

université
PARIS-SACLAY

INSTITUTE
DATAIA
Data Science, Intelligence & Society

D2C
DATAIA CLUB CONNECTION

AI IN MECHANICAL ENGINEERING

DATAIA PARIS-SACLAY INSTITUTE

Located within the **Paris-Saclay University** (12th in the Shanghai ranking), it is the **first French ecosystem in Data Sciences, AI and their societal impacts**.

MISSION

Bring together **multidisciplinary expertise and boost the collective strength of its partners** in the Paris-Saclay cluster with the aim of combining big data and AI technologies with social sciences and humanities for an AI at the service of humans.

IN FIGURES

17

founding
members

46

laboratories
partners

800

full-time
researchers

10

IA chairs out
of 40 national

18

research
projects

450

PhD students
per year



The Industrial Affiliation Plan (PAI) aims to **boost the collective strength of the Institute's academic ecosystem and its industrial members**. The services offered in response to the respective needs expressed include:

- Joint actions to support research;
 - Sharing of experiences and collective needs;
 - Facilitated access to recruitment;
 - Access to training, seminars, workshops, etc.;
 - Implementation of dedicated events (hackathons, challenges, etc.);
 - Participation to DATAIA governance through Industrial External Committee.
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The D2C system aims **upstream**, to present the priority research issues and to match them with the problems of industry. **Downstream**, to monitor contacts and opportunities for collaboration identified until they are set up and launched. It is part of the ambition to facilitate the establishment of several levels of collaboration and create a constructive dynamic:

1. Expertise / Student projects / Internships
2. Research collaborations / CIFRE theses
3. Joint laboratories / Joint teams
4. Multi-partner chairs

OBJECTIVES & PROGRAM



The main objectives of this D2C are focusing on :

- **Improvement of digital models** for simulation and reduction of calculation times;
- **Reduction of 2D design mapping;**
- **Automation and proposal of complex 3Dmodels** in order to quickly explore innovative solutions;
- **Search for reverse engineering solutions** for the reconstruction of CAD files;
- **Enrichment of the digital chain.**

Some proposed applications are :

- **Generative functional dimensioning;**
- **Optimization of the positioning** of active parts and cables of a particle detector;
- **Simulation of mechanical integration** in connection with virtual reality;
- **Generative design assisted by AI;**
- **Testing of solutions** currently being developed by manufacturers and start-ups (LLM, DL, ML, etc.)

DATAIA RESEARCHERS



Functional rating test, link with virtual reality

Pierre Manil – Head of department
Vincent Hennion – Senior System Engineer
Fernando Lomello – Material & Process Engineer
Fabrizio Rossi – Head of Design Office
François Nunio – Senior Mechanical Engineer



Test AI-assisted mechanical calculation and optimization solutions

Julien Bettane – Systems Engineer
Mathieu Walter – Systems Engineer
Norbert Vouzeyllaud – Systems Engineer



Acceleration of simulations in solid mechanics by neural networks

Anders Thorin – Research Engineer



Hybridation Simulation Apprentissage project: industrial use cases

Mouadh Yagoubi – Researcher/R&D Project Manager
Faïcel Chamroukhi – Researcher & R&D Project Manager

GUEST COMPANIES

SIEMENS

**Immersive 3D reconstruction,
virtual reality and GenAI**

Olivier Riou – Director Digital Experience Center



AMPERE

**Data analysis mechanical design part,
generative functional dimensioning**

Fabrice Agnoli – Big Data Project Manager



**Product design with genetic algorithms
and 3D shape recognition**

Tanguy Loreau – Data Scientist



**Flow reconstruction viscosity and
data simulation**

Yoann Cheny – CEO



**Detection and extraction dimensions
from scanned plans**

Hélène Danlos – Data Science Manager



**Convergence between numerical
simulation and data analysis**

Caio Cesar Mafra Marques – Technical Account Manager
Sergio Esparza – Technical Account Manager

INSTITUTIONAL PARTNERS



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