

MODELLING COMPLEXITY. SIMULATING DECISIONS. GOVERNING THE FUTURE.



Research Infrastructure - Level III, recognised by Regione Liguria
Modelling & Simulation · Digital Twin · Autonomous On-Premise AI

FROM DATA TO MODELS · FROM MODELS TO SIMULATION · FROM SIMULATION TO DECISIONS

A research environment where public and private organisations can test scenarios, policies and strategies before acting in the real world.

A recognised research infrastructure

A formal platform for advanced research, innovation and technology transfer.

Governance 4.0 is a University of Genoa research infrastructure dedicated to the modelling and simulation of complex decision-making processes. Its recognition as a Level III Research Infrastructure by Regione Liguria underlines its role as a specialised interface for advanced research, innovation and collaboration with external organisations.

LEVEL III

Recognised by Regione Liguria as a high-specialisation research infrastructure.

UNIVERSITY OF GENOA

Institutional research framework connecting academia, organisations and public institutions.

Four pillars

MODELLING

SIMULATION

DIGITAL

TWIN

ON-PREMISE

AI

DECISION

SUPPORT

From Digital Twin to Decision Twin

A multidisciplinary stack connecting quantitative models, data and Artificial Intelligence.

Modelling & Simulation

Discrete Event, System Dynamics, Agent-Based Modelling, Monte Carlo, optimisation and scenario analysis.

Digital Twin

Dynamic digital representations of processes, organisations, industrial systems and infrastructures.

Cognitive Twin

AI supports interpretation, anomaly detection, pattern recognition and natural-language interaction.

Decision Twin

Simulation and AI are combined to explore alternative futures and support human decision makers.

REAL SYSTEM → DATA → MODEL → SIMULATION → AI → DECISION → LEARNING

Private AI. Local control. Research freedom.

A dedicated on-premise environment for AI experimentation and integration with simulation.



AUTONOMOUS ON-PREMISE AI

Local LLMs · RAG · Private Knowledge Bases · AI-assisted Analytics · Simulation-Augmented AI

- **Data sovereignty**

Sensitive or proprietary data can remain inside the controlled infrastructure.

- **Research autonomy**

Models and experiments can be configured independently of external cloud constraints.

- **Twin integration**

AI can interrogate simulation outputs and digital-twin states to support explanation and scenario exploration.

Applied research across complex systems

The Laboratory builds on long-standing experience in modelling, simulation and decision support across multiple domains.

INDUSTRY

Production systems, capacity, scheduling, maintenance, automation and resilience.

LOGISTICS

Supply chains, warehouses, transport networks, inventory and disruption analysis.

PORTS

Terminal operations, intermodal flows, maritime logistics and port decision support.

HEALTHCARE

Patient flows, laboratories, operating theatres, emergency and resource allocation.

PUBLIC ADMIN

Process re-engineering, service design, policy analysis and governance.

ASSET & INFRA

Reliability, lifecycle, risk, maintenance and infrastructure monitoring.

Experience-driven examples are presented by application field rather than by commercial client.

Genoa ↔ Dubai

An international collaboration focused on the next generation of intelligent Digital Twins.

GENOA



Governance 4.0 brings modelling, simulation, decision-support and AI-integrated Digital Twin expertise.



DIGITAL TWIN FUTURES LAB

International research collaboration on Digital Twin technologies and applications.

DUBAI



The collaboration with Middlesex University Dubai connects the Laboratory with the Digital Twin Futures Lab and the Cognitive Twins initiative.



COGNITIVE TWINS

Research initiative within the Dubai RDI ecosystem on AI-integrated Digital Twins.

PhD & Professional Cruise School

A distinctive international learning environment organised by Governance 4.0.

RESEARCH AT SEA. DISCUSSION WITHOUT BARRIERS.

The Cruise School brings together PhD candidates, advisors, professors, researchers and professionals in an intensive setting where doctoral research, professional experience and interdisciplinary perspectives interact directly.

Governance · AI · Digital Twin · Simulation · Operations · Logistics · Technology · Future Studies

VISIT THE PHD & PROFESSIONAL CRUISE SCHOOL ↗

Research. Innovation. Technology Transfer. Education.

A platform for organisations that need to understand complex systems before changing them.

RESEARCH PROJECTS

National and international projects on modelling, simulation, Digital Twins and AI.

PILOTS & DEMONSTRATORS

Proofs of Concept and experimental environments for new decision-support approaches.

DECISION SUPPORT

Quantitative models and simulation environments for strategic and operational decisions.

EDUCATION

Master, PhD, executive education and the PhD & Professional Cruise School.

GOVERNANCE 4.0

University of Genoa · Department of Political and International Sciences (DISPI)

Scientific Coordinator: Prof. Roberto Revetria

[UNIVERSITY OF GENOA ↗](#)

[CRUISE SCHOOL ↗](#)

[DUBAI COLLABORATION ↗](#)