

Safe & Integrated Mobility

EXECUTIVE SUMMARY

Overview

EUCAR's members, the European automotive manufacturers, strive for a competitive industry whose products meet the needs of society. European collaborative research & innovation (R&I) supports this strategic objective by enabling cooperation between stakeholders and providing co-funding to mitigate part of the risk inherent in automotive research. In the area of Safe & Integrated Mobility, co-funded research supports the development of technologies and services which meet customer and societal demands whilst fulfilling ever more stringent regulatory standards.

The EUCAR R&I roadmaps define the strategic recommendations of the manufacturers for collaborative R&I, detailing the necessary topics for R&I projects aligned with the strategic objectives. They are a vital and unique contribution, since they represent the outlook of the manufacturers, who themselves have the ultimate responsibility to innovate in bringing the resulting technologies to market.

In Horizon 2020, the programmes on "Smart, Green and Integrated Transport" and "Leadership in Enabling and Industrial Technologies" are of direct relevance to R&I in Safe & Integrated Mobility. The roadmaps for Safe & Integrated Mobility present recommendations for collaborative R&I in five areas: "Safety" and "Transport-Travel Services", "Traffic Efficiency", "Value-Added Customer Services" and "ICT & Telematics".

There is a high level of interconnection between these areas, due to the need to consider the transport system in a holistic manner as a safe, efficient and productive whole. Safety is considered in terms of passive and active safety of the vehicle as well as integrated safety - the integration of all safety elements into the traffic system. An important theme is the increasing automation of the vehicle, whether individual, in platoons or as part of a system, using cooperative systems and effective human-vehicle interfaces to reap the potential benefits in efficiency and safety. The roadmap on Road Automation has been compiled in cooperation with the iMobility Forum.

The expected outcome from these activities is a technology readiness for vehicle, infrastructure and communication technologies that provides an effective holistic platform for further development and eventual industrialisation. The final target is to meet customer, societal and regulatory demands for enhanced safety of vehicles and the transport system as a whole, whilst offering the driver an enhanced experience, faster and more reliable journeys and appropriate travel information integrated into the modern electronic communication system.

The Strategic Framework for Automotive Research & Innovation

EUCAR’s members have analysed in depth the strategic motivation for performing research and innovation (R&I) activities and specifically collaborative R&I, in order to set out a future vision for these activities. The following questions need to be answered: “why is collaborative automotive R&I important”, and “what should policy makers and stakeholders expect to extract gain from EUCAR’s roadmaps and this summary, and how is it related to Horizon 2020”. The motivation and the answers to these questions can be considered in terms of three strategic elements at different levels of detail:

- **The main relevant Strategic Trends:** these set the context for long-term strategy and have been identified by EUCAR’s members as the long-term global driving forces and trends which motivate change and require identification of the key automotive R&I themes.
- **Overall Objectives for automotive R&I:** aligned with the broader policy perspective (aiming at Sustainable Transport and Competitive Industry) and the constituent programmes of Horizon 2020, these include:
 - i. The EU Road Safety Programme 2011-2020 aiming at halving road deaths by 2020;
 - ii. EU vehicle safety regulations;
 - iii. EuroNCAP ratings;
 - iv. The 2011 Transport Policy White Paper and the Urban Mobility Action Plan;
 - v. The Smart Cities and Communities initiative;
 - vi. The Horizon 2020 programmes “Smart, Green and Integrated Transport” and “Leadership in Industrial and Enabling Technologies”.
- **Priority R&I Focus Areas:** these representing the key areas of R&I for the automotive sector, identified by the European automotive manufacturers through their collaborative activities in EUCAR.

These are highlighted and represented graphically in the following chart, which represents this strategic outlook in the domain of Safe & Integrated Mobility:

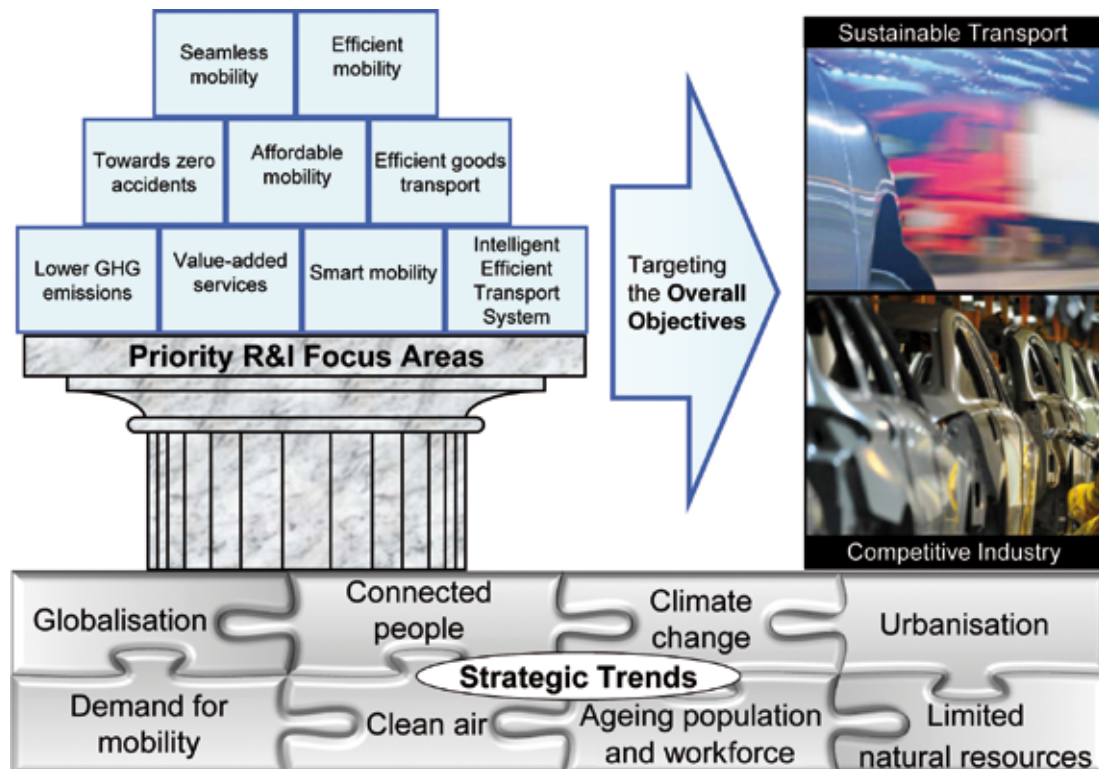


FIGURE 1 Strategic framework for Safe & Integrated Mobility

A number of key R&I priorities in Safe & Integrated Mobility derive from the need to meet societal and industrial challenges, within the global strategic framework of prevailing conditions and trends. These priorities relate to the need to improve safety and efficiency of individual vehicles and road users within a safe and efficient mobility and transport system, providing the technologies, data and services to improve the driving experience and contribute to safety and efficiency.

The EUCAR Strategic Vision for Collaborative R&I

Derived from the strategic framework, the following statements represent the strategic vision of the European automotive manufacturers in the domain of Safe & Integrated Mobility. They are to be considered as an expression of the ambition of the manufacturers in meeting future societal and industrial objectives. They also represent a motivating objective for the definition and performance of research and innovation activities by EUCAR’s members.

The statements include an overall vision statement for Safe & Integrated Mobility and five statements, each representing the strategic vision for part of the domain. This subdivision indicates the breakdown of the Safe & Integrated Mobility domain from the automotive manufacturers’ point of view into four vertical themes “Safety” and “Transport/Travel System”, “Traffic Efficiency” and “Value-Added Customer Services”. For each of these themes, one or more EUCAR R&I roadmaps has been compiled. The horizontal theme “ICT & Telematics” is a key element of the Safe & Integrated Mobility domain which feeds the vertical domains.

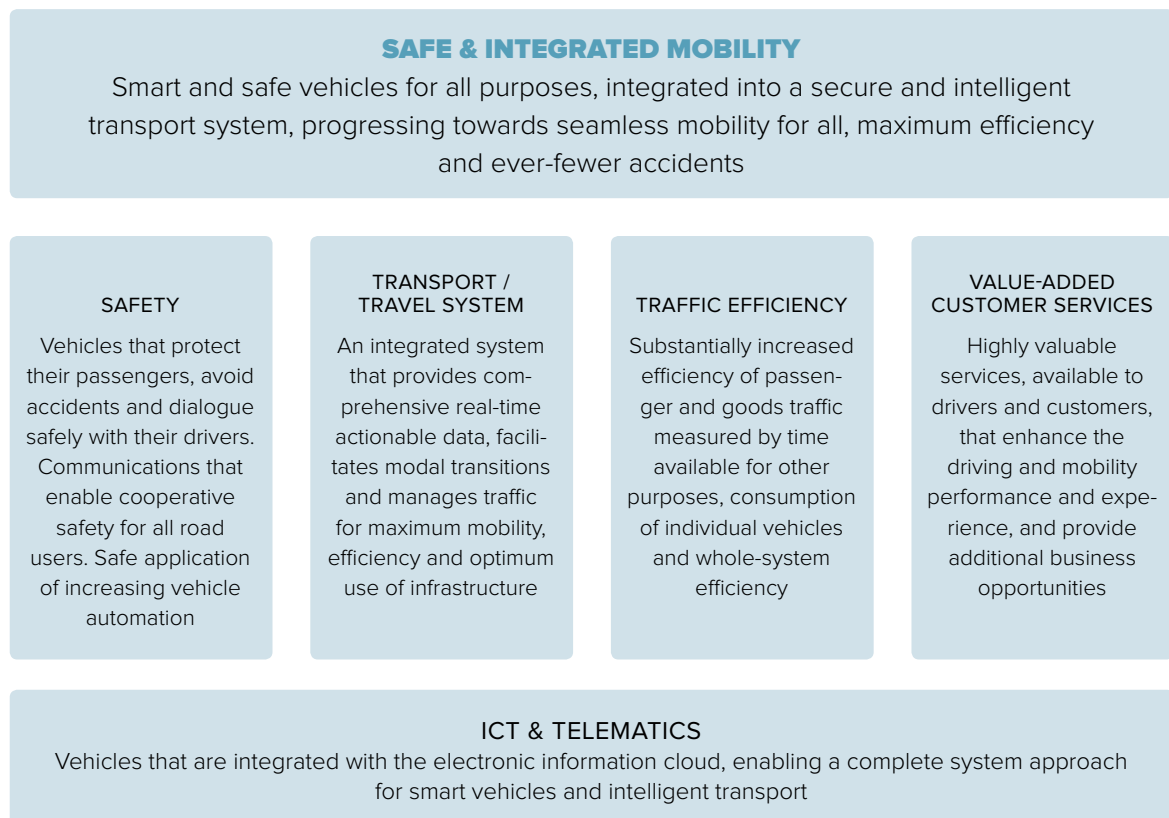


FIGURE 2 EUCAR Strategic Vision for Safe & Integrated Mobility

EUCAR Research & Innovation Roadmaps, Milestone Objectives and Correspondence to Horizon 2020

In order to create a productive link between the automotive manufacturers' strategic vision and their priorities for collaborative research and innovation, milestones have been compiled, representing the objectives to be reached by technology at different levels of readiness.

Milestones and R&I priorities are described in EUCAR's roadmaps. In particular, industrialisation milestones have been compiled, representing the objective for the industrialisation of the technology on the market, derived from the Strategic Vision and relevant indicators.

Industrialisation milestones can be considered as a more detailed expression of elements of the strategic vision and are listed below:

- **Safety:** "Reduction in the number of accidents, fatalities and injuries, contributing to the fulfilment of future EU guidelines, targets and regulations and to meeting increasing customer demands for safe road transport."
- **Transport / Travel System:** "An increase in the effective capacity of the road system(s) enabling projected future increases in traffic volume (projected 38% increase in passenger traffic and 68% in freight traffic by 2050 compared to 2005* with road capacity expected to grow at a minimal rate)."
- **Traffic efficiency:** "A significant decrease in the variability of journey times compared day-to-day."
- **Value added customer services:** "Substantial and growing revenue from services (further metric to be identified)."
- **ICT & Telematics:** "Enabling the fulfilment of future regulatory and standardisation demands on connected vehicles (e.g. eCall) supporting a competitive playing field for the automotive industry."

In the domain of Safe & Integrated Mobility, roadmaps have been compiled which cover the following areas:

1. Active Safety and Driver Assistance 2.0
2. Integrated Safety
3. Passive Safety
4. Automated Vehicles
5. Cooperative Vehicles
6. Driver-Vehicle Dialogues for Safe Driving
7. Driver Vehicle Dialogue for Efficient & Green Driving
8. Driver Vehicle Dialogue for Comfortable, Enjoyable and Informed Driving
9. Cloud-Integrated Vehicles

In this domain, the corresponding elements of the proposed Specific Programme Horizon 2020 have been identified, as well as the relevant public-private partnerships:

EUCAR Strategic Pillar	Horizon 2020 Specific Programme	Proposed Public-Private Partnerships in Horizon 2020
Safe & Integrated Mobility	<p>Smart, Green & Integrated Transport:</p> <p>4.1 Resource efficient transport that respects the environment</p> <p>4.2 Better mobility, less congestion, more safety and security</p> <p>4.3 Global leadership for the European transport industry</p> <p>Leadership in Enabling & Industrial Technologies:</p> <p>1.1 Information and Communication Technologies</p>	<p>Smart Mobility</p> <p>Logistics</p>

FIGURE 3 Potential correspondence to the Specific Programme Horizon 2020 and Public-Private Partnerships

Research and Innovation Roadmaps

The Research and Innovation roadmaps for Safe & Integrated Mobility set out the collaborative technological research and pilot/demonstrator topics and their timing, which are priorities for the automotive manufacturers during the course of Horizon 2020 and beyond, in order to meet the defined strategy and milestones.

The vertical themes of Safe & Integrated Mobility from the strategic vision are presented schematically in the chart below, showing the positioning of the roadmaps. Due to the highly interconnected nature of the Safe & Integrated Mobility domain, the relationships between the domains are shown, with the overlaps and potential synergies between the R&I roadmaps being therefore clearly identified.

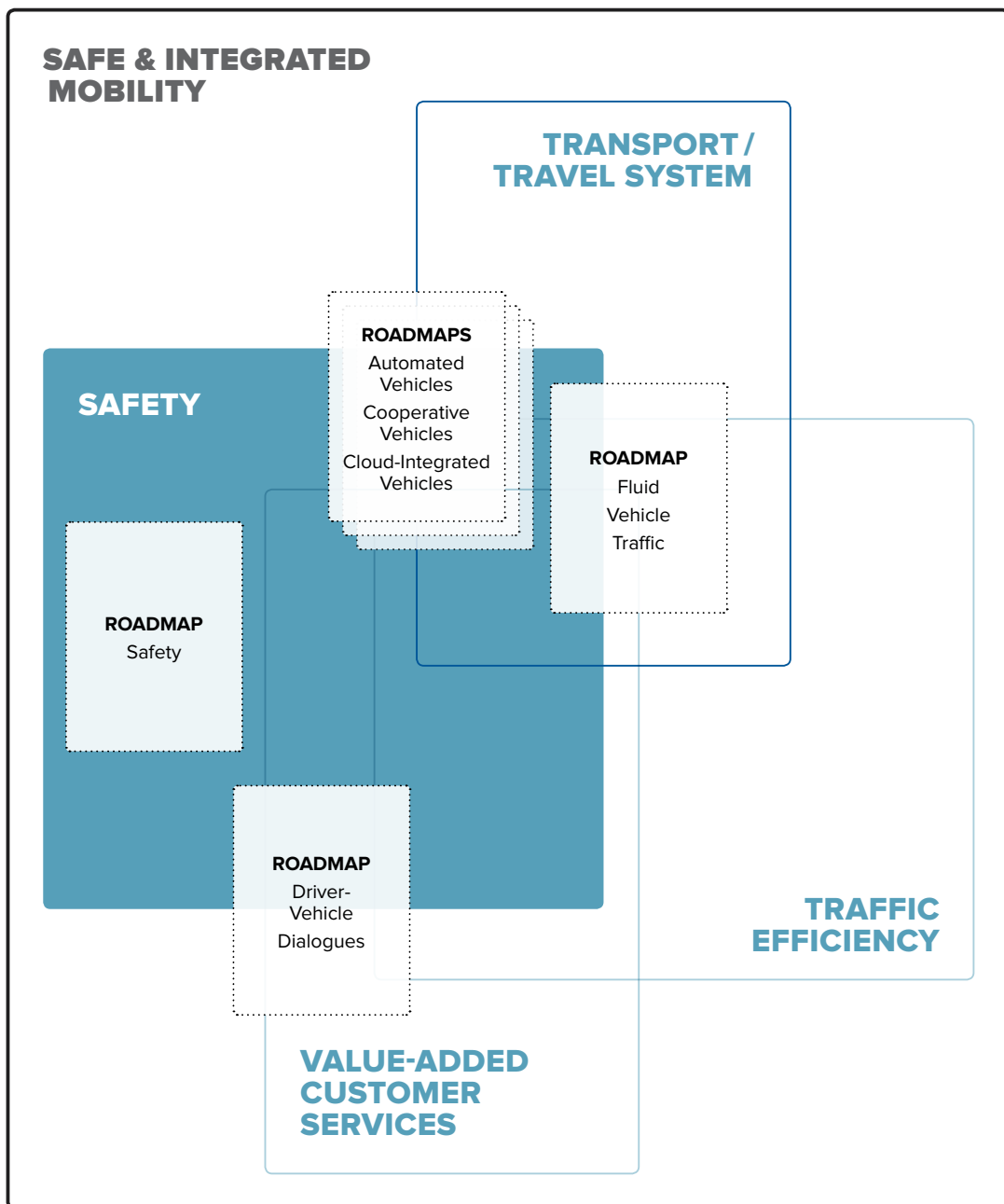


FIGURE 3 Themes in Safe & Integrated Mobility showing relationships and positioning of roadmaps

The following is a list of the R&I topics proposed in each roadmap.

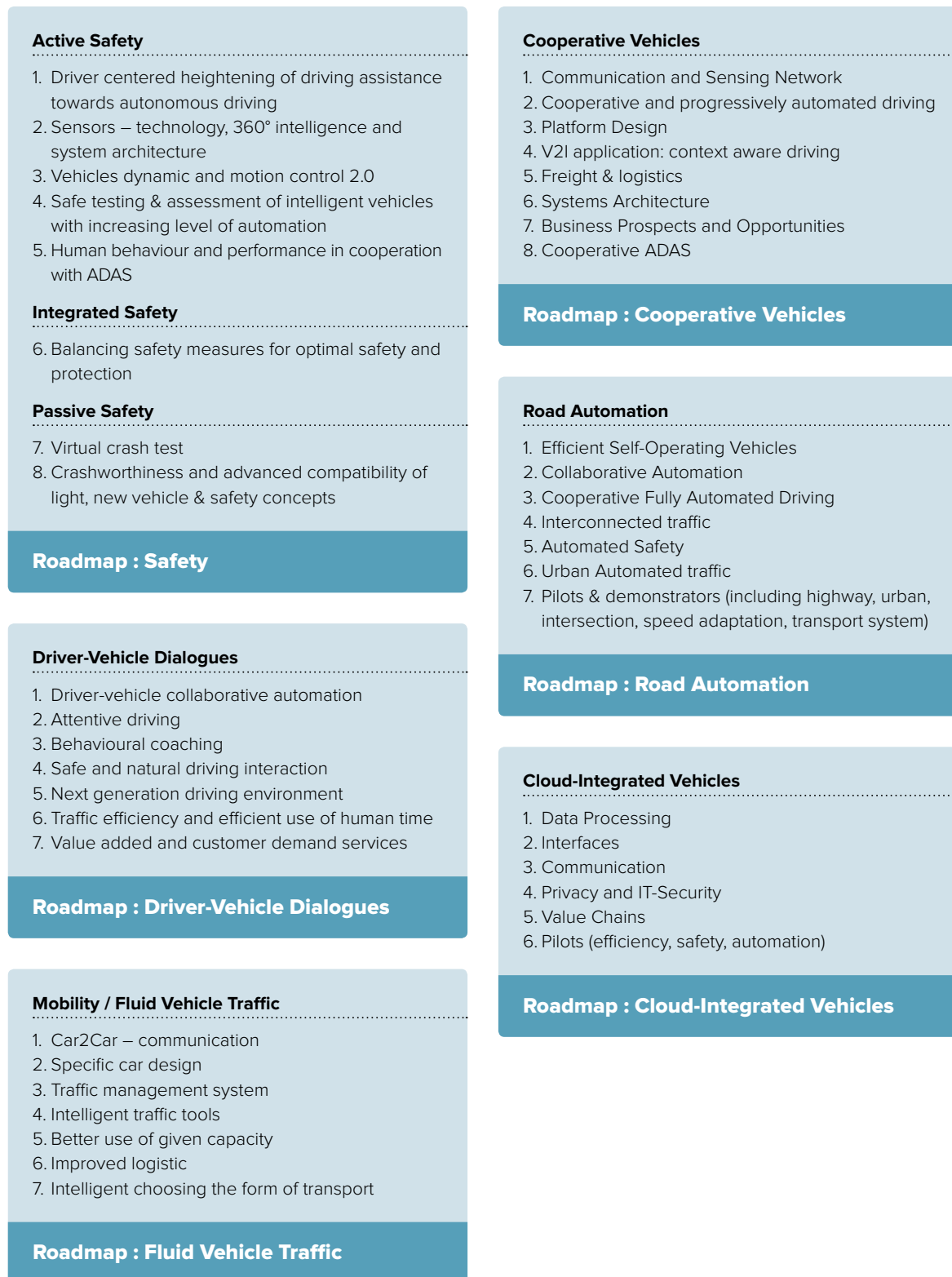


FIGURE 4 R&I priority topics in Safe & Integrated Mobility identified by reference to EUCAR roadmaps

*SEC(2011) 358 final Commission Staff Working Paper Impact Assessment on the White Paper "Roadmap to a Single European Transport Area – Towards A Competitive And Resource Efficient Transport System"