"An European viewpoint on Cooperative and Green Driver Assistance Systems Research"

European Commission
Directorate General Information Society and Media
ICT for Transport

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Content

- Where do we come from
- Projects under FP 7, the overview
- Some concrete examples
- Where do we go to
- What else to bring ITS forward
  - iMobility Forum
  - ITS action plan
  - International cooperation
ICT for transport: Towards cooperative systems

A vision for the future: basic functions defined, but technology not available

Improving traffic systems efficiency: Traffic management: data – information - guidance

Deepening of the topics Basic inputs to Standardisation (GDT, ATT Alert…)

Moving to Field trials

Services and Safety Systems

Safety Systems Moving to Cooperative Systems

Intelligent Transport Systems Intelligent Transport Infrastructure Cooperative Systems

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• **Projects under FP 7, the overview**
• Some concrete examples
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  – iMobility Forum
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  – International cooperation
Addressing the Challenges
Unit G4 - RTD in the 7th FP

2007
- Call 1: Intelligent Vehicles & Mobility Services
- 14 projects, 57 M€ grant

2008
- Call 2: Cooperative Systems
- 12 projects, 48 M€ grant

2009
- Call 4: Safety & Energy Efficiency in Mobility
- 10 projects, 53 M€ grant
- Call 5: Fully Electrical Vehicle
- 7 projects, 20 M€ grant

2010
- Call 6: Mobility of the Future
- 10 projects, 37 M€ grant
- Call 7: Low carbon multimodal mobility & freight transport
- Budget: 50 M€

2011
- Call 8: Cooperative Systems for energy efficient & sustainable mobility
- Budget: 40 M€

2012
- Call 9: Towards highly automated driving

2013
- Call 10: Additional projects
- Budget: 35 M€
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Mission:
“First step towards the long-term vision of automated driving”

Focus:
- Progressive step-by-step approach to transfer the driving task from driver to ‘co-pilot’
- Failure tolerant safe vehicle architecture incl. advanced redundancy management
- Develop & validate next generation ADAS

Coordinator: Continental Automotive GmbH
Total costs: ± 28m€
EC contribution: 17m€
Start date: 1/02/2008
Duration: 42 months

Research Topics:
- **Highly automated driving - applications**
  - Automated merging into traffic flow
  - Automated queue assistant (for trucks)
  - Temporary auto-pilot
  - Active green driving (for trucks)
- **Intelligent virtual co-pilot**
  - Sensors and algorithms for information collection
  - Driver assessment: state, intention, workload, situational awareness
  - Task repartition between the driver & co-pilot depending on the immediate driver capacity
- **HAVE-IT concept will be integrated, tested & validated in 5 prototype vehicles**
Results achieved

- Specification phase successfully completed (Jan 2009)
- Concept phase successfully completed (Apr 2009)
- Other project phases according to plan
  - Components available; many integrated in demo vehicles
  - Joint system development
    - First validation by simulation successfully completed
    - Three joint system integration weeks successfully finished
  - Application algorithms development ongoing
- Next milestones
  - Completion of generic development tasks (Jan 2010)
  - Vehicle integration complete, 1st functionality (Oct 2010)
  - System optimisation completed, final event (Jul 2011)
- HAVEit at ITS Stockholm 2009
  - Invited presentation on Automated Driving (SIS 43)
  - Several paper presentations on different technical matters
  - Exhibits, posters, presentations and demos at EC booth
  - Exhibits at Volvo booth
Mission:
PRE-DRIVE C2X prepares a large scale field trial with vehicular communication technology.

Based on the common European architecture for a vehicle to x communication system, defined by the task force on cooperative systems led by COMeSafety, the project develops a detailed specification for such a system and a functionally verified prototype robust enough to be used in future field operational tests.

Research Topics:
- All tools and methods necessary for functional verification and testing of cooperative systems in laboratory environment and on real roads in the framework of a field operational test will be developed.
- The developed methods and tools will be applied to the PRE-DRIVE C2X prototype system to verify its proper functioning and to do an impact assessment including a user acceptance test.

Coordinator: DAIMLER
Total costs: ± 8,5M€
EC contribution: 5 M€
Start date: 1/07/2008
Duration: 24 months
**Mission:**
Strategic networking of existing and future National, European and Global FOTs (e.g. US and Japan).

**Focus:**
- Public Authorities/ FOT funding organisations (EC, national, regional and cities)
- Industry: Vehicle Manufacturers; Automotive Suppliers; Service Providers (including telecom operators)
  - Research Institutes
  - Users

**Research Topics:**
Establish and operate a networking platform for FOT activities including all stakeholders from public and private sectors
- FOT Catalogue (Wiki)
- FOT Stakeholders workshops
- International FOT meetings

Promote the implementation of a common FOT methodology (FESTA) and discuss any further improvement
- Seminars on FOT methodology
- Online discussion forum

Coordinator: ERTICO
Total costs: 1.230M€
EC contribution: 1.230M€
Start date: 1/06/2008
Duration: 27 months
Mission:
Assess the impact from the usage of Intelligent Vehicle Systems in real traffic for a safer, cleaner, and more efficient transport system in Europe.

Research Topics:
- Analysis of performance and capability of several IVSS
- Assess the impact of eight intelligent vehicle systems for enhancing traffic safety and efficiency
- Driver behavior and user acceptance
- Support of the decision process in the deployment of ICT based systems for mobility

Coordinator: Ford
Total costs: ± 22 M€
EC contribution: 14 M€
Start date: 1/05/2008
Duration: 40 months
**Mission:**
To assess the impacts of functions provided by aftermarket and nomadic devices in vehicles and raise awareness on their potential for improving road safety and efficiency

**Research Topics:**
Analysis will be done on a large fleet (3000 drivers) for a number of functions promoting safety/efficiency assessing:
- driver behaviour and user acceptance.
- impacts on safety, efficiency, and on the environment.
- impact on the transport system.
- attention will also be paid on negative effects.

The project also aims to contribute to user awareness and speeding up deployment.

**Coordinator:** VTT
**Total costs:** ± 14M€
**EC contribution:** 9.7 M€
**Start date:** 1/06/2008
**Duration:** 48 months
1st Year Advancement & Main Achievements:

After its first active year the project has achieved most of its objectives and technical goals for the period with minor deviations. Numerous TeleFOT key results can be recognised:

i. Major steps taken in defining the general framework for running this novel type of research project

ii. Selection of functions to be tested
   + the associated complex framework from the functions to the research hypothesis, through research questions and performance indicators up to the data logger specifications.

iii. Huge steps have been taken in the planning, practical preparations and ramping-up of the numerous national test sites.

Correct implementation and success of these are in the absolute core of TeleFOT. This task includes strenuous negotiations not just within the project but also with third-party stakeholders external to the project consortium.
Mission:
“To develop a combination of cooperative systems and tools using vehicle-infrastructure communication to help drivers sustainably eliminate unnecessary fuel consumption, and road operators manage traffic in the most energy-efficient way.”

Goals:
- Show that a combination of cooperative systems will reduce fuel consumption by 20%
- Develop eCoMove use cases, system concept and architecture
- Develop a common V2V & V2I platform based on CVIS project results
- Develop a strategic model of macroscopic energy consumption for an entire road network
- Develop, test and validate the applications: ecoSmartDriving, eco Freight & Logistics, and ecoTrafficManagement & Control
- Assess applications in 4 field trials (3 cities & 1 interurban motorway)
- Assess implementation issues, carry out a cost-benefit analysis, and propose an implementation roadmap

Coordinator:
ERTICO ITS Europe
Project in negotiation phase
Total costs: ±22.5 M€
EC contribution: ±13.7 M€
Start date: Q1/2010
Duration: 36 months
**Mission**

To develop new high performance and integrated safety applications, enhancing the intelligence of vehicles and promoting safer and more efficient driving

**Goals**

1. Extend the range of possible scenarios and the usability of Active Safety Systems by multiple integrated functions and active interventions
2. Improve decision strategies for Active Safety and Driver-Vehicle-Interaction
3. Develop solutions for collision mitigation that are able to improve the market potential towards low segments
4. Create an innovative model and platform for enhancing the perception of the driving situation

**Coordinator:** FORD

- Total costs: 29 Mio €
- EC contribution: 17 Mio €
- Start date: January 2010
- Duration: 42 months
EcoGem’s approach:

- To render the FEV capable of reaching the desired destination(s) through the most energy efficient route(s) possible

- To render the FEV fully aware of the surrounding recharging points/stations while travelling

EcoGem Solutions

- Continuous monitoring of the vehicle’s battery level and energy consumption
- Autonomous optimised route planning
- Cooperative optimised route planning
- Continuous awareness of recharging points and optimised recharging strategy
- Online management of recharging points
- Holistic approach for energy efficiency and operational cost optimisation

Coordinator: Temsa, Turkey
Duration: 30 months
Commencement date: 01-09-2010
EC funding: 2.044M€
Support the eSafety Forum with respect to all issues related to car to car/infrastructure communications. International Cooperation
**Mission:**
Carry out comprehensive assessments of cooperative systems through Field Operational Tests in various places in Europe in order to verify their benefits and to pave the way for market implementation.

**Expected outcome:** Propose a commonly agreed cooperative driving system for the whole of Europe that is interoperable and considers the needs of all stakeholders involved.

**Research objectives:**
- Create a harmonised Europe-wide testing environment for cooperative systems
- Coordinate the tests with cooperative systems technology carried out in parallel by various national projects in Europe
- Evaluate cooperative systems
- Promote cooperative driving

**Test sites:**
- NL (main)
- FI, FR, DE, IT, SE, ES

**Coordinator:** Daimler AG
32 consortium partners
Total costs: 18.9 M€
EC contribution: 12.4 M€
Start date: 01/01/2011
Duration: 36 months
Objective: Prepare for the deployment of the necessary infrastructure in Europe for making the interoperable Pan-European in-vehicle emergency call service eCall a reality for all European citizens. HeERO will carry out pre-deployment pilots on eCall.

Specific project objectives are:

- Define operational and functional requirements needed to upgrade eCall related service-chain parts to handle eCall.
- Implement and test available Pan-European eCall related standards.
- Implement and test needed technical and operational infrastructure upgrades.
- Identify possible use of eCall system for public and or/private value-added services.
- Produce the training material for the eCall operators.
- Assess certification procedures related to the eCall services equipment.
- Produce recommendations for future eCall pre-deployment and deployment activities in Europe.
- Promote pilots results and best practices with other Member and Associated States non-directly involved in the project.
- Demonstrate interoperability and continuity of harmonised EU-wide eCall service.
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• Some concrete examples

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Call 8: Objective 6.7

Cooperative Systems for energy efficient and sustainable mobility

Projects evaluated and under negotiation
Cooperative Systems (V2V + V2I / I2V) as enablers of decarbonised transport

- allow monitoring + control of transport networks
- direct communication with individual drivers in a given area
- simultaneously collecting traffic data + providing information to users

Broad approach is needed where cooperative systems

- will foster holistic, pro-active approach to urban + inter-urban traffic monitoring, control and management
- will enable proactive traffic management systems predicting traffic flow / volume, taking pre-emptive measures to avoid incidents
Call 8: Objective 6.7

Target outcome:
Cooperative Systems for low-carbon multi-modal mobility for energy efficiency and eco-friendly mobility

European Wide Service Platform (EWSP) for cooperative system enabled services

Coordination and support actions: Dissemination of results, user awareness campaigns, assessments of socio-economic impact and training as well as international cooperation

Call 8 IPs, STREPs: 37M€ CSAs: 3M€
European Wide Service Platform (EWSP) for cooperative system enabled services

Will provide to the drivers a large variety of energy efficiency, mobility, comfort and safety related services.

INTERNET OF SERVICES
congestion, green rerouting, emission footprint, charging
data, information, content, services, payment, subscription
access, banking, traffic, transport, logistics
contacts, agenda, calendar, documents, files, media, entertainment

INTERNET OF THINGS

INTERNET OF USE
in traffic, in transit, in terminal, in house, at leisure, at home, in office
convenient, personal, community, cafe, environmental
Call 8 outcome in numbers:

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<td>Coordination and support actions</td>
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Towards highly automated Driving:

- Focus is on supervised automated driving for improving both the energy efficiency and safety of individual and public transport; and on energy-efficient, safe and accessible services to enhance mobility of citizens.
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iMobility Forum succeeds the eSafety Forum.
includes ICT systems for resource-efficient and clean mobility
in addition to the latter's focus on ICT-based safety technologies
joint platform open for all road stakeholders interested in ICT-based systems and services
iMobility forum

• Active Working Groups
  – Implementation Road Map
  – International Cooperation
  – Research and Innovation
  – ICT for Clean and Efficient Mobility
  – Digital Maps
  – Business Models
  – Legal Issues
  – Vulnerable Road Users
  – Automation
ITS action plan – the rationale

- ITS can contribute to Cleaner, Safer and More efficient Transport
- But: deployment slow so far
- EU action plan to support the deployment of existing ITS solutions
- Joint action of DG TREN, DG INFSO, DG RTD, DG ENTR in order to develop coherent action plan
EU Policies on ITS


**Directive 2010/40/EU**: Framework for the Coordinated and Effective Deployment and Use of Intelligent Transport Systems

Road transport and interfaces with other modes

- coordinate and accelerate deployment of ITS
- make road transport more sustainable
Objective:

- coordinate and accelerate deployment of ITS in road transport and interfaces with other modes

Measures:

- 24 Actions in 6 Priority Areas
ITS Action Plan: Priority Areas

- Optimal Use of Road, Traffic and Travel Data
- Continuity of Traffic and Freight Management
- Road Safety and Security
- Integration of Vehicle into Transport Infrastructure
- Data Protection and Liability
- European ITS Coordination
Directive 2010/40/EU

Framework for the Coordinated and Effective Deployment and Use of Intelligent Transport Systems

Objectives

• Establishing a framework for coordinated and effective deployment and use of ITS
• Setting common priorities
• Development of specifications and standards
Priority Areas

- Optimal Use of Road, Traffic and Travel Data
- Continuity of Traffic and Freight Management
- Road Safety and Security
- Linking Vehicle and Transport Infrastructure

- 6 Priority Actions > see next slides
- all defined in Annex I
6 Priority Actions

- EU-wide Multi-Modal Travel Information
- EU-wide Real-Time Traffic Information
- Free Safety-Related Minimum Traffic Information
- Interoperable EU-wide eCall
- Information Services for Truck Parking
- Reservation Services for Truck Parking
International cooperation
Mail Boxes:
INFSO- intelligent-car@ec.europa.eu
INFSO-eSafety@ec.europa.eu

eSafety Web-site:
http://ec.europa.eu/esafety

eSafety on CORDIS website:

eSafetySupport web:
www.eSafetySupport.org
Thank you for your attention