

FEHRL



SERRP Projects Overview

FEHRL Knowledge Centre

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SERRP PROJECTS

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MOBILITY, TRANSPORT & INFRASTRUCTURE (MTI)

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 Research Area Leader – Franziska Schmidt (IFSTTAR), Asa Aretun (VTI)

OPTIMISM (FP7 CSA - 01/10/2011, 24 MONTHS, DG RTD)

Optimising Passenger Transport Information to Materialize Insights for Sustainable Mobility

(<http://www.optimismtransport.eu/>)



The OPTIMISM project is developing different sets of strategies and methodologies for optimising passenger transport systems based on co-modality ICT solutions. Towards this goal, OPTIMISM will consider passenger needs and the carbon-neutral objective. OPTIMISM's main scope is to provide a scientifically documented insight of the transport system and people's travel choices via the study of social behaviour, mobility patterns and relative business models. This insight will also enable defining future changes in the passenger's travel system that would lead to more sustainable method/mode(s) of travelling, as people can travel in a more efficient, safer and cleaner manner, without compromising mobility.

The OPTIMISM partners will combine and utilise multidisciplinary skills, expertise, and on-going work in the fields of climate friendly transport, foresight, modelling, socio-economics, mobility behaviour, ITS and transport policy development. A Pan-European network with extensive coverage outside Europe as well, will lead dissemination tasks in order to ensure the widespread dissemination of results but also to allow access to various information sources relating to national surveys.

Partners: Coventry University Enterprises Ltd (CUE), Zurich University of Applied Sciences – Institute of Sustainable Development (ZHAW), SIGNOSIS Sprl, Deutsches Zentrum für Luft- und Raumfahrt Ev (DLR), FEHRL (Umbrella: IBDiM, LNEC, UCD; experts: FHWA, NPRA, TCD), Sapienza-Universita di Roma (CTL), Transport & Mobility Leuven (TML), CE Delft (DELFT), Joint Research Centre – Institute for Prospective Technological Studies (JRC-IPTS).

Project Coordinator: Eleni Anoyrkati, Coventry University Enterprises Ltd (e.anoyrkati@coventry.ac.uk)

FEHRL Contact: Adewole Adesiyun, FEHRL (adewole.adesiyun@fehrl.org)

RAIDER (ERA-NET ROAD - 01/11/2011, 16 MONTHS)

Realising Advanced Incident Detection on European Roads (<http://www.fehrl.org/raider>)

 Incident detection is an essential capability for Road Authorities to manage their road networks and adequately respond to incidents. Issues with the quality of detection, such as a high false alarm rate, delays in detection, or inaccurate location of incidents, directly impact the operations. RAIDER is a research project aiming to improve incident detection systems in terms of the detection quality and costs of the system and individual components such as sensors, data fusion and incident detection algorithms. The quality of existing systems and their components are reviewed against the user needs and requirements from National Road Authorities. Generic specifications are derived for sensors, data fusion and incident detection algorithms, based on which recommendations are made for necessary improvements of existing systems. A second path is also followed to assess the feasibility, costs and benefits of innovations in the near future in roadside sensors, nomadic devices, and in-vehicle devices. Alternative system concepts for incident detection are explored to incorporate and fuse data from mobile devices. The quality criteria from the first approach also apply here as constraints on the quality of the devices.

Experts from the National Road Authorities are consulted early in the project to select their most pressing issues as reference cases for research. Stakeholder consultations and two workshops with experts from the Road Authorities are planned to ensure the necessary input for the project and the dissemination and exploitation of the results. The project does not attempt to focus on any particular incident detection systems or Road Authority., because custom solutions are not easily transferable to other systems and Road Authorities.

Partners: TNO (Netherlands Organisation for Applied Scientific Research), TRL, AIT, FEHRL

Project Coordinator: Toon Beeks, TNO (toon.beeks@tno.nl)

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SOLUTIONS (FP7 CSA - 01/05/2013, 36 MONTHS, DG RTD)

Sharing Opportunities for Low carbon Urban transportION

Transport is a key enabler of economic activity and social connectedness. While providing essential services to society and economy, transport is also an important part of the economy and it is at the core of a number of major sustainability challenges, in particular climate change, air quality, safety, energy security and efficiency in the use of resources (EC 2011: Transport White Paper).

The overall mission of this project is to support the uptake of innovative sustainable urban mobility solutions in Europe and other regions in the world, in particular in Asia, Latin America and the Mediterranean. The call text has identified several regions in the world, policy areas and previous and on-going projects relevant for addressing the topic: Implementing innovative and green urban transport solutions in Europe and beyond (SST.2013.3-2). SOLUTIONS will address all regions and policy areas, and will link into all projects mentioned in the call text. We believe that this approach generates the greatest synergies, which will be for the benefit of participating cities and the projects SOLUTIONS will link to and build upon.

While SOLUTIONS will build strongly on previous and on-going projects and initiatives, as is the nature of a coordinating action, it also aims to provide added value that goes beyond summarising and facilitating knowledge sharing and research and technology transfer. SOLUTIONS aims to bridge the “implementation gap” between the potential of innovative sustainable mobility and transport solutions and packages of solutions and the actual level of up-take and quality of the deployment mechanisms.

Partners: Wuppertal Institute for Climate Environment and Energy, Rupprecht Consult, POLIS – Promotion of Operational Links with Integrated Services, ICLEI-Europe, Local Governments for Sustainability, ICLEI - South Asia, Local Governments for Sustainability, EMBARQ Mexico, EMBARQ Brasil, EMBARQ: The WRI center for sustainable transport, EMBARQ China, EMBARQ India, EMBARQ Turkey, EMBARQ Andino, CERTH/HIT, FEHRL, CEDEX, CDV, BAST, TRL, UN-HABITAT - United Nations Human Settlements Programme, IFSTTAR, AustriaTech – Federal Agency for Technological Measures, CATS - China Academy of Transportation Sciences, Technion - Israel Institute of Technology, CAI-ASIA – Clean Air Initiative, LNEC, Mobili-T - Urban mobility and transport, ICCT - International Council for Clean Transportation, ZLC - Zaragoza Logistics Center, AVERE-European Association for Battery, Hybrid, Fuel Cell Electric Vehicles

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TRANSFORMERS (FP7 CP - 01/07/2013, 42 MONTHS, DG RTD)

Configurable and Adaptable Trucks and Trailers for Optimal Transport Efficiency

The transportation of goods within Europe by means of commercial road vehicles has been growing steadily for the last decades and thus pacing economic growth and is predicted to continue in the future. This future trend combined with road congestion and increasing pressure to reduce CO₂-emissions motivates the commercial vehicle industry to explore innovation in the configuration of modern trucks beyond today's trucks that are mainly designed for maximum payload and optimized for limited mission sets.

TRANSFORMERS combines a modular approach for mission rightsizing by means of hybridization, truck engine downsizing and a trailer design that addresses simultaneously aerodynamics and load efficiency improvements. The overall goal is to achieve 25% energy load efficiency (in energy/km.tn) in a real world application taking into account the needs to maintain road infrastructure and traffic safety. The technology selection and sizing of the electric drive system will include analysis of the economic viability.

TRANSFORMERS plans to hybridize the truck by integrating power and intelligent energy controls in the Trailer that adapt to the mission profile and are capable to interact with existing and future trucks. This is defined as Hybrid-on-Demand in the project.

The major advantage over the classic vehicle hybridization approach is that no changes in the trucks/tractor heads should be needed, which in turn also allows new options in mission rightsizing by combining several trailers to make a road train. The results will include a pre-standard proposal for the interface between truck and trailer to allow future interchangeability of the hybridized trailers with legacy trucks. Additionally vehicle dynamics of trailer and semitrailer will be included in the investigation.

Partners: Volvo Technology AB, Robert Bosch GmbH, DAF Trucks NV, Daimler AG, FEHRL, Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung E.V., IFSTTAR, International Road Transport Union ASBL, Procter & Gamble Eurocor N.V., Schmitz Cargobull AG, TNO, Uniresearch BV, Van Eck Group, Kompetenzzentrum – Das Virtuelle Fahrzeug, Forschungsgesellschaft mbH

Project Coordinator: Joakim Svensson, VOLVO (joakim.u.svensson@volvo.com)

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SAFETY AND SECURITY (S&S)

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SAVERS (CEDR - 1/1/2013, 23 MONTHS)

Selection of Appropriate Vehicle Restraint Systems



SAVeRS is a Research Project funded within the 2012 Call “Safety” of the Transnational Road Research Programme of CEDR (Conference of European Directors of Roads).

The aim of the SAvERS project is to produce a practical and readily understandable Vehicle Restraint System (VRS) guidance document and a user-friendly web-based tool that will allow the selection of the most appropriate solution in different road and traffic configurations for all types of VRS: safety barriers including parapets, crash cushions (including truck-mounted attenuators), terminals and transitions, motorcycle protection devices.

Partners: University of Florence (UNIFI), TRL, VTI, Trinity College, ZAG, AIT, Balfour Beatty Major Civil Engineering, BRRC.

Project Coordinator: Dr. Francesca La Torre, UNIFI (francesca.latorre@unifi.it)

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ASAP (CEDR - 01/02/2013, 24 MONTHS)

Appropriate Speed saves All People (<http://asap.fehrl.org>)



Speed management of traffic through work zones is important for the safety of both the road user and road worker. A work zone will entail deviations from normal travel in a discrete road section and appropriate speed is needed to ensure that the driver can navigate the vehicle through the work zone routing, particularly if there are abrupt lateral deviations from road design norms. Without proper control of the vehicle, the driver may cause the vehicle to enter the restricted areas of the work zone. Infringement into these areas can cause injury to the car passengers or the road worker. Thus selection and control of traffic speeds in work zones are crucial components for road safety. A resource for best practice guidelines and financial implications of work zone speed control is not available in Europe. A common information source should be made available if European road users and road workers are to have the best level of safety, regardless of the country or region.

The ASAP project - Appropriate Speed saves All People - was designed to address the issues of speed management in work zones. The main objective is to gather knowledge on effective speed management measures through road works zones through literature review, information gathering from national expertise and practitioners, on-going research in Europe and abroad, and stakeholder consultations. The accumulated information will be documented to provide practical and readily understandable recommendations as to how to effectively manage speed through road works zones, in terms of

- engineering, design, and conspicuity of road works,
- enforcement and
- driver education/information,

with the aim of reducing risks to road workers without significantly increasing risks to road users.

Partners: AIT, BRRC, CDV, University of Firenze (UNIFI), VTI

Project Coordinator: Robert Thomson (robert.thomson@vti.se)

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ENVIRONMENT, ENERGY AND RESOURCES (EER)

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Research Area Leader – Manfred Haider (AIT)

RE-ROAD (FP7 CP - 01/01/2009, 48 MONTHS, DG RTD)

End of life strategies of asphalt pavements (<http://re-road.fehrl.org>)



The project aimed to develop knowledge and innovative technologies for enhanced end-of-life strategies for asphalt road infrastructures, which have an important impact on the energy efficiency and environmental footprint of the European transport system and fit within life-cycle thinking in waste policy at European level. It leads to the reduction of need for new raw materials, prevents the creation of waste and occupation of landfills and minimises the need to transport these materials to and from the work site, hence reducing energy, pollution, and CO₂ emissions. The project covered the following topics:

- Dismantling strategies: Impact and potentially adverse effect of different dismantling procedures on the quality of Recycled Asphalt (RA) will be investigated.
- Characterisation strategies: Improving characterisation and technical evaluation of RA, considering the heterogeneity of the material and specific industrial process for producing the asphalt mix.
- Handling strategies: optimisation of recycling at highest possible level and for the original layer depending on the RA characterisation and environmental sound reuse or disposal of the marginal materials that cannot be recycled.
- Environmental criteria: Assessment of risks and benefits to the environment with the use of RA. Special attention was paid to potential harmful substances and life cycle analysis (LCA) used as a tool.
- Cost-effective recycling: Short and long term performance, life time prediction by modelling of asphalt mixes produced with different levels RA and with different production techniques.
- Industrial processes: Study of the potentially adverse effect on the final asphalt mix quality derived from the specific method for introducing the RA in the mixing plant. How to avoid problems in the recycling of polymer modified RA and how to take full advantage of their special qualities.

Partners: VTI, IFSTTAR, Technische Universität Braunschweig, Swedish Geotechnical Institute, DRD, Dresden University of Technology, University of Nottingham, Hogeschool Antwerpen, PEAB, BRRC, TRL, UCD, EAPA and FEHRL (Umbrella: ZAG, CDV, IBDiM, LNEC).

Project Coordinator: Bjorn Kalman, VTI (bjorn.kalman@vti.se)

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PERSUADE (FP7 CP - 01/09/2009, 72 MONTHS, DG RTD)

PoroElastic Road SUrface: An innovation to Avoid Damages to the Environment (<http://persuade.fehrl.org>)



The project aimed to develop a durable, cost-effective Poroelastic Road Surface (PERS) using used tyres, which would at the same time benefit the environment by not only significantly contributing to abating traffic noise and vibrations but also helping to solve the problem of over three million tons of used tyres having to be dumped or burned every year in the 27 Member States with the consequence on ground and air pollution. It is anticipated that an advanced optimization of the poroelastic rubber compound could lead also to a decrease of rolling resistance for the vehicles rolling on such a pavement and, as a result, could contribute to reducing CO₂ and other emissions. Indeed, end-of-life tyres are a disposal problem regarding the large volumes produced every year.

Tyre shreds are primarily produced to reduce the transportation volumes of end-of-life tyres after collection. Within the European Union, there is a ban on land filling tyre material in order to reduce the total land filling volumes and encourage recycling measures [Directives 1999/31/EC & 2003/33/EC]. Until recently, the main disposal option has been energy recovery in industrial processes. However, legislation acts have recently been taken in the European Union to encourage the recycling and recovery of end-of-life-tyres and re-use of tyre materials in construction works is listed as one disposal option. Tyre shreds possess interesting technical properties that could be beneficially used in civil engineering applications. Some characteristic properties of tyre shred materials are the low density, high elasticity, low stiffness, high drainage capacity, high thermal insulation capacity and intrinsic wear resistance. These properties open up possibilities for utilisation of the material in an innovative manner.

This project will take advantage of existing experience in Sweden and in Japan. The former country is represented in the Consortium, while the latter will be represented in an External Reference Group (ERG). Five countries will host the experimental sites and apply different variants of mixes and construction methods, among which a newly invented Dutch method called the “Rollpave” system. The countries are: Belgium, Slovenia, Denmark, Sweden and Poland. This will allow for the influences of climate and traffic differences to be tested. Regarding traffic, some countries will experiment PERS in a city street with slow, light traffic while others will test it on a highway with fast, heavy traffic. Already the Belgian (Walloon) road administration have expressed willingness to offer a test site, the Road Directorate in Denmark have expressed interest and there is a certain interest in the city of Stockholm to host a test site as a follow-up of previous experiments.

The project will also analyse the cost-effectiveness and the global, possibly positive impact on CO₂ emissions and greenhouse gases (GHG) in general of that new technology. Life cycle assessment will also be performed.

Partners: BRRC, DRD, ZAG, TUG, ETRA, IFSTTAR, VTI, NCC, IBDiM, DVI, HET, KELeuven

Project Coordinator: Luc Goubert, BRRC (l.goubert@brcc.be)

FEHRL Contact: Steve Phillips, FEHRL (steve.phillips@fehrl.org)

MIRIAM (INTERNAL FEHRL PROJECT - 01/01/2010, 84 MONTHS)

Models for rolling resistance In Road Infrastructure Asset Management Systems (<http://miriam-co2.net>)



MIRIAM is a project started by 11 partners from Europe and USA. They have collectively raised internal funding to provide sustainable and environmentally friendly road infrastructure. This will be achieved by reducing rolling resistance - hence lowering CO2 emissions and increasing energy efficiency. The objective of the project is to provide a sustainable and environmentally friendly road infrastructure by developing an integrated methodology for improved control of road transport CO2-emissions. The methodology will be implemented in road asset management systems to optimize the reduction of the part of vehicle CO2-emission related to road pavement conditions. The optimization of pavement quality and condition in relation to CO2-emission and energy consumption supports the sustainable road transport issues in relation to environmental impact and will result in better quality of life for society in general.

The aim of the project is to establish models for:

- Energy saving through reduced rolling resistance
- Vehicle CO2 and Rolling Resistance Sources
- Transport Infrastructure Operation and Management

A first phase of the project will contribute with investigation of; pavement characteristics; energy efficiency; modelling; and, raising awareness of the project in order to secure economic and political support for a second phase. This phase will focus on development and implementation of CO2 controlling models into the road infrastructure asset management systems.

Sub-projects

Measurement methods

Existing measurement methods must be reviewed. Planning of measurements/ experimental design

Investigate influence of pavement characteristics on energy efficiency

Determine the scope of energy efficiency loss caused by Rolling Resistance (justification for the project), determine which other parameters influence energy efficiency loss

Investigate importance of RR on efficiency within LCA framework

To answer the questions at the conceptual level regarding LCA modelling and sensitivity analysis

External funding and raising awareness

To raise awareness of the MIRIAM project and to seek additional funding

Constraints/Requirements to implementation

Determine the constraints and requirements in existing pavement management systems or asset management systems for implementing processes for handling rolling resistance as part of the optimization and strategic maintenance and rehabilitation

Partners: AIT, BAST, BRRC, Caltrans, DRD, IFSTTAR, NPRA, TUG, UCPRC, Trafikverket, VTI, ZAG

Project Coordinator: Bjarne Schmidt and Brian Larsen, Danish Road Directorate (bjs@vd.dk and bgl@vd.dk)

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MIRAVEC (ERA-NET ROAD - 01/11/2011, 24 MONTHS)

Modelling Infrastructure influence on RoAd Vehicle Energy Consumption

(<http://www.fehrl.org/miravec>)



CO₂ emissions from road transport represent an important part of the overall greenhouse gas emissions and consequently contribute to the ongoing climate change. Efforts to reduce those emissions need to consider all influencing factors on energy consumption of road vehicles, which is directly linked to their carbon footprint. Besides the 'greening' of vehicle technologies the improvement of road infrastructure characteristics related to fuel consumption can contribute to an overall CO₂ reduction in road transport. This requires both a thorough understanding of those interactions and the implementation of results in current pavement and asset management practice. In contributing to both objectives MIRAVEC enables National Road Administrations (NRAs) to effectively support the reduction of road transport greenhouse gas emissions.

While some previous and ongoing projects like ECRPD or MIRIAM focused on specific topics in this area, the objective of MIRAVEC is to build on existing knowledge and models. In doing so MIRAVEC aims at achieving a more holistic view considering a broad variety of effects (e.g. the interaction between road design and traffic flow). Moreover, MIRAVEC will investigate the capabilities of available models and tools and evaluate the relative importance of different road infrastructure characteristics for different settings (e.g. topography or network type). The relationship with road safety and noise emissions will be examined. The project results will be compiled into recommendations to NRAs on how to implement the findings, models and tools in pavement and asset management systems. The dissemination to the NRAs is planned using workshops, project presentations and a project website.

Partners: AIT, TRL, VTI, ZAG, CDV, FEHRL

Project Coordinator: Manfred Haider, AIT (manfred.haider@ait.ac.at)

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KEYROADS (DVS/RWS PROJECT - 15/11/2011, 24 MONTHS)

A RIMAROCC analysis of key economic road axes from the Dutch sea ports to the German hinterland

<http://www.fehrl.org/keyroads>

Within the Resilient Road element of Forever Open Road, FEHRL member Rijkswaterstaat launched the KEYROADS project to evaluate the risks from climate change (and possible measures) for the key road links between its sea ports and the European hinterland using the RIMAROCC guidebook that resulted from CEDR's ERANET Road research framework. As a first step, the focus aimed to be on road corridors with Germany and later projects planned to potentially expand the assessment on to a wider European scale. Such assessments could have ultimately formed the basis for Dutch advice to the European Union on the strategies for developing the TEN-T.

FEHRL was to provide support for Rijkswaterstaat (RWS) on the cooperation with Germany on specified activities. A sum of €107,000 was earmarked for possible award to potential contactors to cooperate on the topic of climate risk analysis. Several meetings were held with BAST and links made with the national RIVA project. However, following the specification of the 2012 CEDR trans-national programme and subsequent contract to a Dutch led consortium, the scope of KEYROADS has been adapted to better support wider Dutch-German cooperation with a particular focus on the Infrastructure Innovation (i.e. Infravation). Infravation is an initiative between Netherlands, Germany, Denmark and the USA to support co-funded innovation projects.

Two elements are now being developed within the Keyroads activities. These are:

1. Organisation of an Infravation Expo and brokerage/info event in June 2013. This event will include sessions on Infravation related topics, including a session on the climate adaptation aspects originally considered in KEYROADS
2. Delivery of the planned Infravation Scoping study as a combined action between Rijkswaterstaat, the Danish Road Directorate and the German Federal Ministry of Transport.

See more details on the Infravation programme on page 24.

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LORRY (FP7 CP - 01/11/2012, 36 MONTHS, DG RTD)

Development of an innovative low rolling resistance truck tyre concept in combination with a full scale simulation tool box for tyre performance in function of material and road parameters

(<http://lorry.fehrl.org> and <http://www.lorryproject.eu>)



The aim of the LORRY project is to reduce trucks carbon footprint by developing an innovative low rolling resistance tyre concept combined with a comprehensive tool box for fleet fuel saving management. This proposed concept will go beyond current state of art and stakeholder or market expectations regarding tyre rolling resistance, mileage, driving safety, driving performance and material and manufacturing sustainability. Steer and trailer tyres developed in the framework of the project will demonstrate a minimum 20% gain in truck tyre rolling resistance. Truck tyre wear and wet safety performance levels will be improved additionally. To reach this objective, a multidisciplinary consortium (7 public / 4 private partners) has been created covering the fields of tyre technology, rubber and filler technology, nanotechnologies, composite physics, sensory, transport and road infrastructure.

A complete set of complementary scientific evaluation methods will enable the understanding of interactions between new tread pattern design and new material composites as well as the tyre performance dependency on tyre-vehicle operation and road conditions. LORRY consists in a holistic approach for an intelligent surface transport system. New tyre and truck fleet operating concepts resulting from the programmed will go beyond European Green Car Initiative roadmap expectations for 2015 and smoothly bridge and feed next coming tailored trucks and sustainable trucks initiatives, forecasted respectively for 2020 and 2025.

Partners: Goodyear, Aalto, DIK, Fraunhofer, LPMA, IPF, OEC, CSIC, BRRC, Novacom, Ewals

Project Coordinator: Goodyear SA

FEHRL Contact: Steve Phillips, FEHRL (steve.phillips@fehrl.org)

FOREVER (CEDR - €214K/100%, 01/01/2013, 24 MONTHS)

Future Operational impacts of Electric Vehicles on European Roads' (<http://forever.fehrl.org>)



With changing public attitudes regarding sustainability and energy efficiency, the use of electric vehicles (either hybrid electric or fully electric) on European road networks is increasing. While the main focus of noise-related research has been associated the use of these vehicles in low-speed urban

environments, particularly in relation to the safety risks posed to vulnerable road users, little research has been carried out to date on the potential noise impacts of electric vehicles on roads, which fall under the jurisdiction of National Road Administrations (NRAs), namely motorways and other primary routes.

As part of research funded under the CEDR Transnational Road Research Programme Call 2012 on Noise, the FOREVER project aims to address the issues on NRA roads by providing data and information focussing on three issues:

1. The identification of the noise emission levels from electric vehicles (powertrain and rolling noise components) at speeds representative of NRA roads, including the impacts of added alert sounds and the development of input data for the CNOSSOS-EU noise model,
2. The noise emission from low-noise tyres and tyres used with electric vehicles, and
3. An estimation of the noise impacts of electric vehicles and low-noise tyres on NRA roads, based on different fleet compositions and different take-up rates of electric vehicles.

The results of the proposed research may be applied or integrated into procedures or systems used by individual NRAs, e.g. through the other CEDR Noise project QUESTIM [QUIetness and Economics STimulate Infrastructure Management]. They are of significant indirect use through improved traffic noise prediction and the subsequent preparation of noise maps and action plans in line with the requirements of the Environmental Noise Directive.

The findings will help to inform NRAs in the future planning and design of road traffic noise mitigation measures, help inform future predictions of traffic road noise, and provide information on wider noise benefits of using electric vehicles and the choice of tyres used on electric vehicles.

The project will provide a starting point for enhancements of the source noise model in the forthcoming CNOSSOS-EU noise prediction model and provide further evidence beyond that already available from previous low-speed research studies, as to whether the noise emissions from electric vehicles are similar to or lower than those of ICE vehicles.

Partners: AIT, IFSTTAR, Trinity College Dublin (TCD), TRL, University of Bath

Project Coordinator: Phil Morgan, TRL (pmorgan@trl.co.uk)

FEHRL Contact: Adewole Adesiyun, FEHRL (adewole.adesiyun@fehrl.org)

ALLBACK2PAVE (CEDR - €533K/100%, 01/04/2013, 24 MONTHS)

Toward a sustainable 100% recycling of reclaimed asphalt in road pavements

<http://allback2pave.fehrl.org>



To save natural resources it is essential to recycle used construction materials and to reuse them in new constructions. In the case of road construction, the majority of European roads are paved with asphalt material. The dismantling and end of life strategies for these pavements is common practice in many European countries but are very divergent among the European member states and the associated countries relating to the amount of reclaimed asphalt (RA) reused in new pavement layers. In general the share of recycling the RA in new asphalt courses is rather lower than it could be technically. However, the complete reuse of the reclaimed construction materials requires a precise assessment of the properties of the virgin, aged and mixed materials.

The EU FP7 ReRoad Project is looking at these issues and it has already produced methodologies and tools that will be of primary importance to operate an effective recycling of asphalt pavements in Europe. However, the mechanical characterisation and performance estimation of ReRoad has been performed hot asphalts mixes for surface courses incorporating a maximum of 30% of RA.

AllBack2Pave is a two year international project which will use some of the outputs of the ReRoad project to go further and evaluate the feasibility of recycling up to 100% of asphalt pavements into surface courses by using Warm-Mix technologies to lower emissions and energy consumptions. The main objectives of AllBack2Pave are the following:

- Collaborate closely with the private sector, Asphalt producers, chemical additives producers and waste material managers, in order to define a warm-asphalt mix technology for surface course incorporating as much RA as possible.
- Assessing the mechanical properties of binders and mixes to assess the sensitivity to damage when using warm asphalt mixes containing different percentages of RA.
- Characterise the environmental and economic impact of the defined technology through Lyfe Cycle Assessment and a Lyfe Cycle Cost Analysis.

Partners: Technische Universitat Dresden, University of Nottingham, Universita Degli Studi di Palermo, Iterchimica, CLG Costruzioni s.r.l, Ferrara Accardi E Figli Srl, Athena Sustainable Materials Institute, University of Washington, University of Nevada, GreenRoads Foundation, FEHRL, European Asphalt Pavement Association (EAPA)

Project Coordinator: Davide Lo Presti, University of Nottingham (davide.lopresti@nottingham.ac.uk)

FEHRL Contact: Adewole Adesiyun, FEHRL (adewole.adesiyun@fehrl.org)

ECOLABEL (FP7 CP - 01/10/2013, 36 MONTHS, DG RTD)

Development of a novel ECO-LABELing EU-harmonized methodology for cost-effective, safer and greener road products and infrastructures

The EU Ecolabel identifies products and services that contribute to sustainability because they have demonstrated a reduced environmental impact throughout their life cycle. There are already more than 17,000 EU Ecolabelled products on the market, but there are no references for road products and infrastructures. The concept of the ECOLABEL project arises from the necessity of a new, green, holistic and EU-harmonised ecolabeling methodology integrating by a Life Cycle Engineering approach: environmental indicators along with the economic, technical and social aspects, for the assessment of future and existing road infrastructures, as well as their construction materials such as asphalt mixtures and cement-based materials.

This methodology, together with a guide for road eco-labeling and a multi-criteria software tool to be developed, will define eco-labels and provide recommendations to improve the label achieved, supporting and motivating relevant stakeholders and industry in order to include greener, more cost-effective and safer technologies in their road construction, maintenance and renewal projects. In order to achieve the expected results a complete work plan has been performed. This plan that will move from the definition of the new ecolabelling methodology considering existing relevant labelling approaches, plus the analysis of road products, to the development of guidelines and of a software tool that thanks to the direct involvement of CEN in the project, will motivate future EU-harmonized labelling approaches for roads that would grant the implementation of the ECOLABEL results. The ECOLABEL project will contribute to the implementation of European policies and strategies, boosting the integration of transport in sustainable development promoting technologies and materials that reduce pollutant emissions and the use of natural and financial resources.

Partners: ACCIONA, BAST, CIRCE, Chalmers Tekniska Högskola AB, ERF, FEHRL, IECA, IFSTTAR, Nederlandse Organisatie voor Toegepaste Wetenschap, KGM, AENOR, INVESTEKO, NAPE SA

Project Coordinator: Carlos Montoliu, ACCIONA (carlos.martinportugues.montoliu@acciona.com)

FEHRL Contact: Adewole Adesiyun, FEHRL (adewole.adesiyun@fehrl.org)

DESIGN & PRODUCTION SYSTEMS (DPS)

FEC Supervisor – Bob Collis (bcollis@trl.co.uk)

Research Area Leaders – Alan O'Connor (TCD), Jos Wessels (TNO)

EVITA (ERA-NET ROAD - 01/09/2010, 24 MONTHS)

Strategic benchmarking and key performance indicators

Road operators have to report more and more frequently and efficiently to all road infrastructure and transport stakeholders. This includes the road users and the road owners, as well as, to an increasing extent, the people living adjacent to the road network and other objects in the road surroundings, which ultimately are influenced by the road network.

The needs and expectations go beyond the provision of satisfying structural and surface pavement conditions. They relate to asset (investment) preservation, safety, noise, air quality, security, socioeconomic and other environmental impacts, as well as operation and maintenance costs. Key Performances Indicators (KPIs) are necessary to exert this “reporting” function and to provide a basis for sound decisions on future investment.

The main objective of the EVITA project is the development and integration of new and existing key performance indicators in the asset management process, taking into consideration the expectations of the different stakeholders. The project is paying special attention to the development of easily understandable Environmental KPIs (E-KPIs). The project also aims at identifying existing best practice in the implementation of KPIs to manage the full range of road infrastructure components (pavements, structures, road furniture etc.).

Based on a comprehensive state of the art investigation, a recommendation of different E-KPIs for the following environmental areas will be given: noise, air and water, natural resources and greenhouse gases (GHG). Beside the definition of E-KPIs, a recommendation for the implementation and the use of E-KPIs will be included.

The project will open the door to the development of broader Asset Management Systems. The proposed KPIs, and the framework in which they will be incorporated and interact, will be available for advanced management processes. Thanks to these KPIs, the management of Europe’s Strategic Road Network (ESRN) will be facilitated and improved by using an optimised asset management system able to apply advanced management strategies. Furthermore, since the ESRN covers a number of European states, KPIs will be designed to be consistently usable by the different operators on different road types, also taking into account the fact that the priorities and approaches in different countries may be somewhat different. It has to be mentioned that, reciprocally, in each country, the use of these KPIs could be extended to manage the national networks.

Partners: IFSTTAR (Coordinator - Philippe Lepert), PMS-Consult, TRL, ZAG, University of Belgrade, LNEC, DDC

Project Coordinator: Philippe Lepert, IFSTTAR (philippe.lepert@ifsttar.fr)

FEHRL Contact: Adewole Adesiyun, FEHRL (adewole.adesiyun@fehrl.org)

HEROAD (ERA-NET ROAD - 01/01/2011, 24 MONTHS)

Holistic Evaluation of Road Assessment (<http://www.fehrl.org/heroad>)



To manage the road network, road managers and operators have to consider existing policies such as the requirement to keep the network in good condition and deliver this condition at minimum whole life cost. However, the condition should also meet the expectations of stakeholders. The management process has to optimise the total costs for society, whilst minimising the effects of given condition levels on safety, reliability, environmental impact, economics and sustainability. This principle and its overall goals are equal for all road managers around Europe. HEROAD will investigate the holistic process (the combination of individual components, levels of assessment and the inclusion of a life cycle perspective) to incorporate new challenges in asset management. This includes reviewing data collection, assessment and reporting regimes; taking into consideration new challenges (climate change, traffic configuration, new materials, LCC and the focus on road user expectations); Identifying and assessing the key technical components of these regimes and further determining whether they are the best practice; identifying and describing indicators at different assessment levels (for road operators, complicated technical parameters are okay, for decision makers and the public, more understandable indicators that could be built from combination of technical parameters are needed); selecting the key good parts of HEROAD findings and providing advice to the customer on how they could use them. This will be achieved by taking on board experts from the different areas of road assessment in the project and putting together a consortium with a good geographical spread. Traditional methods with literature search and interview with stakeholders/experts will be done, and the main information and data gathered at a two-day HEROAD workshop made up of smaller groups per asset on the first day and plenary meeting the second day. The final meeting and evaluation will be at the 4th European Pavement and Asset Management Conference (EPAM) in Malmö, Sweden, and the final output will be guidelines with best or promising practices and recommendations for development.

Partners: AIT, BRRC, FEHRL, TRL, VTI and ZAG.

Project Coordinator: Leif Sjögren, VTI (leif.sjogren@vti.se)

FEHRL Contact: Adewole Adesiyun, FEHRL (adewole.adesiyun@fehrl.org)

SMARTRAIL (FP7 CP - 01/09/2011, 36 MONTHS, DG RTD)

Sustainable Maintenance and Analysis of Rail Transport Infrastructure (www.fehrl.org/smartrail)



The SMARTRAIL vision is to provide a framework for infrastructure operators to ensure the safe, reliable and efficient operation of ageing European railway network through a holistic approach which will consider input from state of the art inspection, assessment and remediation techniques and use this data to consider “what if” scenarios using whole life cycle cost models. These models will allow the infrastructure operators to make rational decisions on the best use of limited funding which will be committed to the long-term maintenance of the rail infrastructure networks. The outputs from the project will result in enhanced safety, reliability and capacity of these rail infrastructure networks and address European policy in the areas of transport safety and security, inter-modality, opening up a European network for freight transport and routes to rapidly developing Eastern European and Asian markets.

Major research studies considering the European railways have been conducted, e.g. HISPEEDMIX, SAMRAIL, NEW OPERA, MODTRAIN. The SUSTAINABLE BRIDGE and INNOTRACK projects of the few that specifically considered ageing rail infrastructure, either bridges exclusively (in the case of the former) or within a very broad range of issues including buildings, signalling, track, bridges etc (in the latter). The SMART Rail project focuses on the heavy civil engineering infrastructure (such as bridges, tunnels, rail track and slopes) associated with ageing rail networks. Each element represents a very high cost item (usually quantified in millions of Euro) and unplanned replacement of any single element would cause unacceptable delays for the network (generally measured in months). The SMARTRAIL concept is to provide a whole life cycle tool which will allow infrastructure operators to optimise the existing, ageing European rail infrastructure and ensure it remains operable into the future in the context of:

- (i) Increased traffic volume and loading with particular consideration for increased freight capacity. The techniques must consider the effects of changing climate on infrastructure, for example; incidents of flooding causing accelerated scour of bridge foundations, high intensity rainfall events causing slope failures and freeze thaw causing damage to bridge and tunnel structures.
- (ii) The SMART Rail consortium brings together experts in the fields of infrastructure assessment in the road and rail industries, national infrastructure operators and specialist SME’s to achieve these critical aims.

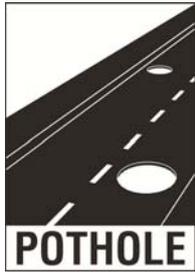
Partners: University College Dublin (UCD), Slovenske železnice, d.o.o. – Slovenian Railways (SŽ), FEHRL (Umbrella: AIT, CDV, EPFL, NTUA, TRL, VTII), EURNEX, IGH, ZAG, RODIS, Adaptronica, Technische Universität München (TUM), Instytut Kolejnictwa (IK), University of Nottingham (UoN), HZ Infrastruktura D.O.O., Irish Rail, DeMontfort University (DMU).

Project Coordinator: Dr Kenneth Gavin, UCD (kenneth.gavin@ucd.ie)

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POTHOLE (ERA-NET ROAD - 01/10/2011, 24 MONTHS)

Rapid and Durable Maintenance Methods and Techniques (www.fehrl.org/pothole)



The main objective of the project POTHOLE is to address the need of road agencies for durable construction and maintenance methods for the repair of damage which occur after hard winters due to repeated frost-thaw cycles. All European countries are faced with the problem of potholes and how to repair them. Many approaches just deal with repair methods which are durable only on a short-term base and therefore are not cost-effective. Regarding the immense economic loss due to the damage, the repair of potholes with materials that are only good on a short-term base and, most importantly, the increasing numbers of crashes, injuries and deaths caused by potholes requires an improvement in the methods and techniques. In this context it is not just important to improve the

methods and techniques, but also provide the road agencies with some kind of tool which gives them the relevant information and helps them to make sound decisions.

In this project, normal together with new approaches which target the medium- or long-term repair of potholes will be studied. In a catalogue tests, evaluation methods and experiences according to existing European Standards will be listed to give road agencies an overview of the possibilities for the repair of potholes. Furthermore, the testing of techniques and the use of materials from already existing trial sites will be used to determine laboratory testing which can or should be used to be able for the correct testing of materials for this purpose. The gained knowledge, including the European experiences, will be used to develop guidelines for road agencies to enhance their maintenance needs, allowing them to select a repair technique and/ or material with a durability corresponding to the estimated lifetime of the existing pavement. The great advantage of this approach is the corporation of seven countries which ensures that many views and experiences throughout Europe are considered. This also means a great help for the implementation of the results at the end of the project as all partners can use their national contacts within the national road agencies and provide them with the developed guidelines on a direct basis.

Partners: TRL, DRD, FEHRL, Karlsruhe Institute of Technology (KIT), University of Zilina (UNIZA), University of Twente (UT), ZAG.

Project Coordinator: Dr.-Ing. Carsten Karcher, Senior Researcher, KIT (carsten.karcher@kit.edu)

FEHRL Contact: Steve Phillips, FEHRL (steve.phillips@fehrl.org)

TRIMM (FP7 CP - 01/12/2011, 48 MONTHS, DG RTD)

Tomorrow's Road Infrastructure Monitoring and Management (www.fehrl.org/trimm)



Effective, fair and sustainable road management requires objective and up-to-date information. Advances in a range of sensing technologies and information processing have built up the potential for implementing new monitoring techniques that deliver key information for road management. Many current monitoring techniques suffer from low cost efficiency, restricted spatial coverage, traffic disruption, poor reliability, poor understanding of their capability, subjective interpretation, poor assessment of defects affecting functionality, and restricted versatility. For this reason, many road and bridge owners/operators make limited use of current monitoring systems and avoid some of the recent developments. The practice of using monitoring techniques also differs between countries. As a result, management decisions are sometimes not optimal, causing higher costs, lower performance, inconvenience (traffic delays) and additional costs and external effects to society. The vision of the project is to have.

- Reliable and accurate road infrastructure condition data that reports the key functional, safety and structural condition of roads and structures across Europe.
- The effective use of this data across the full range of maintenance activities from scheme identification and treatment design, through to strategic, financial and whole life planning.
- Increased efficiency, informed decision making, sustainable and cost effective road management.

The project aims to enhance the management of road infrastructure assets by complementing or replacing existing monitoring systems, thus creating a comprehensive and efficient toolbox of monitoring systems and indicators that will provide the key information required for efficient, sustainable and cost-effective decision making, at both the network and project level.

Partners: VTI, Nederlandse organisatie voor toegepast natuurwetenschappelijk onderzoek (TNO), AIT, TRL, ZAG, IGH, LNEC, IFSTTAR BRRC, FEHRL, CESTEL, RED Bernard GmbH, YottaDCL, Greenwood Engineering A/S, Roadscanners OY.

Project Coordinator: Robert Karlsson, VTI (robert.karlsson@vti.se)

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INROADS (FP7 CP - 01/12/2011, 36 MONTHS, DG RTD)

INtelligent Renewable Optical ADVisory System (www.fehrl.org/inroads)



Road studs (also commonly known as cat's eyes) are used around the world to delineate, along with painted lines, road space through retro-reflective spheres, which are illuminated by vehicle headlights. In recent years, the use of LED lights within road studs has been developed which has the significant advantage that the road studs are more visible due to active lighting than is achievable through reflection alone, can use dynamic colours and can be seen at angles that would not be reflected by headlights. These properties make LED road studs useful for locations where there is an increased risk of accidents such as unlit country roads, but their use has been predicted to increase generally on unlit roads, both major and minor, as an alternative to traditional street lighting. Typically, the LED lights are a single colour, such as white for lane delineation or red for the hard shoulder for example, although the potential to have active lighting, such as blue in cold weather or red if a vehicle is travelling too close to another have been explored. There will be a trade-off between the potential additional information that could be achieved using additional colours, and the potential to confuse or distract drivers.

This project aims to develop new intelligent lighting applications, tools and methods, integrating LED lighting across the highway that will enable the more effective operation, planning, design, repair and maintenance of the highway network. It will improve safety and service level, reduce vulnerability of transport networks to incidents, assure high-quality process without data loss and errors and reduce CO2 emissions by maximising the use of the existing asset and reducing the need for additional road construction. The integration of communication technology, and for certain applications, sensors within the individual units will enable enhanced traffic management and driver information and this is what will represent the significant step forward over existing systems, as the lights will be able to communicate with each other and with a central control. The potential for units to be powered by renewable energy, specifically solar or piezoelectric, to reduce carbon emissions and to be truly self contained will be explored; this would allow for their use on sections of highway with no readily available power source. For certain applications, a wired power source would be required in order to have 24 hour illumination, or back up power.

Partners: TRL, AIT, Centro para la Investigación y Desarrollo en Transporte y Energía (CIDAUT), Desarrollo de Sistemas Tecnológicos Avanzados (DSTA), Israel National Roads Company (INRC), IFSTAR, Siemens, INNOWATTECH

Project Coordinator: Martin Lamb, TRL (mlamb@trl.co.uk)

INFRAVATION (FEHRL - 01/12/2012, 7 MONTHS)



FEHRL members Rijkswaterstaat supported by FEHRL, are leading the initiative to create Infravation, an ERA-NET PLUS action expected to be supported through the EC's Framework Programme 7 (FP7) 2013 Work Programme. This call will address the needs of Member States for joint research on road infrastructure and will enable national and regional bodies to take on tasks collectively that otherwise could not be taken forward, bringing together the efforts of Member States, the European Commission (EC) and industry. The USA/FHWA will also participate through its Cooperative Agreement with FEHRL.

The Infravation call will be issued in early 2014 and the topic will be 'Advanced Systems, Materials and Techniques' for road infrastructure. For design, inspection and monitoring, advanced systems could include breakthrough sensing and analysis technologies, including 'manu-services'. The call will include the development of advanced and novel materials based on nano-technology, biomimicry, etc. In the case of techniques for construction and maintenance, aspects such as advanced robotics could be developed. The call is for the development of advanced market-ready products and services for road operations, either on the European, national, regional or urban network. Before the 2014 call, Member States will issue an invitation for a scoping study to sharpen the technical focus and priorities.

Phase 1:

FEHRL was responsible for the drafting and submission to the EC of the project proposal text for the ERA-NET PLUS Infravation on behalf of the Member States representatives who are led by Rijkswaterstaat. This proposal, finalised in late-February 2013, set out Infravation's 2014 call for proposals on advanced systems, materials and techniques for road infrastructure and comprise of a Consortium of representative organisations of Member States, including FEHRL. Besides FEHRL is setting up a website on Infravation as a tool for partners as well as for profile raising at <http://www.infravation.net>

Phase 2:

FEHRL is instrumental in setting up a Scoping study to be agreed by the other funding bodies. This study will establish a scientific council which will provide a technical report to the Infravation Steering Group on the potential for innovations that could be developed in projects funded by the Infravation programme. The Scoping study would be linked with a planned US scanning tour on the subject undertaken in cooperation with US FHWA and provide a detailed report to assist the Steering Group finalise their call for proposals and to assist in defining the evaluation criteria for the programme.

Phase 2a:

FEHRL is organising an Infravation Expo information/brokerage event in June 2013 to raise awareness of Infravation and infrastructure innovation in general, promote brokerage activities between innovative enterprises and potential Infravation project partners and contribute to the development of the final call for Infravation proposals.

Partners: RWS, DRD, FEHRL, TUV, NPRA, Bundesministerium für Verkehr, Bau und Stadtentwicklung

Project Coordinator: Govert Sweere, Rijkswaterstaat (govert.sweere@rws.nl)

FEHRL Contact: Steve Phillips, FEHRL (steve.phillips@fehrl.org)

SAFELIFE-X (FP7 CSA - 01/06/2013, 24 MONTHS, DG RTD)

Safe Life Extension management of aged infrastructures networks and industrial plants

The importance of aging of infrastructures, networks and industrial plants will continue to increase because of

- a) need to continue operation of these infrastructures, networks and plants beyond the design life-time,
- b) need to operate under changed conditions and
- c) the increased role of existing plants in the optimized (“smart”) supply and utility networks of the future, e.g. as fall-back supply.

The effective agreed strategies to address aging issues are yet to be developed and consistently applied. The project, SafeLife-X, will contribute to creating consensus on aging management including potential cascading and/or ripple effects. It will, thus, satisfy the demand within various industrial sectors and help match the EU Grand Challenges and the EU-2020 Strategy, and achieve goals of main stakeholders (e.g. EC, OECD, ECTP, ETPIS...). The project will create a multi-disciplinary / multi-sector community able to answer the key issues related aging at EU & International level. The consortium includes members of the EU Technology Platforms ECTP (construction) and ETPIS (industrial safety) and a group of 25 experts to complement the expertise needed, and will be open to all interested parties. This community will meet, share experience and prepare a common vision for the future and main elements needed to realize it. The project will capitalize on best practices of modelling, asset integrity management, decision making, and cost-benefit analysis. CEN Workshop Agreement(s) will be initiated in the course of the project and the development of one European Standard (EN) on “Risk-Based Inspection Framework” pursued. New projects will propose input for Horizon 2020 within the Strategic Research Agenda & Roadmap. SafeLife-X will explore the issue of aging as an opportunity for new technologies, services and businesses primarily in service and construction sectors, the latter being the largest EU industrial employer representing 9.9% of the GDP and 14.9 million operatives.

Partners: European Virtual Institute for Integrated Risk Management (EU-VRI), Steinbeis Advanced Risk Technologies GmbH, Institut National de l'Environnement Industriel et des Risques, TecNALIA Research & Innovation Foundation, Deltares, Teknologian tutkimuskeskus (VTT), FEHRL, Electricité de France SA., EnBW Energie Baden-Württemberg AG, Vienna Consulting Engineers (VCE)

Project Coordinator: Aleksander Jovanovic, EU-VRI (jovanovic@eu-vri.eu)

FEHRL Contact: Steve Phillips, FEHRL (steve.phillips@fehrl.org)

HORIZONTAL AND DISSEMINATION PROJECTS

FEC supervisor - Bojan Leben (bojan.leben@zag.si)

SAFIER (FP7 CSA - 01/02/2009, 39 MONTHS, DG RTD)

Support action for implementation of ERTRAC's road transport research priorities (SAFIER)

SAFIER aimed to build the strategies for implementing a step-change in the road transport sector - and more widely within the transport and energy sectors by providing the objective, consensus-based plans for the European Technology Platform ERTRAC (European Road Transport Research Advisory Council). Since 2002, ERTRAC has been an open forum for all relevant stakeholders in the road transport research. SAFIER provided common agreement on the scenarios for the urban mobility, long-distant transport, road transport safety, environment and energy, global competitiveness and enabling technologies sectors. The crucial contribution that ERTRAC made towards the establishment of the European Research Area and achieving the Lisbon goals addressing the 21st Century's key economic, technological, environmental and societal challenges for road transport will be continued. SAFIER aimed to support the development of transport specific innovations that will deliver step changes into efficiency and cleanness in the next 20 years and beyond.

SAFIER has led to a radical change in the stimulation of the Research and Development (R&D) of breakthrough technologies and concepts for transport. The involvement of all relevant parties considered new approaches and models for implementing the radically new solutions (both in technology and ways of thinking) to overcome the key challenges and in particular address the impact on, and of, climate change and overcoming energy dependency. Topics such as urban mobility and long distance transport were discussed in an integrated way with other transport modes. Industry and public authorities used the outputs of SAFIER to shape their R&D strategies to prioritise on areas of consensus and coordinate research activities. SAFIER aimed to demonstrate to decision-makers that action is possible to address the climatic, energy, mobility, safety, and global competitiveness challenges facing Europe.

Partners: FEHRL (Umbrella: TRL, DVS) (BE), CONCAWE (BE), CRF (IT), Rheinisch-Westfaelische Technische Hochschule Aachen (DE), UITP (BE), ERTICO (BE), VALEO (FR), Delphi Automotive Systems Luxembourg (LX), POLIS (BE), Volkswagen AG (DE), Volvo Technology (SW)

Project Coordinator: Josef Affenzeller, AVL List GmbH (josef.affenzeller@avl.com)

FEHRL Contact: Steve Phillips, FEHRL (steve.phillips@fehrl.org)

TEAM (FP7 ITN - 01/11/2009, 48 MONTHS, DG RTD)

Training in European Asset Management (<http://www.ucd.ie/team>)



Transport demand, both for passengers and freight, is growing strongly. To meet the economic growth targets of the Lisbon Agenda and to facilitate the economic integration of the European Union, European transportation needs to cater for a continuing medium term growth in demand. However, transport growth using the technologies of today is unsustainable.

New technologies and processes need to be developed which deliver cheap transport which is sustainable. In the past two decades there has been a revolution in electronic sensor and processing technologies. Sensors and the associated multiplexing electronics and software tools are now cheap and reliable which creates potential for new innovative uses in all kinds of ways.

The TEAM proposal will exploit the benefits of new sensor and processing technologies, methodologies, models and algorithms to monitor the condition and safety of transport infrastructure. These new sources of asset health data, combined with new computer models and algorithms, will achieve a step change gain in the accuracy of condition and safety assessments. Knowing exactly the processes, parameters, implications and state of health of transport infrastructure assets, will extend their safe working lives and reduce costs. It will prevent premature and sub-optimal repair, rehabilitation and replacement of assets without compromising safety.

The TEAM project will not just achieve these technological advances but will also develop training structures for a new generation of PhD students with the specialist and complementary skills necessary to develop the transport infrastructure of tomorrow.

Partners: UCD, ROC, IFSTTAR, UNott, IFSTTAR, EPFL, RDA, ABM, TCD, FEHRL

Project Coordinator: Dr Ciaran McNally, UCD (ciaran.mcnally@ucd.ie)

FEHRL Contact: Steve Phillips, FEHRL (steve.phillips@fehrl.org)

DETRA (FP7 CSA - 01/06/2010, 28 MONTHS, DG RTD)

Developing the European Transport Research Alliance (<http://detra.fehrl.org>)



The concept of DETRA derived from the so-called Lyon Declaration. In 2008, the Lyon Declaration signatories i.e. ECTRI, FERSI, FEHRL, EURNEX, HUMANIST, ISN and NEARCTIS committed themselves to work together on the deepening the European Research Area objectives in transport to address the Grand Challenges. From this commitment grew the objective to create a European Transport Research Alliance (ETRA) that would strengthen transport domain. Key priorities of this Alliance were to examine the strengths, weaknesses, opportunities and threats (SWOT) in the domain and develop a common understanding and approaches to reducing fragmentation and overcoming barriers.

The DETRA project provided a detailed examination of the current status and structure of transport research, bringing together the competences of all the partners together with their networks and associated links to provide the most comprehensive assessment of all the aforementioned aspects of ERA development. The project then set out, and began implementation, of the next steps in developing the Surface Transport ERA. The project was based on consultations and inputs from main stakeholders and experts to provide a series of key deliverables setting out the current situation, the identified barriers and recommendations for the next generation of the Transport ERA. It was recognised that each of the ERA themes must be examined in detail but reflecting the need for greater integration between each element the main project deliverables focused on more cross-cutting aspects. For this reason, the project structure reflected each ERA theme in a separate Work Package. These were then integrated transversally into five major DETRA outputs covering the main strategic issues to be addressed in shaping a coherent Transport ERA programme to 2020.

Partners: ECTRI, EURNEX, CERTH (FERSI), FEHRL (Umbrella: AIT, BAST, CDV, CSIR, IBDiM, IP, UCD, VTI, ZAG) and Humanist with support of ISN and Nearctis

Project Coordinator: Steve Phillips, FEHRL (steve.phillips@fehrl.org)

TRA 2012 (FP7 CSA - 01/01/2011, 24 MONTHS, DG RTD)

Supporting the Transport Research Arena 2012 conference (<http://www.traconference.eu>)

The fourth Transport Research Arena 2012 (TRA2012) was organised in Athens, Greece, in April 2012 and was supported by five stakeholder organisations; the Conference of European Directors for Roads (CEDR), the European Commission (EC), the European Road Transport Research Advisory Council (ERTRAC), the European Rail Research Advisory Council (ERRAC) and the European Technology Platform Waterborne (Waterborne TP).



This conference brought together representatives of the surface transport modes from industry, public authorities (national and local) and research providers. The main objective of TRA2012 was to contribute to innovation in sustainable mobility for Europe, by bringing together all the stakeholders of the transport system. In pursuing its objective of sustainable mobility for Europe, TRA enhances the global competitiveness of the European Union, by promoting the three aspects of the knowledge triangle: Research - Education - Innovation (Source - TRA2012).

The objective of this project was to provide support for organising and promoting TRA2012 so that it can be effectively considered as the first European Sustainable Surface Transport research Conference. This included reinforcing the scientific excellence of the conference and cementing its position as the main transport research event in Europe. The project was a coordinated commitment of partners from all of the relevant stakeholder organisations plus the 2012 and 2014 TRA organisers. This involved a balanced representation between the three transport modes, with proper involvement of the European Technology Platforms (ETPs) and major transport research stakeholders (academics, suppliers, operators, infrastructure managers, transport authorities at EU, National and local level).

Partners: CEDR, EOSA, UIC, UNIFE, CESA, CERTH/HIT, EURNEX, UCD, IFSTTAR, UITP, FEHRL (Umbrella: BRRC, NTUA, ZAG)

Project Coordinator: Michel Egger, CEDR (michel.egger@cedr.fr)

FEHRL Contact: Steve Phillips, FEHRL (steve.phillips@fehrl.org)

EUTRAIN (FP7 CSA - 01/10/2011, 24 MONTHS, DG RTD)

European Transport Research Area International cooperation activities

(<http://www.eutrain-project.eu>)



In the field of Transport research, the European Union as well as other major national, federal or regional entities of —global importance such as the U.S., Japan, Australia, South America, India, China, and others are buffeted by common transport related problems and challenges. These include challenges such as the forces of climate change, escalating energy prices, congestion and aging population, whose physical, social, and economic importance can only be faced jointly at international level. International Cooperation in Transport research is becoming therefore an increasing priority aiming, primarily, at creating critical mass in moving collaboratively to solve critical 21st century transportation challenges. The main idea and objective is to establish – through international cooperation in transport research - the free circulation of specialized knowledge, experience and know how in facing transport problems and challenges and create through collaboration the conditions for more breakthrough research and achievements that would otherwise require more time and resources if faced individually and separately. As the European Transport Research Area (ERA-T) takes shape and strength, international transport research collaboration can both help its further strengthening and internal cohesion as well as boost Europe’s competitiveness in the global economy. However, enacting and fostering international research collaboration is faced with significant problems and difficulties today (such as issues related to intellectual property rights, research infrastructures, researchers’ mobility and others), which should themselves be researched, in order to provide the means of enacting solutions.

The EUTRAIN proposal seeks to put forward a framework for such international cooperation in Transport research between the ERA-T and other regions, in order to ease existing barriers and limiting factors for such collaboration. It is also of major interest to try and achieve, within international research collaboration, an increased focus on human resources and creating the next generation of “global” researchers. The EU has already embarked upon an active programme of international cooperation actions and programmes for research, with actions partly under the 7th Framework Programme and partly as related to bilateral agreements for scientific and technological cooperation. The proposed project EUTRAIN will build upon the existing experience and know-how in this field - that has been gained in recent years through specific actions of international cooperation as well as projects / studies – and will go one step further to make specific recommendations and policies that will be —ripe for implementation.

Partners: ECTRI, ERTICO, FEHRL (Umbrella: BAST, CSIR, DRD, LNEC, VTI; Expert: FHWA), EURNEX, VOLVO Technology Corporation.

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INCRIS (FP7 CSA - 01/12/2011, 30 MONTHS, DG RTD)

Improving International Cooperation and R&D Road Infrastructure Strategy for Ukraine (<http://www.fehrl.org/incris>)

Ukraine plays a strategic role in facilitating East-West transport connections, the country's strategic road network. It however, cannot handle the increasing traffic load due to insufficient technical parameters. The overall objective of the INCRIS coordinating action is to ensure that the cooperation capacities of Ukraine's leading road research centre, the Shulgin State Road Research Institute (DNDI) are reinforced in order for it to foster its integration into the European Research Area and this improve road infrastructure in Ukraine through joint research.



The project aims to establish strategic partnerships between DNDI and EU road research centres in order to facilitate knowledge sharing. The project will help DNDI to develop partnerships and set up joint research programmes through networking. It also aims to strengthen the ability of Ukrainian researchers to take part in future FP7 funded research projects through training on project management accompanied by the secondment of DNDI staff at the Brussels office of FEHRL.

The sharing and dissemination of knowledge between DNDI and research institutes in member states will be facilitated by setting up a bilingual website, translating scientific results of DNDI into English and disseminating them through various channels. A bilingual project brochure will also be produced and participation of DNDI researchers in international conferences in the partner countries will be supported. The project will also assist in building a research strategy for DNDI in order to increase its scope and regional coverage in Ukraine as well as to improve its responses to the socio-economic needs of the country. Eventually, the project will contribute to improve transport infrastructure in Ukraine through enabling researchers to find the best solutions, locally initiated or an adaption of existing know-how while taking the principle of sustainability into account.

Partners: DNDI, FEHRL, IBDIM, VTI, KTI, INRC.

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FOSTER-ROAD (FP7 CSA - 01/03/2013, 36 MONTHS, DG RTD)

Future of Surface Road Transport European Research

The FOSTER-ROAD project will support the European Technology Platform ERTRAC (the European Road Transport Research Advisory Council) to create and implement the needed research and innovation strategies for a sustainable and competitive European road transport system. Linking all relevant stakeholders FOSTER-ROAD will provide the consensus-based plans and roadmaps addressing the key societal, environmental, economic and technological challenges in areas such as road transport safety, urban mobility, long distance freight transport, global competitiveness and all issues related to energy and environment. The FOSTER-ROAD activities include project monitoring, strategic research agendas, business case models and innovation plans, coordination of research on European and national level. They include multi-modal issues as well as comprehensive dissemination activities. Overall it can be stated that FOSTER-ROAD provides the best opportunity to maintain, strengthen and widen the activities to further develop the multi-stakeholder road transport research area, for the high-quality research of societal and industrial relevance in Europe.

Partners: AVL list GmbH, Centro Ricerche Fiat scpa, CONCAWE IVZW, Continental Automotive GmbH, ERTICO, FEHRL, Fundacion AIC, POLIS, Renault s.a.s. represented by GIE REGIENOV, Ricardo UK Limited, Robert Bosch GmbH, Scania CV, UITP, Valeo sa, Volkswagen ag, Volvo Technology ab

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TRA-VISIONS (FP7 CSA - 01/05/2013, 18 MONTHS, DG RTD)

Organisation of Transport Research Awards for the Transport Research Arena (TRA) conference (<http://www.travisions.eu>)



The concept of this project is to organise two competitions for transport research awards to be announced at the TRA conference in 2014:

- A research student competition with the goal of stimulating the interest among young researchers/students in the field of sustainable surface transport.
- A competition for senior researchers in the field of innovative surface transport concepts based on results only from EU-funded projects.

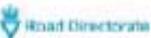
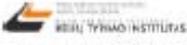
Both competitions will cover all surface transport modes (road, rail and waterborne) including Infrastructures and cross-cutting issues in line with the EC policy objectives for smart, green and integrated transport. The objectives are to nurture the best transport researchers in Europe, promote the alignment of their interests with those of transport stakeholders, encourage them to participate in the conference and celebrate their achievements. Similarly the senior researcher competition will promote and acknowledge the leaders in generating impactful research in transport in the EU. The process will be two-way: young researchers will be inspired by the presentations at the main conference and mature researchers will be inspired by the research and vision of the young researchers.

Partners: Foundation WEGEMT - a European Association of Universities in marine technology and related sciences, Balance Technology Consulting GmbH, EURNEX e. v, UIC France, FEHRL, CESA, Fraunhofer, AVL List , UCD

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