



POLITECNICO
MILANO 1863

DIPARTIMENTO DI
INGEGNERIA GESTIONALE

DIG PhD scholarship

Title	Approaches and strategies for sustainable logistics systems based on the Logistics 4.0 paradigm
Theme	<p>Unprecedented opportunities for a technological revolution and a full digitalisation of logistics are available, enabling new services and business paradigms, including Logistics 4.0. Data availability and sensing capabilities on logistics and transport networks enable complex real-time optimisation, with evident potential economies of scale, cost savings and better environmental performance. In this context, it is possible to overcome the difficulties in achieving sustainability targets. The Logistics 4.0 paradigm and its related solutions to collect and analyse data foster the implementation of data-driven approaches for decision-making, integrating different players and dealing with uncertainty. New technologies can be the enabling factor of the transition towards a greater digitalization and synchronization of logistics processes.</p> <p>In this context, developing innovative decision support systems for planning, management, analysis and development of new logistics systems is a challenging and timely topic. The ultimate research objective is to facilitate sustainable development through better processes, systems, and technologies, whether organizing logistics networks and supply chains in more efficient and environmentally sustainable ways, developing new planning methods, or improving the flow of information throughout the supply chain. Synchronization of transport resources (e.g., redesign of transport planning, last mile delivery) and synchronization between transport activities and logistics nodes will be examples of the topics to address. Models, for instance based on digital twin approach, will be developed to simulate planning and operations within and between the supply chain nodes to improve sustainability. Integrated logistics processes will be analysed and redefined, with a specific focus on data-driven management systems.</p>
DIG professors involved	Claudia Colicchia, Elena Tappia, Riccardo Mangiaracina, Sara Perotti
International collaborations	Rotterdam School of Management (TheNetherlands), Beijing Jiaotong University (China), Ghent University (Belgium), University of Tennessee (USA)