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INNOVATION FOR TRANSPORT INFRASTRUCTURE

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What a difference a year makes! One year on from FEHRL’s SERRP V

FEHRL completes successful road safety pilot: PILOT4SAFETY

NEW ALLIANCE
FEHRL concludes DETRA project with launch of new European Transport Research Alliance

NEW ERA-NET PLUS
FEHRL and Infravation 2014

DESIGN & PRODUCTION SYSTEMS (OPS)
Tackling the infrastructure management challenges with the HEROAD and SMARTRAIL projects

ENERGY, ENVIRONMENT & RESOURCES
Addressing the recycling of asphalt with the Re-Road project

TRAINING & DISSEMINATION FOR UKRAINE
Improving International Cooperation and R&D Road Infrastructure Strategy for Ukraine with INCRIS
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 InfraVision 2014, an ERA-NET PLUS for infrastructure innovation, and more details are outlined on pages 12-13.

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 - 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 representing FOR’s deployment of FOR x 4 as the extension of the FOR programme.

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 fully represented and the roadmap will reinforce FEHRL’s deployment of FOR x 4 as the extension of the FOR programme.

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 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.

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

Contact Steve Phillips, FEHRL Secretary General, at steve.phillips@fehrl.org, or Stefan Dax, Research Coordinator Chairman, at stefan.dax@at.ac.at for more details. And for the latest news on FOR, see www.foreveropenroad.eu.
The joint task force aims to deliver by mid-2013 a single roadmap on infra-structure 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-relation 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 development in the other components of the transport system, such as new vehicle/vessel/aircraft concepts and fully informed travelers and freight operators. The roadmap will operate within a 2020-2050 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.

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

The workshop was chaired by Goovert Sverre of Rijkswaterstaat. Paul Verhoof 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 basins 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 Amore (ERRAC) and Bob Collins 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 Verhoof 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.
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, FEHRL, EURNEX, HUMANIST, ION 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 Termins 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.

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George Giannopolous giving Jean-Pierre Médevielle his farewell present.

SIX KEY OUTCOMES

Joris Al explained that the building blocks within DETRA focused on 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 programme 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. The report is 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 element 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.

The LAUNCH received by the Alliance partners – Neil Pauley of TRL (representing ECTR), Wolfgang Steinecke of EURNEX, Joris Al, Rijkswaterstaat (FEHRL), Horst Schulze, BAS (FERSI) and Jean-Pierre Médevielle, IFSTTAR (Humanist VCE) – signed the ToR and the Terms of Reference (ToR) of the new ETRA, as a basis for taking forward the ETRA activities.

The project website is http://detra.fehrl.org or join the ETRA group on Linkedln.

For more information on DETRA, see detra.fehrl.org or contact Project Coordinator, Steve Phillips at Steve.phillips@fehrl.org for details on the new ETRA, see www.etralliance.eu or join the ETRA group on LinkedIn.
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’Energie - MEDDE) expressed the willingness to host the 2014 edition of TRA (TRA2014) and delegated its organisation to 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.

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 (ERRC) and Waterborne, the ETPs for the rail and waterborne sectors, respectively. And a great network of other European partners will support the TRA2014 conference.

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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 (ORD), supported by FEHRL, have been working hard to set up an exciting new initiative for developing innovative infrastructure concepts called Infravation 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.

FEHRL AND INFRAVATION 2014: NEW ERA-NET PLUS

The Infravation 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 Infravation 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 ‘smart-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.

PROJECTS

Infravation perfectly complements, and complements, 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 responsible for developing their own exploitation. This is a difference with, for example, the CEDR trans-national calls (previously ERA-NET ROAD) that produce 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: Infravation 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 Infravation 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

Infravation 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.

UNIQUE CONTRIBUTION OF INFRAVATION

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IMPLEMENTATION AND KNOWLEDGE TRANSFER

Infravation 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 Infravation 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 Infravation on behalf of the Member States representative who are led by Rijkswaterstaat. This proposal, to be finalised by early next year, will set out Infravation’s 2014 call for proposals on advanced systems, materials and techniques for 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 Infravation 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/infravation.
SAFETY AND SECURITY

SUCCESSFUL PILOT4SAFETY PROJECT

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 ERTRAC’s priorities on the issue which further stress the Cooperative Vehicle-Infrastructure System (CVIS).

The link between road safety and road infrastructure 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-explanatory 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 suppliers: 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 these 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, especially 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
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, SBAKL, EVITA, ASCAM and PRO-CROSS. 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).

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 los@jysk@vti.ie.

... 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 (SMEs) 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 two years 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.

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

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 Concrete (UHPFRC).

For more information on SMARTRAIL, see www.smartrail.eubr.org or contact Dr. Kenneth Gavin at kenneth.gavin@ucd.ie.
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 (AFT) 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.

**RE-ROAD PROJECT ADDRESSES ASPHALT RECYCLING**

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. Applicable extra benefit can be realised if high specification aggregates are preserved in their original application by surface-to-surface course recycling, due to the courses 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 components 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.

**TO SUMMARISE RESULTS**

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 Euros 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 government 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 gathered as part of the Re-Road project have been used in the LCA.

**SOFTWARE PROJECT MEMBERS:**

- Bjorn Kalman
- VTI
- KTI
- FEHRL
- DNDI
- IMRO
- Road Directorate
- VT (Vilnius Technological Institute)
- Zhoun (Zhejiang University)
- ARTIST
- INCRIS
- ICER
- IMPROVING INTERNATIONAL COOPERATION AND RED 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 Shukhyn 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, EIBIM, KTI and VTI with translation into Ukrainian. All materials for participants such as the invitation, programme, guides, feedback form and presentations were also available in Ukrainian.

**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.
4-6TH JUNE 2013

COME AND JOIN US AT

FeRRM 13
FEHRL Road Research Meeting

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", FeRM13 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.