

AGENDA

DesCartes Week 2023

Monday 2nd October

Pinnacle Room, Level 16

- 9.00 – 9.30 **C@C Registration**, Level 2 (On the left, after the escalators) - **MANDATORY**
Welcome Coffee, Level 16 (Near the Pinnacle room, along the glass wall)
- 9.30 – 10.00 **Welcome Address** – Dominique Baillargeat
Presentation of the week's agenda, and quick presentations of CNRS & CNRS@CREATE
- 10.00 – 11.30 **Monitoring, Diagnosis and Prognosis of critical infrastructures empowered by HAI** – Francisco Chinesta (WP9), Caroline Chaux (WP3), Clément Mailhe (WP9), Pauline Le Borgne (CETIM-MATCOR)
The various presentations intend to explore the latest developments in monitoring, diagnosing, and predicting maintenance needs for both civil and industrial infrastructure. Following a technical overview provided by CETIM MATCOR, the topics of data collection, image analysis, and processing will be addressed, followed by a discussion on technologies capable of adapting models to address localized damage.
- 11.30 – 12.30 **Presentation of the Digital Twin** – Francisco Chinesta (WP9)
- 12.30 – 1.15 *Lunch Break (Terrace Level 13)*
- 1.15 – 3.00 **Intellectual Property of Creativity** – Jean-Marc Deltorn (WP7)
This activity will explore the significance of creation and intellectual property as tools for responsible innovation, in the context of a challenge related to the Sustainable Development Goals. Following a team collaboration phase, students will showcase their work, and the best groups will be elected and rewarded!
- 3.00 – 3.15 *Coffee Break Level 16 (Near the Pinnacle room, along the glass wall)*
- 3.15 – 4.15 **Human - AI social interactions** – Vanessa Evers (WPX)
Lecture
- 4.30 – 8.00 **Teambuilding Activity**, Bus departing from CREATE drop-off
Bubble Soccer - The Cage, Kallang

Tuesday 3rd October

Pinnacle Room, Level 16

- 9.00 – 9.30** **C@C Registration, Level 2 (On the left, after the escalators) - MANDATORY**
Welcome Coffee, Level 16 (Near the Pinnacle room, along the glass wall)
- 9.30 – 12.00** **Building Ethics of Autonomy in the Machine: an example in Descartes use-case** – Yannis Montreuil (WP4), Chen Bin (WP5), Marida di Crosta (WPX) and Wayne Christensen (WP6)
- In this panel discussion Yannis Montreuil, Chen Bin, Marida di Crosta and Wayne Christensen will present research on hybrid human-AI systems, ethical learning and effective ethical control. They will explore ways of bridging diverse perspectives and methods for the formulation of an integrated approach.*
- 12.00 – 2.00** **Lunch Break (Terrace Level 13)**
- 2.00 – 3.30** **Modeling: Link between physical modeling and human behavior** – Benoit Cottureau (WP4) & Ludovic Chamoin (WP8)
- The class will explore links between physical modeling and behavioral data. It will focus on the drift diffusion model, which has been widely used in psychology to explain observed patterns of choices and response times. After a presentation of this model, some visions on it from biology and physics viewpoints will be presented, highlighting similarities in the phenomenological diffusion concepts involved. Some basic examples will also be developed in a short practical session. Eventually, the class will open with possible hybrid modeling in this framework, that may be a relevant research area in the Descartes project.*
- 3.30 – 4.00** **Coffee Break (Near the Pinnacle room, along the glass wall)**
- 4.00 – 5.30** **Control: Using nudge to control energy system with human in the loop** – Nina Powell (WP6) & Benoit Delinchant (WP8)
- This class delves into the workings of incentives that assist in decision-making, using a household energy flexibility experiment as an illustrative example. It will also examine the psychological principles that underlie incentives and engage in discussions about the philosophical and ethical inquiries they provoke.*
- 5.30 – 6.30** **Meeting for DesCartes LPIs**
CNRS@CREATE Meeting Room, Level 8

Wednesday 4th October

Pinnacle Room, Level 16

- 9.30 – 10.00 **C@C Registration**, Level 2 (On the left, after the escalators) - **MANDATORY**
- 10.00 – 10.30 **DesCartes Co-Design Workshop**– Vanessa Evers (WPX)
Introduction of the DesCartes co-design workshop and the ‘Responsible Futuring’ design thinking method.
- 10.30 – 10.45 *Coffee Break*
- 10.45 – 12.00 **Workshop on « Responsible Futuring »: Connect, relate and analyse**
Identify Challenges for and impact of the DesCartes Program.
- 12.00 – 1.00 *Lunch Break (Terrace Level 13)*
- 1.00 – 2.30 **Workshop on « Responsible Futuring »: Co-design alternative futures**
- 2.30 – 3.00 *Coffee Break (Near the Pinnacle room, along the glass wall)*
- 3.00 – 4.30 **Workshop on « Responsible Futuring »: reflect reframe act**
- 4.45 – 9.00 **Teambuilding Dinner**, *Bus departing from CREATE drop-off*
BBQ – Marina Cove
For DesCartes Members and upon registration only.

Thursday 5th October

Theatrette, Level 2

9.00 – 9.30 **C@C Registration, Level 2 (On the left, after the escalators) - MANDATORY**
Welcome Coffee, Level 2 (Near the theatrette)

10.00 – 10.30 **Presentation and use of CNRS@CREATE & DesCartes Teams Channels –**
Nicolas Christie & Célia Choimet (CNRS@CREATE)

10.30 – 11.00 **Smart Cities, Civic Tech, and Urban Digital Twins: A Critical STS**
Perspective – Chaewon Ahn (NUS)

This lecture will critically examine smart cities and technology, explore civic tech and participatory projects as alternative responses, and introduce a comparative study on urban digital twin models that aims to investigate complex urban models through an STS (Science, Technology, and Society) perspective.

11.00 – 12.00 **Development of data-driven and hybrid-based modeling for real-time**
industrial application – Chady Ghnatios (ENSAM)

The industrial world is adopting fast and reliable artificial intelligence-based modeling, incorporating data to enhance precision while meeting certification requirements. In this class, we will explore a hybrid modeling approach that combines data with physical models using model order reduction and AI techniques for real-time industrial applications.

12.00 – 1.30 **Lunch Break (Terrace Level 3)**

1.30 – 2.00 **Cognitive digital twins for empowering decision making – Beatriz Moya**
Garcia (CNRS@CREATE)

Intelligent interaction with the environment is a key aspect in the hybrid AI paradigm. However, understanding of the physics of reality is a challenge in terms of complexity and availability of the required data. This talk will break down physics perception to analyze and understand how to build the so-called cognitive digital twins, capable of understanding occurring physics in evolving scenarios.

2.00 – 3.00 **Modelling and Simulating Cities with Digital Twins – Anders Logg**
(Chalmers University)

Digital twins are models of physical systems that have the capability to real-time simulate and visually represent multifaceted urban data — encompassing buildings, infrastructure, utilities, businesses, and human & vehicular movement patterns. When harnessed effectively, such technology can become a game-changer in addressing critical urban issues like segregation, flooding, air pollution, traffic bottlenecks, and the spread of fires or diseases.

In this talk, Prof Logg will present an overview of his research and development at the Digital Twin Cities Centre, a Vinnova Competence Centre hosted by Chalmers University of Technology in Gothenburg, including his most recent results on automatic city model generation, simulation, and visualization.

3.00 – 3.30 **Coffee Break – RIE Lounge (Innovation Tower, Level 2)**

4.00 – 6.00 **Students Presentations – RIE Lounge (Innovation Tower, Level 2)**

Friday 6th October

Theatrette, Level 2

9.00 – 9.30 **C@C Registration, Level 2 (On the left, after the escalators) – MANDATORY**

9.30 – 10.45 **DesCartes: Two Years on**

In this first morning session, each WP will cover its progress, challenges, and strategic plans for the next three years, taking into account the initial program goals and the recently discussed use cases.

10.45 – 11.00 **Coffee Break**

11.00 – 13.30 **DesCartes: Two Years on**

This second session will be the opportunity to have an open discussion among all PIs regarding the program's future direction and priorities.

13.30 – 2.30 **Lunch Break (Terrace Level 3)**

2.30 – 5.30 **DesCartes Second Year Anniversary**

This afternoon will be dedicated to presenting the demonstrators and the notable scientific milestones attained, incorporating valuable feedback from our industrial members. Following this, there will be a comprehensive look at the program's advancements and performance measures, accompanied by a contemplative review of DesCartes' activities in the year 2023.

The conversations will then center on prospective plans, with a quick presentation from our two new industrial members, and crucial use case presentations to shape discussions.

5.30 – 6.30 **Break**

6.30 – 8.30 **Cocktail and Networking – RIE Lounge (Innovation Tower, Level 2)**



FOR INQUIRIES

MOBILE +65 8048 4456 | WHATSAPP +33 7 70 42 20 27
EMAIL CELIA.CHOIMET@CNRS.FR

GUEST SPEAKERS

Chaewon AHN



Chaewon Ahn is an urban researcher who studies the relationship between social systems and the built environment using urban data and analytical frameworks.

Her research interests are formed through academic and professional experiences in architecture, urban design, data visualization, and urban studies. Her research focuses on social networks and communities in cities, and the impact of technology in urban planning programs to empower citizens. She uses analytical skills to conduct data-driven analysis that primarily focuses on big data, participatory data collection, spatial analysis, and social network analysis to expose persistent issues of power in urban development processes.

Chady GHNATIOS



Chady Ghnatios serves as associate professor at the Department of Mechanical Engineering, Notre Dame University-Louaize, as well as a visiting professor to Arts et Métiers institute of technology in Paris. He acquired his industrial experience at IRT Jules Verne, an Airbus group funded company, and as consultant to several industrial companies. His academic experience is acquired at Centrale Nantes and Notre Dame University-Louaize, along with many invited professor positions. He is also a Fulbright visiting associate professor to Stanford University. His research interests are model reduction techniques, advanced simulation of composite materials, data-driven methods and digital twins' construction and simulation.

Anders LOGG



Anders Logg is a Professor of Computational Mathematics at Chalmers University of Technology and currently serves as the Director of the Digital Twin Cities Centre. He has authored a wide range of research papers and books in computational mathematics, notably focusing on the automated high-performance simulation of physical systems. Additionally, Logg is the founder and CEO of ReSpace, a firm that specializes in cloud-based solutions for easily creating and sharing digital twins in AR and VR.