The present status and the future of EU-projects concerning driver assistance systems – an overview

European Commission
Directorate General Information Society and Media
ICT for Transport
Dr. Irmgard Heiber

Content
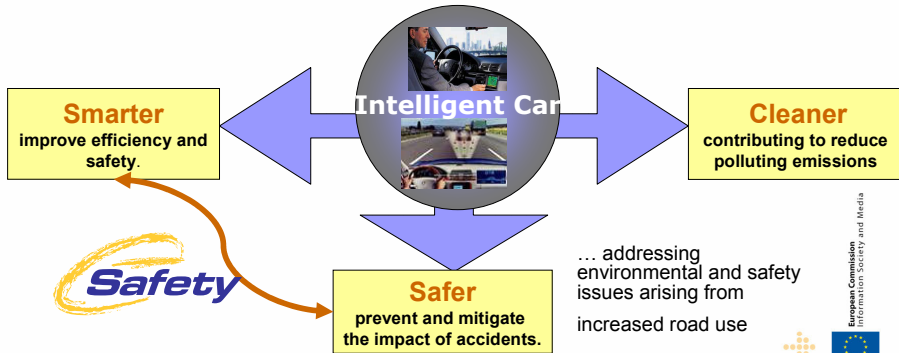
- **The Intelligent Car Initiative**
- Projects under FP 7, the overview
- Some concrete examples
- Future calls
- ITS action plan

The Intelligent Car Initiative

On June 1, 2005 the Commission adopted the Communication
"i2010: European Information Society 2010 for growth and employment"
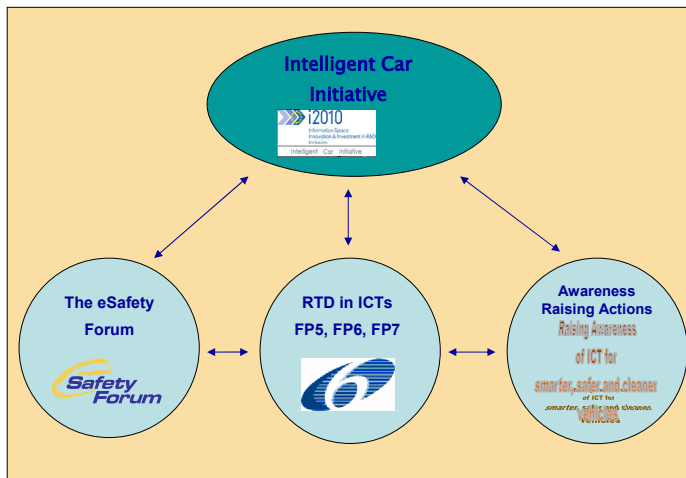
The **Intelligent Car** is one of the i2010 Flagship Initiatives.

The objective is to improve the quality of the living environment by supporting ICT solutions for **safer, smarter and cleaner mobility of people and goods**.

Intelligent Car

Smarter
improve efficiency and safety.

Cleaner
contributing to reduce polluting emissions

Safety

Safer
prevent and mitigate the impact of accidents.

… addressing environmental and safety issues arising from increased road use

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Intelligent Car: Structure

The i2010 Intelligent Car Initiative will build on the work of the eSafety initiative and follow a three – pillar approach:

Intelligent Car Initiative

The eSafety Forum

Safety Forum

RTD in ICTs FP5, FP6, FP7

Awareness Raising Actions
Raising Awareness of ICT for smarter, safer and cleaner vehicles

(1) The eSafety Initiative and eSafety Forum

(2) RTD in Information and Communications Technologies

(3) Awareness raising Actions

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The Intelligent Car Initiative
Policy Achievements through stakeholder concertation – the e-safety forum

- New Commission Communication on eCall to speed up its implementation

- European Statement of Principles (ESoP) with recommendations on HMI updated

- European Code of Practice for developing and testing ADAS from RESPONSE 3 project

The Intelligent Car Initiative
User Awareness Achievements

- Information dissemination to raise awareness on the potential of Intelligent Vehicle Systems

- Stimulate user's demand and create socio-economic acceptance.

- Facilitate the deployment of mature technologies and systems

- ChooseESC! campaign by eSafetyAware!
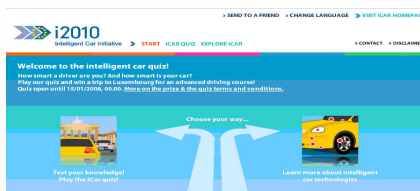
PReVENT Exhibition

Content

- The Intelligent Car Initiative
- **Projects under FP 7, the overview**
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The Intelligent Car Initiative
RTD in ICT for Mobility

FP7 Workprogramme 2007-2008

Call 1
**ICT for
Intelligent Vehicles
& Mobility Services**

Focus:
- Intelligent Vehicle Systems
- Mobility Services for People
- Mobility Services for Goods

Selected proposals:
2 IP
9 STREP
3 SA
56.6 M€ funding
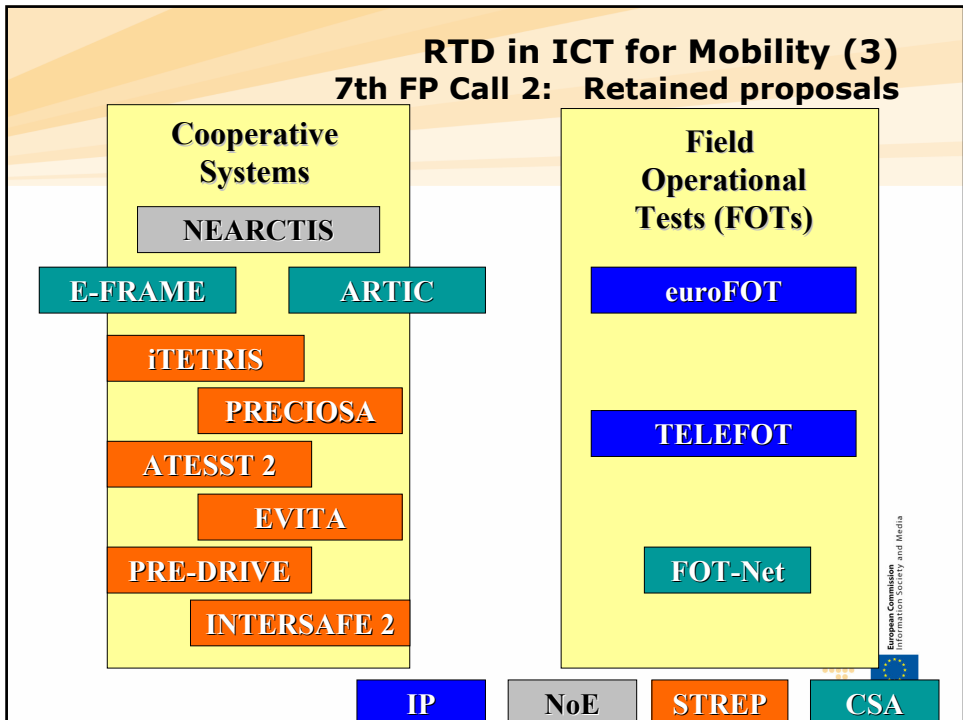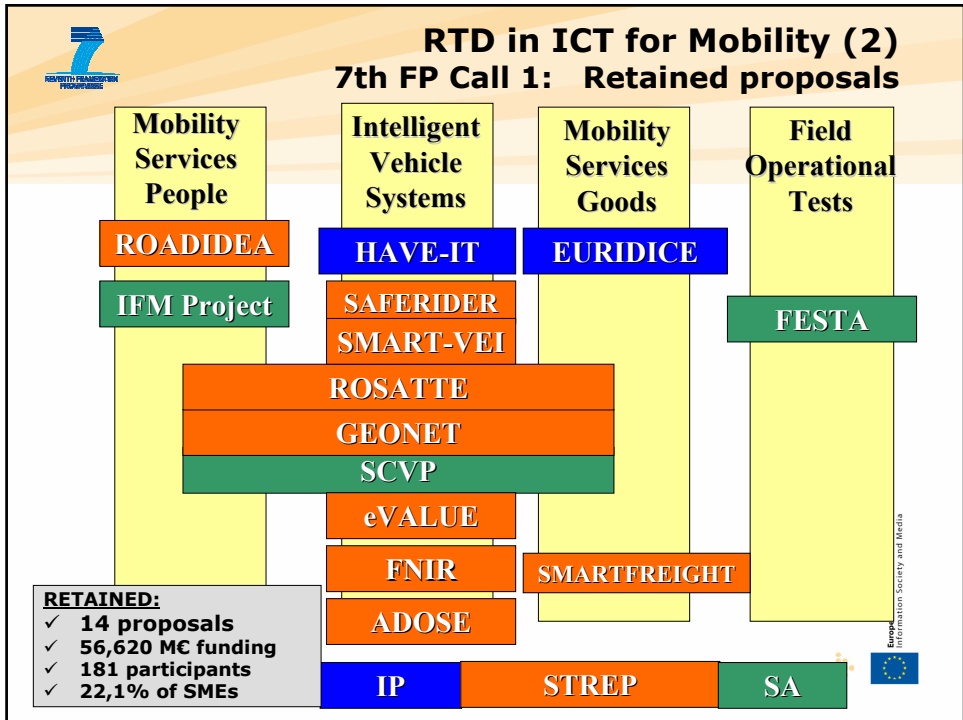

Call 2
**ICT for
Cooperative Systems**

Focus:
- Cooperative Systems
- Field Operational Tests

**Projects under
negotiation**

Selected proposals:
2 IP
6 STREP
3 SA, 1 NoE
48 M€ funding

RTD in ICT for Mobility (2)
7th FP Call 1:   Retained proposals

Mobility Services People

Intelligent Vehicle Systems

Mobility Services Goods

Field Operational Tests

ROADIDEA

HAVE-IT

EURIDICE

IFM Project

SAFERIDER
SMART-VEI

FESTA

ROSATTE

GEONET

SCVP

eVALUE

FNIR

SMARTFREIGHT

ADOSE

RETAINED:
✓ 14 proposals
✓ 56,620 M€ funding
✓ 181 participants
✓ 22,1% of SMEs

IP

STREP

SA

RTD in ICT for Mobility (3)
7th FP Call 2:   Retained proposals

Cooperative Systems

Field Operational Tests (FOTs)

NEARCTIS

E-FRAME

ARTIC

euroFOT

iTETRIS

PRECIOSA

ATESST 2

TELEFOT

EVITA

PRE-DRIVE

FOT-Net

INTERSAFE 2

IP

NoE

STREP

CSA

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HAVEit

Highly automated vehicles for intelligent transport

Overall budget / funding: 27.8 M€ / 17.0 M€

Start / end date: 01. Feb. 2008 / 31. Jul. 2011

Coordinator: VDO Automotive

Partners: 18

Contact: **Prof. Dr. Gernot Spiegelberg, VDO Automotive AG (D)**
gernot.spiegelberg@continental-corporation.com

Highly <u>a</u>utomated <u>ve</u>hicles for <u>i</u>ntelligent <u>t</u>ransport

HAVEit

Overall objective: Safety Enhancement by highly automated driving

Key objectives: 1) Safe vehicle architecture with migration concept

2) Joint system driver – co-pilot system

3) Highly automated vehicle applications building on 1) and 2)

Highly automated vehicles HAVE it applications

HAVEit

- Safe vehicle architecture
  - Joint system demonstrator
  - Electric wedge brake truck

- Highly automated functions
  - Automated assistance in complex scenarios (e.g. construction site, lane change, automated filtering)
  - Automated queue assistance
  - Temporary auto-pilot
  - Active green driving

Reliable Application Specific Detection of Road Users with Vehicle On-board Sensors

ADOSE

Overall budget / funding: 10.2 M € / 6.1 M€
Start / end date: 01. Jan 2008 / 31 Dec 2010

Coordinator: Centro Ricerce Fiat

Partners: 12

Contact: Dr. Nereo Pallaro, nereo.pallaro@crf.it

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ADOSE **Key objectives**

ADOSE addresses **functional, performance and cost limits of current sensors and Advanced Driver Assistance Systems** for their extensive market penetration.

The aim is the **enhancement of safety functions** through the **development of high performance and low cost sensing technologies** suitable for reliable detection and classification of obstacles and vulnerable road users.

ADOSE is a **product driven project** with the development and integration of smart systems and technologies.

European Commission
Information Society and Media

Specific objectives

ADOSE addresses five breakthrough sensing technologies, with the goal to improve the current state-of-the-art in terms of costs, performance and reliability :

• FIR-add-on sensor with sufficiently good thermal & spatial resolution at lower cost (FIR)
• Low-cost multi-functional and multi-spectral CMOS vision sensor (MFOS)
• High spatial resolution and low-cost 3D range camera (3DCAM)
• Harmonic radar and passive/active tags (HR-PTAG and HR-ATAG)
• High temporal resolution and low-cost silicon retina stereo sensor (SRS)

Potential application scenarios
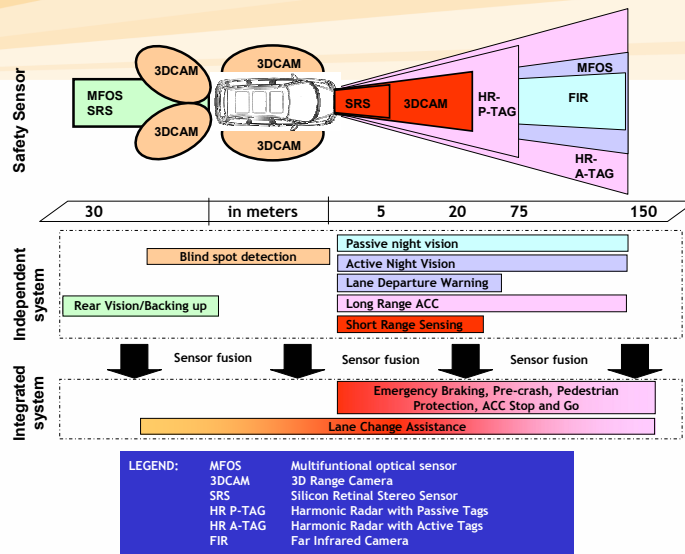
Overall budget / funding: 5.37 M € / 3.5 M€
Start / end date: 01. Jan 2008 / 31 Dec 2010

Coordinator: CERTH/HIT Grece

Partners: 20

Contact: Dr. Evangelos Bekiaris, abek@certh.gr
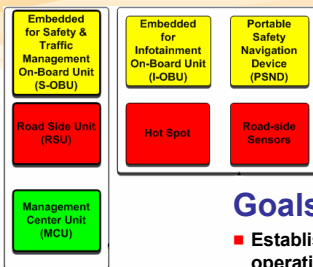
Overall objective:

**To study the potential of ADAS/IVIS integration on
motorcycles for the most crucial functionalities and
develop efficient and rider-friendly interfaces and
interaction elements for riders comfort and safety.**

SAFE RIDER Integration example
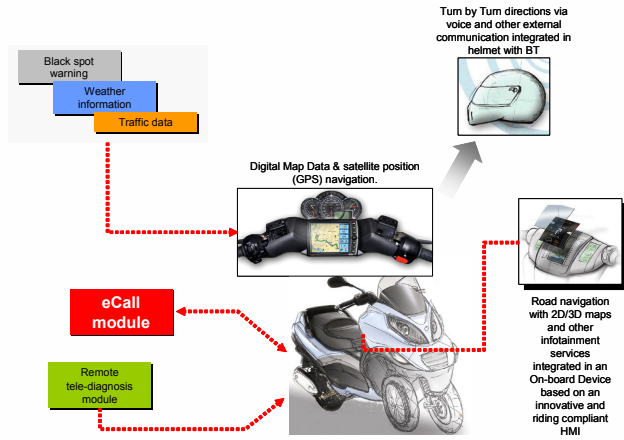
Examples of Call 2 Projects
PRE-DRIVE C2X

| Embedded for Safety & Traffic Management On-Board Unit (S-OBU) |
| Embedded for Infotainment On-Board Unit (I-OBU) | Portable Safety Navigation Device (PSND) |
| Road Side Unit (RSU) | Hot Spot | Road-side Sensors |
| Management Center Unit (MCU) |

Mission:

"To specify and prototypically realise a common European architecture for co-operative systems and to estimate a priori the impact on road safety and traffic efficiency."

Goals:

- **Establishment of a pan-European architecture framework for co-operative systems which ensures interoperability of all different applications of vehicle-to-vehicle and vehicle-to-infrastructure communications for safety and mobility.**

- **Development of an integrated simulation model of co-operative systems.**

- **A priori estimations of the impact on traffic safety and mobility of co-operative systems for road safety and traffic efficiency.**

- **Paving the way for the forthcoming field operational tests of co-operative systems by development of tools and methods for functional verification and testing in laboratory environments, on test tracks, and on real roads.**

- **Identification of the key enabling and disabling factors to plan the future market introduction.**

Coordinator:
DaimlerAG
Total costs: ±8.343 M€
EC contribution: ±5.015 M€
Start date: 01/05/2008
Duration: 24 months

Examples of Call 2 Projects
INTERSAFE 2

intersections constitute a major accident 'black spot', especially in urban areas.

- About 30 to 60% (depending on the country) of all injury accidents and about 16 to 36% of the fatalities occur at intersections
- Accident scenarios at intersections are amongst the most complex

Mission:

Develop and demonstrate a Cooperative Intersection Safety System that to improve traffic safety at intersections.
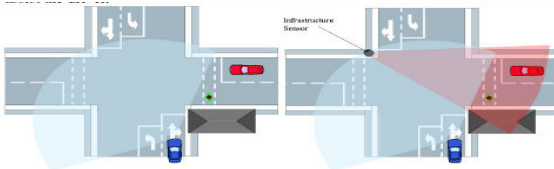
Research Topics:

- Develop three demonstrator vehicles and introduce new functionalities from warning systems to active vehicle intervention.
- 2. Bidirectional V2X communication and cooperative sensor data fusion
- 3. Infrastructure monitoring
- 4. Relative intersection localisation
- Intersection object tracking and classification
- Cooperative intersection scenario interpretation, risk assessment, warning
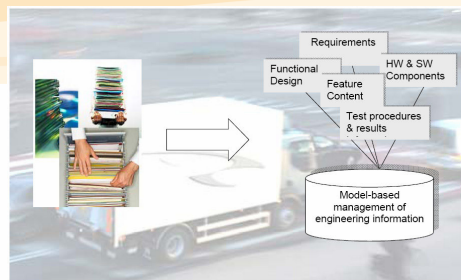- intervention strategies

Coordinator: IBEO
Total costs: ± 6.5m€
EC contribution: 3.8 m€
Start date: 1/05/2008 (?)
Duration: 36 months

Examples of Call 2 Projects
ATESST2

Mission:

"To link design and verification technologies with advanced automotive functions of future co-operative systems."

Goals:

- Identification of stakeholders' needs for an architecture description language for the development of co-operative active safety systems.
- Harmonisation of the structural descriptions of EAST-ADL2 with the latest evolutions of existing approaches.
- Development of adequate behavioural modelling for EAST-ADL2.
- Development of analysis techniques suitable for assessing safety, reliability, performance, and cost of co-operative active safety systems.
- Support of field operational tests by providing explicit descriptions of desired behaviours, test cases, and test results.
- Development of support for re-use and variability management.
- Definition of a language implementation in the form of a UML2 profile.

Coordinator: Volvo Technology AB
Total costs: ±3.750 M€
EC contribution: ±2.287 M€
Start date: 01/07/2008
Duration: 24 months

Mission:

"To avoid unauthorised manipulation of on-board systems to prevent intrusion into the in-vehicular system infrastructure and transmission of corrupted data outside"

Objectives:

- Definition of an appropriate partitioning of functions into software and hardware modules in order to provide the suitable vehicle protection level against a spectrum of intrusion attacks.
- Design of a security hardware module matching the requirements of in-vehicular systems.

Coordinator:
Fraunhofer-Gesellschaft (SIT)
Total costs: ±6.039 M€
EC contribution: ±3.858 M€
Start date: ??/??/2008
Duration: 36 months

Methodology:

- Identify industrial use cases (assembly, field maintenance).
- Compile scenarios of possible threats.
- Define overall security requirements.
- Compile secure trust model.
- Specify, verify, validate, and demonstrate a secure on-board architecture and protocol.

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Mission:

"demonstrate that co-operative systems can comply with privacy regulations using an example application endowed with PET for location data"

Picture: C2C consortium

Objectives:

- Define an approach for evaluation of co-operative systems in terms of:
  - Communication privacy
  - Data storage privacy
- Define a privacy aware architecture for co-operative systems, involving:
  - Suitable trust models and ontologies
  - V2V and V2I privacy verifiable architecture, including:
    - *Protection*
    - *Infringement detection*
    - *Auditing*
- Define and validate guidelines for privacy aware co-operative systems
- Investigate specific challenges for privacy

Coordinator:
TRIALOG
Total costs: ± 2,465 K€
EC contribution: 1,667 K€
Start date: 1/03/2008
Duration: 24 months

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Information Society and Media

Mission:

*"To create a **virtual research institute** that not only focuses on systems for advanced cooperative **traffic management** for road traffic optimisation but is also concerned with how such systems can be integrated into existing traffic management systems.*

Goals:

- To provide this virtual institute with the constitutive elements of a research institute,
  - An integrated research program
  - A set of common or shared resources
  - A policy and a structure for results and method dissemination
  - Integrated training capabilities
- A particular objective of the network will be to "spread the excellence" across the scientific community, with an emphasis on the newer members of the European Union

Coordinator: ERT

Total costs: ±3 M€
EC contribution: ±2.50M€
Tentative Start date: 01/07/2008
Duration: 48 months

European Commission
Information Society and Media

Mission:

"Transfer of antenna technology knowledge from ACE NoE (Antenna Centre of Excellence) to iCar, in order to enable the best implementation of the future systems."

Focus:

- Antenna technology transfer
- Adoption of software and measurement best practices
- Raise awareness through workshop sessions and international conferences
- Enlarge the existing ACE Virtual Centre of Excellence (www.antennasvce.org) to spread on the Web the ARTIC results
- Offer a specific "Antennas for Intelligent Car" training course to the industrial users and manufacturers.
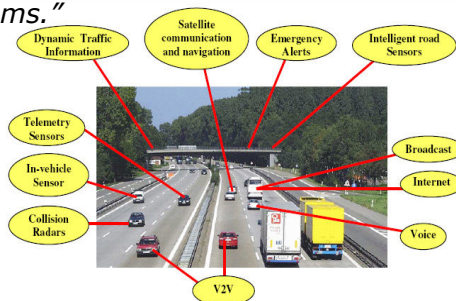
Coordinator: IDS Ingegneria dei Sistemi
Total costs: 466.545 €
EC contribution: 361.000 €
Start date: 1/04/2008 (?)
Duration: 24 months

Examples of Call 2 Projects
E-FRAME (CA)

Mission:

"To support the development and ongoing updating of a standardised ITS architecture to incorporate the requirements raised by co-operative systems."
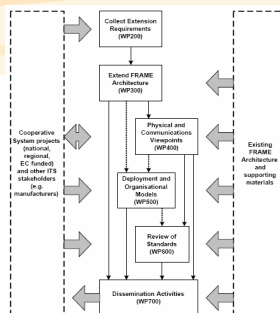
Goals:

- Creation of a pan-European ITS architecture that includes co-operative systems.
- Creation of common physical and communications viewpoints for co-operative systems.
- Provision of expert guidance on deployment and organisational issues.
- Establishment of a list of standards based on findings regarding which parts of co-operative systems need to be standardised.
- Provision of expert advice, support, and training.

Coordinator: Peter Jesty Consulting Limited
Total costs: ±1.046 M€
EC contribution: ±1.045 M€
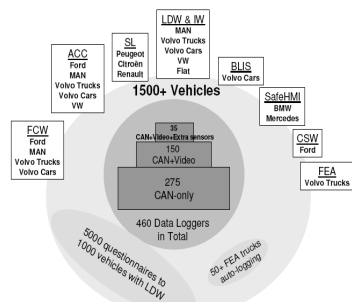Start date: 01/05/2008
Duration: 36 months

Euro F.O.T (IP)

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 based on real data of:
- performance and capability of several IVSS
- driver behaviour and user acceptance.
- impacts on safety, efficiency, and on the environment
- Contribute to support the decision process in the deployment of ICT based systems for mobility.
- Large data base in public domain

Coordinator: Ford
Total costs: ± 22m€
EC contribution: 14m€
Start date: 1/05/2008 (?)
Duration: 40 months

TELEFOT (IP)

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

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FOTNet (SA)

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:

•FOT-Net will establish a European networking body for National,

•European and Global FOTs where all stakeholders from public and private sectors are represented. Then

•FOT-Net will contribute to improve significance, visibility, comparability and transferability of available FOT

•results at National and European level by promoting the implementation of a common FOT methodology

•(FESTA results).
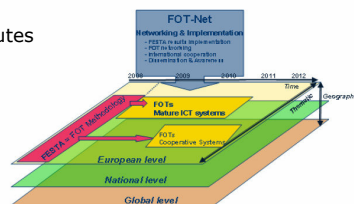
Coordinator: ERTICO
Total costs: ± 1.2m€
EC contribution: 1.2m€
Start date: 1/06/2008
Duration: 24 months

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Workprogramme 2009-2010 (1)

Currently under preparation, taking into consideration the input from:

- ➤ The on-going research activities
- ➤ Strategic Research Agendas of transport related Technology Platforms (ERTRAC, ERRAC, ACMARE…)
- ➤ the eSafety Forum RTD Working Group Research Agenda
- ➤ The Member States' activities
- ➤ Input from professional and research organisations: EUCAR, ECTRI, CLEPA, FERHL, CEDR …
- ➤ Exchange of views with key actors in USA and Japan

Call 4:

➢ ICT for Intelligent Vehicle Systems

➢ ICT for Clean and Efficient Mobility

Call 5:

➢ Field Operational Tests for Integrated Safety Systems and Co-operative Systems

➢ ICT for Smart Urban Mobility, new mobility concepts

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- **ITS action plan**

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

ITS action plan – what happened so far

- Oct 2007: First outline of an ITS Roadmap "Intelligent Transport Systems (ITS) for more efficient, safer and cleaner road transport"
- Dec 2007: « Reality check » with high level stakeholder interviews
- Jan 2008: Paper on policy actions
- Feb 2008: 1st workshop with MS + stakeholders
- March 08: Internet consultation
- 26 March 08: 2nd Workshop with MS + stakeholders

ITS action plan
– the way ahead

- April – May 08: preparation of communication on ITS action plan
- July 2008: adoption by the Commission
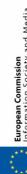

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  mes/esafety/index_en.htm

eSafety on CORDIS website:
http://cordis.europa.eu/ist/so/esafety/home.html

eSafetySupport website
www.eSafetySupport.org

Thank you
for your attention