ICTR 2017

Sessions' Minutes

Main Points discussed & pointed out

Plenary – Opening Ceremony

Dr. E. Bekiaris and all local stakeholders welcomed the ICTR08 in the City of Thessaloniki, which attracted more participants than ever - and wished success. All of them stressed the importance of research for the change of quality of life of all of us.

The main points mentioned are the following:

- **Urban Mobility moves towards City-as-a-Service (CaaS)** and Thessaloniki is a good case study (i.e. the railway upgrade, the new Kastelli airport in Crete, the anticipated maritime urban transport for the Metropolitan Area of Thessaloniki, and the driverless Metro of Thessaloniki, which is the largest engineering project ever done in Thessaloniki (~1,5billion€), the basic line of which will be operational in 2020, etc.).

- **Transport can contribute considerably to Greece economic growth** (4,4% contribution to national GDP). Still, public and private investment in transport in 2016 was only 15% (whilst in Europe, it reached 70%).
  - **Most problematic factors affecting entrepreneurship** → policy & governmental instability, taxation, bureaucracy, problematic access to financing.
  - **Favourable factors** → innovation capacity, high educational level of work force, inflation.
  - **Greece ranks 12th** (out of 28 members) in terms of budget share in EU research. CERTH and FORTH are the 2 top R&D institutions in Greece.

- Integrated and holistic **Strategic plan of Transport** by the Greek Ministry of Transport, embedding decision making, traffic modelling and cost benefit tools and data flow protocols to interface external services.

Plenary – Opening Ceremony

- Challenges lie in **innovative resistant materials** tailored to all apps, **energy and environmental footprint reduction, batteries, nanostructures**, **seamless and user oriented services, shift from system oriented to cloud based oriented management, open architectures and efficient data handling.**
- **Drivers of revolutionary change** → driverless electric cars, cooperative transport systems and infrastructures, sustainable mobility &MaaS.
- By **2050,** more than **50% of the vehicles with battery and hydrogen**, **fewer cars** in the roads, **few parking spaces** by the roads, **cleaner energy sources** (even the more conventional ones), **reduction of emissions by 50%.**
- Social benefits lie in **reduction of emissions**, **protection of vulnerable populations exposed to adverse conditions**, **improvement of everyday mobility**, **attraction of capital and job creation**.
- H2020 is the key funding instrument for transport. Future trends and calls include **automation, electrification, batteries, cities-led sustainable urban mobility solutions**.
- **Mobility of the future has to be safe, secure, seamless and fair** (i.e. toll payment has to be worth paying for).

"It is all about connectivity. Researchers are in a privileged position. Work more, with others. This is an exciting and satisfying journey."
Mr. D. Theologitis

"We are in a period of revolutionary change in transport. It is an exciting time to be a Transport Researcher!"
Prof. G. Giannopoulos

Session I.A: Maritime Transport

- The presentations highlighted the **multifaceted nature of maritime transport**, covering aspects related to new technologies, environment, safety, economics and employment.
- A key point that was directly or indirectly noted, cutting across all presentations, is the **dynamic and rapidly changing environment in the ports and maritime transport sector.** This leads to requirements for:
  - more efficient vessels,
  - adjustments to meet the economic challenges,
  - increasing attention to health and safety issues,
  - new training requirements;
  - collaboration among stakeholders in the sector.

Session I.B: Air Transport and Logistics

The main points mentioned are the following:

- The seaplanes could boost the tourism industry and remove the isolation of many Greek islands if there is a good promoting strategy and operational plan. For this reason the "legal" obstacles that stopped their development since 2008 should be soon overcome.
- Artificial Neutral Network can give very good forecast of air transport demand events, with the use of repeated feed, which offer a dynamic forecast.
- Econometric models can be used to support decision makers to invest in airport infrastructures in order to ensure sustained reduction of air connectivity, generating multiplier effects across economy.
- Users are eager to receive back any potential monetary investment they make for purchasing cooperative freight transport services and are in general skeptical whether their investment on these services will finally deliver the cost savings and efficiency described.
- There is a high potential in exploiting the use of ITS data and methodologies for transport planning as well as data coming from cellular phones; through bog data analysis and crowdsourcing.

Session II.A: Transport Economics

The main points mentioned are the following:

- Challenges of the penetration of **autonomous and connected vehicles** to the road traffic in the near future
- Factors affecting the **cost performance** of transport **infrastructure** projects
- Applicability of **Price of Anarchy and the Braess' paradox** in real urban road networks for determining **urban traffic management strategies**
- Estimation of **societal cost** of travel in urban road systems
- **Policy reforms** promoted and adopted by the EU, regarding the **Local Public Transport industry**

Session II.B: Rail Transport

The main points mentioned are the following:

- The high significance of **dwell times** in tramway operation, affecting even 25-30% of the total run time
- The variation of **tramway superstructure** costs, according to construction method, type of covering materials and traffic separation method used
- The existence of different **energy consumption and pollutant emissions models** for road and rail freight transport and the required data input
  - Fuel savings in **intermodal** options in freight transport
- The risks and the relevant mitigation measures for **railway systems operation under special weather conditions**

Session IV.A: Clean Transport & the Environment

The main points mentioned are the following:

- Clean technologies are expected to have **the most considerable environmental impact, when applied in light and heavy vehicles**, despite the fact that this will be more challenging , due to their significant market share (i.e. 98% of inland transport in Greece is performed by trucks).

- All **environmental friendly systems for driver support**, intervening or not in the vehicle, have to take into account **all possible data sources**: the vehicle, the driver (i.e. driving profile), the traffic and environmental conditions and, **especially for EVs, the road topology specificities.**

- **Need for awareness – i.e., although Thessaloniki (in Greece) is promoting electromobility for taxis and other means/modes of transport**, 83% of taxi drivers are not really aware of electromobility.

- Cities and regions are in need of a **context-specific incentive policy - "Any case, a unique case".**

- **Huge investment required on infrastructure end** (especially for the most promising systems, i.e. inductive charging) is the key challenge.

- Degree of deployment influences the **well to wheel ratios**.

- Legal frameworks, eco-corridors and fragmentation will make the difference for environmental protection. We lose "**time, human resources and money**".

Session IV.B: Traffic Management Operations

The main points mentioned are the following:

- **Automated Systems** are being designed, however there are still several questions that need to be answered.
- **Traffic simulation models**, which need further improvement, are being used for system evaluation and design, together with more recent applications, including **data driven methods**.
- Advanced traffic management strategies were considered, including:
  - Integrated motorway operations using **variable speed limits** and **ramp metering**,
  - **Traffic responsive control** plans for **isolated junctions, coordinated** and optimisation methods.
  - **Parking management** optimisation algorithms.

Session V.A: Urban Mobility & MaaS

The main points mentioned are the following:

- **Great enthusiasm for MaaS Europewide**, including Greece (i.e. in Thessaloniki, there are already some sustainable mobility services operating; the metro will certainly give a boost to such solutions).
- **Young travelers and low income population** reveal a significantly **higher willingness to use MaaS** and this is considered to be independent to the economic crisis.
- **Awareness** is crucial for MaaS penetration.
- Each city/ region/ country is a different case and market with different operational requirements. As such, **the optimum combination of sustainable mobility solutions is context-specific.**
- More effort has to be put in **traffic context classification**.
- **Viable and more profitable Business Models are required for enabling the penetration of demand-responsive transport schemes** – tools and intention is there already.
- Similarly, novel Business Models are required for MaaS penetration and growth. **Who is going to play the role of MaaS aggregator?** Roaming Business Models could serve as a paradigm.
- In a MaaS world, we will be able to travel:
  - **Cheaper** (with at least 20% less money)
  - More **comfortable** (at least 10 times faster)
  - Respecting the **environment** (with at least 75% reduction in CO_2 and NO_x emissions due to modal shift from ownership to usership)

Session V.B: Education, Training & Social Media

The main points discussed were:

- **Anticipatory design and integration of human factors** is mandatory for forgiving and self-explanatory roads.
- **Application of an ICLV model** in the identification of users with pre-environmental attributes can facilitate the on-demand incentivization process.
- **Utilisation of Socia Media and Crowdfunding platforms** for the selection of mobility innovative ideas and indicators.
- **Practical teaching enhanced by digital technologies** may improve the effectiveness of existing and new traffic education programmes for underage pedestrians.
- **Development of personalized VR training modules** for young drivers may be adopted by and used in new and disruptive transportation schemes.

Session VI.A: Automation in Road Transport

The main points mentioned are the following:

- **Electrification and Automation** are synergies under sharing systems.

- New relevant documents released:
  - ERTRAC new **Automated Driving Roadmap 2017, June 2017**
  - ERTRAC & EPoSS new **Roadmap Electrification of Road Transport, June 2017**
  - **EPoSS Strategic Research Agenda 2017**: Transport & Mobility Chapter , Milestone 2030: Converging all Modes of Transport (i.e. flying cars)

- The market of electric cars was quite optimistic and ended to a quite pessimistic evolution -> **right policy support to reach 70% of electrification** in automobiles.

- **Future connectivity** will be based on IoT, be fast and safe (**5G evolution**) and offer sustainable business cases for local actors and users.

- The **joy and pride in being able to control** – proving ability and independence – what will it be like in the future? Will the technology reach the one that needs it the most?

Session VI.B: Young Researchers Presentations

- Issues that were raised and analyzed were:
  - Maritime issues, such as port performance and maritime clusters
  - Road safety
  - Social media for transportation studies
  - Electric cars and automated driving
  - Accessibility issues
  - Management policies
  - Management of traffic incidents
  - Carpooling and ridesharing services and applications
  - Mobility preferences and measures

- The prizes that were finally given within this Session are:
  1. "**Dimitrios Tsampoulas" Award** (for best graduate or Master degree student paper) was awarded to **Mr. Michael Pouliasis** (for the paper: "Social media data mining at mobility and transport domain")
  2. "**Matthew Karlaftis" Award** (for best PhD student paper) was awarded to **Mr. Emmanouil Chaniotakis** (for the paper "Inferance of activities from Social Media data for transportation studies")

Session VII.A: Road Safety

The main points mentioned are the following:

- Safe-system/ Vision Zero constitutes a substantial shift from behaviour-modification to protection-oriented strategies.
- Safetycube is the first integrated road safety support system developed in Europe, which offers scientific evidence of risks (not only measures and not only on infrastructures) and sets links between risks factors and measures.
- Need for improving safety and mobility for the elderly pedestrians.
- Low-cost innovative implementation towards self-explaining and forgiving C-ITS.
- Real-time monitoring of traveler's psychological stress.
- Apply road safety inspection on regional roads.
- Integrated accident prevention approach in road transport, construction and mining.
- The need for Mobility should not outreach Road Safety!

Session VII.B: Resilience and Security issues

The main points mentioned are the following:

- Critical infrastructure resilience management at different levels (Network, Multimodality, National, Trans-national).
- Guidelines and tools for CI resilience management and infrastructure managers decision support.
- Environmental factors should be taken into account in constructing transportation infrastructure, not only in terms of protection of human well-being, but also for the wildlife originally living in the area.
- Special attention to the transportation of dangerous goods, both in terms of appropriate routing and of protecting measures on the infrastructure, e.g. fire proof boards for tunnel surfaces.

Session VIII.A: Transport Policies

The main points mentioned are the following:

- **Employability issues** concerning the future transportation system of Europe, affected by the sector's emerging and future trends.
- Need and measures of **green transportation**:
  - Development of a green transport policy tool.
- Advantages, perspectives and risks concerning the use of **Autonomous Cars.**
- **Evacuation measures** and procedures in case of emergency in highways.
- **Promotion and support of young researchers** through the TRA Vision competitions.

Session VIII.B: Regional Aspects

The main points mentioned were the following:

- Regional aspects with a focus on urban mobility and how this can be improved, through various tools, measures, studies and Bus Rapid Transit Systems.
- The SOLUTIONS project identified that city logistics were missing from the planning agendas in the Mediterranean countries while common urban mobility was the main priority.
- The economic crisis has affected sustainable urban transport in Greece by increasing bicycle usage and reducing private car as well as taxi usage.
- A 3 tier assessment audit framework for street design, that can accommodate pedestrians on the roads, was presented.
- Preliminary results from the SaferAfrica project were presented, identifying per country the current status in terms of basic road safety aspects.
- Bus Rapid Transit System can benefit professional workers as well as improve access to city centre and road conditions within neighbourhoods for the city of Dar es Salaam in Tansania.

Session IX: Plenary – Closing Ceremony

Closing Remarks of the 8th ICTR:

- Road Transport
  - Electrification and Automation is the future of Road Transport
- Maritime Transport
  - The ship of the future will be electric & autonomous.
- Air Transport
  - Seaplanes viable in touristic destinations (i.e.75 euros WTP Athens to Creta), but still an issue for non-touristic islands.
- Rail Transport
  - Combined road & rail freight transport can lead up to 40% fuel reduction and much cheaper transport