



POLYTECHNIQUE  
MONTREAL

UNIVERSITÉ  
D'INGÉNIERIE



# Participant Guide

## PLM23 - 20th International conference on Product Lifecycle Management

Leveraging Digital Twins, Circular Economy, and Knowledge  
Management for Sustainable Innovation

From July 9 to July 12

Polytechnique Montréal  
Pavillon Lassonde  
Montréal, Québec  
CANADA

techso.  DASSAULT  
SYSTEMES



## Welcome from the program chair – Christophe Danjou

Dear PLM23 participants,

We warmly welcome you to this 20th International Conference on Product Lifecycle Management – PLM23. Serving as program chair, it is an honour to welcome you to this conference, which brings together the brightest minds and most talented researchers in PLM and related fields.

This conference is essential, offering a unique opportunity to share our knowledge, ideas and experiences of PLM. By bringing together experts from different backgrounds, we have the opportunity to push back the boundaries of our discipline and explore new paths to excellence. This conference will be an enriching experience for every one of you. More, to celebrate the 20th anniversary of the conference, we are offering a rich social program punctuated with surprises over the 4 days of the conference.

I'm also looking forward to introducing you to our city, Montreal, which has worn its finest summer attire to welcome, surprise and seduce you. It's a city renowned for its dynamism and pleasant lifestyle. Repeatedly named North America's most sought-after conference city, I hope you'll have the opportunity to appreciate its riches.

Finally, I'd like to express my gratitude to the members of the scientific committee, the members of the local organizing committee and, above all, the authors who will be presenting their work, all of whom contribute to making this exceptional event a reality. Your commitment and dedication are invaluable. I wish you all a successful conference rich in fruitful exchanges and inspiring discoveries.

**Christophe Danjou**

**Professor, Mathematical and industrial engineering department, Polytechnique Montréal.**

**Program chair of the PLM23 conference**

## Conference location

### **Pavillon Lassonde – Polytechnique Montréal**

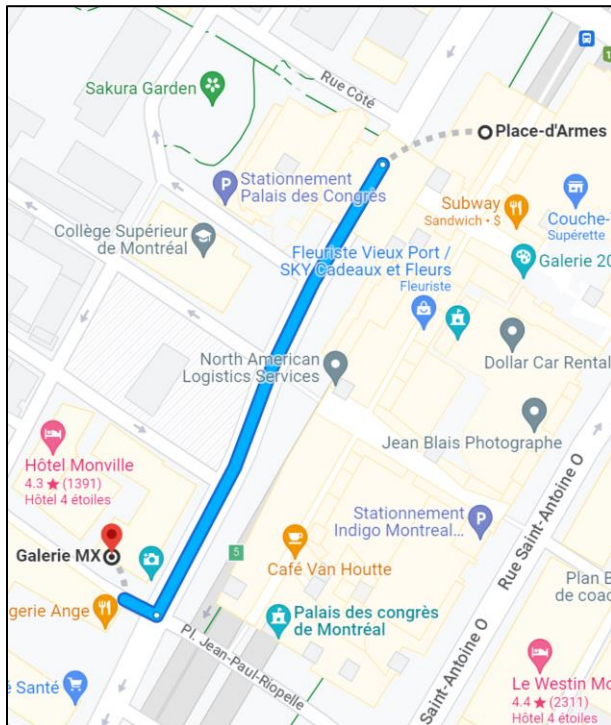
2500 Chemin de la rampe, H3T 1J4, Montreal, QC, Canada

Access: Drop off at “Université de Montréal » station on the metro blue line and follow the signage.  
We will provide every participant with a 3-days unlimited metro pass.

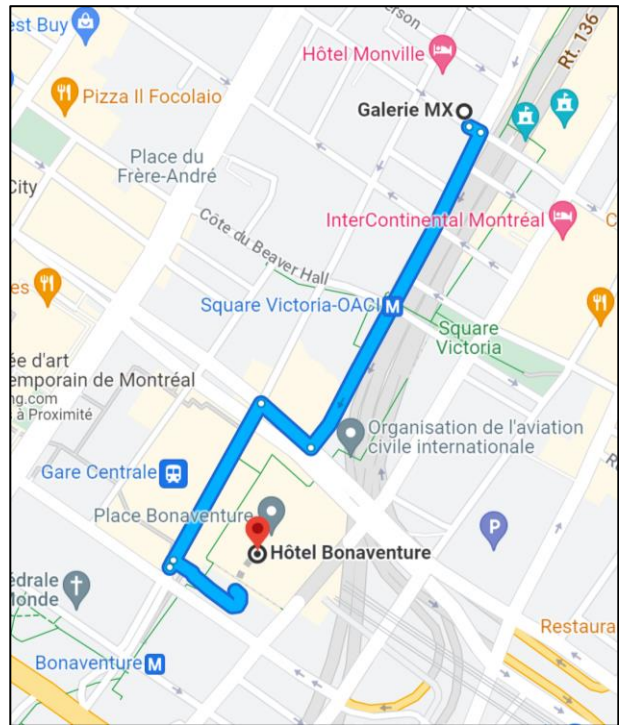
## Welcoming cocktail – Monday, July 10th from 6.30 pm to 8.30 pm

### **Galerie MX**

333 Avenue Viger Ouest, H2Z 0A1, Montreal, QC, Canada



Access from “Place d’Armes” metro station  
(5 minutes walking distance)

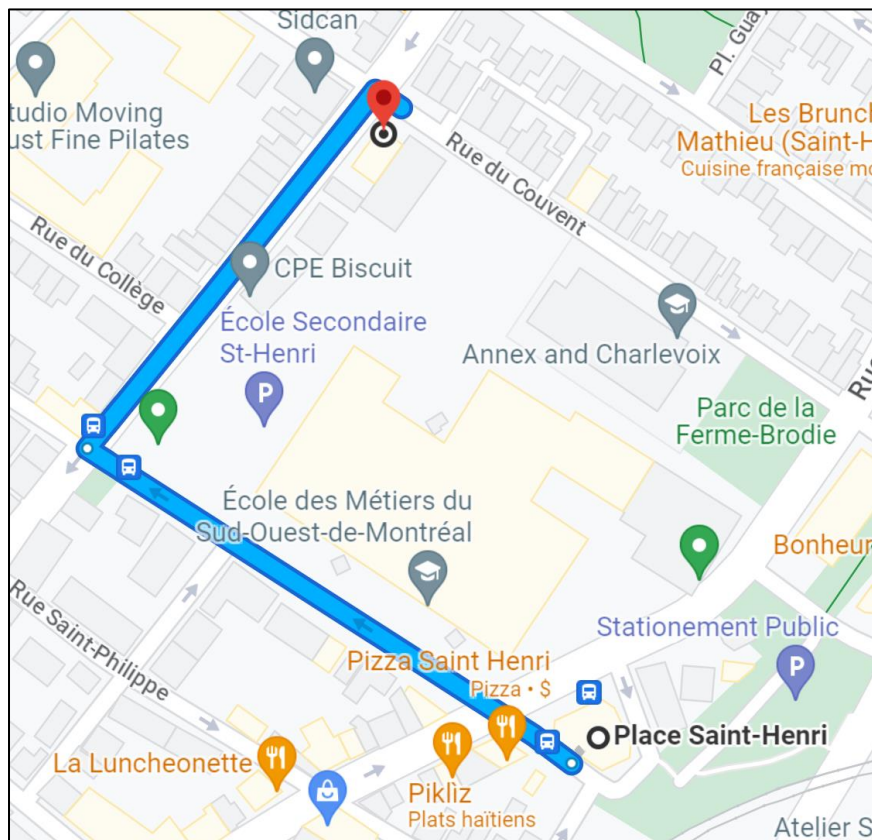


Access from Bonaventure Hotel  
(10 minutes walking distance)

Gala dinner – Tuesday, July 12th starting at 7 pm

**La Maison Principale**

872 Rue du Couvent, H4C 2R6, Montreal, QC, Canada



Access from “Place Saint-Henri” metro station  
(5-minutes walking distance)

**Activities during free time**

We have referenced on the PLM conference website some places you can visit, restaurant, bars, etc. under the “Venue” tab – scan me direct access below :



## Scientific Program

<b>Lundi</b>	<b>10 juillet</b>	
07:00-08:15	Breakfast + Registration	
08:15-08:45	Conference opening (Room M-1010)	
08:45-09:30	Keynote 1: (Room M-1010) 09:30-10:00	
Healthy break		
10:00-11:00	<b>M.1-1: Digital Twins (Room M-2101)</b>	
	Chair: Vincent Thomson	
	Benefits of Digital Twin Applications used to Study Product Design and Development Processes	Milad Attari Shendi, Vincent Thomson, Haoqi Wang, Gaopeng Lou
	A Digital Twin framework for Industry 4.0/5.0 technologies	Mansur Asranov, Khurshid Aliev, Paolo Chiabert, Jamshid Inoyatkhodjaev
	A data structure for developing data-driven digital twins	Oghenemarho Orukele, Arnaud Polette, Aldo Gonzalez Lorenzo, Jean-Luc Mari, Jean-Philippe Pernot
10:00-11:00	<b>M.1-2: Knowledge management (Room M-2103)</b>	
	Chair: Mickael Gardoni	
	How to support knowledge exchange in a multi-division manufacturing firm?	Mélick Proulx, Mickaël Gardoni
	Contextualization for Generating FAIR Data: A Dynamic Model for Documenting Research Activities	Osman Altun, Marc Hinterthaler, Khemais Barianti, Florian Nürnberger, Roland Lachmayer, Iryna Mozgova, Oliver Koepler, Sören Auer
	Gamification as a knowledge management tool	Pierre Miroite, Mickaël Gardoni
10:00-11:00	<b>M.1-3: Prediction and smart processes (Room M-2107)</b>	
	Chair: Abdelhak Belhi	
	Product model for lifecycle support of mechanical parts	Hiroyuki Hiraoka, Arata Hori
	Comparative Analysis of the Sustainability of Injection Molding and Selective Laser Sintering Technologies for Spare Part Manufacturing	Philipp Jung, Klaas Tuschen, Kristin Zagatta, Iryna Mozgova
	Hybrid Production Structures as a Solution for Flexibility and Transformability for Longer Life Cycles of Production Systems	Dorit Schumann, Marco Bleckmann, Peter Nyhuis
11:00-12:00	<b>M.2-1: CPS and Digital twin implementation (Room M-2101)</b>	
	Chair: Claudio Sassanelli	
	A quality-oriented decision support framework: cyber-physical systems and model-based design to develop Design for Additive Manufacturing features	Claudio Sassanelli, Giovanni Borzi, Walter Quadri, Giuseppe De Marco, Giorgio Mossa, Sergio Terzi
	Examining the Influence of Business Models on Technical Implementation of Smart Services	Samuel Helbling, Felix Nyffenegger
	Navigating the Digital Twin: 3D Exploration for Asset Administration Shell Content	Mario Wolf, Oliver Vogt, Detlef Gerhard
11:00-12:00	<b>M.2-2: Change management (Room M-2103)</b>	
	Chair: Benoit Eynard	
	Drivers of change impacting outcome-based business models in industrial production equipment	Olli Kristian Kuismanen, Karan Menon, Hannu Kärkkäinen
	Exploration of multi-layers networks to elicit and capture product changes	Vincent Cheutet, Aicha Sekhari, Chantal Cherifi, Justin Favre, Mohamed Douass, Maxence Millescamp
	A Model to Predict Span time and Effort for Product Development Processes	Shourav Ahmed, Vince Thomson
11:00-12:00	<b>M.2-3: Additive manufacturing digital thread (Room M-2107)</b>	
	Chair: Daniel Schmid	
	A methodology to promote Circular Economy in Design by Additive Manufacturing	Simona Ianniello, Giulia Bruno, Paolo Chiabert, Fabrice Mantelet, Frederic Segonds
	Design And Release Process For Additive Manufacturing Parts	Daniel Schmid
	Investigation on additive manufacturing processes performed by collaborative robot	Khurshid Aliev, Mansur Asranov, Tianhao Liu, Paolo Chiabert
12:00-13:00	Lunch break (Atrium)	

<b>Lundi</b>	<b>10 juillet</b>	
13:15-14:00	Keynote 2: PLM conference - An overview for the 20th anniversary	Felix Nyffenegger
14:00-15:00	<b>M.3-1: Training and learning (Room M-2101)</b>	
	Chair: Sergio Terzi	
	E-Learning Content Creation for Interdisciplinary Master of Science Program in Product Lifecycle Management (PLM)	Alexandra Saliger, Yannick Juresa, Manfred Grafinger, Jens C. Göbel
	Enhancing Collaborative Design through Process Feedback with Motivational Interviewing: Can AI Play a Role?	Sabah Farshad, Yana Brovar, Clement Fortin
	Designing a human-centric manufacturing system from a skills-based perspective	Marco Dautaj, Maira Callupe, Monica Rossi, Sergio Terzi
14:00-15:00	<b>M.3-2: Process optimization (Room M-2103)</b>	
	Chair: Yacine Ouzrout	
	Optimization Framework for Assembly Line Design Problem with Ergonomics Consideration in Fuzzy Environment	Elham Ghorbani, Samira Keivanpour, Firdaous Sekkay, Daniel Imbeau
	Optimization of the operation management process of a company in the electronic manufacturing sector	Marcelo Goncalves, Katuzi Hamasaki, Izamara Dias, Elpidio Nara
	Towards zero-defect manufacturing in the silicon wafer production through calibration: an Italian	Federica Acerbi, Andrea Pranzo, Cristina Sanna, Marco Spaltini, Marco Taisch
14:00-15:00	<b>M.3-3: BIM and PLM for the construction industry (Room M-2107)</b>	
	Chair: Louis Rivest	
	Industrialization of site operations planning and management: a BIM-based decision support system	Félix Blampain, Matthieu Bricogne, Benoît Eynard, Céline Bricogne, Sébastien Pinon
	On Considering a PLM Platform for Design Change Management in the Construction Industry	Hamidreza Pourzare, Conrad Boton, Louis Rivest
	Application of BIM technology to propagate information and knowledge of design changes in the product development cycle	José Roberto Alcântara Lobo, Anderson Luis Szejka, Osiris Canciglieri Junior
15:00-15:30	Healthy break	
15:30-17:10	<b>M.4-1: Special session on system engineering (Room M-2101)</b>	
	Chair: Clement Fortin, Monica Rossi	
	SE Based Development Framework for Changeable Maritime Systems	Brendan Sullivan, Monica Rossi
	Interface modeling for complex systems design: an MBSE and PLM system integration perspective	Yana Brovar, Arkadii Kazanskii, Betania Tapia, Clement Fortin
	An Implementation of Integrated Approach in Product Life-cycle Management Tool to Ensure Requirements-In-Loop during Complex Product Development: A Cubesat Case Study	Mubeen Ur Rehman, Clement Fortin
	Holistic Perspective to the Drug-Device Combination Product Development Challenges	Yaroslav Menshenin, Romain Pinquié, Pierre Chevrier
	Knowledge-Based Engineering Design Supported by a Digital Twin Platform	Sthefan Berwanger, Henrique Diogo Cardoso da Silva, António Lucas Soares, Cristiano Coutinho
15:30-16:50	<b>M.4-2: Special session on artificial intelligence (Room M-2103)</b>	
	Chair: Camélia Dadouchi	
	Investigation of an integrated synthetic dataset generation workflow for computer vision	Julian Rolf, Mario Wolf, Detlef Gerhard
	Digital technologies and emotions: spectrum of worker decision behavior analysis	Ambre Dupuis, Camélia Dadouchi, Bruno Agard
	Prediction of Next Events in Business Processes: A Deep Learning Approach	Tahani Hussein Abu Musa, Abdelaziz Bouras
	Machining learning algorithms for process optimization and quality prediction of spinning in textile industries	Hyekyung Choi, Whan Lee, Seyed Mohammad Mehdi Sajadieh, Sang Do Noh, Hyun Sik Son Son, Seung Bum Sim
15:30-16:50	<b>M.4-3: IoT and Digital Transformation (Room M-2107)</b>	
	Chair: Paolo Chiabert	
	Integrating Processes, People and Data Management to Create a Comprehensive Roadmap Toward SMEs Digitalization: an Italian Case Study	Marco Spaltini, Federica Acerbi, Anna De Carolis, Marco Taisch
	Development of IoT solutions according to the PLM approach	Francesco Serio, Ahmed Awouda, Mansur Asranov, Paolo Chiabert
	Development of a multi-plant cross-function roadmapping tool: an industrial case in Food&Beverage sector	Elena Beducci, Federica Acerbi, Marco Spaltini, Anna De Carolis, Marco Taisch
	A preliminary framework of sustainability, smart cities, and digital transformation with effects on urban planning: A review and bibliometric analysis	Andreia de Castro e Silva, Elpidio Oscar Benitez Nara, Marcelo Carneiro Gonçalves, Izamara Cristina Palheta Dias, Camila Vitoria Piovesan, Gabrielly dos Santos Domingos
18:30-20:30	Welcoming cocktail (Galerie MX)	

<b>Mardi</b>	<b>11 juillet</b>
07:30-08:30	Breakfast + Registration + Networking
08:30-09:15	Keynote 3: A PLM pionner story presented by Francis Bernard (Room M-1010)
09:15-10:00	Industrial presentation 1: Smart modular home construction - Impararia & Bouygues Construction (Room M-1010) <i>Frédéric Gal &amp; Mohamed-Ali El Hani</i>
10:00-10:30	Healthy break
10:30-11:15	Industrial presentation 2: BusPas, The Bus Stop, Reimagined - BusPas (Room M-1010) <i>Wisseem Maazoun</i>
11:15-12:15	Round Table: The future of PLM with AI and Digital twins (Room M-1010)  Moderator: Benoit Eynard <i>Éric Boutin (Siemens), Kevin Chagnon Beaulieu (Techso), Arnaud Guitton (Impararia), François Lamy (PTC), Florent Salako (Dassault Systems)</i>
12:15-13:30	Lunch break
13:30-14:00	Keynote 4: Smart, Digital, Green innovation network - A new model made in Quebec (Room M-1010) <i>Hany Moustapha</i>
14:00-14:45	Industrial presentation 3: Shaping the future of advanced air mobility - Vports (Room M-1010) <i>Fethi Chebil</i>
14:45-15:15	Healthy break
15:15-16:00	Industrial presentation 4: DOME: The Digital Operations and Maintenance Environment for the offshore renewable energy lifecycle (Room M-1010) <i>Nick Giannias</i>
16:00-16:45	Industrial presentation 5: Adopting applied AI in manufacturing SMEs: A project lifecycle approach - Mila (Room M-1010) <i>Jonathan Brodeur</i>
16:45-17:00	Closing industrial day (Room M-1010)
19:00-23:00	Gala Diner (La maison principale)

<b>Mercredi</b>	<b>12 juillet</b>	
08:00-09:00	Breakfast	
09:00-10:00	<b>W.1-1: Circular economy 1 (Room M-2101)</b>	
	Chair: Nicolas Maranzana	
	A technical and systematic characterization of circular strategy processes	Gautier VANSON, Pascale MARANGE, Eric LEVRAT
	When Industry X.0 meets End-of-Life Aircraft treatment: A brief review and criteria for identifying the core t	Ghita El Anbri, Samira Keivanpour
	How to foster the Circular Economy within the Pharmaceutical Industry? A research framework proposition	Simon Massot, Duc-Nam Luu, Claus-Jürgen Maier, Nicolas Maranzana, Améziane Aoussat
09:00-10:00	<b>W.1-2: Augmented reality and digital twin (Room M-2103)</b>	
	Chair: Detlef Gerhard	
	Industrial Layout Mapping by Human-Centered approach and Computer Vision	Marcelo Rudek, Osmar Moreira da Silva
	A Data Management Approach for Modular Industrial Augmented Reality Applications	Jan Luca Siewert, Matthias Neges, Detlef Gerhard
	A Method to Interactive Simulations of Industrial Environments Based on Immersive Technologies	Marcelo Rudek, Richard Valandro, João Cláudio Nogueira
09:00-10:00	<b>W.1-3: Ontology and semantics (Room M-2107)</b>	
	Chair: Matthieu Bricogne	
	Smart Product-Service Systems: A Review and Preliminary Approach to Enable More Flexible Development Based On Ontology-Driven Semantic Interoperability	Athon Francisco Curi Staben de Moura Leite, Matheus Beltrame Canciglieri, Osiris Canciglieri Junior
	A preliminary discussion of semantic web technologies and machine learning to support the complex parts manufacturing quotation: an aerospace industry case	Murillo Skrzek, Anderson Luis Szejka, Fernando Mas
	An approach to Model Lifecycle Management (MLM) for supporting collaborative Ontology-Based Engineering	Manuel Oliva, Rebeca Arista, Domingo Morales-Palma, Anderson Luis Szejka, Fernando Mas
10:00-10:30	Healthy break	
10:30-11:30	<b>W.2-1: Circular economy 2 (Room M-2101)</b>	
	Chair: Améziane Aoussat	
	Optimizing closed-loop supply chain in the electric vehicle battery industry: a fully fuzzy approach	Mina kazemi miyangaskary, Samira Keivanpour, Amina Lamghari
	Drives and barriers for circular ion-lithium battery economy: a case study in an automobile manufacturer	Ana Paula Yamada, Enzo Domingos, Juliana Hoffmann, Luciana Rosa Leite, Carla Robeta Pereira
	Application of Life Cycle Assessment for more Sustainable Plastic Packaging - Challenges and Opportunities	Simon Merschak, Christian Kneidinger, David Katzmayr, Johanna Casata, Peter Hehenberge
10:30-11:30	<b>W.2-2: Blockchain and data exchange (Room M-2103)</b>	
	Chair: Romeo Bandinelli	
	Development of a human-centric knowledge management framework through the integration between PLM and MES	Giovanni Marongiu, Bruno Giulia, Lombardi Franco
	Blockchain applications in the food industry: a pilot project implementation in the ancient grains industry	Virginia Fani, Gloria Padovan, Bianca Bindi, Giacomo Trombi, Niccolò Bartoloni, Marco Moriondo, Camilla Dibari, Romeo Bandinelli
	Protecting Manufacturing Supply Chains through PLM -Blockchain Integration and data model encapsulation	Abdelhak Belhi, Abdelaziz Bouras
10:30-11:30	<b>W.2-3: CAD and collaboration (Room M-2107)</b>	
	Chair: Frédéric Segonds	
	Towards a multi-view and multi-representation CAD models system for computational design of multi-material 4D printed structures	Hadrien Belkebir, Romaric Prod'hon, Sebti Foufou, Samuel Gomes, Frédéric Demoly
	A state of the art of the collaborative CAD solutions	Hugo Locquet, Louis Rivest, Matthieu Bricogne
	KARMEN: A knowledge graph based proposal to capture expert designer experience and foster expertise transfer	Jean René CAMARA,, Philippe Véron, Frédéric Segonds, Esmá Yahia, Antoine Mallet, Benjamin Deguilhem
10:30-11:30	<b>W.2-4: Frameworks for project and service development (Room M-2109)</b>	
	Chair: Romain Pinquié	
	A multicriteria framework proposition for project management approaches	Márcio Leandro do Prado, João Felipe Capioto Seelent, Gilberto Reynoso-Meza, Guilherme Brittes Benitez
	Innovative Development in a university environment based on the triple helix concepts: a systematic literature review	Lucas Sidorak Lessa, Michele Marcos de Oliveira, Osiris Canciglieri Junior
	Understanding service design in the context of servitization	Ana Maria Kaiser Cardoso, Pedro da Rocha Loures Robell, Guilherme Brittes Benitez
11:30-12:00	Closing Ceremony	
12:00-13:00	Lunch break	
13:00-17:00	Industrial visit	