

FIRM

FEHRL INFRASTRUCTURE RESEARCH MAGAZINE



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FOR A SUSTAINABLE AND
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INNOVATION FOR TRANSPORT INFRASTRUCTURE

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INNOVATION FOR TRANSPORT INFRASTRUCTURE

Transport infrastructure is the lifeblood of modern society, but often struggles to meet demands and expectations on reliability, availability, maintainability, safety, environment, health and cost. FEHRL's role is to provide solutions for the challenges now faced and anticipate the challenges to come. Through innovation, the operation of transport infrastructure can address society's needs.

FEHRL encourages collaborative research into topics such as mobility, transport and infrastructure, energy, environment and resources, safety and security as well as design and production.

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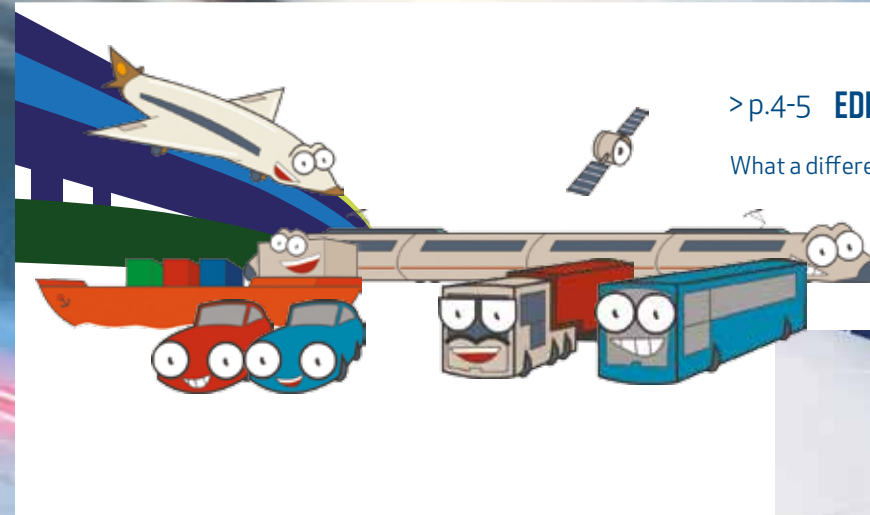
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INNOVATION FOR TRANSPORT INFRASTRUCTURE

WHAT A DIFFERENCE A YEAR MAKES! ONE YEAR ON FROM SERRP V

Welcome to the first issue of FEHRL's Infrastructure Research Magazine (FIRM). Aimed at all our transport infrastructure stakeholders, FIRM will illustrate how FEHRL provides solutions for the transport infrastructure challenges now faced and anticipates those still to come. This work is carried out through the implementation of FEHRL's fifth Strategic European Road Research Programme (SERRP V) and its flagship Forever Open Road (FOR) programme, and the associated execution of key projects within four distinct Research Areas. Progress on SERRP V and FOR is summarised below, and FEHRL's role within the key projects PILOT4SAFETY (Safety & Security Research Area), Heroad and SMARTRAIL (Design & Production Systems) and Re-Road (Energy, Environment & Resources) are featured in this first issue of FIRM, as are the horizontal and dissemination projects DETRA, INCRIS and TRA2012.



SERRP V – ONE YEAR ON

Published in 2011, SERRP V sets out the core challenges and solutions and addresses the needs from the perspective of national and European stakeholders. These essentially come from the national Road Directors, drawn from the Conference of European Directors of Roads (CEDR) and the European Commission (EC). The EC's "White Paper Roadmap to a Single European Transport Area" formed an important policy context against which to formulate the research and innovation needed. In this context, the EC's Framework Programme 7 (FP7) comes to an end in 2013 and, when it is replaced by Horizon 2020 in 2014, will include transport as one of its major elements and consequently more emphasis on infrastructure research.

SERRP V recognised that strong partnership with public and private stakeholders is essential and that FEHRL should focus on building the links between the relevant different bodies. As well as road owners and policy makers, FEHRL is working to integrate industry bodies and academia into the governance processes of SERRP V. FEHRL is also supporting greater joint programming of research activities with a blend of national, European and industry funding to take forward projects of common interest. The first concrete iteration of this is **Infraction 2014**, an ERA-NET PLUS for infrastructure innovation, and more details are outlined on pages 12-13.

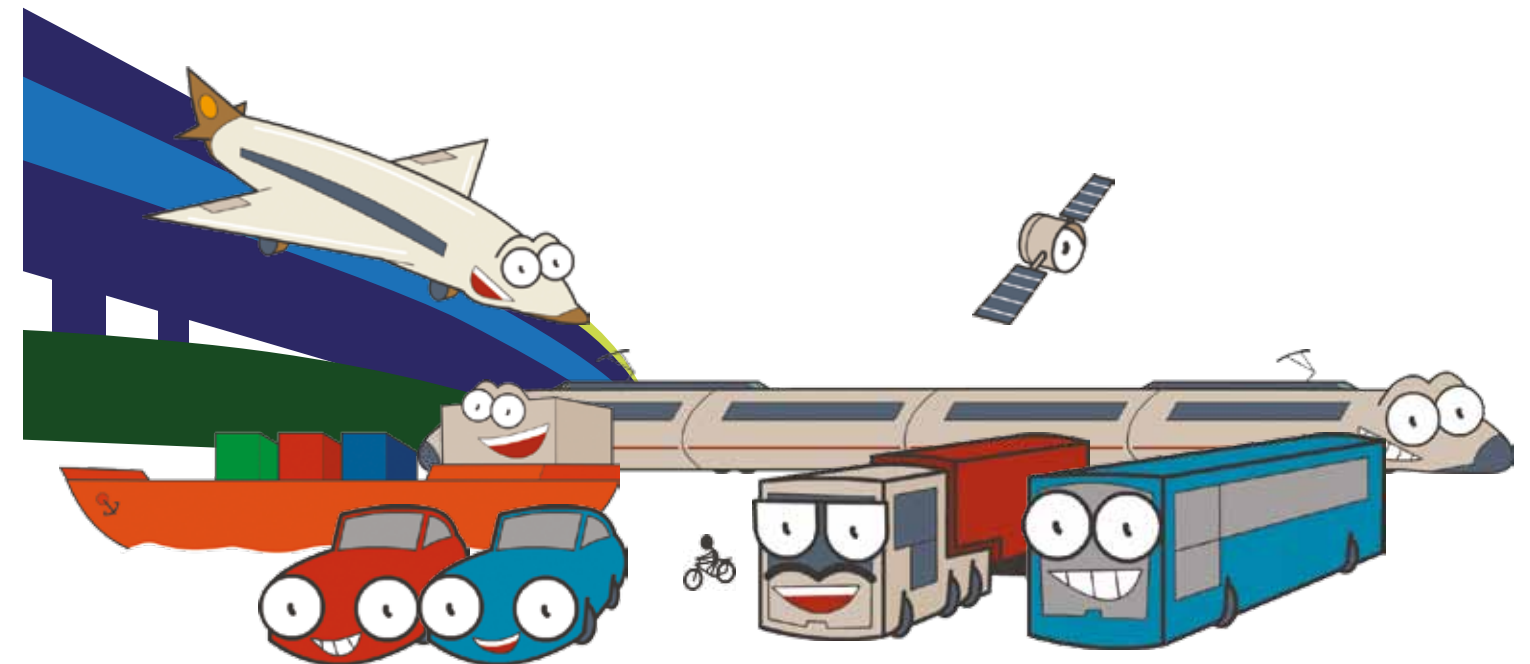
The European Technology Platforms (ETPs) continue to develop as major fora for multi-stakeholder discussion with the EC. FEHRL remains active in

ERTRAC for road transport and ECTP for the construction sector. Links are also developing with ERRAC (for rail) and Waterborne. FEHRL now leads an **inter-European Technology Platform Task Force on Transport Infrastructure** that will define a joint cross-modal roadmap for the subject in Horizon 2020, and you can get the key details on pages 6-7. The significance of this roadmap for FEHRL's effort towards funding of road research is clear: the content of FEHRL's flagship Forever Open Road (FOR) programme will be duly represented, and the roadmap will reinforce FEHRL's deployment of 'FOR x 4' as the extension of the FOR programme.

ROADMAPS COMPLETE FOR FOR

The **FOR** programme involves a combination of national and multi-national activities that have already started to be implemented, involving a wide range of partners from public and private sectors. It will deliver a new concept for roads that are adaptable, automated and climate change resilient using a toolbox with proven solutions/products from an integrated systems approach.

The **FOR** programme team has now finished drafting demand-driven innovation roadmaps for each of the three above-



► Meet these characters in the FOR video (at www.foreveropenroad.eu)

mentioned elements - adaptable, automated and climate change resilient - that define the new generation of roads. These are being prepared for dissemination by the end of the year. Each roadmap identifies the priorities for future research actions from a vision for 2025, building on a basis of national and industrial programmes on road research, truly rendering FOR a programme of programmes. These include "Route 5ème Génération; R5G" in France, "Road of the 21st century (R21C)" in Germany, "Ferry Free E39" in Norway, "Exploratory Advanced Research (AER)" in the USA and "Rijks-waterstaat Corporate Innovation Programme" (CIP) in the Netherlands. Implementation of the roadmaps will lead to a comprehensive portfolio of proven solutions that builds on state of the art practices. System trials will demonstrate the viability of the respective solutions.

Now with the first projects of the FOR programme underway, FEHRL is developing the 'sister' programmes Forever Open Railway, Forever Open River and Forever Open Runway for railway, river and runway infrastructure, respectively. Together these four concepts constitute the FOR x 4 initiative on transport infrastructure. Due to the strong technical overlaps in infrastructure requirements, there will be many complementary research actions, e.g. for bridges, earthworks and materials. The priority for FOR (and FOR x 4) remains to engage with key European stakeholders, including industry associations and ETPs, on priority topics for European and national programmes, as well as cooperating on responding to the ongoing funding calls.

THREE NEW MEMBERS FOR FEHRL

Three new members were officially approved at the 27th FEHRL General Assembly on 18-19th October 2012:

- Bridges and Road Administration (PCH) in Luxembourg
- Lithuanian Road Research Institute (RRI)
- ARRB Group of Australia

Go to www.fehrl.org for more details.

► Contact Steve Phillips, FEHRL Secretary General, at steve.phillips@fehrl.org or Stefan Deix, Research Coordinator Chairman, at stefan.deix@ait.ac.at for more details. And for the latest news on FOR, see www.foreveropenroad.eu.

FEHRL has been coordinating efforts over the past months on behalf of ERTRAC to establish a transport-led, joint European Technology Platform (ETP) task force on transport infrastructure research and innovation for Horizon 2020. This action originates from a meeting held at TRA2012 between the European Commission (EC) services of DG MOVE and DG RTD and representatives of some of the transport ETPs. At this meeting, the conclusion was reached that a joint task force on infrastructure research should be formed consisting of all four mode-specific ETPs (ERTRAC for road, ERRAC for rail, WATERBORNE for water, ACARE for aviation) as well as the construction industry ETP (ECTP). This joint task force is being chaired by Ruud Smit from the Dutch Ministry of Infrastructure and the Environment (Rijkswaterstaat), who was previously the Programme Manager for FEHRL's flagship Forever Open Road programme.

TOWARDS AN ADVANCED, MULTI-MODAL TRANSPORT INFRASTRUCTURE NETWORK FOR A SUSTAINABLE AND COMPETITIVE EUROPE

HOW THE NEWLY FORMED JOINT ETP TASK FORCE CAN MAKE THIS HAPPEN

WHAT IS ERTRAC?

ERTRAC was established to mobilise the stakeholders of the Road Transport System, develop a shared vision and ensure a timely, coordinated and efficient implementation of research in Europe to tackle the societal challenges of road transport and enhance European competitiveness. See www.ertrac.org for more details.

MEMBERS OF TASK FORCE



• **ACARE:** Advisory Council for Aeronautics Research in Europe



• **ECTP:** European Construction Technology Platform



• **ERRAC:** European Rail Research Advisory Council



• **ERTRAC:** European Road Transport Advisory Council



• **Waterborne:** Waterborne Technology Platform



The joint task force aims to deliver by mid-2013 a single roadmap on infrastructure research and innovation for all stages of the infrastructure lifecycle, including manufacturing, finance and governance. It will focus on those research and innovation topics that are common across the modes or are complementary in nature. As such, this joint roadmap will form the foundation of the cohesive programming of infrastructure research and innovation activities during the period of Horizon 2020.

This will be done through a holistic approach that considers the inter-relationship between infrastructure and the other transport system components such as vehicles/vessels, logistical and utility services and energy resources, aiming to deliver a truly adaptable, intelligent and resilient transport infrastructure that supports the developments in the other components of the transport system, such as new vehicle/vessel/aircraft concepts and fully

informed travellers and freight operators. The roadmap will operate within a 2030-2050 context, and aims to produce concrete results with a significant impact for 2020.

This roadmap will be synthesised from the various available strategic research agendas and roadmaps of the ETPs. FEHRL's FOR programme roadmaps, which have just been finalised (see Editorial on pages 4-5), are feeding into this process, which will run through the ERTRAC roadmap process. It will be benefit and results-driven, reflecting an ambition to enable an affordable, available and acceptable transport infrastructure. The first draft for discussion is due to be available in November 2012 for engagement with the contributing ETPs, as well as EC services and Member States. The content of the roadmap will be consolidated in two workshops to which experts are invited through the contributing ETPs. The first workshop was held on 28th September 2012 in Brussels, the second will take place

on 28th February 2013, also in Brussels. Representatives of the EC services will participate in these workshops. Since the Task Force is ETP owned, an open invitation is extended to all ETP members. Hence FEHRL, being both a member of ERTRAC and ECTP, has the opportunity to send its experts and many FEHRL members already attended the first workshop.

THE FIRST JOINT ETP TASK FORCE WORKSHOP

More than 60 delegates from a range of stakeholder organisations from across Europe and modes, including ETP members, EC representatives, universities and consultants, joined the first workshop in Brussels on the morning of 28th September. The workshop was a first external kick-off to raise awareness of the activities of the Joint ETP task force, as well as get headline feedback on the first outline of common elements in the vision and the research highlights from each of the ETPs involved.

The workshop was chaired by Govert Sweere of Rijkswaterstaat. Paul Verhoef of the EC's DG MOVE and Liam Breslin of DG RTD presented the latest developments in the Strategic Transport Technology Plan and Horizon 2020 and explicitly encouraged and supported the joint ETP task force activities in view of the fact that infrastructure is indeed among the four key priorities of the first Work Programme of Horizon 2020. In the following session, Ruud Smit presented an overview of the common denominators in the ETP's visions for 2030-2050, which can be summarised as:

1. **The need for advanced, affordable and acceptable infrastructure**
2. **The need for adaptability, automation/information, resilience**
3. **The need for uniform/harmonised basics and frameworks**

After this, a panel of ETP representatives from ACARE, ECTP, ERRAC,

ERTRAC and Waterborne gave their key specific aspects of their joint vision and the audience had the opportunity to give their input under moderation by John Amoores (ERRAC) and Bob Collis of TRL (FEHRL).

Following the break, the second consultation session was opened by a panel of five ETP representatives that highlighted their key research needs for 2020 in the context of the joint ETP task force.

Finally in the conclusion of the workshop, Paul Verhoef and Liam Breslin repeated their encouragement and support, stressing the importance of infrastructure as a key priority in the first Work Programme of 2014 and reinforcing the ambitious timeline set for the joint ETP task force to deliver the joint roadmap. Ruud Smit closed the meeting by presenting the next steps before the next workshop in February 2013.

► For more details on the task force, contact Ruud Smit at ruud.smit@fehrl.org.

ADDRESSING THE GRAND CHALLENGES OF THE EUROPEAN RESEARCH AREA IN TRANSPORT



FEHRL CONCLUDES DETRA PROJECT WITH LAUNCH OF NEW EUROPEAN TRANSPORT RESEARCH ALLIANCE

The concept of DETRA derives from the Lyon Declaration. In 2008, the Lyon Declaration signatories, ECTRI, FERSI, FEHRL, EURNEX, HUMANIST, ISN and NEARCTIS committed themselves to work together on the deepening of the European Research Area (ERA) objectives in transport, in order to address the Grand Challenges. From this commitment, the objective grew to create the European Transport Research Alliance (ETRA) that would strengthen cooperation in the transport domain.

Developing the European Transport Research Alliance (DETRA) was a strategic FP7 project, coordinated by FEHRL, between seven key transport research organisations to make an analysis of the state of the European Research Area (ERA) development within the transport domain. DETRA finished at the end of September, but the key outputs of the project will be picked up by a new European Transport Research Alliance (ETRA) that was launched at a reception in Brussels on 20th September 2012.

This event was moderated by FEHRL President, Joris Al, and also included presentations by Dr. András Siegler, Director of the EC's DG Research & Innovation Directorate H – Transport and new Chair of ETRA, Professor George Giannopolous of the Greek CERTH. It was also an opportunity to say farewell to Jean-Pierre Médevielle

of IFSTTAR, the driving force behind the original Lyon Declaration process and the Terms of Reference (ToR) of the new ETRA, who was set to retire at the end of October 2012.

András Siegler outlined that the DETRA project was one of the few initiatives in Europe that reflected on highly practical ways to realise an ERA in a single thematic domain. Many of DETRA's initial findings are in line with the EC's five priorities to speed up the ERA, he stressed, and the ETRA should now add a higher level of detail and take a more action-oriented approach. He advised ETRA to extend its membership to as many universities and research organisations as possible and ensure active engagement of all its players, as well as create synergies between national programmes and open discussions between modes.

DETRA PROJECT PARTNERS



FEHRL

ECTRI

EURNEX

FERSI*

HUMANIST VCE

*represented by Centre for Research and Technology Hellas - CERTH



The five Alliance partners with András Siegler of the EC.

SIX KEY OUTCOMES

Joris Al explained that the building blocks within DETRA focused on six ERA themes that were examined in detail.



The recently published "DETRA Final Report" gives comprehensive detail of the outcomes, including the following highlights:

1. Mobility for Researchers

The transport sector faces growing problems to develop, attract and retain staff. Closer cooperation between academic institutions and end-users is needed and the transport PhD proposed within DETRA can be a contribution.

2. World-class transport Research infrastructures (RIs)

This is another area where wider cooperation is needed. Regardless of whether we are talking about databases or developing large-scale testing facilities, Europe-wide – or even world-wide, cooperation is needed to achieve the critical mass needed. DETRA proposed four new RIs of great relevance to solving the future challenges in a coordinated approach that can be taken forward either by the Alliance or its partner organisations. These are explained in detail in the "Transport Research Infrastructure Roadmap" report that has also just been published.



3. Strengthening research institutions

Strengthening research institutions focused on how research organisations have already adapted to the ERA objectives and the actions still to be taken

regarding research excellence, which comprises scientific excellence, relevance and governance excellence. One conclusion is the need to reduce fragmentation in the sector. FEHRL itself is looking at how it can strengthen its network amongst academia and hopes the Alliance will support that.

4. Sharing knowledge

So far DETRA has focused on how knowledge is generated. Looking at how the knowledge is shared is another key part of the innovation chain. This includes how knowledge is currently shared between public research organisations and industry in the transport sector and with the general public and civil society organisations. Related issues such as standardisation were also considered and the Alliance will be looking at how the project recommendations can be implemented. The Transport Research Arena (TRA) series of conferences is one part of that process.

5. Optimising research programmes and identifying priorities

DETRA examined the wide range of research programmes and roadmaps coming from different stakeholder bodies. The partners analysed the common priorities and the missing elements to produce an overall recommendation for transport research.

6. International cooperation

Finally, the state of European research cannot be considered without taking into account its role and position internationally. This includes our relations with our neighbours who we share our transport networks with, those who share the same problems as us with whom we can work together on common solutions. Aspects of international cooperation touch on all of the previous issues raised.

ETRA TO SING WITH ONE VOICE

"The Alliance will hopefully help Europe to speak with a more coordinated voice. Perhaps we could think of the Alliance as a choir – hopefully from time to time singing the same song," commented Joris Al. The benefits of cooperation between the Alliance partners will provide them with a more powerful collective voice, and give the highest visibility to the transport research community and its potential contribution in supporting policies issues.

At the launch reception, the five Alliance partners - Neil Paulley of TRL (representing ECTRI), Wolfgang Steinicke of EURNEX, Joris Al, Rijkswaterstaat (FEHRL), Horst Schulze, BAST (FERSI) and Jean-Pierre Médevielle, IFSTTAR (Humanist VCE) – signed the ToR agreed as a basis for taking forward the ETRA activities.

George Giannopolous (CERTH), as the new Chair of ETRA, outlined that the ETRA complements the existing transport research structures in Europe. It will provide a more integrated form of representation for the research providers and complement the work of the other existing bodies, namely the European Technology Platforms or the various Advisory Groups within the EC.

► For more information on DETRA, see detra.fehr.org or contact Project Coordinator, Steve Phillips at steve.phillips@fehl.org. For details on the new ETRA, see www.etralliance.eu or join the ETRA group on Linked In.



FEHRL MEMBER IFSTTAR ON THE MOVE TO TRA2014 ...

WHO IS IFSTTAR?

IFSTTAR, «L'Institut français des sciences et technologies des transports, de l'aménagement et des réseaux», was founded on 1st January 2011 from the merger of the INRETS Institute and the LCPC Laboratory. Recognised as a new reference organisation in the international arena, IFSTTAR conducts applied research and expert appraisals in the fields of transport, infrastructure, natural hazards and urban issues, with the aim of improving the living conditions of France's residents and, more broadly, promoting the sustainable development of our societies.

Soon after the Transport Research Arena 2012 (TRA2012) was held, the French Ministry of Sustainable Development (le Ministère de l'Écologie, du Développement Durable et de l'Énergie - MEDDE) expressed the willingness to host the 2014 edition of TRA (TRA2014) and delegated its organisation to FEHRL member IFSTTAR, the French Institute of Science and Technology for Transport, Development and Networks. IFSTTAR was significantly involved in TRA2012, with Hélène Jacquot-Guimbal, the Director General of the institute, as the French representative of the Management Committee and four IFSTTAR representatives in the TRA2012 Programme Committee.

TRA2014 will take place at the CNIT Congress Center, La Défense, Paris, on 15-18th April 2014 with the theme of "Transport Solutions: from Research to Deployment/Innovate Mobility, Mobilise Innovation". The aim is to link up the TRA conference to other transport events that will be hosted in the same place at the same time. The core objective of the 2014 project is to favour inter-modal and interdisciplinary dialogue, allow for cross-fertilisation, while maintaining the identity of each joint conference. For instance, in April 2014 France will also host an ITF/JTRC (Joint Transport Research centre of ITF and OECD) seminar and a high-level meeting of the THE-PEP Programme

(Transport, Health and Environment Pan-European Programme, a joint programme between the WHO and the United Nations Economic Commission for Europe). Additionally and for the first time in Europe, the International Conference on "Women's Issues in Transportation" will take place on 14-21st April (see wiit-paris2014.sciencesconf.org for more details). IDRRIM, the French Institute for roads, streets and mobility infrastructure (Institut des Routes, des Rues et des Infrastructures pour la Mobilité), will also organise an event jointly to TRA2014.

As was the case for TRA2012, the preparation of the event brings together various stakeholders in addition to IFSTTAR. Three of them have been involved in the organisation of the TRA since its first edition: the Conference of European Directors of Roads (CEDR), the European Commission (EC) and the European Road Transport Research Advisory Council (ERTRAC) European Technology Platform (ETP). And in 2012, two others became associated with the conference: the European Rail Research Advisory Council (ERRAC) and Waterborne, the ETPs for the rail and waterborne sectors, respectively. And a great network of other European partners will support the TRA2014 conference.



From left to right: Steve Phillips, FEHRL Secretary-General, Máire Geoghegan-Quinn, Commissioner for Research, Innovation and Science, András Sieglér, Director for Transport, EC DG Research & Innovation and Joris Al, FEHRL President.

... BUILDING ON FEHRL'S RICH EXPERIENCE IN TRA2012 AND BEFORE!

FEHRL has been extensively involved with TRA since the launch of the first event in 2006, and was instrumental in developing TRA2012 in Athens. Numerous experts from FEHRL have been active in all four editions that have been held – often in leading roles.

In 1999, the second European Road Research Conference (ERRC) was co-organised by FEHRL, FERSI, COST and the EC (DG VII Transport) and aimed to provide an interchange between researchers, as well as between researchers and their clients at EU and national level. In 2002, FEHRL obtained the support from the European Road Directors for a third European Road Research Conference. This was formally adopted by the newly formed Conference of European Directors of Roads (CEDR) in 2003 with the creation of a joint CEDR-FEHRL task force. The Swedish Road Directorate, part of the task force, offered to host the event in Gothenburg, Sweden and FEHRL suggested the opportunity to ERTRAC in order to widen the activities to the entire road sector. At the same time, FEHRL secured funding from the EC for a conference in Brussels in 2005. This

conference, the FEHRL Road Research Meeting (FeRRM), brought together members of ERTRAC, CEDR and the EC for the first time and served as the launch platform for the newly named Transport Research Arena (TRA).

TRA2006 was then held in Gothenburg and was followed by TRA2008 in Ljubljana, Slovenia. The second event included the first YEAR competition for students, supported by the EC. The EC separately provided financial support to the local organisers, which were FEHRL member ZAG. FEHRL was a partner in both activities. TRA2010, held in Brussels, was the first attempt to go multi-modal because of the heavy focus on urban mobility. However, it was only in TRA2012 that rail and waterborne transport became involved in a significant way.

At TRA2012 in Athens, Greece on 23rd-26th April, over 1,700 participants from 54 countries shared exchanges on transport research topics with tremendous hospitality from the Greek hosts. FEHRL took part in all the major organisational entities (such as the Management Committee, Programme Committee, Steering Group and EC-funded FP7 project management group, in particular managing the Communications Working Group).

Not only was the launch of FEHRL's transport infrastructure video (illustrating the extension of the 'Forever Open Road' concept to railways, runways and rivers) well received at TRA2012, but FEHRL's Forever Open Road research agenda was highlighted in the conference conclusions as "an example of the issues at hand for road infrastructure." A special focus on infrastructure was given at TRA2012 with the involvement of countless FEHRL members across the different sessions. Of particular note was the "Infrastructure for the 21st century" Strategic Session moderated by Hans Jeekel (Rijkswaterstaat), with Marit Brandtsegg from Statens Vegvesen (NPRA) and Claude Van Rooten (BRRC) as speakers.

FEHRL's stand received many visitors from public authorities, industry and research/academia. Many FEHRL projects featured throughout the TRA2012 programme, including a Special Session on the DETRA project and the development of the ETRA between the key organisations (see related article on pages 8-9).

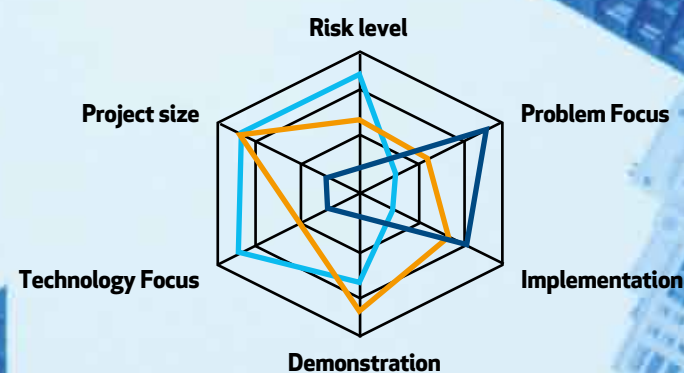


► Contact Christelle Fongue, TRA2014 Project Manager at contacttra2014@gmail.com for more details on TRA2014.



FEHRL AND INFRAVATION 2014: NEW ERA-NET PLUS

Now is the time when innovation for road infrastructure is an absolute imperative, to reduce costs without compromising on quality. To deliver this objective on a trans-national basis, FEHRL members Rijkswaterstaat and the Danish Road Directorate (DRD), supported by FEHRL, have been working hard to set up an exciting new initiative for developing innovative infrastructure concepts called Infracation 2014. This ERA-NET PLUS action is 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. In a first ever, the USA/FHWA will participate too, through its Cooperative Agreement with FEHRL.



CEDR projects	Infracation	EC FP projects
Low Risk	Controlled risk	High risk
Problem Focussed	Challenge Focussed	Technology Focussed
Immediately Implementable	demonstrate implementable	Prototype
National Road Authority owns results	Industry owns and shares results	Industry owns results

The Infracation call will be issued in early 2014. The funding of research projects will be based on a common pot, enabling the best expertise to be used, regardless of nationality and thereby minimising programme management and allowing the maximum use of resources for pan-national research cooperation.

FOCUS FOR INFRAVATION 2014

The topic of the Infracation 2014 call 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.

UNIQUE CONTRIBUTION OF INFRAVATION

Infracation perfectly complements, and completes, the suite of existing international programmes. The EC programmes typically focus on higher risk – often industry focused – research. The research partners share the ownership of the results and are then respon-

sible for developing their own exploitation. This is a difference with, for example, the CEDR trans-national calls (previously ERA-NET ROAD) that procure research results for today's road authority problems and expect results and hence its owners then own the results. Each programme achieves its intended objectives. Infracation sits between the two (see diagram on page 12). Research providers maintain their ownership of the results (e.g. patents) but work more closely under the direction of authorities to ensure that the results are suitable. The pan-European characteristics of Infracation provide further encouragement for the private sector to innovate because they understand that there are ready and willing customers for their products and services.

TARGETS AND EXPECTED IMPACTS

Infracation is a challenge driven programme. Whilst it aims to support the development of advanced systems, materials and techniques, it remains an applied research programme and all projects will be expected to deliver tangible, demonstrable benefits. The focus is on projects with the objective to develop and demonstrate Advanced systems, materials and techniques for green, cost-effective, reliable next generation road infrastructure.

IMPLEMENTATION AND KNOWLEDGE TRANSFER

Infracation will adopt a coordinated approach to knowledge transfer to ensure that all projects provide consistently high-quality information to relevant stakeholders. All projects will be required to contribute to a regular Infracation newsletter and provide material and participation for national workshops. These workshops will be arranged in several countries and will possibly involve translation for local practitioners. The workshops will focus on the proven benefits of the solutions developed.

Research providers will be encouraged to protect their developments through, for example, patents. Nevertheless the funding agencies will receive a licence for the use of the results of the projects for their own purposes.

FEHRL'S ROLE WITHIN INFRAVATION

FEHRL is currently responsible for drafting the project proposal text for the ERA-NET PLUS Infracation on behalf of the Member States representatives who are led by Rijkswaterstaat. This proposal, to be finalised by early next year, will set out Infracation's 2014 call for proposals on advanced systems, materials and techniques for

FHWA COOPERATIVE AGREEMENT FINALISED

At the end of September 2012, FEHRL's Cooperative Agreement with Associate Member FHWA was concluded, which provides a formal structure for proactive trans-Atlantic research cooperation. Infracation and MIRIAM (miriam-co2.net) will be first examples.

road infrastructure. The proposal will comprise of a Consortium of representative organisations of Member States, including FEHRL.

FEHRL will also liaise with the EC, ERA-NET TRANSPORT, Member State representatives and other key stakeholders to develop a funding and governance model for the proposed project. This model will be based on the application of the real common pot model for funding, and will include consultation with other appropriate bodies (including potential suppliers) to determine the practicality/acceptability of the model. The model will take into account EU FP7, conditions as well as those anticipated for the following Horizon 2020.

FEHRL is participating in and hosting proposal preparation meetings in Brussels, and has set up a website on Infracation as a tool for partners as well as for profile raising. For more information, contact Steve Phillips, FEHRL Secretary General at steve.phillips@fehrl.org or see www.fehrl.org/infracation.

SAFETY AND SECURITY

SUCCESSFUL PILOT4SAFETY PROJECT

In order to bring FEHRL's SERRP V and Forever Open Road (FOR) programme to life, FEHRL relies on four distinct Research Areas - Mobility, Transport and Infrastructure, Safety and Security, Energy, Environment and Resources and Design and Production Systems - under the responsibility of the FEHRL Research Coordinators and managed by the FEHRL Research Area Leaders. A full programme of research is being developed for each of these Research Areas. Each issue of FIRM magazine will feature the highlights of these and the projects carried out within them, starting here with Safety and Security, which is jointly led by Xavier Cocu of BRRC and Francesca La Torre of UNIFI.

Road safety is a priority topic for most stakeholders in the road sector, not least Road Authorities and the European Commission (EC). The specific priorities of CEDR are to take advantage of intelligent vehicles and infrastructure technologies to improve road safety and improve road design concepts in relation to road safety. The first of these illustrates a clear link with ETRAC's priorities on the issue which further stress the Cooperative Vehicle-Infrastructure System (CVIS).

The link between road safety and road infrastructure condition is clear: the surface skidding characteristics, the provision of good drainage, the maintenance of good longitudinal and transverse profiles, and the use of clear signs and markings are all examples. Road infrastructure should be self-explaining to the road users to avoid mistakes and accidents and forgiving in case of accidents, in order to reduce the consequences for the users to a minimum.

Within this Research Area, one of the most recent projects, PILOT4SAFETY, was successfully completed in May 2012. Here we outline the main successes and next steps of the project.

PILOT4SAFETY - EUROPEAN COMMON STANDARDISED CERTIFICATION METHODOLOGY FOR ROAD SAFETY EXPERTS

The European Parliament and the European Council issued the Directive 2008/96/CE on road infrastructure safety management, foreseeing safety checks, training and certification of road safety auditors. Due to EU rules, the Directive is mandatory only in the TEN-T road network, while the highest number of fatalities occurs on the local and regional roads. To overcome this barrier and improve road safety and road infrastructure safety management, the PILOT4SAFETY project, co-financed by DG MOVE of the EC, applied the Directive's approach to some selected secondary roads in five regions of different EU states, in order to share good practices and define a common standardised certification methodology for road safety experts.

FEHRL was the Coordinator of PILOT4SAFETY and, mainly via three member institutes AIT, BAST, and BRRC, the training supplier. Generalitat Catalunya (Spain), Randers Municipality (Denmark), Astral Lazio (Italy), Region of Central Macedonia (Greece), and CDV (Czech Republic), delegated some of their staff members to participate in the training for Road Safety Inspectors and Auditors. The newly certified auditors and inspectors subsequently carried out several Road Safety Audits (RSA) and Road Safety Inspections (RSI), allowing a mutual exchange of engineers.



THE OUTCOMES OF THE PROJECT WERE:

- PILOT4SAFETY succeeded in defining common agreed training curricula and tools for qualification of road safety personnel; the application of the same curricula for the training of auditors and inspectors of five EU regions, based on the main results from EU research;
- An agreement between the regions involved about the reciprocal validity of the certification of the road safety personnel trained during the study;
- International agreement about common standards for training auditors and inspectors;
- A comprehensive training programme for Road Safety Auditors and Inspectors (each about 12 days long);
- A new safety prevention manual for secondary roads, particularly useful for the training of EU Road Safety Auditors and Inspectors, in compliance with the European Directive 2008/96/CE principles;
- Recommendations for a common EU training of road safety experts;
- Several dissemination workshops, including in the premises of the European Parliament and the European Economic and Social Committee.

NEXT STEPS

The PILOT4SAFETY project aimed to have a number of regions applying the same approaches of the Directive 2008/96/CE to secondary roads. PILOT4SAFETY therefore developed proposals for recommended international training schemes for secondary roads, which are considered by the partners as European training courses representing the best practice. Since many countries have already got their own national training schemes for RSA/RSI, it is necessary to find out how to link these to the international training. These countries should be able to continue using their existing schemes, but the international training will help define a minimum common level. National variations and adjustments are often beneficial or even necessary to comply with national requirements. For those countries still developing or currently improving their national training curricula, especially for secondary roads, the proposals will form a good basis for further adjustments. Ensuring a minimum common level of knowledge transfer across the training courses in the European countries is vital to improve safety on the roads within the EU.

Road safety experts must usually take part in some kind of refresher courses to get the validity of their certificate extended. These courses are a good opportunity to share experiences and exchange best practice. The typical contents of such courses are the latest findings in research concerning road design and road safety or developments in RSA and RSI procedures.

FEHRL will therefore continue to promote the project conclusions and look at opportunities for organising a common EU training programme for Road Safety Inspectors and Road Safety Auditors. If such programmes are conducted on an international basis and accepted on a national level, the exchange of best practice across borders could be further promoted, espe-

cially as it also addresses countries with existing national training schemes.

Recognising that a comprehensive exchange of best practice requires the cooperation of several European countries, the PILOT4SAFETY partners also suggested encouraging the networking of all parties involved in the training and certification schemes of road safety experts. The idea of creating an International Centre for RSA and RSI has been proposed. Such a centre could present a central contact point for coordinating and managing all the actions regarding European road safety expert certificates. In the meantime, FEHRL and its members from the project (AIT, BAST, BRRC and CDV) will be organising RSA and RSI training courses early next year.

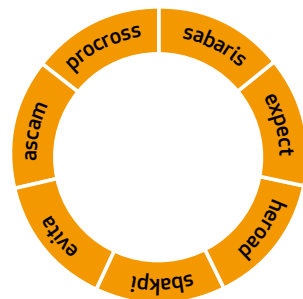
- For more information on PILOT4SAFETY, see pilot4safety.fehrl.org or contact Project Coordinator, Adewole Adesiyun at adewole.adesiyun@fehrl.org.

PARTNERS

	FEHRL
	CDV (Czech Republic)
	Generalitat Catalunya (Spain)
	Randers Municipality (Denmark)
	Astral Lazio (Italy)
	Region of Central Macedonia (Greece)

TRAINING SUPPLIERS

	AIT
	BAST
	BRRC



The Design and Production Systems (DPS) Research Area within FEHRL, jointly led by Alan O'Connor (TCD) and Jos Wessels (TNO), focuses on the methods and processes of infrastructure from a cost, efficiency and harmonisation perspective.

On this two-page spread, we profile two projects within this Research Area that are currently underway – HEROAD and SMARTRAIL. While HEROAD, one of the seven ERA-NET ROAD projects within the Asset Management programme, focuses on road infrastructure, SMARTRAIL is a good example of FEHRL carrying out research in other transport modes.

ASSET MANAGEMENT - THE NEW WAY TO PRIORITISE ROAD INVESTMENTS

Seven road research projects were awarded funding through an international research collaboration project called the ERA-NET Road Asset Management programme in 2010. The objectives are to manage the European road networks even tighter and to save time and money.

Asset management is primarily about setting a strategic approach by optimising the use of available resources for the management, operation, preservation and enhancement of the road infrastructure that best meets the needs of the stakeholders, including the road users.

The programme is steered by the Programme Executive Board (PEB) consisting of experienced road managers and experts from Belgium, Denmark, Finland, France, Germany, Ireland, Lithuania, Netherlands, Norway, Slovenia, Sweden, Switzerland and the United Kingdom. FEHRL member, the Danish Road Directorate (DRD), has been assigned to manage the overall programme.

CONTRIBUTING TO ROAD ASSET MANAGEMENT PROGRAMME ...

The Asset Management programme awarded funding to the following seven projects in 2010 that all involve FEHRL members: SABARIS, EXPECT, HEROAD, SBAKPI, EVITA, ASCAM and PROCROSS. Here we give more details on one of them, HEROAD, which focuses on the Holistic Evaluation of Road Assessment.



The overall aims of HEROAD are to identify the parameters that will be most beneficial for the assessment of condition

across the wide range of assets present on the road network. HEROAD aims to present recommendations on how to improve and optimise condition assessment, and in particular how to make good use of new technologies and apply these results in an efficient road management system.

Within HEROAD, five FEHRL members – AIT, BRRC, TRL, VTI and ZAG – have since the beginning of 2011 been investigating the holistic process (the combination of individual components, levels of assessment and the inclusion of a life cycle perspective) to incorporate new challenges in the field of asset management. This is being achieved by taking onboard experts from the different areas of road assessment in the project, as well as a consortium with a good geographical spread to take differences in traffic into consideration. Traditional methods with literature search and interviews with stakeholders/experts are being carried out, and additional information was gathered recently at a HEROAD workshop at the fourth European Pavement and Asset Management Conference (EPAM).

EPAM2012: KEY INPUT FOR HEROAD

The HEROAD project held a workshop in conjunction with the EPAM2012 conference in Malmö, Sweden on 5th September 2012. This workshop discussed the results to date from the project and collected feedback on these results. EPAM takes place every four years and this time focused on user experiences, durable asphalt, life cycle analysis, data collection and climate change.

The HEROAD session was moderated and concluded by UK consultant Chris Britton and included an introduction to the project by Project Coordinator, Leif Sjögren of VTI, and a short overview and discussion on each of the key project areas by project members.

HEROAD PARTNERS



► For more details on the Asset Management programme, see sites.google.com/site/assetcall/ or contact Bjarne Schmidt at bjs@vd.dk or Mette Holm Duelund at mhd@vd.dk. For more details on HEROAD, see www.fehrl.org/heroad or contact leif.sjogren@vti.se.

... AND MAINTAINING RAIL INFRASTRUCTURE IN A SMART WAY WITH SMARTRAIL



The rail sector needs to increase its competitiveness and overcome limitations on existing infrastructure by reducing the cost of maintenance, increasing capacity and efficiency and improving the resilience to climate change and extreme weather conditions. The Smart Maintenance and Analysis of Transport Infrastructure (SMARTRAIL) project aims to reduce replacement costs and delay and provide environmentally-friendly maintenance solutions for ageing infrastructure networks through state-of-the-art methods to analyse and monitor the existing infrastructure and make realistic scientific assessments of safety. The project brings together experts in the areas of road and railway infrastructure research, small and medium-sized enterprises (SME's) and railway authorities responsible for the safety of national infrastructure.

The 36-month EC FP7-funded project, led by FEHRL group member University College Dublin (UCD), has been running for just over a year and already counts a number of highlights to date. One of these is the Buna Bridge project in Croatia, involving the replacement of an old railway bridge, rehabilitation of transition zones and the bridge structure.



THE BUNA BRIDGE: A TEST SITE FOR TRANSITION ZONE REHABILITATION

One area of SMARTRAIL focuses on "Rehabilitation technologies and construction methods", including how to achieve a smooth transition between different types of track structure where an abrupt change in the rigidity of track structure and track settlement occurs between individual transverse profiles. For this, the Buna bridge was selected as a pilot project. Originally designed in 1893, the bridge was repaired in 1953 and a decision was taken in 2010 to fully replace the bridge.

Within the SMARTRAIL project, an extensive geophysical and geotechnical investigation was performed in March 2012 and included the design of the rehabilitation of transition zones. The construction of the new bridge and transition zones was scheduled to take place this autumn and the steel structure of the bridge will be used for the modelling and testing of the rehabilitation of the bridge structure with Ultra High Performance Fibre Reinforced Concretes (UHPFRC).

► For more information on SMARTRAIL, see www.smartrail.fehrl.org or contact Dr. Kenneth Gavin at kenneth.gavin@ucd.ie.

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	The University of Nottingham, UK
	HZ Infrastruktura D.O.O., Croatia
	Iarnród Éireann, Ireland
	De Montfort University, UK
	University of Twente, Netherlands



RE-ROAD PROJECT ADDRESSES ASPHALT RECYCLING

RE-ROAD FINAL CONFERENCE TO SUMMARISE RESULTS

Environmental issues continue to have a high profile on the political agenda throughout Europe. Road transport contributes to these concerns, particularly from the point of view of traffic noise, air and water pollution, and recycling. Previous research programmes have enabled significant progress to be made in each of these areas, but at the same time have revealed further problems so further efforts are required. FEHRL is currently involved in many projects within this Energy, Environment & Resources Research Area, which is led jointly by Manfred Haider (AIT) and Gregers Hildebrand (DRD) and also links to the Climate Change Resilient element of its Forever Open Road programme.

Within the area of recycling (of asphalt), several FEHRL members are participating in the 48-month EC FP7-funded Re-Road project that is led by VTI of Sweden.

Most (90%) of Europe's paved roads are made with asphalt. We all know a bad road when we drive on one. Apart from making the journey uncomfortable, a bad road also makes it less safe and increases transportation costs, which is why billions of Euro's are spent each year digging them up and replacing them. This generates millions of tonnes of asphalt rubble. Reclaimed asphalt (RA) should not be looked upon as waste but as a raw material. Both industry and governments recognise the potential environmental benefits of reusing RA in new bound pavements, but there are also performance worries and environmental concerns that sometimes limit the recycling of RA. Using RA in new mixes can be more complex than using virgin aggregates and binders, and consequently the level of recycling is very divergent across Europe. In many countries, most end up as unbound material in roads.

The Re-Road project, which will finish at the end of this year, has addressed asphalt recycling from many perspectives, from the sampling strategies of material not yet recycled, to the performance modelling of asphalt made with RA. Life cycle assessment (LCA) has been used as a transparent framework for illuminating the pros and cons of various ways of recycling. Both data generated by past research and new data generated in the course of the Re-Road project have been used in the LCA.

The results of the LCA prove that, above all, recycling to a bound course is significantly more environmentally advantageous than recycling to an unbound course. Appreciable extra benefit can be realised if high specification aggregates are preserved in their original application by surface-to-surface course recycling, due to the quarries that produce these specialised aggregates being widely spaced (hence requiring large transport distances for the aggregates). The moisture content that is sometimes present in reclaimed asphalt only mildly counteracts the recycling benefits. The data used for the LCA proved to be comprehensive and of high quality and it is hoped that the study will be a useful "one stop shop" for life cycle data going forward. A risk assessment has been conducted based on the toxic effects of organic compounds that experiments have shown to be present in the leachates and vapours arising from some reclaimed asphalt materials, and is likely to be the best source of information regarding these harmful compounds available. A major feat of the project is the viscoelastic modelling tools that can be used to design pavements made of recycled materials and predict pavement life as well as sensitivity to damage.

All of these results will be summarised in the Re-Road final conference, organised by FEHRL, on 13th November 2012 in Brussels. This free-of-charge conference will be held in English.

PROJECT MEMBERS:



► See re-road.fehrl.org for more details or contact Bjorn Kalman at bjorn.kalman@vti.se.

IMPROVING INTERNATIONAL COOPERATION AND R&D ROAD INFRASTRUCTURE STRATEGY FOR UKRAINE WITH INCRIS

FEHRL's mission is to promote and facilitate collaboration on road and infrastructure research. To this end, FEHRL participates in selected projects that cover all four Research Areas and are aimed at training and dissemination of high-quality information and advice on relevant technologies and policies. The EC FP7-funded INCRIS project, coordinated by Ukraine's leading road research centre, the Shulgin State Road Research Institute (DNDI) and involving FEHRL and four other FEHRL members, is an example of such a "horizontal" project.

Ukraine plays a strategic role in facilitating East-West transport connections via the country's road network. However, it cannot handle the increasing traffic load due to insufficient technical parameters. The overall objective of INCRIS is to ensure that the cooperation capacities of DNDI are reinforced to foster its integration into the European Research Area and improve road infrastructure in Ukraine through joint research. The project aims to establish strategic partnerships between DNDI and EU road research centres and facilitate knowledge sharing, as well as help DNDI to develop partnerships and set up joint research programmes through networking.

The sharing and dissemination of knowledge will be facilitated by a bilingual website, the translation of DNDI's scientific results into English and subsequent dissemination through various channels. The project will assist in building a research strategy for DNDI to increase its scope and regional coverage in Ukraine and improve its responses to the socio-economic needs

of the country. It will also strengthen the ability of Ukrainian researchers to take part in future FP7-funded research projects through project management training and the secondment of DNDI staff to the Brussels office of FEHRL.

The project management training course is divided into two levels: the initial and advanced module. The initial module was held in Kiev, Ukraine, from 18-20th September 2012 for 24 Ukrainian participants from three research organisations (including DNDI) to introduce them to information about EU funding. It was focused on general rules of EU projects: main objectives of Framework Programmes, application procedure, project management principles, financial aspects, planning a project, building strategy. Lectures were carried on by project managers, researchers and financial experts from DNDI, FEHRL, IBDIM, KTI and VTI with translation into Ukrainian. All materials for participants such as the invitation, programme, guide, feedback form and presentations were also available in Ukrainian.

► For more details on INCRIS, see incris.fehrl.org.



NEXT TRAINING PLANNED:

The advanced module of the INCRIS training will be held in English at the FEHRL offices in Brussels, on 14-16th November 2012. This module, which is linked to the FEHRL training course on project management for aspiring managers of EU projects, will focus on project development, consortium building, managing people, risk and resources, financial reporting.

INCRIS CONSORTIUM:



4-6TH JUNE 2013

COME AND JOIN US AT



FIRST ANNOUNCEMENT

**JOIN US AT THE FEHRL ROAD RESEARCH MEETING
2013 (FERRM13) ON 4-6TH JUNE IN BRUSSELS.**

With the theme of "*Advanced and Innovative Construction and Maintenance*", FeRRM13 will feature updates on Infravation 2014 and other key FEHRL projects. In addition, the latest progress on FEHRL's flagship Forever Open Road (FOR) programme and FOR x 4 initiative on transport infrastructure will be given.

Contact Isabelle Lucchini at isabelle.lucchini@fehrl.org
for more details.

FOREVER OPEN ROAD
Redefining Road Transport for the 21st Century

