European Conference

'Transport safety: societal challenges, research solutions'
Genova, 4-5 December 2014

An event of the Italian Presidency of the EU
co-organised by the European Commission and
the Italian Ministry of Education, Universities and Research

Transport professionals, researchers, stakeholders and policy makers involved in all modes of transport met in Genova, Italy, a on 4-5 December 2014 to assess the future needs for transport safety research and identify priorities for activities in Horizon 2020 and beyond. The Conference participants adopted the following final statement:

Draft final statement

The European Commission **White Paper on Transport**[1] sets ambitious safety objectives within a coherent policy framework: moving close to zero fatalities in road transport by 2050, halving road casualties by 2020 and ensuring that the EU remains a world leader in the safety of all modes of transport.

In order to help achieve these objectives, the EU Framework Programme for Research and Innovation (2014-2020), **Horizon 2020**[2], aims at 'reducing accident rates, fatalities and casualties' in each mode and in the whole transport system by furthering knowledge and awareness, and by developing technologies, products, services and solutions that reconcile safety with efficiency and user-friendliness.

The Horizon 2020 specific programme indicates that *'this will be achieved by addressing aspects inherent to the organisation, management and monitoring of performance and risk of transport systems and by focusing on the design, manufacturing and operations of aircraft, vehicles, vessels, infrastructures and terminals. The focus will be on passive and active safety, preventive safety and enhanced automation and training processes to reduce the risk and impact of human errors. […] Activities will also focus on improving the safety of all road users, especially those at greatest risk, particularly in urban areas'*

In the context of rapid technological progress and changes in behaviour and demand patterns, it is important to identify evolving needs and to define a clear European Agenda for transport safety Research and Innovation, which should be driven by consistency with the policy objectives and a strong focus on the future deployment of results.

The Research and Innovation agenda should, in particular, take into account the following considerations:

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[1] Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system, COM (2011) 144 final.
[2] Proposal for a Council Decision establishing the Specific Programme implementing Horizon 2020, COM/2011/0811

1. A multi-modal approach needs to be adopted regarding the collection of accident data , given that the causes of accidents and incidents can be similar for the four transport modes - road, rail, waterborne and aviation - and that there is a great potential benefit in sharing best practice between transport modes. Research should help define a common methodology and a European standard for data collection, sharing, processing and analysis, including for road safety, to form the basis for sound legislation.

2. Since human factors are one of the major causes of incidents, specific research in the field of distraction, stress and fatigue should be supported, with the aim of implementing appropriate mitigation measures and technologies, and developing awareness about the factors to be kept under control.

3. Increasing support for the Human Machine Interface and automation in all transport modes is expected to reduce the risk of incidents and limit the effects of human error. A roadmap to automation should be defined to determine which technologies should be implemented in priority order, taking into account the safety benefits of each system and their combined effect on both the fleet and infrastructure.

4. At the same time, the introduction of these technologies should take into consideration possible unintended impacts, such as an over-reliance on automated devices, distraction and cognitive overload, together with the need for adequate levels of cyber-security, for proper redundancy to cope with possible failures, and for effective communication, education and training to ensure social acceptance.

5. A harmonised management of safety-relevant traffic data is necessary, including validation of sources, ownership of data, privacy and liability issues. Research is needed to achieve an integrated approach to data governance, essential to ensure a seamless and safer transport system.

6. Due consideration should be taken of the safety impact of infrastructure design, construction and maintenance and its overall contribution to safety on a modal and cross-modal basis.

7. In prioritising research efforts and in defining a roadmap to implementation, the primary focus should be on those measures that can be deployed in the short-medium term and are most likely to yield rapid safety gains, taking into account the shorter renewal cycles of certain components of the transport system. However, longer term research objectives and disruptive technology breakthroughs should not be neglected.

8. While safety is, and should remain, a paramount objective for each mode and for the transport system as a whole, road safety deserves particular attention, given the disproportionate occurrence of accidents and casualties.

9. Complementing the above, for each of the modes, European Transport safety research and innovation priority actions have also been identified as follows:

Road

- Addressing behavioural changes and adapting education and training of road users to these changes. Safety conditions for Vulnerable Road Users; safe inclusion and accessibility for the elderly. Virtual Human Body Models for safety improvements of vehicle performance.

- Safe transition from driver assistance to automated driving through: advanced Human Machine Interfaces; driver acceptance and adaptation; infrastructure design and equipment; training schemes; regulatory and legal environment.

- Improved traffic data/information handling for real time traffic management and advanced incident detection and rescue systems. Understanding accident causation and counter-measures. Accident evidence and statistical information for policy making, including for the purpose of optimising preventive measures and addressing the burden of injuries.

- Safer road design, road maintenance and advanced traffic management systems.

Rail

- Progressive automation of the Control, Command and Communication systems.
- Improved management of critical interfaces (e.g. at level crossings, stations and work zones).
- Harmonised verification and certification/authorisation of safety management systems, vehicles, etc.
- Intelligent and consistently applied fall-back systems to assure safety during degraded mode, designed into every critical sub-system and component.

Waterborne

- New conceptual designs of vessels and systems and a new approach to emergency response.
- New safety devices and technologies for the evacuation of large passenger ships, for black-out mitigation, for fire proofing and for establishing salvage friendly ships.
- New and improved systems for the surveillance, monitoring and management of maritime transport and other seaborne activities.
- The extension, integration and optimisation of traffic information and communication systems.

Aviation

- Advanced sensing, monitoring and alerting functions, supported by 'big data' system processes, capable of predicting and mitigating technical and operational issues, including weather, traffic and in-cabin hazards.
- New designs, technologies and training processes that support decision making and 'human centred' automation.
- New certification techniques, safety methodologies, organisational principles, and a holistic safety system approach, from design to operations, across all stakeholders and components, including search and rescue and remotely piloted aircraft systems.
- Safety and security must be considered jointly.