ADVISORS

Action for advanced Driver assistance and Vehicle control systems Implementation, Standardisation, Optimum use of the Road network and Safety

Funding: European (5th RTD Framework Programme)
Duration: Apr 2000 - Dec 2002
Status: Complete with results

Background & policy context:
In accidents in the European Community around 40,000 people are killed, the economical costs as a result of congestion are huge, and there is a strong motivation in trying to reduce the emissions of various pollutants, as defined in the Kyoto agreement.

Intelligent transport systems, especially systems that may assist the driver (such as ADAS: Advanced Driver Assistance Systems) are expected to increase road safety and road capacity, and to attenuate environmental load in traffic. However, car manufacturers are developing many of these systems for commercial reasons, mainly. Several of these systems will enter the market, some sooner, some later.

Objectives:
The project’s main objectives were to:

- Identify a set of ADAS with high potential to overcome important safety hazards, road capacity bottlenecks, driver behaviour problems and environmental load in several road types;
- Identify the major legal, institutional, socio-economic, financial, organisational and user acceptance barriers to the implementation of such systems embedded in a decision framework and identify measures and strategies to overcome them;
- Develop an integrated assessment methodology and relevant criteria to reliably assess traffic safety, usability, interaction safety, user acceptance, road network efficiency and environmental impacts of ADAS;
- Assess the impact of emerging longitudinal, lateral and combined ADAS on road safety, driver comfort, as well as on the overall road network efficiency and the environment, using the above methodology, through multipurpose Pilots;
- Develop recommendations for type approval, a common legal framework and standards in the area of advanced driver assistance systems, as well as to propose funding and incentive mechanisms for their social optimum deployment;
- Promote user and stakeholder awareness of such aids and through it to enhance societal acceptance of them; and
- Help realise exploitable ADA systems.

Methodology:
The core of the project’s approach is a common assessment methodology, which covers the development of a methodological framework defining the considerations for decision-making concerning the procedure of choosing ADAS, defining indicators and criteria for assessment of relevant impacts, and defining implementation strategies. The 8 steps of the common assessment methodology comprise:

- Identification of ADAS for evaluation, incl. a classification of its functions, and considering the scenarios where the ADAS will be used;
- Assessment of the risks concerning the impact of ADAS market penetration and successful implementation;
- Actor (stakeholder) analysis clarifying the needs and requirements of the different stakeholders involved with the deployment of ADAS;
- Identification of the costs and benefits that an ADAS system will constitute to each stakeholder.
• identification of specific indicators (variables), generated through measurement methods, that can be used to measure whether, and in case to what extent, a specific criterion is met;
• overall analyses including pilot studies for gathering empirical data about the actual impacts of ADAS on safety, traffic flow and the environment, and the translation of empirical results, using multi-criteria analysis (MCA), into a prioritisation of ADAS and a definition of future scenarios for various categories of stakeholders;
• summarising the results of the MCA relating to the decision with regard to ADAS implementation on the basis of future scenario ratings; and
• a set of implementation strategies.

Related Projects:

EU projects:
• AWAKE
• COMUNICAR
• EUCLIDE
• IN-ARTE
• SAVE
• TRAVEL-GUIDE

Parent Programmes:
FP5-GROWTH KA2 - Sustainable Mobility and Intermodality

Institute type: Public institution
Institute name: European Commission, Directorate-General for Energy and Transport (DG TREN)
Funding type: Public (EU)

Partners:
Belgium:
IBSR-BIVV – Belgisch Instituut voor de Verkeersveiligheid

Czech Republic:
CDV – Centrum Dopravniho Vyzkumu

Finland:
VTT – Technical Research Centre of Finland

France:
Siemens Automotive SA

Germany:
IAT – University of Stuttgart; BAST – Bundesanstalt fur Strassenwesen

Greece:
AUTh – Aristotle University of Thessaloniki; NTUA – National Technical University of Athens

Italy:
CRF – Centro Ricerche Fiat Spa

Sweden:
VTI – Swedish National Road and Transport Research Institute

The Netherlands:
SWOV – Institute for Road Safety Research; Jam de Rijk BV; Achmea Holding BV; TRAIL – Delft University of Technology; RUG – University of Groningen

United Kingdom:
TRL – Transport Research Foundation

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Key Results:

The project's main achievements have been:

- the development of an integrated and common Advanced Driver Assistance System (ADAS) assessment methodology including the description of a comprehensive ADAS assessment approach, drawing on relevant criteria, involving various types of measurements, and setting up an evaluation checklist to allow design and evaluation teams to rapidly check their systems;
- assessments of road safety, driver comfort, network efficiency and environmental impacts;
- a multicriteria analysis on a set of 4 ADAS types revealing a ranking of ADAS for which relevant criteria were considered most favourable;
- development of a risk analysis method based on failure mode analyses and applied to behavioural, legal and organisational risks of a set of ADAS subsystems;
- identification of a set of multidimensional future priority scenarios for ADAS developments, such as Adaptive Cruise Control (ACC) on the motorway, intervening Intelligent Speed Adaptation (ISA) in urban areas, a warning type Driver Monitoring System (DMS) for professional drivers, and an integrated ADAS (IAS);
- the identification of major legal, institutional, socio-economic, financial, organizational and user acceptance ADAS implementation problems;
- the formulation of implementation strategies to overcome implementation barriers for priority future scenarios for ACC, ISA, DMS and IAS; and
- dissemination of the results through various channels and production of user-friendly terminology.

Policy implications

The common assessment methodology targeted at ADAS technology development is, due to its comprehensiveness, considered transferable to other fields of innovative technologies. One of its key elements is the review and listing of pilot testing methods and the overview of measurement method which proved particularly useful for researchers who need to assess operator behaviour. As far as the effects of ADAS deployment are concerned, more research is needed to understand behavioural patterns that are triggered by the effects of certain ADAS technology. Overall, an integrated ADAS is still a thing of the future and highlights the need for further research and development with a particular focus on safety implications of the more complex systems.

Road

Key Findings

No results directly relevant to this theme. However, please note that some findings relevant to the project's key theme (Safety and Security) are generically applicable.

Policy Implications

No policy implications directly relevant to this theme. However, please note that implications for the project's key theme (Safety and Security) are generically applicable.

User aspects

Key Findings

No results directly relevant to this theme. However, please note that some findings relevant to the project's key theme (Safety and Security) are generically applicable.

Policy Implications

No policy implications directly relevant to this theme. However, please note that implications for the project's key theme (Safety and Security) are generically applicable.

Safety and security

Key Findings

The project's main achievements have been:

- The development of an integrated and comm
STRIA Roadmaps: Cooperative, connected and automated transport
Transport mode: Road transport
Transport sectors: Passenger transport, Freight transport
Transport policies: Digitalisation, Decarbonisation, Societal/Economic issues, Safety/Security
Geo-spatial type: Other