



# PhD in INGEGNERIA GESTIONALE / MANAGEMENT ENGINEERING - 39th cycle

**PNRR 118 TDA Research Field: ADVANCED DIGITAL AND ENVIRONMENTAL TRANSITION  
IN OPERATIONS AND LOGISTICS**

**Monthly net income of PhDscholarship (max 36 months)**

**€ 1450.0**

In case of a change of the welfare rates during the three-year period, the amount could be modified.

## Context of the research activity

**Motivation and objectives of the research  
in this field**

In the last years, more and more attention has been devoted to sustainability. Operations and Logistics are the area of the company that has the greatest impact on sustainability due to its intense use of resources (energy, material, water) and people. A large portion of resources is wasted in processes and transportation (e.g. 17% of food produced every year in the world is wasted). At the same time, digitalization allows each resource to gather a huge amount of information. Unfortunately, the set of information gathered is rigid, fixed in the machine, robot, truck, train, and in general in a resource. In order to dramatically increase the capabilities of a company to improve its operations and logistic system and increase its sustainability, a new approach is needed. A data based approach that allows to collect different data according to the specific need of the moment and of the specific resource, to pursue a specific goal, and a system to analyse them to reduce the impact on the environment. The research aims to develop such a system, that allows to gather and analyse the data needed to improve Operations and Logistic Processes . And will have three different areas of action:

- Analysis of present processes and to define the minimum set of measures to make.
- Identify the different alternative to gather those measures (e.g. through sensors, or gathering the existing information in each resource to a common area in the cloud)



	<p>-Design a comprehensive system that allows to collect a subset of such measures depending on the situation, resource, goals of the study/monitoring and analyse them accordingly.</p> <p>This will allow to quickly monitor the performance of a system or a sub part of a system, and identify causes of problems/opportunities to improve, in particular in the sustainability area.</p>
<b>Methods and techniques that will be developed and used to carry out the research</b>	<p>The following methodologies will be applied in the research project:</p> <ul style="list-style-type: none"> <li>- Literature analysis in order to map the situation of research at international level;</li> <li>- Case studies, in order to analyse the best practices of problem solving and innovation management of companies that have already developed new good practices;</li> <li>- Action research project to work on tools for process analysis in order to identify improvement opportunities.</li> </ul>
<b>Educational objectives</b>	<p>The research is multidisciplinary in nature: the candidate will develop advanced research skills in the areas of Sustainability, Process analysis and improvement, data analytics. She/he will learn how to design and conduct a research project, adopting the proper methodologies for conducting a literature review, data collection and analysis (survey, structured interviews), to validate results, and to present and publish results in both academic and practitioner outlets.</p> <p>Such learnings are extremely useful in all the further development of the professional career of the PhD candidate. And introducing people with such a higher level of education in the economic system gives a strong contribution to increase its competitiveness and degree of innovation.</p>
<b>Job opportunities</b>	<p>Because the subject is at the center of the attention of virtually any company, job opportunities are easily available in any manufacturing company. In addition, consulting companies also value the specific competences on the subject, and also the methodologies learned.</p>



<b>Composition of the research group</b>	1 Full Professors 0 Associated Professors 3 Assistant Professors 3 PhD Students
<b>Name of the research directors</b>	Alberto Portioli, Marco Macchi, Marco Melacini

<b>Contacts</b>
alberto.portioli@polimi.it

<b>Additional support - Financial aid per PhD student per year (gross amount)</b>	
<b>Housing - Foreign Students</b>	--
<b>Housing - Out-of-town residents (more than 80Km out of Milano)</b>	--

<b>Scholarship Increase for a period abroad</b>	
<b>Amount monthly</b>	725.0 €
<b>By number of months</b>	6

<b>National Operational Program for Research and Innovation</b>	
<b>Company where the candidate will attend the stage (name and brief description)</b>	
<b>By number of months at the company</b>	0
<b>Institution or company where the candidate will spend the period abroad (name and brief description)</b>	
<b>By number of months abroad</b>	6

<b>Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information</b>
The candidate will have the possibility to attend specific courses on Operations or Logistics, and the opportunity to help in teaching one or more module in those areas. Desks are available though booking via weDIG app. The candidate will join a very well established community of PhD candidates in Management Engineering.