



COOPERATION 7FRDP Specific Programme

**INTELLIGENT TRANSPORT RESEARCH RELATED ISSUES
(PRIORITY ICT)
FIRST WORKPROGRAMMES**

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Taking into account the fact that ECTRI, its members, the seniors of its members

- Have an active role in Surface Transport Technology Platforms (ERTRAC, ERRAC, WATERBORNE and eSafety forum), in Networks of Excellence APSN, HUMANIST and EURNEX
- Are often solicited as experts for the Member States (national, bilateral, multilateral programmes or ERANET transport project), for industries (ACEA, EUCAR, CLEPA, UNIFE...), for operators (ERTICO, UITP, UIC...) and other European associations (EARTO, EARPA, FEHRL, FERSI...), it is not surprising to see some of the proposal below expressed having been or to be also submitted by other intermediaries. This only proves that the Surface Transport European Research Area is moving and in construction.

The objective of this paper is dated and aimed in the general process of concrete elaboration of the 7FRDP. It is integrated in the preparation of the first workplan of 7FRDP for intelligent transport research related issues in ICT priority and the specific programme COOPERATION.

It follows the ECTRI 2004 inputs for 7FRDP and the specific programmes COOPERATION, IDEA, CAPACITIES and PEOPLE.

It is organized following the bullets of the specific program COOPERATION, followed by the ECTRI input for COOPERATION Specific Program.

For each priority it is reserving a specific treatment for NoE ideas by subpriorities and big cooperative project ideas by bullets. Many of the cooperative project ideas are built as eventual modules of bigger projects and are classified by bullets.

As the writing down of the Environment and Energy priorities are not speaking at all or partially of transport issues, the ECTRI proposals on these issues are classified in the ICT and transport priorities bullets.

For NoEs and IPs ECTRI can provide one page detailing the idea.

About NoEs, ECTRI members and ECTRI are considering that this instrument is dedicated to the structuration of the focussed research (and eventually frontier research) supply side at European level (EU and national and regional level) ERANET and ERANET + are structuring the demand side and the European Technology Platforms (and eSafety Forum) are organizing a foresight exercise and a first step of the supply-demand dialogue.

The experience of ECTRI or ECTRI members is also that it is important to have other stakeholders than academia involved while not necessary being partner or integrating their research potential through Advising Board, Scientific Advisory Board or Stakeholders fora : it is critical for the Lisbon and Barcelona agendas.

It is also one of the big instruments to keep industrial Research and Development world headquarters in Europe through legibility and dialogue with academia (Universities or research institutions, networked around excellence and relevance).

As it is also critical for societal or policy oriented issues including better regulation issues to have such instrument use because it is pushing the agenda more in depth than coordination action instrument.

That is to say ECTRI is thinking that there is a need for new NoEs and also a need to maintain, for successful NoE, possibility of granting a second step of integration and dissemination activities.

Because of these matters, ECTRI is thinking that the treatment within the tasks list of NoE has to be carefully adequate even if it could not be written down in some similar wording than big projects: the aim is not the same.

Information and communication technologies priority

I - ICT meeting societal challenges subpriority

For mobility, eSafety and "Intelligent car initiative"

1 - ICT transport related issues ideas of NoE

- Advanced Traffic Management Modelling and Simulating
- Driving research or design of training NoE
- Electro Magnetic Compatibility and communication systems: new characteristics of EMC transport environment and components or systems

2 - Cooperative projects ideas

Intelligent vehicle system

IPs:

- Safety, Design and appropriation of ADAS functions, integrated methodologies for assessment
- Effects of ITS on behaviour and accidents including driving simulation
- Driver assistance and information systems for powered two wheelers (PTW)
- Designing a haptic interaction between driver and vehicle in order to ensure a safe, fast and efficient handling of vehicles with advanced driver assistance systems (including demonstrators)
- Produce scientific knowledge and data regarding ADAS functionalities and their human-machine-interface for guidelines and eventual standardization
- Developing scientific knowledge for new systems architecture linked to the implementation of ADAS and highly autonomous driving
- Professional Driver training for high workload and emergency situations in driving simulators
- Adaptive and Safe Integration of Nomadic devices into the vehicles interior and HMI

STREPs:

- Training for ITS and using ITS for training-including training program
- Adapting ADAS and IVIS functions to support the driver in managing the individual stress level – avoiding overload and underload and taking into account compensation of the driving task
- Remote system for diagnostics and monitoring of the motor vehicle's technical condition, utilizing OBD II system and SAE standards
- Modular units with adaptable NVH properties
- Integrated system for Driver State Management

- On-board data capture
- Advanced hybrid propulsion concepts and energy optimization by applying novel energy storage technologies (E.g. advanced batteries and super-capacities)
- Environmentally influenced Powertrain control
- Navigation-assisted Powertrain control
- New car insurance model based on the positioning systems

Cooperative systems

IPs:

- Communication spectrum research
- ITS for optimizing sustainable and safe use of main and secondary roads Network
- Adaptive and integrative co-pilot for safety driving from driving automation to the cognitive car
- Semi-autonomic driving – Handling the transition from manual to highly-supported driving with regard to the human-machine-interface
- Technologies for advanced driver-vehicle interfaces
- In-Depth Accident analyses to derive requirements for advanced driver assistance systems (ADAS) with regard to ADAS functions and the human-machine-interface
- Development of scientific knowledge for architecture standards of cooperative systems and their interoperability
- Enhanced ACC systems for trucks

STREPs:

- Development of RF solutions for both vehicle to vehicle and vehicle to infrastructure systems
- Human factors and ergonomics, safety for automation, from airspace to automotive context, analysis of safety and errors
- Long-term effects of ADAS with different degrees of automation with regard to situation awareness, vigilance and risk homeostasis
- Mental models of driving ranging from manual control to highly automatic driving
- Inclusion of the behaviour of increasingly automated vehicles into existing models to investigate traffic flow and congestion effects

Mobility services

IPs:

- Needs and requirements of elderly and professional drivers for ITS
- Seamless intermodal travelling using ICT
- The use of driving simulators for driving rehabilitation and driver re-training

 **STREPs:**

- Advanced optical, infrared and radar sensors and data processing algorithms from airborne and even spaceborne traffic data acquisition
- Consequences of deployment of ITS in the transport environment according to drivers needs and requirements, and including the infrastructure

Field operational test

 **IPs:**

- Demonstration Facilities for Traffic Management (DEFTRAM)
- European Test Laboratory for Advanced Driver-Vehicle Systems
- Naturalistic driving observation to investigate drivers behaviour and ITS uses for favouring an HUMAN Centred Design of ITS
- Legal issues and ITS
- Interactions between drivers in traffic and their effects of traffic safety, traffic flow and the possible changes by ADAS functions
- Development of methods and procedures to assess the safety (and traffic) impacts of vehicle-related ITS functions with a view to possibly developing “certification” procedures
- Large scale demonstration field test of cooperative systems to assess their benefits and their business cases

 **STREPs:**

- Integrated models of driver pilot behaviour within different user group
- Application of infrastructure based or vehicle based dynamic traffic information to support traffic management
- The impact of “pervasive” location, computing and communications on traffic operations
- New car insurance model based on the positioning systems
- European benchmark and trends of infrastructures vehicle technology aimed at traffic information and traffic management

II - International Cooperation

- Opening « intelligent car projects » to non european OECD countries subject to reciprocity – for China and India, task by task analysis
- Idem for human factors projects taking into account the localization of the actual world scientific excellence
- Domain legal subjects or subjects near to normalization should be reserved to Europe