

**Call for application for research scholarships  
for post-graduate international candidates  
RESEARCH PROJECT N. 31**

**Title**

**Design of innovative transport solutions using ITS and big data to fulfill the MaaS (Mobility as a Service) concept**

**Scientific responsible (name, surname, role)**

Cristina Pronello, Associate Professor ([cristina.pronello@polito.it](mailto:cristina.pronello@polito.it))

**Short description of the research activity (max 250 words)**

The activity aims at defining innovative transport solutions using ITS (Intelligent Transport Systems) both at city and regional level to individuate new solutions allowing people to use less the car in medium-size cities and rural areas. Finding out new methods for collecting mobility data (and notably big data) from different sources could help in understanding the mobility patterns and propose tailored solutions at different geographical scales. To this end, the design of “mobility as a service” is nowadays a very hot topic in EU agenda, where packages of services can be offered focusing also on the integrated ticketing.

The PhD student will have to:

- find out all the available data: from social media (e.g. Twitter), existing surveys, validations from public transport (given from the Transport Authority), an app for smartphone collecting mobility patterns, etc.;
- propose possible new methods of data collection of mobility: sensors on vehicles, improvement of existing app (data collector), etc.;
- data storage: a repository of data using data fusion techniques;
- visualise the mobility patterns and compare them with the transport supply;
- propose interventions focused to improve the people mobility using more sustainable transport modes.

The PhD student will have to work both in university and interacting with technicians and policy makers in the cities where the data are collected. They will participate to meeting with local stakeholders and on site activities with users, beside the supervisor.

**Specific requirements (experiences, skills)**

The needed skills are software programming, data mining, algorithm development. A knowledge of transport systems is also fundamental to better exploit the potentiality of the ICT.

**Website of the research group (if any)**

The supervisor has a double affiliation. She coordinates the TRIS (Transport Research for Innovation and Sustainability) research group at Politecnico di Torino where she is member of the BigData Laboratory (<https://bigdata.polito.it/>). She has the Chair of ITS and Territorial Dynamics at Sorbonne Universités – Université de Technologie de Compiègne (<https://avenues.utc.fr/presentation/chaire-midt.html>)

**Keywords (min 3, max 6)**

Transport, smart mobility, big data, ITS, data mining, smart cities

**Research Area (max 1)**

Computer Engineering