EU Activities in Intelligent Transport Systems

ITS Seminar, Finland 20 May 2011

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European Commission
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The European Transport Challenges
The European Policy Initiatives
Addressing the Challenges with ICTs
Research and Development
Deploying Cooperative Systems
Common Strategic Framework and ICT for Transport
Suomi ja älyliikenne
The European Transport Challenges

- Safety (-50% by 2020)
- Congestion (-2% GDP)
- Energy Efficiency & Emissions (-80 to 95% by 2050)
- Growth in demand
- Balance between modes
- Make use of research and developments, including ICT
- Increasing urbanisation
- Accessibility
- Dependence on oil and increasing oil prices
- Aging population
### The vision of the White Paper 2011
Towards a competitive and resource efficient transport system

<table>
<thead>
<tr>
<th>Passengers</th>
<th>Freight</th>
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<tr>
<td><strong>Long-distance</strong> travel and intercontinental freight</td>
<td>• High global maritime standards</td>
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<tr>
<td>• Adequate capacity and improved overall travel experience (efficient</td>
<td>• More efficient hinterland connections for ports</td>
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<td>links between airports and rail, minimum hassle for personal security</td>
<td>• Modern vessels and cleaner fuels for shipping</td>
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<td>screening…)</td>
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<td><strong>Intercity</strong> travel and transport</td>
<td>• Paperless logistics</td>
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<td>• Seamless multimodal travel (online multimodal info and ticketing,</td>
<td>• Multimodal long-distance freight corridors</td>
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<td>multimodal hubs…)</td>
<td>• No barriers to maritime transport</td>
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<td>• Quality service and enforced passengers’ rights</td>
<td>• Cleaner trucks on shorter distances</td>
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<td>• Near-zero casualties for road</td>
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<td><strong>Urban</strong> transport and commuting</td>
<td>• Better interface between long distance and last-mile</td>
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<td>• Non-fossil mobility (Clean and efficient cars; Higher share of public</td>
<td>• Freight consolidation centres and delivery points</td>
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<td>transport; Alternative propulsion for urban buses and taxis; Better</td>
<td>• ITS for better logistics</td>
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<tr>
<td>infrastructure for walking and cycling)</td>
<td>• Low-noise and low-emission trucks for deliveries</td>
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On 19 May 2010 the Commission launched the Digital Agenda for Europe (DAE) – One of the EU2020 Flagships:

- Europe's strategy for a flourishing digital economy by 2020.
- Maximise economic and social benefits from ICT
- Reinforce ICT Research and Innovation
- In Mobility and Transport:
  - Support partnerships between ICT and major emitting sectors like transport and logistics to improve energy efficiency
  - Increase the speed of ITS take-up, in particular for road and urban transport
“Advanced road safety technologies play an ever increasing role in improving road safety. Their strength and focus is accident avoidance, not just better occupant or road user protection in the event of an accident. For many years, Europe has invested in the research and development of these technologies. Now it is time to reap their benefits.”

Neelie Kroes
European Commissioner for Digital Agenda
CARS 21
Competitive Automotive Regulatory System for the 21st century

- CARS 21 process aims to make recommendations for the short-, medium-, and long-term public policy and regulatory framework of the European automotive industry.

- This framework enhances global competitiveness and employment, while sustaining further progress in safety and environmental performance at a price affordable to the consumer.

- The CARS 21 process was re-launched in October 2010. It has three-level structure:
  - the High Level Group (Ministers, CEOs and Presidents of associations, etc.)
  - the "Sherpa" group responsible for preparing the input to the High Level Group
  - the working groups, responsible for more technical aspects.
### Addressing the Challenges with ICTs - Overview

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<th>Research &amp; Development</th>
<th>European Large Scale Actions</th>
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<td>FP7</td>
<td>FP8</td>
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<td>Field Operational Tests (FOTs)</td>
<td>Standards</td>
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<td>FOT Method</td>
<td>eCall Standards CEN/ETSI</td>
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<td>Autonomous Vehicle Systems</td>
<td>ETSI in ITS Cooperative Systems standards</td>
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<td>Cooperative Systems</td>
<td>eCall regulation</td>
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<th>User Awareness</th>
<th>Regulation</th>
<th>International Cooperation</th>
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<tr>
<td>Choose ESC! campaign</td>
<td>eSafety Challenge</td>
<td>ITS Committee</td>
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<td>eSafety Aware!</td>
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<td>Tri-lateral cooperation</td>
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<th>EU - METI Coop. Agreement</th>
<th>EU-US joint declaration</th>
<th>EU – MLIT Signature EU-Japan MoC</th>
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<td>2005</td>
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<td>2011</td>
<td>2012</td>
<td>2013</td>
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<td>2014</td>
<td>... 2020</td>
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Research and Development – FP7

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

- **2008**
  - **Call 2**: Cooperative Systems 12 projects 48 M€ grant
  - **Call 3**: Safety & Energy Efficiency in Mobility

- **2009**
  - **Call 4**: Fully Electrical Vehicle 10 projects 53 M€ grant
  - **Call 5**: Mobility of the Future

- **2010**
  - **Call 6**: Low carbon multimodal mobility & freight transport 10 projects 37 M€ grant

- **2011**
  - **Call 7**: Cooperative Systems for energy efficient & sustainable mobility

- **2012**
  - **Call 8**: Budget: 50 M€

- **2013**
  - **Call 9**: Budget: 40 M€
Contributing to Green Mobility
- eCoMove
- Elvire
- Ecogem
- IFM project
- Europtima
- iTetris
- Sunset
- PowerUp
- SmartV2G
- Roadidea + Inco
- In-Time

EC funding 41.4 M€

Logistics & Freight
- Euridice
- Logistics4life
- SmartFreight
- FREILOT

EC funding 13.8 M€

Contributing to Safety
- 2Wide_sense
- Adose
- Have-it
- Fnir
- ARTIC
- InteractIVe
- Mosarim
- ATESTST2
- Minifaros
- eValue
- Saferider
- ActiveTest
- HeERO

EC funding 65.3 M€

ICT for Transport
- EC funding 213.5 M€

Supporting activities
- iCar Support
- iCars Network
- eSafety Challenge
- SCVP
- ECOSTAND

EC funding 6 M€

Field Operational Test
- Drive C2X
- TeleFOT + inco
- euroFOT
- FOT-Net 1+2
- FOTsis
- ITSSv6
- Festa

EC funding 49.9 M€

Completed projects
- Running projects

Security & privacy
- Evita
- Oversee
- Preserve
- Preciosa

EC funding 12.2 M€

EC funding
- 24.9 M€
- 49.9 M€
- 6 M€
Cooperative Mobility means the interconnection of vehicles and infrastructure, to create and share new kinds of information, leading to a better cooperation amongst drivers, vehicles and roadside systems.

An attractive solution contributing to the European goal of safer, cleaner, and more efficient and sustainable traffic solutions.
Project Vision:
- To create a wireless network between vehicles & infrastructure
- To increase efficiency through vehicle-infrastructure cooperation
- V2V and V2I communication for safety and traffic efficiency applications using Car2Car and CALM technologies:
  - Car2Car protocol for V2V and V2I communication, based on geo-aware multi-hop routing
  - CALM for ITS and Internet Services based on continuous communication over 802.11, GSM, UMTS, IR, IPv6, etc.

www.cvisproject.org
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, ecoFreight & 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
The Cooperative Mobility Showcase 2010 demonstrated the results of COOPERS, SAFESPOT and CVIS for the first time in real life. A major successful milestone.
The European Green Cars Initiative
Public-Private Partnership

- **Objective:** to support R&D on technologies and infrastructures to develop the use of renewable and non-polluting energy sources, safety and traffic fluidity.

- **DG’s involved:** DG Research, DG Information Society and Media, DG Mobility and Transport, DG Environment and DG Enterprise.

- **Industry involvement:** through European Road Transport Research Advisory Council (ERTRAC), European Technology Platform on Smart Systems Integration (EPoSS), SmartGrids and other stakeholders.
**Mission:** The objective of “ELVIRE” is to develop an on-board electric energy communication & service platform for realistic use-cases including the relevant external communication and services.

**Objectives:**
- Selection of representative use-cases according to realistic scenarios and business-models.
- Identification & development of those off-board ICT & services needed to comply with the use cases.
- Development of “Prototypes” for the on-board Communication and E-energy service unit.
- Test & verification of all integrated sub-systems on prototype level and in a proof of concept demonstration.

**Coordinator:** Continental Automotive GmbH

**Total costs:** 9,300,000 €

**EC contribution:** 5,200,000 €

**Start date:** 01/01/2010

**Duration:** 36 months
Deploying Cooperative Systems
Legacy systems

Europe: EFC systems using DSRC, GNSS based systems gaining ground, OEM telematics systems on the market
Japan: 40 million ETC users, 27 million VICS users
USA: > 6 million On-Star Users, other OEM telematics systems

Proliferation of PNDs, Smartphone based services
Deploying Cooperative Systems
Taking a Global Approach

- Telematics, as we know it now, will never reach large-scale deployment.
- Tri-lateral negotiations EU-US-Japan in Tokyo on 21 October and the 6th International Workshop on Vehicle Communications show that we have a unique opportunity to proceed in a cooperative way in the world-wide harmonised deployment of cooperative systems for the benefit of the industry, society and citizens in the three regions.
- This deployment could start earlier than previously believed:
  - In Europe, kick-start with eCall, industry aiming at 2015
  - In Japan, deployment of Smartway / SPOT already started
  - In USA, decision by NHTSA on 2013 on mandatory introduction
Implementing Arrangement January 2009

MoU signed October 2010

MoC under Negotiations
Deploying Cooperative Systems
Taking a Global Approach
Deploying Cooperative Systems
Aiming at Globally harmonised standards
Deploying Cooperative Systems
FOTs and Pilots

Preparing for policy decisions → Policy decisions to support deployment

Research projects
Framework Programmes
New research ideas and proof of concept

FOTs
Framework Programmes
Assessment

Pilots
Competitiveness and Innovation Programme
Pre-deployment
Deploying Cooperative Systems
FOTs and CIP Pilots

**CIP - InTime**
In-Time is a Pilot project that aims at drastic reductions in energy consumption in urban areas’ transport through the mobility behaviour of the single traveller, by providing multimodal Real-time Traffic and Travel Information. The In-Time system will be piloted in the cities of Brno (CZ), Bucharest (RO), Florence (IT), Munich (DE), Oslo (NO), and Vienna (AT).

**CIP - Freilot**
The FREILOT pilot targets reduction of fuel consumption and CO2 emissions in urban freight transport. The FREILOT consortium has developed a new approach to deal with this issue where four of the above mentioned factors will be addressed:
- Traffic management (intersection control optimised for energy efficiency)
- Vehicle (Acceleration and adaptive speed limiters)
- Driver (Enhanced “eco driving” support)
- Fleet management (Real-time loading/ delivery space booking)

**TeleFOT**
TeleFOT aims to assess the impacts of functions provided by aftermarket and nomadic devices in vehicles and raise wide awareness of their traffic safety potential. These devices can provide different types of driver support functions and almost nothing is known about their safety and other impacts yet. The market penetration of portable navigators and smart phones is exploding today, making the timing for the project ideal.

**EuroFOT**
The goal of EuroFOT is to identify and coordinate an in-the-field testing of new Intelligent Vehicle Systems with the potential for improving the quality of European road traffic. EuroFOT will specify a test plan identifying proper driving scenarios, factors with maximum safety potential and expected results.

**FOT-Net**
The FOT-Net support action has been established by the European Commission to network Field Operational Tests (FOTs) organisers in one strategic networking platform in order to address common issues related to the practical organisation, set-up and follow-up of FOTs results.
DRIVE C2X carries 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. This general objective is split into four major technical 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.

At the end of the project DRIVE C2X will propose a commonly agreed cooperative driving system for the whole of Europe that is interoperable and considers the needs of all stakeholders involved.

Coordinator:
Daimler AG

Consortium Partners:
VTT, ERTICO, Audi, Renault, PSA, Hitachi, Delphi, SAP, DLR, TNO and many other OEMs, suppliers and research institutes
Deploying Cooperative Systems
eSafety Challenge in Milbrook, 13 July 2010
Deploying Cooperative Systems: eCall

**eCall: The crashed car calls 112!**

1. **Emergency Call**
   - A 112 emergency call (eCall) is made automatically by the car as soon as on-board sensors (e.g. the airbag sensors) register a serious accident. By pushing a dedicated button in the car, any car occupant can also make an eCall manually.

2. **Positioning**
   - Via satellite positioning and mobile telephony caller location, the accurate position of the accident scene is fixed and then transmitted by the eCall to the nearest emergency call centre. More information is given in the eCall, e.g. the direction of travel and the vehicle type.

3. **Emergency call centre (PSAP)**
   - The eCall’s urgency is recognized, the accident’s location can be seen on a screen. A trained operator tries to talk with the vehicle’s occupants to get more information. If there is no reaction, emergency services are sent off without delay.

4. **Quicker help**
   - Due to the exact knowledge of the accident’s location, the emergency services (e.g. ambulance, fire fighters, police) arrive much quicker at the crash site. Time saved translates into lives saved.
Deploying Cooperative Systems

eCall: Envisaged regulatory measures


CEN Standards are available

Recommendation to MS targeting MNOs

- Support of the eCall like any 112 call
- Implementation of the eCall discriminator (ETSI standards)

Based on the USD

- Upgrading of the PSAP infrastructure in the framework of the ITS Directive
- Common specs to be adopted by end 2012.

CEN & ETSI Standards available
The Common Strategic Framework (CSF)

Three distinct but overlapping strategic objectives

Creating Industrial Leadership and Competitive Frameworks
- Leadership in enabling technologies, i.e. ICT
- Access to risk finance
- Integrating research, education & innovation (EIT)
- Innovation in SMEs

Raising and spreading levels of Excellence in the Science Base
- Frontier research (ERC), FET Flagships
- Skills and career development (Marie Curie actions)
- Priority research infrastructures

Tackling major Societal Challenges
- Health, demographics and wellbeing
- Food security and sustainable bio-resources
- Secure, clean and efficient energy
- Smart, green and integrated transport
- Resource Efficiency and Climate Challenge
- Secure and inclusive societies

Europe 2020 priorities

Shared objectives and principles

International cooperation

Common rules, toolkit of funding schemes

Simplified access

European Research Area

Seamless connections

Coherent with other EU and MS actions
The Common Strategic Framework (CSF)
Creating industrial leadership

• Increasing strategic investments and leadership in current and future enabling technologies:
  - ICT - underpins innovation and competitiveness, provides solutions to societal challenges and enables scientific progress in all disciplines
  - Biotechnologies ...
  - Nanotechnologies, materials, production ...
  - Space technologies ...

• Facilitating access to risk finance

• Bridging the gaps between research, education and innovation (EIT)

• Stimulating the SMEs towards more research and innovation efforts
The Common Strategic Framework (CSF)

Tackling major Societal Challenges

- tackling societal challenges identified in the Europe 2020 strategy and the Digital Agenda and Innovation Union flagship initiatives
- contributing to achieving the EU's policy priorities, e.g. on resource efficiency, energy, climate change and transport
- It will support activities from research to market:
  - identify, stimulate and explore potential innovative solutions
  - support R&D projects
  - promote proof of concept
  - integration of applications – e.g. for intelligent vehicles
  - contribute to improved services to citizens and businesses
  - real life pilots, demonstration and testbeds at a significant scale
  - support for standardisation and regulatory activities
  - opening up a range of market opportunities for innovative businesses
  - support to public procurement
  - integration of international initiatives
Main Challenges:

- **Resource efficient transport respecting the environment**
- **Less congestion despite increase in mobility**
- **Global leadership for the European transport manufacturing industry**

• **Innovation activities across these challenges:**
  - Bringing R&I close to market: demonstration projects, market take-up actions, standardisation, etc
  - Initiatives such as Clean Sky, SESAR it is and Green Cars PPP, including fully electric vehicles
  - International cooperation large-scale initiatives e.g. with US, Japan on transport electrification
Kansallinen älyliikikenteen strategia
- Korkea profiili liikennepolitiikan keskeisenä osana
- ”Hätäviestijärjestelmä (eCall) parantaa liikenneturvallisuutta ja tukee sen varaan rakentuvien lisäärvopalveluiden ja ajoneuvoihin jälkiasennettavien laitteiden markkinoita”
- Monipalveluajattelu (julkiset ja yksityiset palvelut)
- Maksupalvelut, logistiikan tuki, matkustajainformaatio, liikenneohjaus, lisäärvopalvelut
- Vahva painotus myös kansainväliseen yhteistyöhön
- Vahvuus: Suomen asema mobiili-kommunikaatiossa
Suomi ja älyliikenne

Saavutuksia:

- Hyvä osallistumistaso 7. puiteohjelmassa:
  - osallistumisia 33, mukana 14 yritystä
  - Kokonaisrahoitus 10 M€, 5% osuus
  - Yrityksiä ja tutkimuslaitos: Aalto university, Destia, Emtele, Foreca, Ilmatieteen laitos, Logica Suomi, Mediamobile, Oulun yliopisto, Searail, VTT, Tieliikelaitos
- Drive C2X testialue Tampereella
- Vetovastuu laajassa TELEFOT hankkeessa (kannettavat laitteet)
- HeERO Pilot testialue, myös Suomi-Venäjä pilotti
- European eCall Implementation Platform 1. puheenjohtajuus
- eSafety Forum Implementation Road Map WG puheenjohtajuus
- Kohta allekirjoitettaneen Suomi-Venäjä yhteistyösopimus
Thank you for your attention!

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