



# *Assessing the impact of ICT on road transport emissions*

Wednesday 8 and Friday 10, May 2013,  
Madrid, Spain



[www.ict-emissions.eu](http://www.ict-emissions.eu)



## WORKSHOP AGENDA

Assessing the impact of ICT on road transport emissions		
TIME	AGENDA	RESPONSIBLES
9:00	<b>Welcome</b>	<b>Madrid Government</b>
9:10	<b>ICT-Emissions Project Overview</b> - Traffic and Air Quality problems in cities - Projects objectives and methodology - Expected results	<b>AUTH/LAT,</b> Prof. Zissis Samaras
9:40	<b>City of Madrid</b> - Environmental Action Plan	<b>Madrid Government,</b> Mr Javier Rubio
10:10	<b>Presentation of Case Studies</b> - Madrid (20 min)  - Turin (15 min) - Rome (15 min)	<b>-TRANSyT-UPM,</b> Prof. Andres Monzon <b>- 5T,</b> Massimo Coccozza <b>- RSM,</b> Marco Cianfano
11:00	Coffee break	
11:30	<b>Technical Visit: Calle30 Control Center</b>	<b>Madrid Calle30</b>
13:30	Lunch at Calle30	
14:30	<b>End of workshop</b>	

### ICT-EMISSIONS OVERVIEW

ICT technologies or ITS are expected to have a significant role to play in reducing CO<sub>2</sub> emissions, as a part on an integrated policy. It is acknowledged that the mechanisms of impact of ITS are complex and diverse and therefore specific modeling tools need to be adapted / developed – validated, tested and well documented

**ICT-Emissions** is a project funded under the 7th Framework Programme-ICT which aims at developing a methodology that can be used for assessing the impact of advanced ICT on energy efficiency and CO<sub>2</sub> emissions reduction for road transport.

It will for this purpose apply its methodology to emission models which take into account driver behavior, and that can be used by transport planners, local authorities, and automotive OEMs and suppliers.

The **ICT-EMISSIONS** project attempts to establish the missing links between traffic and emission modelling at the micro and the macro scale. It will also develop an instantaneous emission model best suited to be linked to traffic microscale models.

In broad terms the methodology can be summarized in the following steps:

- Develop/adapt vehicle simulators to calculate CO<sub>2</sub> emissions of cars when operating in ICT regimes
- Simulate the impact of various ICT measures by implementing commercial traffic models at the micro and macro scales, and link them to vehicle simulators
- Validate the methodology on measured real-world ICT application cases
- Summarize the impact of ICT measures on traffic, energy and emissions in a library
- Issue recommendations and implementation guidelines for use of best-practice ICT measures

Based on the observed results, the project will issue recommendations and implementation guidelines that can lead to significant energy and CO<sub>2</sub> reductions from road transport.

## CASE STUDIES

During the past few months three data measurement campaigns have been conducted in Madrid, Turin and Rome.

Surveys consisted in accomplish a consistent number of trips through selected areas, before and after the implementation of:

- Speed control by section,
- VMS (Variable Message Signs) which display a recommended speed limit of 40, 60 or 80 km/h depending on a control algorithm. This algorithm is based on instant speed and traffic intensity data recorded by induction loops situated along the section.
- UTC (Urban Traffic Control) system which uses adaptive algorithms to define the best policy of traffic light management to improve the overall conditions of urban traffic by minimizing the total travel time of private traffic

Vehicles were equipped with a GPS data recorder to collect travel distance, position and speed and with an OBDKey device to record fuel consumption every second. Different driving behaviors such as eco-driving or control cruise, were also tested.

The objectives of these surveys are:

- To measure the impact of each of the measures tested
- To obtain ad hoc driving profiles, which with driving profiles from existing databases, will feed the database library of the project.
- To record actual traffic flow regimes to use in the micro and macro traffic modeling

## PARTNERS

### Project coordinator



**Aristotle University of Thessaloniki.** The Laboratory of Applied thermodynamics (LAT) belongs to the Energy Division of the Mechanical Engineering Department, in the Aristotle University of Thessaloniki, Greece. Coordinator of the project, LAT will be leading the development of the vehicle engine/emission simulator.

### Project partners



**Centro Ricerche Fiat.** CRF is Fiat group centre of expertise for innovation, research & development. In ICT-Emissions, CRF contributes to the development of the Vehicle Fuel Consumption model, the integration, development and

validation of the overall methodology.

**VL List GmbH** is the world largest privately owned and independent company for the development of powertrain systems as well as instrumentation and test systems. AVL will carry out fuel consumption simulations for a large number of vehicle classes adopting alternative future powertrain configurations. Moreover, AVL will contribute to interfacing the fuel consumption databases and its fuel consumption simulation tool CRUISE to the traffic simulator in order to enable traffic simulation on both a micro and macro level.



**Berner & Mattner Systemtechnik GmbH** provides products as well as engineering and consulting services for the automotive, aerospace, defence and rail industries. Berner & Mattner mainly will contribute to the specification and implementation of the common ICT-Emissions traffic simulation model and the definition and development of driver-

vehicle models.

**Universidad Politecnica de Madrid (UPM)** is the oldest and largest Spanish technical university, with more than 4.000 faculty members, around 38.000 undergraduate students and 6.000 postgraduates. TRANSYT-UPM is the the Transport Research Centre of UPM. TRANSyT-UPM has a leading role in the traffic modelling. TRANSyT-UPM also has an active role monitoring traffic situations and in the software specification and definition.



**Tecnologie Telematiche Trasporti Traffico Torino srl (5T)** was founded in July 2000 under mandate from the Turin Municipality. The term 5T stands for ‘Telematics Technologies for Transport and Traffic in Turin’ and it is also the name of an advanced integrated telematics mobility management system that currently operates over a large section of the metropolitan area of Turin. 5T will provide among other things the “point of view“ of the local authorities and traffic control centres, stressing out their needs and their perspectives.

**Polis** is a network of European cities and regions supporting innovation for a more sustainable urban and regional mobility. Polis leads dissemination activities and will established and manage the ICT-Emissions exploitation group.



**IVECO** IVECO is an international leader in the development, manufacture, marketing and servicing of a vast range of light, medium and heavy commercial vehicles. CSST will be the active IVECO partner in ICT-Emissions. Centro Studi sui Sistemi di Trasporto (CSST) since 1st January 2011 is a Branch of IVECO. Before of that it was a company belonging to FIAT Group that has operated in the field of transport and traffic studies for forty years. CSST will provide a key contribution to tasks related to traffic monitoring and control.

**Agenzia Roma Servizi per la Mobilità** was founded on 1 January 2010. RSM (Rome Mobility Services Agency) is fully owned and directed by the Municipality of Rome (Roma Capitale) and its mission is to give support to the Mobility Department in the exploitation of its policies. RSM will provide data to the project in order to build the integrated methodology. Also, RSM will facilitate the application of the ICT model in real driving situations in Roma, for validation.





**Madrid-Calle 30.** The city of Madrid operates the Madrid inner orbital motorway through the public body Madrid-Calle 30. It currently manages the operation, conservation and maintenance of the distribution ring “Calle 30” as well as the surrounding infrastructures such as links, bridges, parks and open spaces included in the ring. Madrid-Calle 30 will have an active role in task 2.4 providing traffic data, driving patterns information and network characteristics of the City of Madrid. It will also provide suitable testing areas with and without interventions in order to monitor real-world traffic data. Besides data providing and study cases testing, Madrid City will assess the use and the validity of the model outputs from the point of view of local authorities.

**Joint Research Centre (JRC) – Institute for Environment and Transport (IET).** The JRC is a Directorate of the European Commission. The mission of IET is to provide support to Community policies and technology innovation to foster sustainable and efficient transport in Europe. IET will mainly contribute by providing know-how and personnel resources on aspects of monitoring and modelling traffic and related emissions.

