Air Pollution and Transport

Possibilities for future emission reductions by using Advanced Driver Assistance Systems

By Edoardo Gianotti,
Secretariat staff member of WP.29
• Secretary-General Ban Ki-Moon has put sustainable mobility high on the UN agenda.
UNECE and Intelligent Transport Systems (ITS)

• UNECE’s vision on ITS:
  • Bring ITS to the policy makers agenda
  • Filling the gaps and eliminate obstacles to the broader use of ITS, because
  • UNECE believes that ITS are more than just technology, but a new culture
Better Environment - ITS improve energy efficiency

- Data Center
- Helpdesk Pilot
- Enhanced Data Center
- 24x7 helpdesk
- Metropolitan transport monitoring and control system

- Vehicle Tracking Systems
- Real Time Traffic Control & adaptive signals
- Real-Time PIS
- Fare Integration thru CMC
- Integrated Information across Modes
- Cashless Toll Collection
- Fare Integration thru UID
- Intelligent Traffic Management Systems
- Predictive Traffic Management
- Advanced vehicle safety systems
- Seamless Intelligent Transportation System
- High Level Analytics

- Management Efficiency
- Better Asset utilization
- Increase in PT usage
- Passenger Satisfaction
- Better Management
- Multi-Modal Transport
- Passenger Satisfaction
- Reduced Congestions
- Predictability
- Reduced Emissions and accidents

T - Date of Policy Approval
T + 5 Years
T + 10 Years
T + 15 Years
T + 20 Years
UNECE strategy package on ITS

- Background document
- Strategic note
- Road Map
UNECE Road Map on ITS

The UNECE answer to the findings of its research, its strategic note:

The UNECE Road Map: 20 global actions to promote the use of ITS
UNECE’s commitment for change

- Global Partner for addressing inland transport issues
- Global forum
- Promotion of governance
- Capacity building
- Best practice and platform for innovation
- Leapfrogging

UNECE’s commitment for change at a glance:

1. Reaching a common definition on ITS.
2. Harmonizing policies.
3. Forging International cooperation.
4. Facilitating interoperability and the ITS architecture.
5. Ensuring data security.
6. Scaling up the work on ITS in all Working Parties of the UNECE Inland Transport Committee (ITC).
7. Promoting vehicle-to-infrastructure communication.
8. Promoting vehicle-to-vehicle communication.
10. Addressing the liability concerns.
11. Harmonizing Variable Message Signs.
13. Integrating with Rail Transport.
15. Enhancing the modal integrator’s role of ITS.
16. Developing Cost-benefit assessment methodologies.
17. Contributing to climate change mitigation.
18. Launching analytical work.
19. Contributing to capacity building, education and training.
Different definitions for ITS

- Applying ICT to transport (EU).
- To add ITC technology to transport infrastructure and vehicles (Wikipedia).
- A system that integrates information and communication technology with transport infrastructure, vehicles and the user (ERTICO).
- A combination of Information Technology and telecommunications, allowing the provision of on-line information in all areas of public and private administration (ITS United Kingdom).
- Utilizes synergistic technologies and systems engineering concepts to develop and improve transportation systems (Intelligent Transportation Systems Society).
- Includes telematics and all types of communications in vehicles, between vehicles, and between vehicles and fixed locations / Not restricted to Road Transport (The European Telecommunications Standards Institute - ETSI).
- A system that capitalizes on leading-edge IT to support the comfortable and efficient transportation of people and goods. Its aim is to achieve a quantum leap (safety, efficiency, comfort) (ITS Japan).
- The application of advanced and emerging technologies (computers, sensors, control, communications, and electronic devices) in transportation to save lives, time, money, energy and the environment (ITS Canada).
The Road Map - Status of implementation

Action 2 - Harmonizing policies at global

- WP.29 vehicle Regulations
- Advanced Driver Assistance Systems (ADAS)
Environmental Protection – WP.29 activities

GRPE Activities on pollution and energy:
- Battery Electrical Vehicles (EV): 1996
- Measurement procedure for CO$_2$ emissions (Fuel consumption): 1997
- Hybrid/Electric Vehicles (HEV): 2004
- Market Fuel Quality (FQ): 2010

Other GRs activities on pollution and energy savings:
- Regenerative braking systems: 2008
- LED lighting devices: 2010
- Weight reduction (e.g. plastic glazing)
- Adaptive front lighting system (AFS): 2011

Intelligent Vehicle Systems (e.g. advanced driver assistance systems (ADAS))
SO FAR MORE FOCUSED ON SAFETY
The case of Adaptive Front lighting System (AFS): 2011

No Opposing Traffic
Full Main Beam Operated

Dipped Beam operated when opposing or preceding vehicles are present.

Frequently drivers operate the dipped or full main beam not in a responsive way affecting road safety and fuel consumption.

2 July 2014
The case of Adaptive Front lighting System (AFS): 2011
Future activities of WP.29 on ADAS

The case of Platooning application

GRRF presentation 2014: «Companion project» (Sweden)

- Potential benefit of energy savings in future applications up to -22%
- 1st results achieved of energy savings up to -7% (depending on safety distances)

Lowered fuel-consumption

Increased safety

Higher road capacity

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Platooning
Future activities of WP.29 on autonomous vehicles

- Harmonizing of a classification system of automation in vehicles and the related definitions at an international level

- WP.29 agreed to refocus its activities to reflect the rapid technological development