



Assessing the impact of ICT on road transport emissions

# Newsletter

## Results of the European Commission Concertation Workshop, April 30th 2014 in Brussels

The European Commission and iMobility Forum organised a Concertation Workshop on April 30th in Brussels with the aim to exchange on the state-of-the-art, create synergies among on-going projects working on ICT emissions modelling and multimodal optimisation modelling, and identify research questions that yet need to be answered by the European research framework programme Horizon 2020.

ICT-Emissions project was invited to attend the workshop together with the following European projects in presenting their latest achievements: AMITRAN, SUPERHUB, MOBIS, MOBINET, TEAM, EcoDriver, e-COMPASS, COLOMBO, MODUM, REDUCTION, PEACOX, GETSERVICE, DECOMOBIL, CARBOTRAF, SIMPLI-CITY.

Prof. Zissis Samaras (Aristotele University of Thessaloniki) attended the parallel session on "ICT Emission Modelling" moderated by Mrs. Irmgard Heiber (European Commission, DG CONNECT), with a brief presentation answering the three questions raised by the organisers in advance: a) Project objectives; b) What is the starting point of modelling and further developments; c) Problems, highlights, synergies with other projects.

The ICT-Emissions project strives to give answers to questions such as:

- How ICT affects the driving pattern of single vehicles and how the average driver's behaviour is affected?
- How does the technology of different vehicles respond to the modified driving pattern, what shifts are induced by an ICT measure at fleet level?
- How can micro transport models like AIMSUN or VISSIM take into account eco-driving?

Prof. Samaras highlighted how much micro- and macro scale model integration, both for transport and for emissions/fuel consumption, is a challenge faced by the project.

Considering the micro- and macro modelling in an integrated manner is essential to assess the impacts of ICT measures for the entire road network or for a city district. This calls not only for interfaces between models, the research in ICT-Emissions lead also to modifications of existing transport- and emission models. The project invests significant efforts into these modifications and their proper integration.

Key to the success are extensive validation exercises based on city experiments in Turin, Madrid and Rome with floating cars and on monitoring the real emission behaviour of some 30 cars in the laboratory. ICT-Emissions enables also an outlook into the future by integrating 15 advanced vehicle types (e.g. hybrids) into the micro scale emission model.

Prof. Samaras also tried to answer the question: How well does the validation come out for different types of ICT actions? "In order to validate a model on a specific vehicle, it is necessary to know a lot about the vehicle

**June 2014  
Newsletter #5**

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**Project coordinator:**  
Prof. Zissis Samaras

Laboratory of Applied  
Thermodynamics  
Dept of Mechanical  
Engineering  
Aristotle University  
54124 Thessaloniki,  
Greece

E-mail:  
[zisis@auth.gr](mailto:zisis@auth.gr)

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characteristics and performance." He continued: "Using a generic model for a vehicle class (like PHEM- Passenger Car and Heavy Duty Emission Model) can give a large margin of error (+/- 10%). You also need knowledge of meteorological conditions, e.g. if there is light rain there could be slippage. With very good data, accuracy could improve to +/-2%."

ICT-Emissions is using existing commercial models instead of developing new ones. The interfaces and the changes to these models will be documented and will be publicly available after the project.

A **project comparison matrix** was produced as a final outcome of the Concertation Workshop. The table gives an overview on project objectives and modelling techniques; the scale of modelling or scaling up; type and level of validation; challenges and highlights; and synergies with other projects.

This matrix revealed that ICT-Emissions is the only project that undertakes significant validation efforts with real-life experiments.

The concertation came up with a set of **recommendations**. The most important ones from ICT-Emissions viewpoint are:

- Harmonisation of CO2 emission methodologies and methods to enable that projects deliver comparable results.
- Establishment of a centralised database to make the results generated by projects available in a harmonised and comparable way.
- Enhance methodologies to buses, heavy goods vehicles and other transport modes, this requires further research.

#### **Resources:**

- The ICT-Emissions presentation is available for download [here](#).
- The project matrix comparison can be found [here](#).

For more information and to see the other presentations, please visit the event [website](#).

### **Three new project deliverables available for download**

ICT-Emissions has published the following project deliverables:

- Deliverable 3.1: Vehicle energy/emission simulator for conventional and advanced passenger cars
- Deliverable 5.1: Case studies definition
- Deliverable 6.1: Evaluation Plan

#### **Deliverable 3.1: Vehicle energy/emission simulator for conventional and advanced passenger cars**

The report describes the CRUISE and COPERT software capabilities in general and gives an overview of the vehicle models generated in the course of the project. These tools are used to simulate vehicle energy and emissions.

#### **Deliverable 5.1: Case studies definition**

The document describes the Turin and Madrid case studies. A detailed technical description is followed by an introduction to the expected process and software which is being used to build the emission models. In order to test the functionality of the platform under diverse environments, different modelling software was used in each city. Turin: MT Model and AIMSUM for traffic macro and micro simulation and COPERT and CRUISE for emissions. Madrid: VISUM and VISSIM for traffic macro and micro simulation and COPERT and CRUISE for emissions.

### Deliverable 6.1: Evaluation Plan

The document describes the evaluation plan for applying the ICT-Emissions road transport impact assessment methodology. Three chapters provide an overview of the potential users and their needs, different ITS measures currently in use, and the ICT methodology and tools. The Assessment Framework introduces the scope of the exercise and objectives, use of indexes as methods of assessment, a description of each index used to assess each objective and the expected simulation plan. The closing chapter exemplifies how to apply the evaluation methodology to a real case: the Urban Traffic Control in Turin.

Deliverables are free to download, please visit the [project website](#).

### Call for cities: Join the ICT-Emissions exploitation group

ICT-Emissions is looking for **new cities to join the exploitation group**.

The project offers the possibility to apply its integrated methodology to evaluate the impact of ICT-related measures on mobility, vehicle energy consumption and CO2 emissions of vehicle fleets at the local scale. This exercise will help validate the ICT-Emissions methodology with real world data and promote the wider take-up of the most appropriate ICT/ITS measures in cities.

We are especially looking for:

- Existing case studies where ICT/ITS measures have been implemented, including the analyses of traffic and driving profiles before and after the implementation of ITS measures.
- Existing before-after simulation studies made with AIMSUN traffic simulator.

**Cities that have already joined are:** Rome and Turin (Italy), Madrid (Spain), Rotterdam (the Netherlands), Zürich (Switzerland).

The exploitation group counts among its members **stakeholders from the automotive industry, OEMs, ITS and ICT providers**. These are: IVECO, Toyota Motor Europe, Bosch, Magneti Marelli, Centro Ricerche Fiat (CRF), AIMSUN/TSS, Nokia, AVL, Berner&Mattner Systemtechnik, PTV.

Three **research centres**: LAT Aristoteles University, TRANSyT - Universidad Politecnica de Madrid, the European Joint Research Center.

ICT-Emissions will hold its 4th Exploitation Group workshop after the summer break.

For more information, please visit the project website at <http://www.ict-emissions.eu/join-the-exploitation-group/>

To join the exploitation group, please contact [fboschetti@polisnetwork.eu](mailto:fboschetti@polisnetwork.eu).

### Three papers on ICT-Emissions presented at the Transport Research Arena (TRA 2014) are now available online

The following three papers presented at the last Transport Research Arena 2014 are now available for download on the project website:

**"ICT measures to reduce CO2 emissions in metropolitan areas. The case study of Madrid"**

*Alvaro Garcia-Castro , Andres Monzon, Cristina Valdes, Transport Research Centre, TRANSyT, Universidad Politecnica de Madrid*

## "ICT-emissions methodology for assessing ITS and ICT solutions"

*Silvana Toffolo and Eugenio Morello (IVECO), Zissis Samaras and Leonidas Ntziachristos (Aristotle University of Thessaloniki), Vock Christian (AVL List), Werner Maier (Berner & Mattner Systemtechnik), Alvaro Garcia-Castro (TRANSyT, Universidad Politecnica de Madrid)*

## "Traffic models enhancements for properly assess environmental impacts of ITS/ICT systems: generalities and eco-driving example"

*Eugenio Morello, Silvana Toffolo, Giorgio Magra (IVECO)*

The Transport Research Arena (TRA 2014) took place on 14-17 April 2014 in Paris-La Défense (France).

To download the papers, please visit the [project website](#).

## Motor Vehicle Emissions Control Workshop, 25-27 June in Hong Kong

Leonidas Ntziachristos (Aristotle University of Thessaloniki) will present ICT-Emissions and recent developments in vehicle regulations and emission modelling in Europe at the upcoming Motor Vehicle Emissions Control Workshop 2014 (MoVE 2014), at the Hong Kong Polytechnic University, 25-27 June 2014.

The event program can be found at:

[http://www.cilt.org.hk/webadmin/img/events/963\\_1.pdf](http://www.cilt.org.hk/webadmin/img/events/963_1.pdf).

## Collaboration with other projects: Amitran final conference, June 16th 2014, at the ITS European Congress in Helsinki

ICT-Emissions has been invited to attend the Amitran final conference in Helsinki on Monday, June 16th, from 09:00 to 14:45 (Eastern European Time), at the venue of the ITS European Congress.

The event will focus on the Amitran project results including the online guidance and knowledge base (with a hands-on demonstration session), as well as the methodologies for scaling up local results to national or European levels.

The model types, validation and demonstration of the methodology with real use cases will be presented, along with topics concerning costs and benefits, and a discussion on maintaining and promoting the Amitran outputs following the end of the project.

Please visit the Amitran project website for more details and a link to the registration page: [www.amitran.eu/news-and-events/news/amitran-final-conference-in-helsinki](http://www.amitran.eu/news-and-events/news/amitran-final-conference-in-helsinki).

## Upcoming events

- [ITS European Congress](#), 14-17 June 2014, Helsinki
- [European Sustainable Energy Week](#), 23-27 June 2014, Brussels and across Europe
- [ITS World Congress](#), 7-11 September 2014, Detroit (U.S.)
- [2014 Polis Annual Conference](#), 26-27 November 2014, Madrid

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