

# ***University of Calabria*** ***(TESEO Lab)*** **Partner Profile Presentation**

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University of Calabria

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# UNICAL

- Public University operating in Calabria (Italy).
- It consists of 6 Faculties and 23 Department in which operate different Research Labs
- The Research Lab here represented is **TESEO** (Technologies for Simulation and Optimization)
- Web Site: [www.unical.it](http://www.unical.it)



# TESEO

- **Head Manager:** Prof. Roberto Musmanno
- **Faculty:** Engineering
- **Department:** Department of Electronics, Informatics and Systems)
- **Fields of Activity:**  
Simulation/Optimization Models and Methods for Decisional Problems related to the management, optimization and control of Logistics, Transportation and Urban Mobility Systems



# TESEO Research Topics and Streams

## I/2

- **Distributive Logistics and Transportation of Goods:** definition of simulation/optimization based models and algorithms for the optimal management of fleet of vehicles related to the distribution of products and the transportation of goods (in particular dangerous goods) over a territory .
- **Traffic and Mobility Systems:** design and realization of Simulation/Optimization models and methods for the traffic and road congestion forecasting, management, control and optimization in order to optimize cost, environmental impact and security of urban mobility systems.
- **Port Logistics:** definition and application of optimization models and simulation systems for addressing in an integrated manner decisional problems related to the optimal management of port activities.
- **Mathematical Programming under Uncertainty:** defining and developing mathematical models and methods for decisional problems in critical application contexts characterized by uncertainty and for the assessment and risk management in situations of dynamic boundary conditions with particular reference to logistics applications.



# TESEO Research Topics and Streams

## 2/2

In particular, the main research streams in which TESEO Lab is currently involved are:

- **algorithms and advanced optimization models and methods for real time fleet management problems**, with particular reference to dynamic vehicle routing and dispatching problems;
- **models and methods for the planning of the activities related to the asset management business** and, in particular, the optimal management of vehicle maintenance;
- **stochastic programming based methods for risk management problems under uncertain and dynamic conditions** with particular reference to the control of transportation, mobility and logistics systems in order to ensure both high security and low environmental impact;
- **techniques of vehicle tracking and tracing systems** based on GSM/GPS/GPRS/UMTS technology;
- **solutions for interoperability between wireless sensor networks and wide area networks**;





# TESEO R&D Projects 1/2

- **INTRAREGIO** “Towards an Intermodal Transport Network through innovative research-driven clusters in Regions of organised and competitive knowledge”, financed by CE under the FP7, Region of Knowledge 2011 Programme.
- **Raccorsu** "Rationalization And Optimization System For Collection Of Municipal Solid Waste," financed by Miur DM 593/2000 art. 5.
- **Rischio Zero** "Reorganization of the supply chain in the distribution of food" financed by Miur DM 593/2000 art. 5.
- **INLOCO**: Innovation coordinate logistics ", Logistics and reprocessing technology district of Gioia Tauro, financed by DM Miur 593/2000 art. 13.
- **HABITAT** “Harbour traffic optimization system”, financed by MIUR under the measure PON 2010 “Ricerca e Competitività”.



# TESEO R&D Projects 2/2

- **DIRECT FOOD** “Exploiting the local and traditional Made in Italy food production systems through the integrated management of supply chains and novel producer-consumer channels”, financed by MIUR under the measure PON 2010 “Ricerca e Competitività”.
- **AGROMATER LAB** “realizing an integrated transportation system (technologies and organization) in urban and regional areas which guarantee a significant reduction of the traffic flows and high levels of the services for the freight and passengers mobility”, funded by Regione Calabria as project under APQ Calabria 2010.
- **"Complete reorganization of the distribution activities of a dairy farm"**, financed by the Ministry of Productive Activities under the Law 46/82, FIT-ICT call.
- **"Creation of a system for managing a distribution center"**, financed by the Ministry of Productive Activities under the Law 46/82, FIT-ICT call.



# TESEO Collaboration with Regione Calabria

Realization of an Operative Station providing the following services:

- Certification of the Local Transportation Services provided by transportation companies;
- Innovative Infomobility Services for:
  - touristic system -> attractiveness
  - mobility system -> sustainability and efficiency;
- Local Transportation data collection and analysis
- Optimization tools for transportation companies:
  - Fleet management
  - Vehicle maintenance





# TESEO Scientific Production

- Many International publications on the major journals of the sector;
- Patent:
  - **USPTO Patent Number 20060190360 – Patent Name: System and method for controlling the transport of items:** Authors: Roberto Musmanno, Massimo Guccione, Andrea Attanasio.



# TESEO Participation to the FP7 Transport Call

TESEO Lab skills and expertise can support project ideas related to the following topics:

- *SST.2013.3-1. Managing integrated multimodal urban transport network*
- SST.2013.3-2. Implementing innovative and green urban transport solutions in Europe and beyond ;
- SST.2013.3-3. Capitalising CIVITAS knowledge and experience
- SST.2013.4-1. Ships in operation.
- SST.2013.4-2. Inspection capabilities for enhanced ship safety
- *SST.2013.6-2. Towards a competitive and resource efficient port transport system*



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