

FIRM

FEHRL INFRASTRUCTURE RESEARCH MAGAZINE



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Life Cycle Engineering approach to develop a novel EU-harmonized sustainability certification system

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Overview of FOX, USE-IT, SETRIS, REFINET, ECORoads, FLOW and SENSKIN



FEHRL INFRASTRUCTURE RESEARCH MEETING 2015

Review and highlights of conference (p. 5-7)

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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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WELCOME

to the sixth issue of FEHRL's Infrastructure Research Magazine (FIRM), which outlines how FEHRL provides transport infrastructure solutions for current and future challenges. In this issue, we highlight the FEHRL Infrastructure Research Meeting 2015 (FIRM15) held on 22nd-23rd April in Brussels, Belgium (pages 5-7). FIRM15 focused on the innovative maintenance of transport infrastructure and for the first time opened up to all transport modes with 110 participants, mostly from the road but comprising a good number from the rail sector. We also outline the new Horizon 2020 projects FEHRL is now involved in (pages 16-18) and give you updates on the key existing FP7 projects.

The last few months have been eventful for FEHRL with our FIRM15 event and other normal ongoing project activities. We started to coordinate the new FOX, USE-iT and ECORoads Horizon 2020 projects, as well as be involved in the REFINET, SETRIS, SENSKIN and FLOW projects, which have all now kicked off in May and June. Our Secretariat team of dedicated professionals has risen to

these challenges and is also gearing up to the new activities which are planned and will take place during the second half of the year and beyond.

And since the last issue of this magazine, FEHRL developed its international cooperation with the FEHRL US Scanning Tour 2014 in December 2014. Forever Open Road was the theme of this tour, which enabled selected FEHRL members to visit locations in and around Washington DC that relate to the Automated Road element, including FEHRL member FHWA and the US Department of Transport's Headquarters. The group also visited three locations in Michigan where innovative ITS projects are being carried out. A report is being produced which will feed into the ongoing Forever Open Road work.

THE FUTURE LOOKS BRIGHT

Looking forward, we are also now starting to plan for the kick-off event for the new ERA-NET Plus Infravation projects on 12-13th November (page 15), as well as our next International Project Management (IPM) training to take place on

24-26th November 2015 (see back page). And we are supporting our Polish member IBDiM with the communications for TRA2016 to be held in Warsaw, Poland on 18th-21st April 2016 (also see back page).

In this issue, we also showcase the progress and plans for our Environment, Energy and Resources projects LCE4ROADS (previously ECOLABEL) and ROSANNE on pages 8-11, which are now halfway through, as well as the outcome of the Design & Production Systems project SafeLife-X (page 14) and Mobility, Transport & Infrastructure project SOLUTIONS (page 19). And we show FEHRL's focus on dissemination and cooperation with an article on the FOSTER-Road project (pages 12-13).

We hope you enjoy your read!

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FIRM15 FOCUSES ON INNOVATIVE MAINTENANCE OF TRANSPORT INFRASTRUCTURE

FIRM 15
FEHRL Infrastructure Research Meeting
22-23 April

On 22nd-23rd April 2015, some 110 transport infrastructure research experts from Europe and beyond met for the 2015 FEHRL Infrastructure Research Meeting (FIRM15) at the Diamant Centre in Brussels, Belgium to discuss the overall theme of

“Innovative maintenance of transport infrastructure: Faster, cheaper, more reliable, safer, greener”.

Throughout the two-day conference, several solutions for R&D&I were presented that are in the pipeline. The debates in particular covered the challenges facing Europe, namely that little attention is given to the maintenance of transport infrastructure. While different funding mechanisms exist, these do not cover the total required costs and it is difficult to get funds for maintenance. More financial support is needed (for example, through programmes such as Horizon 2020, CEDR programmes and Shift2Rail), as is expertise for construction and more knowledge about the remaining capacity of the existing infrastructure. The discussions held concluded that the scope of

maintenance is broader than it used to be and the frequency higher due to the short-term timespan of infrastructure upgrades. A new maintenance framework should be found as the commercialisation and implementation of innovative solutions is too long and the actual procurement schemes are not adequate to implement innovative solutions. A change in business model is also required, which could lead to incentives (such as used in the USA) or a more normative approach (such as the European Railway Agency). And for procurement, more responsibilities and a performance-based approach where contractors build and maintain are also needed, which would be similar to an insurance contract.

The debates also highlighted the issue of a possible backlog in the need for maintenance at the end of the contract and raised the question about whether the company who carried out the contract would even still exist then. According to the high-level participants, maintenance should be seen more as an investment to drive benefits for private partners and society/community. Transport infrastructure currently drives European competitiveness but there are no benefits retrofitted to infrastructure. For instance, a new railway or a new exit on a highway will benefit to the territory

around it, but there is no reward to the infrastructure. How can part of this benefit be distributed to infrastructure? Engineers should play a role in educating both politicians and citizens and this could all form a future topic of research as well as a political mandate.

SESSION 1: CROSS-MODAL POLICY CONTENT

This first plenary session on 22nd April 2015 featured a rich blend of high-level cross-modal speakers who all discussed

“How we can foster the Innovative maintenance of Transport Infrastructure”.

FEHRL President Stefan Strick from BASt opened the meeting and Thierry Goger, FEHRL Secretary General welcomed everyone. The first speaker, Gesine Meißner, MEP Transport and Tourism Committee, Group of the Alliance of Liberals and Democrats for Europe, outlined that while more money is needed in Europe to pay for transport infrastructure, there is never enough, and welcomed industries, road users and entrepreneurs to make proposals



to politicians to carry out better policy making. Ruud Smit, ERTRAC Vice-Chairman for Member States and Infrastructure, Rijkswaterstaat, outlined the details of the cross-modal roadmap for Transport Infrastructure innovation and urged FEHRL to now engage with the stakeholders to define the strategy for implementation of this roadmap. Andy Doherty, Vice-Chairman of the European Rail Research Advisory Council (ERRAC), Network Rail, was very enthusiastic about collaboration between the modes and gave ideas on innovation that both the rail and road sectors could benefit from with "Shift2Rail - How to boost innovation in the rail infrastructure sector?". European policy priorities were outlined by Keir Fitch, Head of Unit, DG MOVE, European Commission and an industrial perspective provided by Miguel José Segarra Martínez, Head of the R&D&I Directorate, Dragados. And according to Kallistratos Dionelis, ASECAP Secretary General, who closed the session, there is a need to coordinate the mono-modal infrastructure management.

SESSION 2: WHAT ARE THE ENGINEERING NEEDS, CHALLENGES AND SOLUTIONS FOR INNOVATIVE MAINTENANCE OF TRANSPORT INFRASTRUCTURE?

The first technical session, moderated successively by FEHRL Executive Director, Lutz Pinkofsky of BAST and Manfred Haider of AIT, who is also Chair of FEHRL Research Coordinators, featured an introduction by Oliver Ripke of BAST and CEDR on the needs and challenges of Transport Infrastructure owners in terms of innovative engineering solutions. The following proposed R&D&I solutions then followed:

- **Developing/harmonising measurement methods for skid resistance, noise emission and rolling resistance of road pavements as a preparation for standardization, ROSANNE, Manfred Haider, AIT**
- **Innovation in the asphalt industry, EAPA, Egbert Beuving, EAPA**
- **Design, performance, design life and sustainability assessment of warm mix asphalt mixes with high recycling rates for wearing courses, AllBack2Pave, Davide Lo Presti, University of Nottingham/ NTEC**
- **A tool to assess the impact of construction process quality on the performance of pavements, CONSISTEND, Jos Wessels, TNO**
- **The Development of Self-Powered, Intelligent Road Studs, INROADS, Martin Lamb, TRL**

SESSION 3: ROUND TABLE DISCUSSION: "INVESTING IN INNOVATIVE TRANSPORT INFRASTRUCTURE, A CRITICAL MATTER AT STAKE FOR COMPETITIVENESS AND SOCIAL COHESION".

Moderated by FEHRL Executive Director, Bob Collis of TRL, the discussion started with an introduction by Peter Haardt, head of the Concrete Bridges department of BAST entitled

"Innovative maintenance for ageing bridges and tunnels"

and featured Gerard Waldron, ARRB and FEHRL Vice-President, Wim Van de Camp, MEP Transport and Tourism Committee, Group of the European People's Party, Maria-Cristina Marolda, Policy Officer, DG MOVE of the European Commission, Pat Maher, NRA, Executive Board member, TD innovation of CEDR, Monika Heimig, EIM Executive Director, Christophe Nicodème, ERF Director General, Wolfgang Steinicke, EURNEX Secretary General and Kjersti Kvalheim-Dunham, NPRA and FEHRL Executive Director.



SESSION 4: WHAT ARE THE NEEDS, CHALLENGES AND SOLUTIONS FOR INNOVATIVE OPERATIONS MAINTENANCE OF TRANSPORT INFRASTRUCTURE?

FEHRL Executive Director, Kjersti Kvalheim-Dunham of NPRA and Jos Wesels of TNO, who is also FEHRL Research Area Leader Design and Production moderated in succession this second technical session, which started with an introduction by Pieter de Winne, Flemish Mobility and Public Works Ministry, CEDR Chair of TG Research. The following proposed solutions then followed:

- Fully portable, very accurate and reliable Bridge Weigh-in-Motion System, **SiWIM, Aleš Žnidarič, ZAG**
- Automated Ravelling Inspection And Maintenance Planning On Porous Asphalt In The Netherlands, **Road measurement and monitoring, Willem van Aalst, TNO**
- Towards a single system architecture for road defects monitoring and near-miss accidents data collection, **SVRAI-MIRANDA, Thierry Serre, IFSTTAR**
- Improving the requirements for high-speed inspections, **HI-SPEQ, Alex Wright, TRL**
- Human factors considerations and research on traffic management measures, **METHOD, Luuk Vissers, SWOV Institute for Road Safety Research**
- Risk Assessment of ageing infrastructures, **RE-GEN, Eugene O'Brien, Roughan O'Donovan**

SESSION 5: WHAT ARE THE NEEDS, CHALLENGES AND SOLUTIONS FOR INNOVATIVE GOVERNANCE, MANAGEMENT AND FINANCIAL SOLUTIONS OF TRANSPORT INFRASTRUCTURE?

Monika Heimig, EIM Executive Director, moderated this third technical session and gave the introduction. The following proposed solutions then followed:

- PPP in financing of infrastructure, **ECTRI, Jose Manuel Vassallo, UPM**
- Life cycle engineering for roads, the new sustainability certification system for roads, LCE4ROADS as part of the FP7 project **ECOLABEL, Carlos Martin Portugues Montoliu, ACCIONA**
- The business case of operation and maintenance for bridges, **SAFELIFE-X, Mark de Bel, Deltares**

Thierry Goger closed the event on both days. More information can be found from the FIRM15 tab on the top navigation of www.fehrl.org.

DYNAMIC MINI-EXPO

Nine stands featured in the mini-expo held in parallel to the conference covering three FEHRL members (BRRRC, BAST and FEHRL), CEDR, EAPA, ERTRAC and Infravation and two French SME suppliers Dynatest and ROADWAY SOLUTIONS.





ECOLABEL RENAMED TO LCE4ROADS AND GETS NEW PROJECT COORDINATOR

The 36-month FP7 project - "Development of a novel ECOLABELing EU-harmonised methodology for cost-effective, safer and greener road products and infrastructure" (ECOLABEL), which has now been running for 18 months (and featured on page13 of the June 2104 issue of this magazine), has recently changed its name to LCE4ROADS - "Life Cycle Engineering approach to develop a novel EU-harmonized sustainability certification system for cost-effective, safer and greener road infrastructures". This follows feedback from the European Commission's Directorate-General for Environment (DG Environment), who pointed out that "ECOLABEL" could be easily confused with the EU Ecolabel of the same name. Recent work within the project has also clarified the fact that the outcome will lead towards a certification system rather than a methodology, hence the change in the title as well as the name. The logo and name have been updated on all the communications tools, and you can access the website at www.lce4roads.eu. At the same time, due to an internal reorganisation within ACCIONA, the Project Coordinator has also changed from Carlos Martin-Portugues Montoliu to Rocío Fernández Flores as a result of Rocio's progressive involvement in the management and technical tasks during the project. Carlos will remain involved in the project as Scientific and Technical Coordinator.

WP2 WORKSHOPS INVITE INPUT ON METHODOLOGY

Within Work Package (WP) 2 (Sustainability certification methodology for road products and infrastructures), the certification system has been developed and several workshops were held with key stakeholders to get input to validate and invite comments. The proposed indicators and certification will now be dis-

cussed, checked and if necessary revised by performing several case studies in WP 3 (Assessment against the LCE4ROADS methodology of road products and infrastructures). Here are details of the main workshops held.

SPAIN: JANUARY 2015 IN MADRID AT AENOR

A Spanish workshop was organised for 25 relevant experts. During the meeting, the project concept was presented. This included establishing the relationship between the Public Procurement of Innovation (PPI) and Green Public Procurement (GPP) with LCE4ROADS. Examples of Innovative Public Procurement were given, as were the GPP criteria for roads being prepared by the Joint Research Centre (JRC).

NETHERLANDS: JANUARY 2015 AT RIJKSWATERSTAAT

TNO organized two meetings with relevant experts from Rijkswaterstaat, the Dutch national road authority and Duurzaam GWW, the Dutch private public partnership which develops a green procurement approach. During the meetings, the LCE4ROADS concept was presented and the participants also provided constructive feedback. The Dutch stakeholders indicated that they see benefits from the European approach for European procurement and transnational knowledge exchange on sustainability. However, they stressed their hope that the current Dutch sustainability framework, already established with relevant stakeholders, would somehow fit within the LCE4ROADS approach. As the development of LCE4ROADS progresses, TNO aims to arrange more meetings with stakeholders in the Netherlands.

EUROPEAN: JANUARY 2015 IN BRUSSELS, BELGIUM



On 28-30th January, a three-day meeting was held at project partner ERF, comprising the fourth Project Management Group (PMG) on 28th and 30th January and a European workshop on 29th January, which gathered representatives from various DGs of the European Commission as well as the JRC. At the same time as the European workshop, parallel sessions were held in the FEHRL office for WPs 2 and 3.

During the workshops, discussions were focused on the new methodology that not only considers traditional elements (energy consumption, gas emissions, etc), but also new factors and technologies (i.e. energy harvesting, drainage systems to reduce environmental impacts and advanced road route design) as well as, if possible, methods to set scores for all the Key Performance Indicators (KPIs) within each of the Life Cycle Engineering aspects covered. On the first day of the PMG, members of ACCIONA, ERF and AENOR also joined a JRC meeting on GPP for roads.

POLAND: MARCH 2015 IN WARSAW (NAPE)

As Poland is represented in the consortium by two Polish companies – NAPE and INVESTEKO, a collaborative action was taken to organise the Polish workshop. Participants included representatives from research institutions, road infrastructure designer and supervisor and construction management company.



In the first part of the meeting by NAPE, general project goals were presented. In the second part, methodology assumptions and defined KPIs were described by INVESTEKO. The last part of the meeting was a thematic workshop on KPIs and the possibilities of its implementation in the Polish reality.

TURKEY: MARCH 2015 IN ANKARA (KGM)



The Turkish workshop, organised by project partner General Directorate of Highways (KGM), was attended by 23 people. After informing the participants about the project, the methodology and weights for the different LCE aspects and KPIs were discussed.

National workshops have also held in Germany, France and Sweden. Germany followed a two-step approach where in November 2014 LCE4ROADS the project was first presented in a national symposium on "The Sustainable Road". The audience included representatives from industry, research bodies and road authorities. In a second step, LCE4R-

OADS was presented in February 2015 in the interdisciplinary "Sustainability" Working Group, which has members from BASt and the federal Ministry.

And LCE4ROADS was presented in February 2015 in France during the annual national symposium on roads in Nantes. This followed a first workshop already held in 2014.

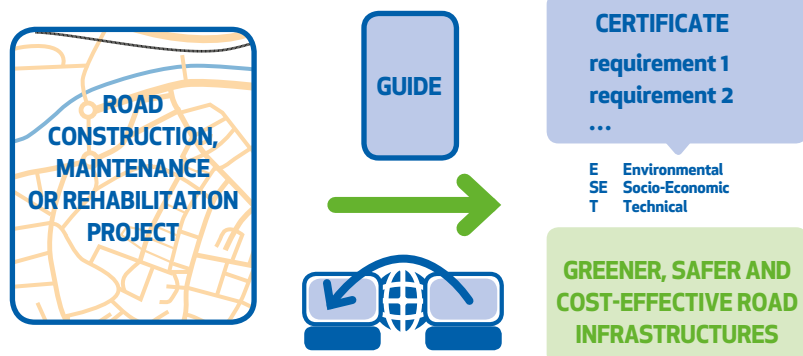
DISSEMINATION UPDATE

Within WP 7 (Communication, dissemination, standardisation and exploitation), led by FEHRL, four special dissemination telephone conferences have been held during 2014 and early 2015. Presentations have also been made to key bodies such as the relevant CEN committees.

As described on pages 5-7, ACCIONA presented the project at the FEHRL Infrastructure Research Meeting 2015 (FIRM15) in Brussels, Belgium, on 22nd-23rd April 2015.

LCE4ROADS will also be presented at 1st IRF Europe & Central Asia Regional Congress & Exhibition on 15-18th September 2015 in Istanbul, Turkey at the "Sustainable Roads" session (on Friday 18th from 11am-12.30pm).

► For more information, go to www.lce4roads.eu or contact Rocio at rocio.fernandez.flores.EXT@acciona.com.



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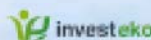
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TWO ROUNDS OF SKID RESISTANCE TESTING COMPLETED DURING FIRST HALF OF PROJECT

ROSANNE (standing for Rolling resistance, Skid resistance, AND Noise Emission measurement standards for road surfaces) is a 36-month FP7 project which started on 1st November 2013 and aims at developing/harmonising measurement methods for skid resistance, noise emission and rolling resistance of road pavements as a preparation for standardisation. Controlling these road surface parameters enables road administrations to make a beneficial contribution to making road transport safer and greener.

Currently, the measurement methods and policies vary greatly across Europe, leading to the situation that while their importance is recognised, the exchange of expertise and good practice among EU countries faces considerable barriers. Ultimately this leads to barriers facing companies that wish to trade in more than one country due to the difficulties in interpreting the technical requirements for the provision of goods and services, and the inefficiency

of requiring different physical equipment for making measurements. The project follows the recommendations of key predecessor projects TYROSAFE (tyrosafe.fehrl.org), HERMES (www.hermesroadmeasurement.eu), SILVIA (www.trl.co.uk/Silvia), SILENCE (www.silence-ip.org) and MIRIAM (Miriam-co2.net) and considers ongoing work in CEN and ISO.

For skid resistance, many European countries have established thresholds for pavement acceptance and routine monitoring that are linked to devices that originated from national development and many years' experience of the performance of pavement materials. Past work has led to proposals for harmonisation of measurements from European skid resistance devices, but so far it has not been possible to establish an algorithm that brings the measurements from all the different devices into a common scale with sufficient accuracy. The lack of accuracy is a particular concern for the control and acceptance of newly constructed pave-

ments against contractual specifications and warranty terms.

The TYROSAFE project (Roe et al, 2009) concluded that, with the large number of different devices operating on various principles and with different responses to the variation in road and test conditions, it would be difficult to achieve a common scale that accommodates all devices in all conditions and still obtains a sufficient accuracy. However, an acceptable accuracy might be achievable if restrictions are placed on the range and types of devices in combination with their operating principles and conditions. TYROSAFE produced a roadmap that described different approaches to achieving this.

Building on this earlier work, the ROSANNE project has proposed that a possible way to achieve an acceptable accuracy is to develop a common scale for each of at least two different groups of devices based on their substantially different operating principles. The proposed groups are devices measuring a



side-force friction coefficient and those measuring longitudinal friction, with a possible further subdivision into devices operating with either a low or high slip ratio. This approach also enables different measurement classes to be introduced, associated with achieving different levels of accuracy. Moreover, it was proposed to organise round robin tests between some European friction devices to establish the feasibility of a common scale for each group of devices. Two experimental campaigns were proposed: the first one to build the common scale and the second one to check its stability over time and with other friction devices. The first campaign was held in May 2014 in Nantes in France on project partner IFSTTAR's test tracks and trafficked roads around the IFSTTAR facility. To limit the differences due to seasonal variations, the tests were carried out on two consecutive weeks; one week for devices measuring longitudinal friction coefficient and another week for devices measuring side-force friction coefficient.

A total of six longitudinal and five side-force devices took part in this 2014 test programme; the devices were available to the consortium and included a reason-

able number of the 15 different device types available in Europe, particularly those that are in common use. The complete test programme allowed for calibration of the common scale over a range of skid resistance levels and a test of its robustness on surface types and measurement conditions that are representative of the roads in Europe. Analysis of the data from the first round of tests has shown that, within each of the device groups, measurements made by different devices can be converted to a common scale with a reasonably good level of accuracy.

The second campaign was held in April 2015 at the same location. The same general organisation was applied with two consecutive weeks of trials, but one main difference with the first campaign was that the trials were open to a limited number of new devices. An invitation was sent to key organisations across Europe and many requests to participate in the trials were received. However for operational reasons the number of devices participating in each week had to be restricted to a maximum of 10. The results are now being analysed and will be presented in a later issue of this magazine.



► For more information, go to www.rosanne-project.eu or contact Manfred Haider at manfred.haider@ait.ac.at.



PARTNERS



TWO NEW RESEARCH ROADMAPS REVEALED AT

ERTRAC, as the European Road Transport Research Advisory Council, provides a platform to bring together road transport stakeholders to develop a common vision for road transport research and innovation in Europe. As a European Technology Platform, ERTRAC defines strategies and roadmaps to achieve this vision through the definition and update of a Strategic Research Agenda (SRA) and the implementation of research and innovation roadmaps. The recent ERTRAC annual conference marked the official release of its latest research roadmaps on urban freight and automated driving. The roadmaps will contribute to the definition of research programmes involving cities, industry, retail, logistics service providers, supported by the European Commission's Framework Programme for Research and Innovation for 2014-2020, Horizon 2020.



"Road transport today offers major opportunities for innovation, which are also opportunities for job creation and competitiveness in Europe", said Jean-Luc di Paola-Galloni at the 2015 annual ERTRAC conference in March in Brussels. Paola-Galloni is acting Chairman of ERTRAC and Corporate Vice-President for Sustainable Development of the automotive supplier VALEO.

The conference, attended by some 200 road transport researchers and stakeholders, represents the main platform where ERTRAC's Working Groups present the research needs they identify in continuous work. This year this included the urban freight and automated driving roadmaps, which were presented by ERTRAC's Working Group leaders within three strategic sessions on Powertrains (engines, fuels, and electrification), Connectivity and automated driving and Infrastructures, urban mobility and freight. ERTRAC Working Group leaders and invited high-level speakers from industry and the European Commission exchanged information and ideas on these research and innovation priorities within these three sessions.

A ROADMAP FOR INTEGRATED URBAN FREIGHT TRANSPORT

Urban freight is responsible for approx. 25% of urban transport-related CO₂ emissions and 30 to 50% of other transport-related pollutants such as particulate matters (PM) and Nitrogen Oxide (NO_x). At the same time, load factors for delivery vehicles in cities, for example, are low. In London, for example, the aver-

age load accounts to just 38% of capacity. Hence, potential for improvements in urban logistics is massive. "As economic centres, cities are not only the place of delivery of goods, but also the place of shipments. Improvements to achieve more efficient, clean and smart transport of goods therefore need to tackle distribution in urban areas", explains Nick Lester, and hence the need for a dedicated roadmap on urban issues.

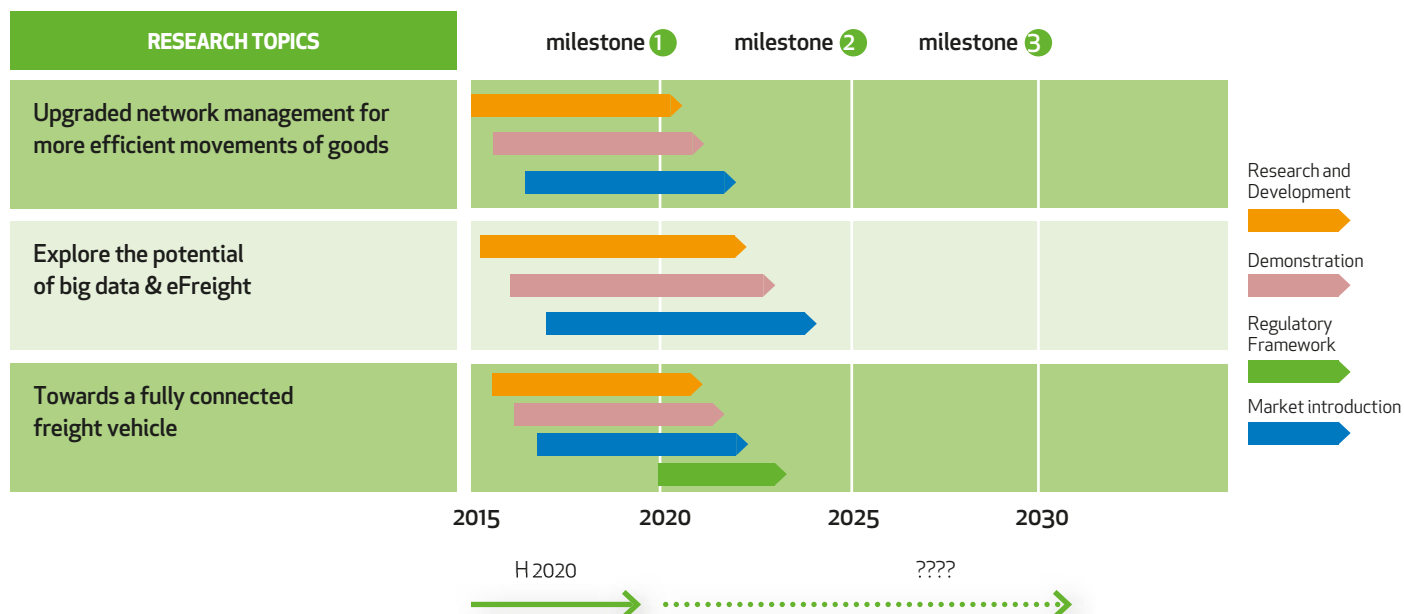
Drafted jointly by ERTRAC and ALICE (the Alliance for Logistics Innovation through Collaboration in Europe), the urban freight roadmap lists research priorities related to urban freight delivery, returns and urban logistics to improve the efficiency, sustainability and security of this activity.

The vision is to achieve a full integration of freight flows in cities' operations and activities that allow citizens to access the goods they require and the goods to reach the citizens, while at the same time supporting sustainable development. Research areas identified aim to:

- **Increase energy efficiency**, which can be achieved by improving the efficiency of the whole urban logistics system, and added to the expected gains in the energy efficiency of vehicles;
- **Improve the urban environment** by increasing air quality and reducing noise;
- **Increase customer satisfaction** by delivering the goods on time and improving the reliability of the systems;
- **Increase safety and security**, reducing injuries and fatalities as well as cargo loss or damage.



ANNUAL ERTRAC CONFERENCE



Enabling more efficient movements of goods through the management of the infrastructure (ERTRAC roadmap on urban freight, page 26)

ERTRAC's urban freight roadmap covers all movements of goods into, out of, through or within the urban area, made by light or heavy vehicles, including:

- **Delivery of goods (business and home);**
- **Service transport and demolition traffic;**
- **Shopping trips made by private households;**
- **Reverse logistics for waste removal and for returns management;**
- **Service vans for maintenance, supply and removal of parts.**

The roadmap suggests milestones and research topics to achieve policy objectives. For example, to enable a more efficient movement of goods through the management of the infrastructure, the following three specific

research topics are proposed:

- **Upgraded network management**
- **Potential of big data and eFreight**
- **Fully connected freight vehicles**

This roadmap was also distributed from the ERTRAC stand at the recent FIRM15 (see pages 5-7).

WHO IS DOING WHAT RELATING TO CONNECTIVITY AND AUTOMATED DRIVING?

A draft of the ERTRAC roadmap addressing automated driving was also revealed at March's ERTRAC conference, and is currently being finalised. This was produced by a new ERTRAC Task Force on "Connectivity and Automated driving", created in June 2014 (see article on page 18 in December 2014 issue of this magazine). As well as some recommendations for the Horizon 2020 Work Programme 2016-2017,

this "Automated Driving Roadmap" includes chapters on the scope and objectives, common definitions, state of the art, an overview of the EU and international situation, key challenges and objectives, roadmaps for:

- **Conditional Automated Driving**
- **Automated Commercial Vehicles**
- **Automated Urban Road Transport**

The European Commission has supported ERTRAC for using its multi-stakeholder capacity to address this challenge with an integrated approach and deliver recommendations. Both the Task Force and ERTRAC are supported by the FOSTER-Road project, the FP7 coordination action.



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SAFELIFE-X PROJECT DRAWS TO AN END

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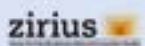
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The importance of ageing infrastructures, networks and industrial plants will continue to increase due to the need to continue the operation of these infrastructures, networks and plants beyond their design life-time and operate under changed conditions.

Effective strategies to address these issues have not yet been developed and consistently applied. The SafeLife-X project, initiated by the European Technology Platforms ECTP (construction) and ETPIS (industrial safety) and started in September 2013, is exploring that issue of ageing as an opportunity for new technologies, services and businesses, primarily in the service and construction sectors. The project relies on the conclusions of global organizations such as the World Economic Forum and OECD, which indicate that the "underinvestment in infrastructures" is one of the most important risks for society.

The goal of this 24-month FP7 project, which finishes in August 2015, is to improve ageing management for infrastructure networks and industrial plants, including roads, railways, tunnels and bridges, so that their availability is maximised and their management cost effective. SafeLife-X is also pursuing the development of a European Standard (EN) on a Risk-Based Inspection (RBI) Framework (Preliminary Work Item - PWI 00319020) and is building cost-effective solutions to handle the problem of infrastructures ageing in the next 10 years (2015-2025) by providing specifications for new Research Development Innovation projects (Strategic Research Agenda/Roadmap). It will also set up a reference source with Asset Integrity Management (AIM), mapping catalogue of the good/best practices as well as with Cost-Benefit analysis and Return of Investment.

The standardisation in the project is focused on the RBI activities. The basis for these activities is the CEN CWA

15740:2008/2011, developed in the FP6 project RIMAP. Within SafeLife-X, this pre-standardization document is being promoted into an EU standard, currently in the preparation phase as a Risk-Based Inspection Framework (RBI). The final draft will be released in autumn 2015.

The RBI is developed within the CEN TC 319 dedicated to maintenance, under a working group dedicated to RBI (WG12). NEN, the Dutch Standardisation Body, holds the Secretariat and Steinbeis Advanced Risk Technologies coordinates the project. The work on the standard is directly supported by industry, involving more than 30 major companies (among them TÜV Austria, DEKRA, Bayer, TÜV SÜD, EnBW, Shell, TUV Rheinland, DNV-GL, MAN, Du Pont, Lloyd's, VTT, Vincotte, BAM, AirProducts, APPLUS, ENAIL, ISIM, BZF and others).

The SafeLife-X project and the new EN will help Europe deal better with challenges posed to the maintenance and management of aging infrastructures, networks and plants. In particular, those related to globalisation and related competitive pressures which have resulted in rapid changes across industry and society. New trends in maintenance have increased the requirements applicable to infrastructures and industrial plants, for example:

- **Data-Driven Maintenance Management and enhanced tracking and reporting systems.**
- **Mobile and unmanned solutions.**
- **"Green" certifications, which need reliable maintenance and facility data.**
- **Increasingly complex record-keeping for regulatory compliance.**

All these results and more were discussed at the project's final conference on 24th-25th June 2015 in conjunction with a preceding education course/workshop on Resilience and a RBI-EN meeting.

► For more information, see safelife-x.eu-vri.eu or contact Aleksandar Jovanovic and Bastien Caillard at SafeLifeExtension@eu-vri.eu



CALL ENTERS CONTRACT NEGOTIATIONS WITH SELECTED PROPOSALS



NEGOTIATION OF GRANT AGREEMENTS SET TO RUN UNTIL AUGUST; LIST OF FUNDED PROJECTS DUE BY SEPTEMBER

The ERA-NET Plus Infravation 2014 Call for proposals on 'Advanced systems, materials and techniques for next generation road infrastructure' has reached the end of the selection process. All applicants have been informed about the status of their proposal and Rijkswaterstaat, the Project Coordinator, is currently in the grant agreement preparation with the successful proposals. The list of the funded projects will be known at the end of this process, which is expected by September 2015.

Infravation started 18 months ago as a trans-national pooled research fund to develop transport infrastructure innovations which address the challenges identified in the European Commission (EC) White Paper on Transport: Smart, Green and Integrated transport. Its objective is to enable a high-quality infrastructure offering high service levels to the user/economy/society through solutions for both new and existing infrastructure.

This Call, launched on 3rd March 2014, aimed at cost-effective advanced systems, materials and techniques in road infrastructure construction and maintenance, including repair, retrofitting and revamping and generated more than 100 proposals. Proposers then followed a two-step submission and evaluation procedure. The light proposal stage, which concluded at the end of June 2014,

saw the formation of consortia and developing of ideas and the evaluation of the submitted light proposals ended at the end of September. Coordinators of the favourably evaluated light proposals had until the end of November 2014 to prepare and submit their full proposals, which were then evaluated by international independent experts on road infrastructure innovation between December 2014 and April 2015. This included a joint consensus meeting on 23rd-24th March 2015 at the Rijkswaterstaat Brussels Office where these independent evaluators came together to assess and rank each of the proposals with the facilitation of the Infravation Management Group (members of Rijkswaterstaat, TUV and FEHRL), followed by the final decision on funded projects taken at the Infravation Steering Group consensus meeting on 15-16th April 2015.

The Call has an available budget for co-financing of €9.025 million and falls under the scope of SST.2013.1-3 (ERA-NET Plus 'Advanced systems, materials and techniques for next generation infrastructure').

PROJECT KICK-OFF MEETING IN NOVEMBER 2015

A joint kick-off meeting for all funded projects will be organised on 12-13th November 2015 at the Diamant Center in Brussels, Belgium. This will give the involved consortia the opportunity to get to know the other funded projects, exchange information, establish contacts and join forces. The kick-off meeting will also enable the Infravation Scientific Panel members to start liaising with the funded projects. The Scientific Panel brings together technical experts who will support and connect the funded projects and review their progress.



► For more information on the Infravation Call, contact the Infravation Call Secretariat at david.doerr@de.tuv.com and miriam.stephan@de.tuv.com or see www.infravation.net.



FUNDING PARTNERS





FOREVER OPEN INFRASTRUCTURE ACROSS (X) ALL TRANSPORT MODES (FOX)

In general, the European transport network is of a high standard but is fragmented. Recent years have seen the first networking activities and exchange of strategic programmes among the stakeholders of the four transport modes – road, rail, water and air – but a mono-modal, mono-disciplinary culture still exists. The FOX project aims to develop a highly efficient and effective cross-modal R&D environment and culture.

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Based on the already existing co-modal transport research programmes and agendas, the FOX project will identify common needs and innovative techniques in the technical areas of construction, maintenance, inspection, and recycling & reuse of transport infrastructure. This will be reached by the involvement of all stakeholders of the modes using a phased approach, starting with the determination of the state-of-the-art in research and practice, followed by the identification of the most promising practices and ideas. By mapping the common needs, the final aim is to establish a cross-modal Working Group to develop a roadmap for the whole transport sector and set the agenda for the further improvement of cross-modal research development innovation. FOX is a 30-month project under the H2020 topic of MG-8.1b-2014 - Smarter design, construction and maintenance.

FOX AND USE-IT PROJECTS KICK OFF

On 7-8th May 2015, two new Horizon 2020 (H2020) projects called FOX (Forever Open Infrastructure across (X) all transport modes) and USE-iT (Users, Safety, security and Energy In Transport infrastructure) kicked off at a joint meeting for some 25 researchers. The meeting looked at each of the Work Packages, as well as the synergies between these and other linked H2020 projects. On the following pages, we give a short overview of FOX and USE-iT, as well as the other H2020 projects that FEHRL is involved in.

USERS, SAFETY, SECURITY AND ENERGY IN TRANSPORT INFRASTRUCTURE (USE-IT)

The transport network across Europe faces challenges relating to carbon reduction targets, energy, security, and depletion of natural resources. The road and rail infrastructure in particular are also ageing and require renewal. Simultaneously, advances in sensors, mobile communications, smart ticketing and 'big data' offer the potential for customers to become an active part of the transport operations system and have the information to make decisions and for freight operators to have more resilience and better reliability in their systems.

In order to tackle the challenges and reap the benefits, infrastructure owners and transport operators will be required to work together, along with other crucial stakeholders, to share knowledge and cooperate in a way that will be beneficial to all parties. The USE-iT project seeks to facilitate this. The objective of this 24-month project is to better understand the common challenges experienced across transport modes, bring representatives of transport modes together and develop a set of common research objectives. The project will focus on the technical areas of User Experience, Safety and Security and Energy and draw upon the experience gained from programmes such as FEHRL's Forever Open Road. USE-iT is a 24-month project under the H2020 topic of MG-8.2b-2014 - Next generation transport infrastructure: resource efficient, smarter and safer.

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► Both projects will contribute to the development of FEHRL's FORx4 initiative (profiled on page 9 of the December 2014 issue of this magazine). For more information on both FOX and USE-iT, contact Project Coordinator Thierry Goger at thierry.goger@fehrl.org.

STRENGTHENING EUROPEAN TRANSPORT RESEARCH AND INNOVATION STRATEGIES (SETRIS)

The SETRIS project aims to deliver a cohesive and coordinated approach to research and innovation strategies for all transport modes in Europe. To do this, the following objectives are envisaged:

1. To identify synergies between the transport European Technology Platforms (ETPs) strategic and research and innovation agendas (SRIAs) and between these and relevant national platforms;
2. To review and update the existing SRIAs for each of the transport ETPs within a multi-modal and integrated transport system framework;
3. To benchmark past and present research initiatives affecting the achievement of integrated transport SRIAs and market uptake;
4. To define comprehensive, credible and realistic implementation plans for each SRIAs in a coordinated framework of running ETPs;
5. To support, shape and contribute to future TRA events.

The first four objectives lead to two integrated agendas highlighting not only innovations or research activities that need to be done, but also the changes in governance that are required to facilitate these agendas. These objectives will be implemented through the involvement of representatives of all relevant transport modes and ETPs. SETRIS is a 24-month project under the H2020 topic of MG-9.6-2014 Strengthening the research and innovation strategies of the transport industries in Europe. The kick-off meeting was held in Brussels, Belgium on 19th June 2015.

► For more information, contact Project Coordinator Belinda Fairbairn at Belinda.Fairbairn@newcastle.ac.uk.

PROJECT COORDINATED BY

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RETHINKING FUTURE INFRASTRUCTURE NETWORKS (REFINET)

The REFINET project intends to create a sustainable network of European and international stakeholders' representatives of all transport modes and transport infrastructure sectors. It will also deliver a shared European vision of how to specify, design, build or renovate, and maintain the multimodal European transport infrastructure network of the future along with innovative processes to enhance the effectiveness of the sector, and elaborate a Strategic Implementation Plan with a comprehensive set of prioritised actions.

REFINET will consider two complementary scenarios, namely maintenance and the upgrading of existing transport infrastructures, and development of new transport infrastruc-

tures. REFINET will contribute to create a European-wide consensus on where to focus in terms of research and innovation to improve the productivity of the assets and reduce drastically traffic disruptions of transport flows from inspection, construction and maintenance activities, and to accommodate increasing/ changing traffic demand. Thus, REFINET will pave the way to enhanced technology integration and transfer and mass-market development for innovative materials, components, systems and processes supporting the pan-European generalisation of advanced multimodal infrastructures. REFINET is a 24-month project under the H2020 topic of MG-8.1b-2014 - Smarter design, construction and maintenance. The kick-off meeting was held in Brussels, Belgium on 13th May 2015 at the Renewable Energy House (REH).

► For more information, contact Project Coordinator Luc Bourdeau at luc.bourdeau@cstb.fr.

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EFFECTIVE AND COORDINATED ROAD INFRASTRUCTURE SAFETY OPERATIONS (ECORoads)

The general objective of ECORoads is to overcome the barrier established by a formal interpretation of the two Directives 2008/96/EC (on road infrastructure safety management) and 2004/54/EC (on tunnels), that in practice do not foresee the same Road Safety Audits/Inspections to be performed on open roads and in tunnels. To overcome this barrier, the project aims to establish a common enhanced approach by using concepts and criteria of the Directive 2008/96/CE on road infrastructure safety management and the results of related EC funded projects. ECORoads is a 24-month project under the H2020 topic of MG-8.1b-2014 - Smarter design, construction and maintenance. The kick-off meeting was held for more than 25 project members in Brussels, Belgium on 4-5th June 2015.

► For more information, contact Project Coordinator Adewole Adesiyun at adewole.adesiyun@fehrl.org or see www.ecoroadsproject.eu.

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FURTHERING LESS CONGESTION BY CREATING OPPORTUNITIES FOR MORE WALKING AND CYCLING (FLOW)



The FLOW project sees a need for a paradigm shift wherein non-motorised transport is placed on an equal footing with motorised modes with regard to urban congestion. To do this, FLOW will create a link between walking and cycling and congestion by developing a user-friendly methodology for evaluating the ability of walking and cycling measures to reduce congestion. FLOW will develop assessment tools to allow cities to evaluate the effects of walking and cycling measures on congestion. FLOW partner cities will develop implementation scenarios and action plans for adding or up-scaling measures that are shown to reduce congestion. FLOW is a 36-month project under the H2020 topic of MG-5.3-2014 - Tackling urban road congestion. The kick-off meeting was held in Budapest, Hungary on 9-11th June 2015.

► For more information, contact Project Coordinator Bernard Gyergyay at b.gyergyay@rupprecht-consult.eu or Bonnie Fenton at b.fenton@rupprecht-consult.eu.

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'SENSING SKIN' FOR MONITORING-BASED MAINTENANCE OF THE TRANSPORT INFRASTRUCTURE (SENSKIN)

Structural Health Monitoring (SHM) is expected to play a predominant role in the management of the transport infrastructure. Yet, SHM techniques continue to rely on point-based sensing requiring a dense network of these point-sensors increasing considerably the monitoring cost. Additionally, commercially available strain sensors cannot measure strains beyond 1% to 2% and, thus, are not able to provide an alarm for an imminent catastrophe.

SENSKIN aims to develop a dielectric-elastomer and micro-electronics-based skinlike sensing solution for the structural monitoring of the transport infrastructure, as well as use the new and emerging technology of Delay Tolerant Network to secure that strain measurements acquired through the 'sensing skin' and develop a Decision-Support-System for proactive condition-based structural intervention under operating loads and intervention after extreme events. SENSKIN is a 42-month project under the H2020 topic of MG-8.1a-2014 - Smarter design, construction and maintenance. The kick-off meeting was held in Athens, Greece, on 2nd-3rd June 2015.

► For more information, contact Project Coordinator Angelos Amditis at a.amditis@iccs.gr or see www.senskin.eu.

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SOLUTIONS PROJECT ORGANISES WORKSHOPS AND TRAININGS IN INDIA AND BRAZIL

The 36-month FP7 SOLUTIONS project, which aims to support the uptake of innovative sustainable urban mobility solutions in Europe and other regions in the world, has really been busy since it was first profiled in the December 2013 issue of this magazine and still has a lot of activities planned in the remaining year. Here we focus on the recent workshops and trainings in the City of Cochin (India) and Belo-Horizonte (Brazil).

SOLUTIONS aims to get cities actively involved in the project activities and called for applications from cities in Europe, Asia, Latin America and the Mediterranean to get involved as leading, take-up, or training city. Cochin Municipal Corporation responded and organised a three-day workshop and brainstorming session on sustainable transport solutions in Cochin (India) on 25-27th March 2015. The workshop's main programme was conducted by ICLEI - South Asia, with support from the Wuppertal Institute, FEHRL (Secretary General Thierry Goger), BAST, Austriatech, Embarq India and Clean Air Asia.

The first day of the workshop addressed Cochin Municipal Corporation's ongoing cross-sectorial projects and efforts to improve transport systems, consequently dividing the SOLUTIONS team into two groups to visit different organisations responsible for transport activities in the city. The second day of the workshop consisted

of participatory sessions attended by officials from various departments, such as Kochi Corporation, City Traffic Police, RTO, Town and Country Planning Organization, CPPR and various experts involved in local transport development. The workshop was closed by SOLUTIONS team experts with a presentation on successful measures implemented in Europe and India, with potential to be also implemented in Cochin.

The overall objective of the workshop was to bring together various stakeholders responsible for the planning and development of transport systems as well as to establish a participatory discussion and prepare priority actions for a sustainable transport system in the city. It succeeded in creating an exchange platform between local stakeholders and the SOLUTIONS team, where international case studies were showcased, highlighting key factors to transform Cochin into a livable and healthy city. The workshop also received a lot of local press attention.

In the context of the SOLUTIONS project, another workshop on Urban Mobility was hosted in mid-March in Belo Horizonte (Brazil). Organised by Belo Horizonte's transit agency, BHTRANS and EMBARQ Brasil, the workshop focused on designing a workplan for the collaboration between Take-Up city Belo Horizonte, Leading City Bremen and Take-Up coach IFSTTAR. Building on its city-to-city partnership with Bremen, Belo Horizonte plans to invest in the implementation of a Zone 30. From the partnership with IFSTTAR, the city aims to get support on the development from the Municipal Policy of Urban Logistic.

The event gathered more than 80 local stakeholders and included a technical visit to the BRT corridor and to the cycling network. With support from the City of Bremen (Germany) and IFSTTAR, training sessions on innovative urban mobility solutions were offered to participants.



► For more information, contact Oliver Lah at oliver.lah@wupperinst.org, see www.urban-mobility-solutions.eu or [f](#) [t](#) [v](#)

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EXPERTS CALL FOR NON-MECHANISED TRANSPORT SYSTEM

DC CORRESPONDENT
KOCHI, MARCH 27

Urban transport experts from various international agencies have put forward innovative, adaptable, automated and climate change-resilient solutions for the city's transport infrastructure. During a three-day workshop organised by the Kochi Corporation and Kochi Metro Rail Limited as part of the 'Solutions' project, experts stressed the need to develop a non-motorised transport system with a focus on cycling.

Kochi has been selected as one of the cities under the 'Sharing Opportunities for Low Carbon Urban Transportation' (SOLUTIONS) programme, funded by the European Commission.

Dr Thierry Goger, secretary general of FEHRL, Europe's national road research centre, said that guidelines and common standards should be followed while planning and designing urban roads and public places. Constructing central protective islands on roads, extended pavements, narrowing of the roadway, elevated surface of roadways, improved placement of signage and lights are some of the suggestions recommended by the expert.

Improving the bus system with proper timing, comfort, safety, efficient interchange hubs and passenger information system, restrictions on use of private cars through imposition of tax and limiting parking facilities in city centres, incentives for shifting from cars to public transport and improving road safety are some of the other major recommendations to improve the urban transport sector.



Deputy mayor B. Bhadra with Dr. Thierry Goger, Secretary general of FEHRL, - Europe's national road research centre and Oliver Lah, Wuppertal Institute during a workshop on sustainable transport solutions organised by city corporation in association with Kochi Metro Rail Limited. - ARUNCHANDRA JOSE

24-26TH NOVEMBER 2015

FEHRL INTERNATIONAL PROJECT MANAGEMENT TRAINING COURSE



Do you need to learn about the procedures and techniques needed to work effectively in EC and other multinational projects? If so, sign up now for the next **FEHRL International Project Management (IPM) training course** in Brussels on 24-26th November 2015.

This course will focus on building teamwork with experts of different nationalities and cooperating with experts from the public and industrial academic sectors.

Lectures and workshops will be performed in English by professional trainers, qualified project managers and EC officials.

- For more information, contact Isabelle.lucchini@fehrl.org.

18TH-21ST APRIL 2016

COME AND JOIN US AT TRA 2016



FEHRL will be present again at TRA2016 on 18th-21st April 2016 in Warsaw, Poland, so save the date now and come and meet us there!

- See www.traconference.eu for more details on TRA2016.



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