our findings revealed two primary partnership configurations for achieving a high level of maturity. According to the results, the partnership configurations that combine the collaborative engagement of academic institutions, corporate firms, innovation hubs, and communities, as well as those involving the joint participation of academic institutions, corporate firms, and government, demonstrated the greatest relevance for achieving the higher levels of startup maturity.

CEDES Builging/CD-908/**ONLINE/15:30-15:45**

Transforming a pilot project to a fully-fledged programming strategy
Turning "Regions of Knowledge" to standard planning practice for lagging regions

Dimitri Corpakis, PhD former European Commission, Brussels, Belgium.

"Regions of Knowledge" was a small pilot project initiated by the European Parliament in 2003 with an initial budget of EUR 2 million, later expanded under the European Framework Programme for Research and Technological Development (now Horizon Europe). Originating from a concept proposed by two Italian MEPs, the project applied Triple Helix principles to guide local and regional planning, particularly in lagging regions. This paper analyzes the conceptual framework, theoretical principles, and strategic actions that contributed to its success, mapping structural components and identifying key dimensions for fostering regional economic growth. Links are drawn to contemporary theories of place-based development, including smart specialization strategies, demonstrating how comprehensive planning informed by knowledge economy features can effectively support regional development. The study highlights the importance of collaborative governance among universities, industry, and government as a catalyst for innovation. It also emphasizes the role of targeted research funding and capacity-building. Additionally, lessons from the pilot project provide guidance for policymakers seeking to design context-sensitive strategies for local economic resilience.

PARALLEL SESSIONS

DAY 1
29th october

CEDES Builging/CD-908/**ONLINE/15:45-16:00**

From Statist to Balanced : A Literature-Based Comparative Analysis of Triple Helix Configurations

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Sara Diop. National School Of Management And Accounting Of Agadir , Ibn Zohr University, Morocco.
Fatima Ouahraoui. National School Of Management And Accounting Of Agadir , Ibn Zohr University, Morocco.

This study examines how the Triple Helix (TH) Model is implemented across nations, analyzing 36 countries through government role, hybrid organization activity, and cross-sector interactions. A systematic review of 59 Scopus-indexed articles revealed that the statist model—government-led with strong state control—remains dominant globally, while balanced TH configurations appear in countries like Japan, South Korea, Singapore, Switzerland, Finland, Spain, and the UK. The study offers a comparative typology combining TH and National Innovation System perspectives, highlighting that configurations are context-dependent and shaped by historical, institutional, and policy factors. Findings provide guidance for policymakers on targeted innovation strategies and emphasize the need for context-sensitive approaches, while suggesting future research on broader data sources and structured innovation metrics.

CEDES Builging/CD-908/**ONLINE/16:00-16:15**

The Quintuple Helix and the journey of Deep Tech startups: An assessment of the interaction of the Quintuple Helix actors throughout the Deep Tech life cycle

Daíla dos Passos Vitorino, Andrea Aparecida da Costa Mineiro, Rita de Cássia Arantes, Sandra, Miranda Neves, Isabel Cristina da Silva Arantes.
Federal University of Itajubá, Brazil.
Federal University of Lavras, Brazil.

Deep Tech refers to startups grounded in advanced scientific fields such as robotics, blockchain, and artificial intelligence. Emerging mainly from academic environments, these ventures face longer development cycles than traditional startups and rely heavily on collaboration among actors in the innovation ecosystem, particularly those of the Quintuple Helix. Despite their disruptive potential, deep techs encounter major challenges in technology commercialization and investment attraction due to extended research and development phases. This study aims to identify key stages and early challenges in their life cycle through a qualitative approach involving in-depth interviews and document analysis. Findings highlight the strategic role of universities in providing access to networks, partnerships, and investors. However, the long path from research to market readiness remains a critical barrier, often leading to demotivation and funding difficulties. Strengthening public policies and targeted support programs could enhance the competitiveness of deep tech startups within innovation ecosystems. Furthermore, fostering collaboration between academia and industry is essential to reduce the gap between research outcomes and market applications, accelerating their consolidation and socioeconomic impact.

PARALLEL SESSIONS

DAY 2
30th october

CEDES Builging/CD-1004/**ONLINE/11:30-11:45**

The Maturity Trajectory of a University's Internal Innovation Ecosystem: The Case of UFMG

R. Suzuki, J. C. Crepalde Medeiros, R. M. Lago.
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Federal Institute of Education, Science and Technology of São Paulo (IFSP), Registro, Brazil.

Universities have become key players in national innovation systems, adapting to global challenges such as climate change, digital transformation, and sustainability. This study examines the evolution of the internal innovation ecosystem at the Federal University of Minas Gerais (UFMG), a leading institution in Latin America, through a longitudinal case study using process tracing and grounded theory. The analysis identifies nine stages of development, grouped into four levels of institutional maturity, spanning from foundational teaching and research to mechanisms of knowledge transfer and innovation governance. Based on interviews and institutional document analysis, the findings reveal that university innovation ecosystems evolve through adaptive, non-linear processes shaped by context, leadership, and learning. The proposed model provides a diagnostic framework to guide other universities in designing and advancing their innovation systems, contributing to discussions on universities as agents of innovation and institutional change.

CEDES Builging/CD-1004/**ONLINE/11:45-12:00**

Innovation Capacity in Universities: An Analysis of Innovation Indicators in Global Rankings

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Federal Institute of Education, Science and Technology of São Paulo (IFSP), Registro, Brazil.

University rankings have emerged as central instruments for assessing institutional performance in higher education, influencing decision-making processes, resource allocation, and public policies. Despite their widespread use, these rankings have been widely criticized for failing to capture the complexity of university missions, particularly regarding innovation. A systematic literature review following the PRISMA protocol analyzed 80 peer-reviewed articles published between 2014 and 2024, revealing that most rankings prioritize research output, such as publications and citations, while innovation indicators remain underrepresented and inconsistently defined. Only a few systems, such as SCImago Institutions Rankings, Times Higher Education (THE), and U-Multirank, include innovation-related indicators, primarily focused on patents and industry income. This article identifies these gaps and proposes hybrid metrics that better reflect the maturity of universities' internal innovation ecosystems, calling for inclusive frameworks that recognize multiple innovation pathways and contributions of universities, particularly in emerging and non-metropolitan contexts. Furthermore, the study highlights the importance of considering qualitative dimensions of innovation, such as knowledge transfer, entrepreneurial culture, and regional engagement, often overlooked in current ranking methodologies.

PARALLEL SESSIONS

DAY 2
30th october

CEDES Builging/CD-1004/**ONLINE/12:00-12:15**

Entrepreneurial motivations and collateral dysfunctions between startups and corporations - contributions to the governance of innovation ecosystems

Marisangela Csik. Sao Paulo University. Brazil.
Alvair Silveira. Torres Junior. São Paulo University. Brazil.

Startups develop knowledge in their initial journey that can be defined as original and highly innovative. However, when they interact with corporations, it can be wasted, as they often acculturate to large companies. Thus, their innovation purpose is, to a certain extent, abandoned, as they end up molded to corporate strategies, generating an unmeasured impact on the socioeconomic and technological development of their ecosystems. The study examined startups' motivations and how their innovation trajectory changes. A semi-structured qualitative questionnaire was applied to 18 startups. Results showed that after the initial idea, validation of the business model is the main motivator sustaining partnerships. Some internal and external dysfunctions were identified, including the need for additional funding for pivots and abusive pricing due to the startup's small size. The main contribution of this article is to understand, from startups' perspective, how these partnership attractors could be strategically included in innovation ecosystems through public policies to enhance their development.

CEDES Builging/CD-1004/**ONLINE/12:15-12:30**

Crisis-Driven Innovation: Unraveling The Evolutionary Stages Of Technological Collaboration

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PPGA, ESPM, São Paulo, Brazil.
Business, DCU – Dublin City University, Dublin, Ireland.
PPGA, UFG, Goiânia, Brazil.

This study investigates how innovation networks formed during crisis periods evolve and shape technological development in subsequent contexts. Using a sequential mixedmethods approach, the research integrates a systematic patent review, qualitative analysis, social network analysis, and expert interviews. The findings indicate three evolutionary stages of technological cooperation networks—centralized, diversified, and distributed—enabled by emerging technologies such as blockchain and artificial intelligence. The study makes a theoretical contribution by integrating innovation categories with the Sustainable Development Goals (SDGs) and introducing concepts such as "innovation islands" and decentralized governance. In practical terms, it underscores the importance of cross-licensing and redistributing protected knowledge for the sustainability and resilience of these networks, thereby offering a model applicable to open innovation in global crises.

PARALLEL SESSIONS

DAY 2
30th october

CEDES Builging 10th floor/CD-1005/**11:30-11:45**

Applying Technology Readiness Level Framework to an Antimicrobial Resistance Research Center: A Case Study of Antimicrobial Resistance Institute of São Paulo (ARIES)

Marcelo Augusto Kazuo Ikeda, Alex Yuri Simões Sato, Aline Mariane de Faria, Artur Tavares Vilas Boas Ribeiro, Leandro Lima dos Santos, Felipe Mendes Borini, and Moacir de Miranda Oliveira Junior.
University of São Paulo, São Paulo, Brazil 2 Federal University of São Paulo, São Paulo, Brazil.
FEI University Center, São Paulo, Brazil.

Antimicrobial resistance (AMR) poses a critical global health and economic threat, requiring innovative solutions for prevention, diagnosis, and treatment. This study applied the Technology Readiness Level (TRL) framework to assess the technological maturity of research projects at the Antimicrobial Resistance Institute of São Paulo (ARIES), a multidisciplinary center funded by FAPESP. A case study with semi-structured interviews of nine principal investigators revealed that most projects were in early TRL stages (1–3), with few advancing to prototype development. Key barriers included limited training, insufficient institutional technology transfer, and challenges in academia–industry collaboration. Mapping technological maturity helps prioritize projects, though TRL alone overlooks business, regulatory, and manufacturing, suggesting the need for complementary frameworks and longitudinal assessments of AMR innovations.

CEDES Builging 10th floor/CD-1005/**11:45-12:00**

When Helices Entangle
How Cross-Sector Conflicts Compromised Australia's Opioid Policies

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Institute of Education, Massey University, Palmerston North, NZ.
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This study critically examines ethical conflicts of interest within the Triple Helix Model (THM) in addiction research, focusing on fifteen years of opioid research, regulation, and policy in Australia. A scoping literature review revealed that individuals often occupy influential roles across academia, industry, and government simultaneously, functioning as researchers, consultants, trainers, corporate decision-makers, and regulatory committee members. These overlapping roles create inherent conflicts of interest, correlating with recurring patterns in Australian opioid policy where implemented regulations are consistently deemed insufficient, prompting calls for additional public investment and stricter controls. The analysis shows that without proper ethical safeguards, THM dynamics can generate self-perpetuating policy cycles that prioritize institutional and commercial interests over public health, highlighting the urgent need for structural reforms to manage cross-sphere conflicts in pharmaceutical regulation and research governance effectively.

PARALLEL SESSIONS

DAY 2
30th october

CEDES Builging 10th floor/CD-1005/**12:00-12:15**

Boosting food losses and waste reduction: A multistakeholder approach to improve innovation adoption

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This study examines food losses and waste (FLW) in European food systems, promoting innovative technological solutions through a multistakeholder collaborative approach. Forty interviews with stakeholders from six EU countries revealed that sustainability is primarily seen as environmental, with FLW reduction recognized as highly important and urgent. Enhanced communication between stakeholders and consumers is essential to design and implement effective FLW reduction strategies.

CEDES Builging 10th floor/CD-1005/**12:15-12:30**

Analysis of the relation between the performance of Innovation Districts and their region´s using regression analysis

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This study examines the interdependence between the efficiency of Innovation Districts (IDs) and the regional conditions of the Metropolitan Statistical Areas (MSAs) in which they are located. Using a mixed quantitative approach, Data Envelopment Analysis was first applied to measure the efficiency of both IDs and MSAs, followed by multiple linear regression to identify which regional factors significantly influence ID performance. The analysis of 21 regional variables and over two million regression combinations revealed that venture capital, STEM-granted degrees, industry diversity, and broadband barriers are the main determinants of district efficiency. Results indicate that while human capital and industrial specialization foster ID performance, broadband limitations and misallocated venture capital negatively affect it. These findings emphasize the importance of coordinated policies to strengthen digital infrastructure, STEM education, and targeted venture investment to enhance innovation ecosystems. This research provides empirical evidence of the strong dependence between district-level and regional innovation efficiency, contributing to a more integrated understanding of urban and regional competitiveness.

PARALLEL SESSIONS

DAY 2
30th october

CEDES Builging 10th floor/CD-1006/**11:30-11:45**

Promoting Learning, Employability and Entrepreneurship in Higher Education Institutions in Nigeria through Industry Experience via Effective Deployment of the Triple Helix Model

Sarah Nwinee, Petroleum Training Institute, Effurun, Nigeria. Bamidele Julius, Federal University of Agriculture Abeokuta Nigeria, Nigeria. Charles Ebereonwu, TotalEnergies Limited, Nigeria. Abdulmalik Halilu, Nigerian Content Development and Monitoring Board (NCDMB), Nigeria. Jonathan Njoku, Nigerian Content Development and Monitoring Board (NCDMB), Nigeria. Godsday Usiabulu, The Africa Center of Excellence in Oilfield Chemicals Research (ACE-CEFOR), University of Port Harcourt, Nigeria.

This study explores how industry experience enhances entrepreneurship and employability among Nigerian higher education students through the Triple Helix Model (THM), which connects academia, industry, and government. Based on 323 responses from participants in the Student Industrial Work Experience Scheme (SIWES), results show that industry placements strengthen non-technical, employability, and entrepreneurial skills, fostering greater readiness for self-employment and the labor market. The study highlights the importance of aligning practical training with entrepreneurship education and emphasizes that effective THM collaboration can bridge gaps between universities and industry to better prepare students for future careers.

CEDES Builging 10th floor/CD-1006/**11:45-12:00**

Embedded Entrepreneurial Ecosystems Micro-Foreign Direct Investment, Governance, and Inclusive Rural Development in Vietnam

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Center for Southeast Asian Studies, Kyoto University, Kyoto, Japan.
CRES, Vietnam National University, Hanoi, Vietnam.

This study examines why micro-scale foreign direct investment (FDI) fosters inclusive rural development in some contexts but falters in others, based on a six-year comparative study of Taiwanese oolong-tea ventures in Vietnam's Central Highlands. Drawing on 133 interviews with farmers, entrepreneurs, and officials, along with ethnographic observation, the research shows that ventures with deep, trust-based ties to growers, labor, and authorities were able to jointly manage shocks and distribute gains locally, while those relying on short-term, flexible contracts remained nimble but vulnerable, with some exiting the market. By integrating an embeddedness typology with a Micro-Helix governance lens, the study demonstrates that micro-FDI's developmental impact depends more on the quality of relational and institutional anchoring than on capital volume. The findings highlight that the depth of entrepreneur–state–knowledge interactions drives inclusive upgrading and provide a framework for policymakers to monitor embeddedness, reduce risk displacement, and guide adaptive FDI integration in rural areas.

PARALLEL SESSIONS

DAY 2
30th october

CEDES Builging 10th floor/CD-1006/**12:00-12:15**

The JASEDA from Lab to Market case study as a model of Tech Based Innovation

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This paper presents the case of Ingredientes Activos JASEDA S.A. de C.V., a technology-based company that evolved from academic research at Tecnológico de Monterrey into a successful enterprise through Triple Helix interactions among academia, industry, and government. Originating from a decade of research on Mexican bioresources, particularly Phaseolus vulgaris bioactive compounds, JASEDA developed market-ready products like WellBean®, supported by the university's technology transfer ecosystem, CIATEJ collaborations, and SECTEI funding. Achieving TRL 6.5, securing patents and brand registrations, and forming local and global partnerships, the company demonstrates how applied research, open innovation, and policy support can drive sustainable biotechnology ventures. This case illustrates the role of academic entrepreneurship in fostering hybrid organizations, promoting local value chains, circular economy practices, and high-impact technology transfer, offering insights into governance, funding, and strategic alliances for scalable and sustainable university spin-offs in Latin America.

CEDES Builging 10th floor/CD-1006/**12:15-12:30**

From Active Learning Space to Triple Helix Hub: The Innovaction GYM Model for UniversityIndustry-Government Collaboration.

Azael Capetillo. Tecnologico de Monterrey, México.
Jose Alfredo Galvan Galvan. Tecnologico de Monterrey, México.
Lilia Gomez Flores. Tecnologico de Monterrey, México.

Universities increasingly act as orchestrators of Triple Helix collaborations. This paper presents the Innovaction GYM, a multidisciplinary academic space that acts as a Hub for cooperation between academia, industry and government. Multidisciplinary spaces are pivotal for transforming ideas into tangible innovations by integrating diverse skills, knowledge, and perspectives. Using a descriptive case approach, we detail governance, staffing, equipment, and programs that enable hands-on projects, interdisciplinary teamwork, and Triple Helix collaboration. The Innovaction GYM provides interfaces for university–industry–government interaction through talks, challenges, mentoring, and shared facilities. We report participation and activity indicators—10,521 students engaged across 236 activities in 2023—and discuss operational lessons for sustainability and scaling. The contribution is a practice-grounded model for transforming makerspaces into collaboration nodes.

PARALLEL SESSIONS

DAY 2
30th october

CEDES Builging 10th floor/CD-1006/**12:30-12:45**

Action research on a Management and Governance Model for Technology Parks, using Balanced Scorecard and Triple Helix

Andressa Caroline De Battisti, Adriana Ferreira de Faria, Jaqueline Akemi Suzuki Sediyama, Jucélia Lopes.
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Science and Technology Parks (STPs) represent a worldwide phenomenon and act as agents for promoting scientific and technological development and, consequently, economic and social development. The Balanced Scorecard (BSC) is one of the most widely used tools for monitoring performance. This article presents the strategic and performance management model developed by the Viçosa Technology Park (tecnoPARQ/UFV), using the BSC tool, in light of the Triple Helix innovation model. As a result of action research by the tecnoPARQ management team, a business model was adopted that allows monitoring of tecnoPARQ/UFV processes and activities, considering its objectives and stakeholders, and can serve as a reference model for other technology parks. The implementation of this model also enabled tecnoPARQ to better align its strategies with the needs of resident companies and the regional innovation ecosystem. Despite being a young park, tecnoPARQ/UFV has shown results that make it a key vector of economic and social development in the region.

CEDES Builging 10th floor/CD-1007/**11:45-12:00**

Strategic Pathways to Entrepreneurial and Engaged Universities
A Case Study of La Salle - Ramon Llull University through the ACEEU Framework

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This article presents a comprehensive case study of La Salle - Ramon Llull University, examining how entrepreneurial and engagement dimensions are institutionalized under the ACEEU framework. Building on a systematic literature review that identified the core activities, performance indicators, and actor roles of Entrepreneurial and Engaged Universities (EEUs), the study embeds those insights within La Salle-URL's dual mission strategy. Using a rich array of internal sources, including the Engagement Strategy Plan 2025–2029, the Entrepreneurial and Engagement Self-Evaluation Report, operative and monitoring plans, KPI dashboards, and ACEEU feedback, the paper analyzes how the university integrates entrepreneurship through La Salle Technova, BITLaSalle, startup accelerators, and other initiatives alongside community engagement via the Social Board Council, service-learning, and SDG challenges. This case not only validates and refines the ACEEU framework in a real-world scenario but also offers a replicable institutional model for European universities seeking to harmonize third-mission activities.

PARALLEL SESSIONS

DAY 2
30th october

CEDES Builging 10th floor/CD-1007/**12:00-12:15**

The Entrepreneurial Activity of Universities: A Quantitative Analysis of Facilitating and Limiting Factors in the State of Mato Grosso, Brazil

Evander Pinheiro, Marcelo Amaral, Edilane Carraro. Universidade Federal Fluminense, PPGA/UFF, Volta Redonda, Brazil 2 Universidade Federal do Mato Grosso, UFMT, Sinop, Brazil.

There is a lack of studies that comprehensively analyze the facilitating and limiting factors influencing entrepreneurial universities, especially in regional contexts of emerging economies like Brazil, specifically in low-dynamic innovation regions inside these countries. This study aims to identify the facilitators and barriers that influence the entrepreneurial activities of public universities in Mato Grosso, considering their role in regional economic and social development. A mixed-method approach was employed, combining interviews and document analysis with Structural Equation Modeling (SEM) using Partial Least Squares (PLSSEM) and Confirmatory Composite Analysis (CCA). The data collection involved 157 faculty members and three innovation managers from UFMT, UFR, and UNEMAT. The study identified key enabling and constraining factors in the transition of universities into entrepreneurial institutions. The study contributes to theory by validating the role of institutional and contextual factors in fostering entrepreneurial universities. It provides a framework for policy implementation and strategic decision-making in higher education institutions.

CEDES Builging 10th floor/CD-1007/**12:15-12:30**

Collaborative Governance, Open Innovation and Triple Helix: The Genesis of Vírgula Hub VR and Vírgula Startups

Marcelo Amaral, Marcela Sayumi de Souza Ito. Triple Helix Research Group, Graduate Program in Administration, Fluminense Federal University, Volta Redonda, Brazil.

This study focuses on the Vírgula Innovation Hub, an interinstitutional consortium aimed at promoting innovative entrepreneurship in Volta Redonda, Brazil. The objective is to analyze the recent trajectory of the Hub and the Vírgula Startups Program through the theoretical lenses of Collaborative Governance, Open Innovation, and the Triple Helix model. The research follows an action research approach with a descriptive and exploratory character, using both primary data (interviews and participant observation) and secondary data (internal documents and institutional records). The results demonstrate that the Vírgula Hub embodies a novel collaborative institutional arrangement founded on trust, shared decision-making, and experimentation, with discernible effects on the development of a regional innovation ecosystem. Theoretically, the findings contribute to a deeper understanding of hybrid collaborative arrangements in regional contexts. In practice, they offer insights for creating and strengthening innovation hubs grounded in multi-helix models, demonstrating the replicable potential of the initiative

PARALLEL SESSIONS

DAY 2
30th october

CEDES Builging/CD-1008/**ONLINE/11:30-11:45**

Brazilian Entrepreneurial Universities: Historical Milestones, Policies and Innovation Mechanisms

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Business and Economics Department, Lavras Federal University, UFLA, Lavras, Brazil.

This study examines the role of Brazilian entrepreneurial universities in advancing science, technology, and innovation. It identifies their key characteristics and historical milestones through the perspectives of experts directly involved in shaping national innovation policies. Using a qualitative, descriptive, and exploratory approach based on the oral history method, semi-structured interviews were conducted with five leading specialists in university entrepreneurship. The findings indicate that the consolidation of entrepreneurial universities in Brazil stems from public policies, institutional evolution, and milestones such as the creation of incubators, the Innovation Law, and the establishment of Technology Innovation Centers (NITs). Despite significant progress, challenges persist, including bureaucracy and weak integration with the productive sector. The study underscores the need to strengthen innovative practices focused on sustainability and social impact. It contributes original insights by mapping historical trajectories through expert narratives and expanding the understanding of entrepreneurial universities in the Global South.

CEDES Builging/CD-1008/**ONLINE/11:45-12:00**

The Evolution of Technological Innovation Centers and Interactions with the Quadruple Helix: An Analysis of the Brazilian Context

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Business and Economics Department, Lavras Federal University, UFLA, Lavras, Brazil.

This paper examines the interactions established by Technological Innovation Centers (TICs) with the actors of the Quadruple Helix throughout their development trajectories. A qualitative, applied multiple case study was conducted based on documentary research and semi-structured interviews with managers and collaborators from five Brazilian TICs. The results reveal that interactions with government actors remain limited, as they are often perceived only as funding sources. Relationships with universities, companies, and society also face challenges, marked by low proactive engagement from firms and limited societal participation. More mature TICs have managed to overcome some of these barriers; however, overall progress has been slower than anticipated. The study contributes to both academia and management practice by examining how the evolution of TICs aligns with the Quadruple Helix model, offering a theoretical foundation for future research and practical insights into strengthening innovation ecosystems.

PARALLEL SESSIONS

DAY 2
30th october

CEDES Builging/CD-1008/**ONLINE/12:00-12:15**

Unpacking Quadruple Helix Governance in Peripheral Innovation Ecosystems
The Case of PROINTEC

Dani Lucia Xavier, Andréa Aparecida da Costa Mineiro, Luiz Guilherme RodriguesAntunes, Rita de Cássia Arantes, Sandra Miranda Neves.
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4 Business and Economics Department, Lavras Federal University, UFLA, Lavras, Brazil.

This article analyzes the implementation of the Quadruple Helix model in peripheral innovation ecosystems through the case of PROINTEC, a municipal innovation program in Santa Rita do Sapucaí, Brazil. Based on a qualitative single-case study and interviews with local stakeholders, it examines how multiactor governance operates in a non-metropolitan context. The findings show that, despite formal adherence to Quadruple Helix principles, collaboration remains fragile, personalized, and weakly institutionalized. Coordination gaps, limited governance routines, and asymmetric participation hinder systemic innovation. The study highlights the need for intermediary structures, adaptive orchestration, and clear engagement rules to translate the model's rhetoric into practice. By revealing how the Quadruple Helix unfolds in local programs, the article contributes to innovation policy literature in peripheral contexts and offers insights for designing more resilient and inclusive governance mechanisms.

CEDES Builging/CD-1008/**ONLINE/12:15-12:30**

University-Ecosystem Multidexterity Navigating a context of new tensions

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This study explores the evolution of universities into ecosystemic Entrepreneurial Universities, emphasizing ambidexterity—the ability to manage contradictory tasks across both the university and its external ecosystem. Responding to calls for a multidexterity approach, the research uses a qualitative design with 22 in-depth interviews of European academics to examine best practices at the university–ecosystem interface. Ten sources of tension between the university and ecosystem were identified, along with drivers of individual multidextrous behavior at organizational and personal levels, including motivations and competencies. The findings advance understanding of multidexterity in universities and provide practical insights to guide management in fostering Entrepreneurial University models effectively connected to broader ecosystem. Furthermore, the study highlights how ambidexterity shapes research, teaching, and engagement practices, offering strategies to balance exploration and exploitation. It also underscores the role of leadership and institutional support in enabling multidextrous behaviors. Finally, the results provide a framework for universities to enhance adaptability, innovation capacity, and societal impact in complex, dynamic environments.

PARALLEL SESSIONS

DAY 2
30th october

CEDES Builging 9th floor/CD-904/**11:30-11:45**

Driven innovation elements that impact on technology transfer for the industry helix in TH

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This document explores the elements driven by innovation that significantly impact technology transfer (TT) for industry within the triple helix (TH) model, where academia, industry, and government collaborate to drive innovation and development. It emphasizes how innovation—fueled by research, entrepreneurship, and policy—acts as a catalyst for effective technology transfer, enabling the commercialization of academic knowledge and strengthening industrial competitiveness. Key factors such as intellectual property, collaborative infrastructure, and the alignment of goals are highlighted as essential to ensuring impactful knowledge exchange. Technology transfer contributes to increased productivity, job creation, and technological advancement, especially when supported by coordinated strategies that respond to industrial and societal needs, fostering long-term innovation ecosystems. Moreover, it highlights the importance of continuous evaluation and feedback to maximize TT initiatives.

CEDES Builging 9th floor/CD-904/**11:45-12:00**

Training Engineers in Double Helix Innovation: Development of a Hands-On EdTech Simulator for Logistics Education

Julio C. Cervantes-Rivas, Michelle Vasquez-Urias, Ana L. Othon-Diaz, Fausto A. Valdes-Maldonado, Armando Elizondo-Noriega, Luis C. Félix-Herrán, Juan F. Piñal-Moctezuma.
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This study presents the development of a modular logistics EdTech simulator as the core outcome of a challenge-based learning experience in a Mechatronics Engineering course. The project aimed to simulate a real-world consultancy by requiring students to design an industrial-grade training tool under strict usability, cost, and technical constraints. Over one academic semester, students developed a functional simulator using Siemens PLCs, ladder logic programming, custom CAD components, and HMI interfaces. The solution reached an estimated Technology Readiness Level (TRL) of 6 and was successfully piloted with International Business students, receiving positive feedback on usability, engagement, and real-world applicability. This model blends education, innovation, and entrepreneurship within a Double Helix framework, with potential scalability to Triple Helix contexts. Although further research is needed on its long-term pedagogical impact, the simulator already shows promise for technology transfer.

PARALLEL SESSIONS

DAY 2
30th october

CEDES Builging 9th floor/CD-904/**12:00-12:15**

Collaboration and Networks for Continuous Education: Driving Operational Excellence in SMEs through University-Industry Collaboration.

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This innovation paper explores how collaboration and continuous learning networks, particularly through industry-university partnerships, can enhance the implementation of operational excellence (OE) in small and medium-sized enterprises (SMEs) in developing countries. Recognizing the challenges SMEs face in accessing and effectively applying OE methodologies, the study examines existing collaboration models, mechanisms for ensuring curriculum relevance, strategies to improve students' career readiness, and the role of social learning networks in facilitating knowledge transfer. Critical success factors, including mutual commitment, open communication, resource allocation, cultural adaptation, and long-term vision, are identified to foster effective collaborations that drive continuous improvement and innovation in SMEs. The analysis offers actionable strategies to promote organizational support, enhance employee engagement, and ensure the long-term sustainability of OE initiatives. This research underscores the potential of well-structured University-Industry collaborations as catalysts for building knowledge, enhancing human capital, and achieving lasting operational impact.

CEDES Builging 9th floor/CD-904/**12:15-12:30**

Spin-Off Facilitating Innovation
A practical case of transforming research into business

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The Innovation Methodologies Laboratory (Labmin) is directly involved in the Spin-Off Program at the Federal University of Viçosa (UFV), with the goal of fostering technology-based companies rooted in academic research. This article presents the current results and future expectations for the four projects currently under development within the acceleration program. The methodology employed in the program encompasses various innovation tools, including the Technological Plan, Technical, Economic, Commercial, Environmental, and Social Impact Feasibility Study (EVTECIAS), Valuation, and the Extended Business Plan. By analyzing the progress of the projects based on the developed documents, opportunities have been identified for all four initiatives, which span diverse fields: civil engineering, natural cosmetics, sustainable agriculture, and animal health. Additionally, these projects are at different stages of development. Looking ahead, the program's next phases will involve decisions regarding valuation or entrepreneurship, culminating in a final Pitch at the Viçosa Technological Park, TecnoParq.

PARALLEL SESSIONS

DAY 2
30th october

CEDES Builging 9th floor/CD-905/**11:30-11:45**

Innovation Ecosystems: Tecnoparq Viçosa As A Driver Of Green Transition And Technological Sustainability

Karin Costa Ribeiro Ferraz, Caroline Novais RochaCarvalho, Rodrigo Vilela, Claudinei Heleno da Silva, Frederico Acipreste Ferreira, Angélica Maria Patarroyo Vargas, Jucélia Maria Lopes Maia Roberto; Adriana Ferreira Faria.
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Given environmental emergencies and the need for new development models, the green transition emerges as a strategic agenda that demands transformations in sociotechnical systems. In this context, this paper analyzes the role of tecnoPARQ Viçosa as a vector of technological sustainability and a driver of the green transition. Based on actions to be implemented in the park, such as rainwater reuse with the support of Internet of Things (IoT) technologies, waste management using blockchain, forest restoration based on remote sensing and hydrological modeling, and environmental education and community engagement activities, the capacity for articulation between innovation, resource efficiency, and socio-environmental responsibility is evident. The results indicate that tecnoPARQ Viçosa can consolidate itself as a space for experimentation and learning for sustainability, promoting the integration of science, technology, and public policies and reinforcing the potential of innovation environments as strategic platforms for systemic and scalable solutions toward more resilient and sustainable cities.

CEDES Builging 9th floor/CD-905/**11:45-12:00**

Smarts Cities In Collaboration
A Case Report from the Smart City Hackathon

Ana Carolina Santos Vicente, Frederico Acipreste Ferreira, Jaylany Claudino Santana, João Pedro dos Santos Oliveira, Daniel Silva Souza, Vítor Rezende Ferreira de Carvalho, Jucélia Maria Lopes Maia Roberto, Jaqueline Akemi Suzuki Sediyama, Adriana Ferreira de Faria.
Parque Tecnológico de Viçosa (tecnoPARQ/UFV), Viçosa, Brazil.

This article presents a case report on the Smart City Hackathon, promoted by the Viçosa SMART program in partnership with the tecnoPARQ technology park, as part of a digital transformation and urban development strategy. The event was attended by university students organized in junior companies and guided by multidisciplinary mentors. The methodology involved the study of current municipal plans, the definition of strategic axes (Mobility, Education, Health, Sanitation, Security and Telecommunications) and the collaborative construction of innovative solutions for the main challenges of the city of Viçosa. The article discusses the role of the Hackathon as a space for open innovation, citizen engagement and articulation between academia, government, and society, highlighting the potential of these initiatives in the construction of contextualized and participatory smart cities.

PARALLEL SESSIONS

DAY 2
30th october

CEDES Builging 9th floor/CD-905/**12:00-12:15**

Connecting University and Market: The Role of tecnoPARQ in Promoting Open Innovation and Knowledge Transfer

Luciana Ramos Soares, Angélica Maria Pata-rroyo, Vargas Jucélia Maria Maia Lopes Ro-berto, Adriana Ferreira de Faria.
Technology Park of Viçosa, tecnoPARQ, Viçosa, Brazil.

This study examines the role of technology parks as catalysts for university-industry collaboration, focusing on tecnoPARQ, a science and technology park linked to the Federal University of Viçosa (UFV), Brazil. Grounded in the Triple Helix model[6][10]and the open innovation model [5], the research highlights how mediated environments bridge gaps between academia and the private sector. Through qualitative and documentary analysis, we explore tecnoPARQ's Innovation Link Program and its Innovation Day initiative, which facilitates cocreation by matching corporate demands with UFV's research capabilities. Results show 45 innovation meetings were held (2020–2024), engaging 392 researchers, presenting 368 projects, and generating 71 partnerships worth R$3 million. Key benefits include accelerated R&D, reduced costs, and technology transfer, while challenges involve bureaucratic delays and misaligned priorities. The study underscores technology parks as vital hubs for socioeconomic development, provided institutional flexibility and supportive policies are strengthened.

CEDES Builging 9th floor/CD-905/**12:15-12:30**

Techno-Economic Surveillance of Green Hydrogen as Jet Fuel in Mexico: Business Opportunity Analysis

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This study analyzes the feasibility of implementing a business model based on green hydrogen as an aviation fuel in Mexico, considering its technical, economic, and legislative implications. It examines global trends in the aviation industry, a well as current efforts towards the adoption of sustainable fuels such as hydrogen and SAF. At the national level, the regulatory frameworks and capacities necessary for its implementation in airports are identified. Finally, a technological surveillance is carried out to evaluate the maturity and projection of green hydrogen as a long-term solution. The results underscore the urgency of transforming air propulsion systems to meet IATA's decarbonization goals by 2035, highlighting the strategic role of projects like this in the sector's energy transition and the need for the industry, academia, and government to promote technology development and implementation.

PARALLEL SESSIONS

DAY 1
29th october

CEDES Builging 9th floor/CD-905/**12:30-12:45**

Heterogeneities in Quantum Technologies: Strategic Insights from Patterns of Scientific Knowledge Generation.

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Universidade Federal Fluminense, PPGA/UFF, Volta Redonda, Brazil 2 Universidade Federal do Mato Grosso, UFMT, Sinop, Brazil.

This study analyzes the strategic and policy-oriented development of quantum technologies—covering quantum computation, communication, and sensing/actuation—using over 126,000 publications from the Web of Science. Applying bibliometric mapping techniques, it examines knowledge integration, disciplinary diversity, collaboration networks, and scientific impact, revealing highly heterogeneous development trajectories across subdomains. The findings highlight diverse knowledge bases, collaboration patterns, technological maturity, and scientific impact, underscoring the need for tailored policies, specialized innovation frameworks, and ecosystem strategies for each quantum area. The study provides actionable insights for researchers, practitioners, and policymakers, and suggests future research could incorporate patent data, business models, and quantum competencies, especially in emerging economies. It also emphasizes the importance of fostering international collaboration and interdisciplinary research to accelerate technological breakthroughs. Moreover, the analysis encourages investment in education and workforce development to prepare a skilled quantum-ready talent pool. Finally, the study advocates for monitoring emerging trends to anticipate and address ethical, security, and regulatory challenges in quantum technology deployment.

CEDES Builging/CD-906/**ONLINE/11:30-11:45**

Bridging Gaps in AI Adoption: A proposal for Designing a University-Led Hub for Supply Chain and Logistics innovation

Roberto Andrade, Colegio de Ciencias e Ingenierias, Universidad San Francisco de Quito, Quito, Ecuador.
Sonia Aviles-Sacoto, Colegio de Ciencias e Ingenierias, Universidad San Francisco de Quito, Quito, Ecuador.

Artificial Intelligence (AI) offers transformative potential for supply chains and logistics in Latin America, yet adoption remains limited due to governance gaps, talent shortages, and fragmented policies. This paper proposes an AI Hub for Supply Chains and Logistics at University as a practical solution. The hub operationalizes a hybrid roadmap integrating three dimensions: enterprise-level adoption through phased, modular AI and Digital Twin integration for SMEs; policy-level enablers fostering inclusive regulations, public–private collaboration, and regional cooperation; and education-level reforms to strengthen STEM skills. The proposed AI Hub is addressed by a systematic literature review on AI adoption in supply chains and logistics, ensuring an evidence-based approach for the implementation of the hub.

PARALLEL SESSIONS

DAY 2
30th october

CEDES Builging/CD-906/**ONLINE/11:45-12:00**

Mapping Opportunities through Technological Convergence in Brazil: An AI-Supported Framework for Strategic Sectors

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COPPEAD, UFRJ, Rio de Janeiro, Brazil.
COPPE, UFRJ, Rio de Janeiro, Brazil.
UFF, Niterói, Brazil.

This paper analyzes the convergence of emerging technologies including Artificial Intelligence (AI), the Internet of Things (IoT), Big Data, and Cloud Computing, and their transformative role in strategic sectors in Brazil, including advanced manufacturing, energy transition, and urban innovation. The study adopts a qualitative and exploratory approach that combines documentary analysis with the use of a generative AI model (GPT-4) as a simulated expert. This methodological strategy supported the development of a technological convergence opportunity matrix, integrating insights from secondary sources and institutional data. The findings highlight real-world applications by Brazilian startups, such as predictive maintenance, smart energy systems, and data-driven urban monitoring. The analysis also identifies structural challenges, including infrastructure gaps, shortages in digital skills, and cybersecurity concerns. The study's originality lies in the innovative use of AI as a methodological engine for strategic foresight, offering a replicable framework that provides actionable insights for policymakers, investors, and innovation ecosystems in emerging economies.

CEDES Builging/CD-906/**ONLINE/12:00-12:15**

Mapping the Sustainability Transition in the AEC Sector
An Innovative Helix Framework Analysis

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The Architecture, Engineering, and Construction (AEC) industry faces growing criticism for its environmental impact and resource consumption, positioning it as a key sector in the global sustainability transition. This study proposes a comprehensive framework grounded in a multi-actor and helix model perspective to explore the motivations driving sustainable construction through knowledge production and innovation. By examining the relationships and dynamics within this transition, the research introduces a novel quantitative tool to measure system interactions and synergies among diverse actors. The framework enables a more systematic understanding of how collaborative efforts can advance sustainable construction practices and methodologies, ultimately supporting the development of effective strategies that align the AEC industry with the United Nations Sustainable Development Goals. Furthermore, the study highlights the need for integrated policy instruments and cross-sector partnerships to accelerate the adoption of sustainable technologies and enhance industry-wide transformation.

PARALLEL SESSIONS

DAY 2
30th october

CEDES Builging/CD-906/**ONLINE/12:15-12:30**

Collaborative Skills and the Evolving Techno-Social Employee Profiles for Manufacturing Firms under the Digitalization Era
A conceptual approach

Emma Tambou Marianna, Jahan Ara Peerally.
Department of International Business, HEC Montréal, Montréal, Canada.

Creating digital technological capabilities (DTCs) in manufacturing firms requires employees' collaborative skills, entailing collaboration between humans and between humans and machines. However, there is limited empirical evidence or conceptual guidelines regarding these skills. We question: What types of human, and human and machine collaborative skills are needed for creating DTCs in manufacturing firms as they advance under the Fourth Industrial Revolution (4IR) and toward the Fifth Industrial Revolution (5IR)? Building on the DTC framework developed by Peerally et al. [1], we show that as the manufacturing firm progresses from readiness to maturity on the 4IR spectrum, the techno-social profiles of employees will evolve, and different stages will require different combinations of human-human and human-machine collaboration skills within the firm and across the supply chain. These findings are essential for the design of sustainable practices promoted by the 5IR. We conduct this analysis across the organizational functions of the manufacturing firm. We discuss the implications of our findings for policymakers, practitioners and scholars.

CEDES Builging/CD-906/**ONLINE/12:30-12:45**

Collaboration and Patent Application Status of Federal Universities of Minas Gerais, Brazil

Giovani Peterson Alves Mendes, Leandro de Lima Alcantara, Rafael Morais Pereira.
School of Economics, Business, Accounting and Actuarial Science, University of Sao Paulo, FEA USP, São Paulo, Brazil.

This manuscript aimed to analyze the relationship between interorganizational collaboration—represented by coownership with government and firms—and the status of patent applications filed by federal universities located in Minas Gerais, Brazil. Methodologically, documentary research was conducted using the Orbit Intelligence platform, collecting data on patent applications filed by the eleven federal universities of Minas Gerais between 2000 and 2025. From a sample of 2,647 applications, the results estimated through multinomial logistic regression demonstrated that the presence of government and firms as co-owners influences the status of the patent application (granted, revoked, or pending). This research, an academic contribution, emphasizes the need for coordinated actions among stakeholders to foster partnerships and critically assess administrative processes for patent evaluation. From a public policy perspective, it highlights the potential to develop tools that enhance coordination among the triple helix actors, guiding more effective collaboration and innovation management.

PARALLEL SESSIONS

DAY 2
30th october

CEDES Builging 9th floor/CD-908/**11:30-11:45**

Strategic Triple Helix Framework for Complex Hierarchical Processes of Knowledge Development in China

Asad Abbas.
Writing Lab, Institute for the Future of Education, Tecnologico de Monterrey, Monterrey, Mexico.
School of Public Affairs, University of Science and Technology of China, Hefei, China.

This case study examines bilateral to trilateral collaboration as a strategic triple helix (TH) mechanism within Chinese technological innovation, thoroughly explaining the knowledge development process based on existing state-of-the-art theories. To address points related to bilateral and trilateral complex hierarchical processes, the following research question as explored: What is the strategic triple helix framework for complex hierarchical processes of knowledge development? An interpretive case study approach in three case studies uncovered the various processes and associated theories applicable in the Chinese TH. The findings of this study confirm that bilateral to trilateral collaboration, using the practice-based theorizing concept, benefits the university by enhancing its research infrastructure through the upskilling of human resources, thereby securing more government grants and industrial projects. University technology transfer offices ensure the protection and commercialization of knowledge for industry via government IPR guidelines.

CEDES Builging 9th floor/CD-908/**11:45-12:00**

Ethical Decision-Making in Innovation Systems: From Triple Helix to Quintuple Helix
An Inclusive Model for International Engagement

Jane Ann Williams
School of Public and International Affairs, Virginia Tech, Blacksburg, USA.

Innovation systems have undergone a significant transformation over the past several decades, evolving from linear, top-down models of research and development to dynamic, networked systems involving multiple stakeholders. Among the most influential theoretical frameworks that capture this evolution are the Triple Helix, Quadruple Helix, and Quintuple Helix models. These frameworks recognize innovation as a co-creative process involving not only academia, industry, and government (Triple Helix), but also civil society (Quadruple Helix) and the environment (Quintuple Helix). This dissertation examines how ethical decisionmaking is embedded—or absent—in these innovation models. Specifically, it investigates how governance structures and institutional arrangements support or undermine ethical norms in collaborative innovation ecosystems. Two case studies are analyzed in depth: Robotdalen, a robotics innovation hub in Sweden, and Cap Cana, a luxury development in the Dominican Republic associated with high-profile investors and private governance. These cases serve as contrasting examples of how helix dynamics play out in real-world contexts.

PARALLEL SESSIONS

DAY 2
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CEDES Builging 9th floor/CD-908/**12:00-12:15**

Entrepreneurship, Innovation, and Family Networks: Friends or Foes? A Longitudinal Analysis of the Cariri-Crajubar Brazilian Shoe-Making Cluster.

Cintia Kulzer Sacilotto, Maurizio Sobrero. Department of Marketing & Entrepreneurship, College of Business and Economics, Emirates Center for Entrepreneurship Research, United Arab Emirates University, United Arab Emirates.

Industrial clusters have long been recognized as engines of economic growth, fostering entrepreneurship, innovation, and resilience in regional economies. The role of kinship networks in such clusters, however, remains a subject of debate. This paper investigates how kinship ties shape the development of the Cariri-Crajubar shoe-making cluster in Brazil, influencing entrepreneurial activity, innovation diffusion, and firm survival over nearly four decades (1985–2024). Using a multi-method dataset, we show that kinship networks enhance firm resilience for the pioneers, facilitate knowledge transfer, and create entry barriers that limit diversity and competition. Moreover, second-generation family firms do not capitalize on their ties, with direct long-term consequences on the cluster's success. Our findings contribute to the broader industrial cluster literature and provide policy insights for fostering more inclusive and sustainable innovation ecosystems.

CEDES Builging 9th floor/CD-908/**12:15-12:30**

A Multi-stakeholder Review of Disruptive Innovations among renewable energy and institutional ecosystems in the Global South for Sustainable Development

Gladys Ehindola. Obafemi Awolowo University Ile-Ife, Nigeria.
Tombari Emeka-Duruzor. CypherCrescent Limited, Nigeria.

The Global South possesses vast renewable potential yet continues to face energy access and sustainability challenges. This study assesses how renewable energy ecosystems can narrow the energy access gap through the adaptation of disruptive renewable energy technologies (DRETs). Using a qualitative case study with embedded multi-stakeholder analysis, the research examined policy documents and industry reports related to energy-focused startups and ecosystems. Findings, analyzed through the Reach, Impact, Confidence, and Effort (RICE) model, reveal strong links between ecosystem interconnectedness, institutional actors, and socioeconomic priorities influencing DRET adoption. The study provides insights for policymakers, industry stakeholders, researchers, and entrepreneurs on promoting renewable energy innovation in the Global South and emphasizes the need to strengthen institutional collaboration and business models to maximize the impact of DRETs. Additionally, it highlights the importance of tailored capacity-building programs and local engagement strategies to ensure sustainable and inclusive energy transitions across diverse regional contexts.

SEMI PLENARY

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Round Table
Sala Polivalente

Semi plenary 3
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Kanna
CEDES

Day 2 - 30th October

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The role of the academy in the XXI century
Round Table
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PLENARY SESSIONS

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Innovation Assessment: A New Framework For Experimentation

Riccardo Viale, University Of Milano Bicocca Department Of Economics

Keynote Session 2

Clusters Of Innovation: In The Age Of Ai

Jerry Engel, University of California Berkeley Haas School of Business

Keynote Session 3

A Regional Ecosystem Of Industrial Clusters Nuevo León Industry Clusters

Keynote Session 4

Re-Imagining The Triple Helix Model Of Innovation And Partnerships

Tamara Carleton, Tecnológico De Monterrey Distinguished Global Professor Of Radical Innovation

Keynote Session 5

The Brazilian Digital Payment Ecosystem, A Comparison With India And China

Lourdes Casanova Cornell, University Director of the Emerging Markets Institute

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Innovation, Economic Growth And Public Policy

Fernando Turner. Chairman of Katcon

Keynote Session 7

The Evolution Of The Triple Helix

Aline Figlioli, Executive Director of Triple Helix Association

Joseph M. Pique, Executive President of La Salle Technova Innovation

Yuzhuo Cai, Education Policy University of Hong Kong

Keynote Session 8

Reinventing The Future University

Michael Fung, Tecnológico de Monterrey Director of the Institute of the Future of Education.

CEREMONY

Triple Helix Awards

The Triple Helix Nigeria SciBiz conference is a strategic meeting place for academia, industry, and government, inspired by the innovation model known as the "triple helix." This model recognizes that in order to promote sustainable, competitive growth with a real impact on society, it is not enough for each of these sectors to act separately: they must work in a coordinated manner.

In its most recent edition, with the theme "Integrating Research, Innovation, and Policy: Triple Helix Pathway to Research Commercialization," the event brought together academics, entrepreneurs, industry representatives, and public policy makers to share ideas, experiences, tools, and partnerships.

The main objective is to promote the transformation of knowledge—generated in universities and research institutes—into products, services, or policies that generate economic and social value for Nigeria. Through keynote speeches, panel discussions, practical workshops, and exhibition spaces, the event promotes how to move from scientific discovery to actual commercialization, with the support of all relevant actors.

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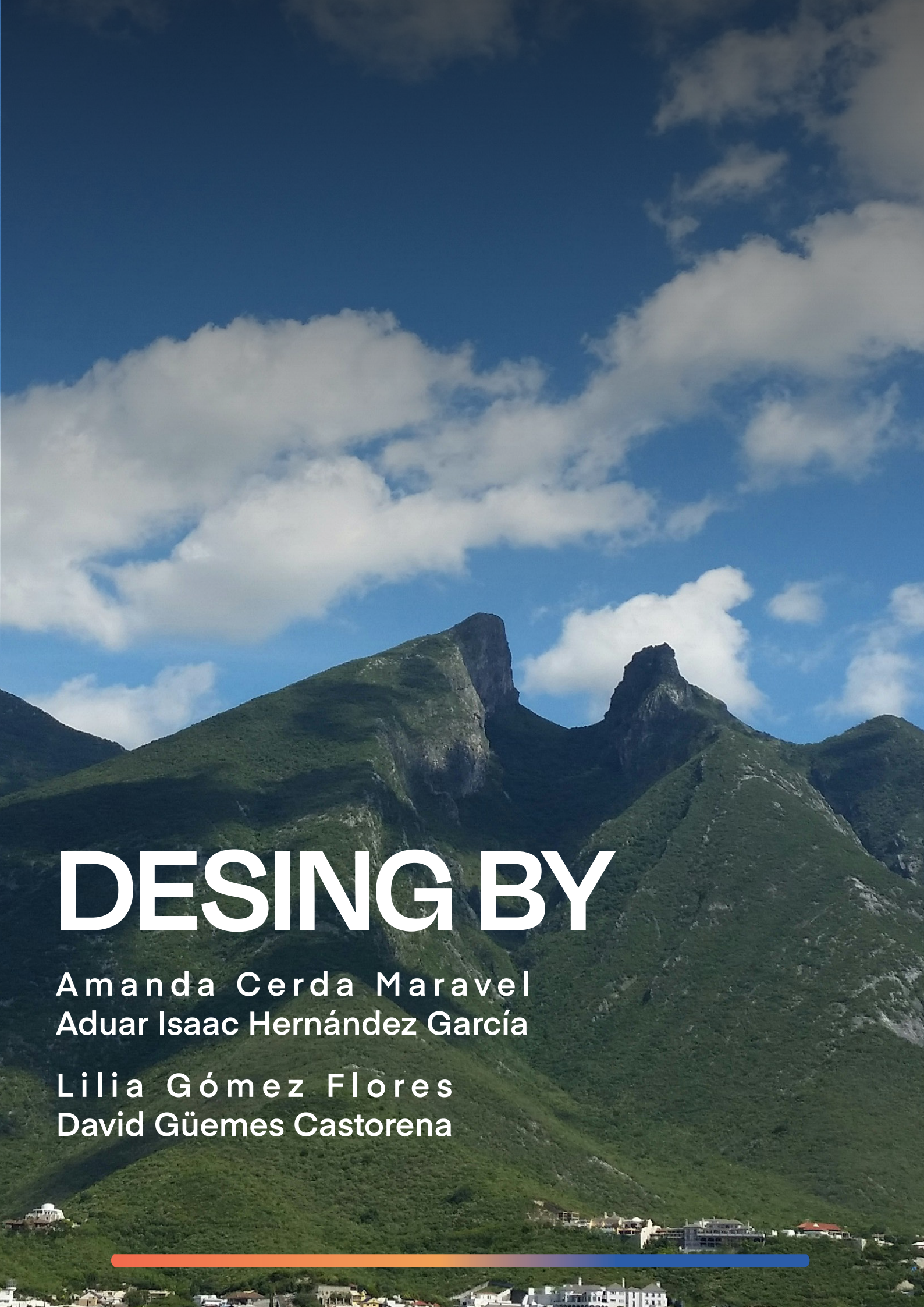

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