EPAM 2012

EXPECTATION • PRESERVATION • ANTICIPATION • MOTIVATION • OUR FUTURE

THE 4TH EUROPEAN PAVEMENT AND ASSET MANAGEMENT CONFERENCE

Malmö, Sweden, 5–7 September 2012

MEET THE CHALLENGES OF ROAD INFRASTRUCTURE ASSET MANAGEMENT

TECHNICAL TOUR
TAKE A LOOK AT THE HALLANDSÅS RIDGE RAILWAY TUNNEL
WHEN CAPABILITY COUNTS...

Fugro has centres of excellence in four continents providing comprehensive highway assessment and consultancy services. Equipped with probably the world’s largest survey fleet our teams record inventory, assess condition, determine structure and test the strength of thousands of kilometers of road and associated infrastructure every year.

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- ARAN automated surface condition
- Pavement construction from GPR
- Asset data collection
- Skid resistance
- Structural pavement surveys
- LIDAR and geospatial surveys
- Visual condition surveys
- Geotechnics

www.fugro.com/transportation
Welcome to the 4th EPAM conference!

VTI has the pleasure of welcoming you to the 4th European Pavement and Asset Management Conference in Malmö, Sweden, on 5–7 September 2012. The conference is the follow up of the previous EPAM conferences in Budapest, Hungary in 2000, Berlin, Germany in 2004 and Coimbra, Portugal 2008.

The effects of increasing traffic, climate change and need of safety as well as the need of well-being has to be met by even more effective road management. The 4th EPAM conference will cover all aspects of the road infrastructure including the sub-assets pavements, engineering structures and road furniture and equipment.

The organizers wish all participants welcome and hope that you will have a fruitful exchange of know-how from more than 80 presentations and participants representing more than 30 countries.

KENT GUSTAFSON
Chairman EPAM4 organising committee

Wednesday, 5th September 2012

08.00 | Wednesday
Opening of the Conference

08.00–09.00 | Conference Registration

09.00–09.30 | Opening Ceremony
Chairman: Kent Gustafson, Chairman of the organising committee
- Jonas Bjelfvenstam, Director General, Swedish National Road and Transport Research Institute, VTI
- Günter Breyer, Austria, Chairman of EPAM4 steering committee

09.30–10.30 | Opening session
Chairman: Sigurdur Erlingsson, Chairman of the scientific committee
Risk-Based Transportation Asset Management for a Performance-Based Program: Practices in the US
- Katie Zimmerman, President of the Applied Pavement Technology, Inc., USA
- Stephen J. Gaj, Team Leader, System Management & Monitoring Team Federal Highway Administration Office of Asset Management, USA

The ERA NET Road Programme and Asset Management
Christian Pecharda, FFG Austrian Research Promotion Agency, Austria

10.30–11.00 COFFEE BREAK
Multi-Approach Life Cycle Analysis Optimization for Integrating Environmental Impacts Into Pavement Management Systems
Filippo Giustozzi, Virginia Tech, USA and Politecnico di Milano, Italy

EVITA: Environmental Key Performances Indicators
Philippe Lepert, IFSTTAR, France

Monetary Valuations of Ride Quality Depending on Pavement Condition
Camilla Byström, WSP Analysis & Strategy, Sweden

Performance-Specified Maintenance Contracting: the Croatian Approach to Improving Road Quality
Mate Srsen, University of Rijeka, Croatia

Follow-Up Study From a Seven Year Performance Contract Ending in 2010
Robert Karlsson, VTI, Sweden

A New Decision-Aid Tool for Pavement Management Systems
Adelino Ferreira, University of Coimbra, Portugal

Road User Interests as an Optimization Criterion for Austrian Motorway Maintenance
Barbara Brozek, PMS-Consult, Austria

A 10-Year Prioritized Roadmap for Pavement Management
Kathryn A. Zimmerman, Applied Pavement Technology, Inc., USA

Development of Prediction Models for the Cost of Road Works Using Multi-variate Regression Analysis
Jelena Cirilovic, IMS Institute, Serbia

Systems and Tools for the Evaluation of Road Quality Indicators
José Antonio Ramos García, Euroconsult NT, S.A., Spain
PROGRAMME OF THE CONFERENCE

Wednesday, 5th September 2012

14.00–15.30 | Session 3
Cross Asset Management and Maintenance Strategies
Chairman: Chris Britton

Asset Service Condition Assessment Methodology (ASCAM project)
Karoline Alten, AIT Austrian Institute of Technology, Austria

Investigation of Good Practice in Road Assessment, Heroad
Leif Sjögren, VTI, Sweden

Survey on Pavement Preservation Treatments in Cold Regions
Hannele Zubeck, University of Alaska Anchorage, USA

Effect of Commercial Traffic Overloading Enforcement on Pavement Performance
Venkat R Sheela, URS Scott Wilson India Private Limited, India

Development of Cross Asset Management Procedures, ENR-Project PRO-CROSS
Alfred Weninger-Vycudil, PMS-Consult GmbH, Austria

14.00–15.30 | Session 4
Decision Tools and Systems
Chairman: Hanz W. Horz

Qualified Thermal Mapping in Castilla-León, Spain
Jose Carlos Valdecantos. Spain

The German BMS as a Decision Tool for Sustainable Maintenance Strategies
Ralph Holst, BASt, Germany

An Impact Hierarchy for the Evaluation of Intervention Strategies for Public Roads
Nam Lethanh, Institute of Construction and Infrastructure Management, ETHZ, Switzerland

Development of a Methodology for Planning Pavement Maintenance Interventions on High-Traffic Roads
João Morgado, IST – Technical University of Lisbon, Portugal

High Speed Rail Lisbon–Madrid: an Innovative Method
Diana Silva Leal, University of Coimbra, Portugal

15.30–16.00 COFFEE BREAK
PROGRAMME OF THE CONFERENCE

Wednesday, 5th September 2012

16.00–17.30  | Session 5
Climate Change – Secondary Network
Chairman: Philippe Lepert

ViaBEL – a Tool for Decision Processes in Pavement Management of Secondary Road Networks in Belgium
Carl Van Geem, BRRC, Belgium

Provision of Road Infrastructure Data for Climate Change Impact Analysis
Marek Skakuj, Heller Ingenieurgesellschaft mbH, Germany

Further Development of Hungarian Road Asset Management Due to Climate Change
László Gáspár, KTI Non Profit Ltd, Hungary

Pavement Management of Secondary Roads in Hungary
Andras Gulyas, University of Pécs, Hungary

“Right in Place” Rehabilitation of Gravel Roads
Svante Johansson, Roadscanners, Sweden

16.00–17.30  | Session 6
Case Studies and Experiences From Implementation
Chairman: Thomas Linder

Road Asset Evaluation Models
Karol Opara, Heller Consult ltd, Poland

Holistic PMS-Approach in the City of Graz
Alfred Weninger-Vycudil, PMS-Consult, Austria

The Development of a Computing Program to Control the Management of a Network Performance Based Maintenance
Rocío Casero Gutiérrez, Technical University of Madrid, Spain

Croatia – On its Way to a Holistic Pavement Management System
Miroslav Keller, Croatian Roads Ltd, Croatia

Asset and Pavement Management for Rural and Urban Development Suggested for Moldova
Carl Anders Lenngren, Lund University, Sweden

18.30–20.00 WELCOME RECEPTION
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<td>Lubomír Pepucha, University of Žilina, Slovakia</td>
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<td>Possible Locations for Cool Pavement Use in the City of Rijeka</td>
<td>Sanja Šurdonja, University of Rijeka, Croatia</td>
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<td>Influence of the Tack Coat Material on Interlayer Bonding Properties in Asphalt Layer Systems</td>
<td>Konrad Malicki, Cracow University of Technology, Poland</td>
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<td>Development of Computational Methods to Estimate Phase Angle of Asphalt Mixtures</td>
<td>Abubeker W. Ahmed, VTI, Sweden</td>
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<td>Methods of Analyzing Safety Risks of Road Traffic Using Pavement Condition Indices</td>
<td>Slawomir Heller, Heller Ingenieuresgesellschaft mbH, Germany</td>
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<td>Influence of Heavy Traffic Lateral Wander on Pavement Deterioration</td>
<td>Sigurdur Erlingsson, VTI, Sweden</td>
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<td>Microsimulation of Work Zone Delays and Applications in Pavement Management</td>
<td>Jonas Wennström, VTI, Sweden</td>
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<td>In Situ Pavement Recycling with Cement Design</td>
<td>Hernán Gonzalo Orden, Universidad de Burgos, Spain</td>
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<td>Assessment and Analysis of Road Network Performance Using Long-Term Surface Condition Data</td>
<td>Johan Lang, WSP, Sweden</td>
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<td>Comparison of Pavement Management in the Nordic Countries</td>
<td>Johan Lang, WSP, Sweden</td>
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<td>Findings From an International Study on Managing Pavements, Monitoring Performance</td>
<td>Kathryn A. Zimmerman, Applied Pavement Technology, Inc., USA</td>
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<td>Cross Asset Management in Practice, Reconstruction Concept A23 Vienna</td>
<td>Alfred Weninger-Vycudil, PMS-Consult GmbH, Austria</td>
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<td>A Life Cycle Cost Approach based on the Calibrated Mechanistic Asphalt Pavement Design Model</td>
<td>Iman Mirzadeh, KTH – Royal Institute of Technology, Sweden</td>
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<td>The New PWD Manual on Pavement Design</td>
<td>Mohd Hizam Harun, Public Works Department, Malaysia</td>
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<td>Asphaltic Concrete on Roads in Malaysia: Is Quality Under Control?</td>
<td>Hanani Mohd Radzi, Public Works Department, Malaysia</td>
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PROGRAMME OF THE CONFERENCE
Thursday, 6th September 2012

08.30–10.00 | Session 7
Performance Prediction and Implementation
Chairman: Lászlo Gaspar

A Stochastic Approach to the Lifetime Prediction of Pavement Structures
Rainer Hess, Durth Roos Consulting GmbH, Germany

New Nordic Performance Model for Better Maintenance Planning
Susanne Baltzer, DRD, Denmark

Tools and Methods for the Daily Work of Improving Data Handling for Asset Management Applications: Experiences from Germany
Slawomir Heller, Heller Ingenieurgesellschaft mbH, Germany

“ElementaryData” format – a Way to High Quality of Road Condition Measurement Data: Application Results
Wojciech Gajewski, Heller Consult Ltd. Poland

Pavement Condition Data Information System By The Federal Highway Research Institute (“BAST”)
Börge Wasser, BASt, Germany

08.30–10.00 | Session 8
Structural Pavement Behaviour
Chairman: Hamid Zarghampour

Ground Penetrating Radar (GPR) – a Tool for Pavement Evaluation and Design
Wong Khai Tung, Fugro PMS, Australia

Structural Pavement Monitoring With Nondestructive Measuring Devices at Traffic Speed – Current Research and Experience in Germany
Rolf Rabe, BASt, Germany

First Experiences with Continuity Bearing Capacity Measurements Complementary to the German Pavement Management System (PMS)
Andreas Grossmann, Hochschule Konstanz University of Applied Sciences, Germany

Rolling Deflectographs and Equipments for Load Capacity Monitoring of Roads
Leif Sjögren, VTI, Sweden

Falling Weight Deflectometer Interpretation of Pavement Behaviour during Spring Thaw
Farhad Salour, VTI, Sweden

10.00–10.30 COFFEE BREAK
10.30–12.00 | Session 9
Pavement Maintenance
Chairman: Hannele Zubeck

- Experienced Durability of Maintenance Treatments
  Johan Lang, WSP, Sweden

- An Application to Measure the Whole Life Cost and Whole Life Carbon Footprint of Pavement Maintenance
  Steven B. Finnie, URS Infrastructure and Environment UK Limited, United Kingdom

- User Costs in Road Life-Cycle Cost Evaluation and Optimisation
  Bertha Santos, University of Beira Interior, Portugal

- Maintenance Requirements for State Roads in Austria
  Johann Litzka, TU Vienna, Austria

- Evaluation of Rutting Threshold Limits on Resurfacing of High-Volume Roads
  Terhi Pellinen, Aalto University, Finland

10.30–12.00 | Session 10
Pavement Performance Modelling and Prediction
Chairman: Safwat Said

- Mechanistic Performance Modelling of Rutting in Pavement Structures
  Sigurdur Erlingsson, VTI, Sweden

- Modeling Prediction on Rutting and Cracking Data
  Markus Svensson, VTI, Sweden

- Determining the Remaining Pavement Life – Field Results
  Sabine Werkmeister, Technische Universität Dresden, Germany

- Response Modelling of a Flexible Pavement Structure Tested in a Heavy Vehicle Simulator
  Thorbjorg Saevardsdottir, University of Iceland, Iceland

- Mechanistic Modelling of HVS Flexible Pavement Behaviour
  Abubeker W. Ahmed, VTI, Sweden

12.00–13.00 LUNCH
PROGRAMME OF THE CONFERENCE
Thursday, 6th September 2012

13.00–14.30 | Session 11
Asset Monitoring and Data Acquisition
Chairman: Kathryn A. Zimmerman

What “Tails” Tell a Highway Manager
Sean Miller, EnterpriseMouchel, England

Integration of Existing and Emerging Data Collection Technologies in Australia
Richard Wix, ARRB Group, Australia

Experiences with New Technologies in the Field of Road Problem Diagnostics
Timo Saarenketo, Roadscanners Oy, Finland

A Road Safety Measures Tool Applied for Urban Road Safety Management
Carmen Carvalheira, High Institute of Engineering of Lisbon, Portugal

A New Mobile System for Safe Performance Control of the Road Markings
Peter Ekdahl, Ramboll RST, Sweden

13.00–14.30 | Session 12
Pavement Performance Modelling and Prediction II
Chairman: Mats Wendel

Response and Permanent Deformations in Base Material – Analysis and Modeling
Ebrahim Parhamifar, University of Lund, Sweden

Moisture Sensitivity of Unbound Granular Materials
Shafiqur Rahman, VTI, Sweden

Analyzing the Gyratory Compaction Design Level for a Dense Mixture and a Stone Mastic Asphalt
Dinis Gardete, Escola Superior de Tecnologia de Castelo Branco, Portugal

Calculation of the Pavement Response to Dynamic Loads by the Boundary Element Method
Arminda Almeida, University of Coimbra, Portugal

Energy Usage and Greenhouse Gas Emissions of Pavement Preservation Processes for Asphalt Concrete Pavements
Juraj Rypak, Crafco Inc., Czech Republic
Programme of the Conference

Thursday, 6th September 2012

14.40–16.10 | Session 13
Pavement Condition Monitoring
Chairman: Terhi Pellinen

New Trends to Characterize Pavement Condition for the “Estradas de Portugal, S.A.” Pavement Management System
João Morgado, Estradas de Portugal, S.A., Portugal

Pavement Condition Visualization Integrated with Images of Pavement Surface
Wojciech Gajewski, Heller Consult Ltd, Poland

Preliminary Work to Introduce the Weighted Longitudinal Profile into Pavement Management Systems
Roland Spielhofer, AIT Austrian Institute of Technology, Austria

Determination of Rut Depths from Multi-Point Transverse Profile Filtering of Laser Projection Systems
James Erskine, Fugro PMS, Australia

Longitudinal Irregularity of Road Surfaces: Depths Under Rolling Straight Edge Versus International Roughness Index
Nurul Hida Hasnan, Public Works Department, Malaysia

14.40–16.10 | Session 14
Sustainable Pavements
Chairman: Luis Picado-Santos

Design and Construction of an Experimental Two Layer Concrete Pavement Motorway Section in Spain
Javier Pablo Ainchil Lavin, FCC Construcción, Spain

Sustainable Pavements: Warm Asphalt Mixtures Made with Recycled Aggregates from Different Industrial By-Products
Fernando C. G. Martinho, Technical University of Lisbon, Portugal

Cold In-Place Recycling of Marginal Materials in Malaysia: How Does it Fare?
Mohd Hizam Harun, Public Works Department, Malaysia

Improving the Mechanical Properties of CBEMs Using Waste Fly Ashes
Shakir Al-Busaltan, Liverpool John Moores University, United Kingdom

Reconsideration of European Wheel Tracking Test-Based Performance-Related Specifications for Asphalt Concrete
Miomir Miljkovic, Ruhr Universität Bochum, Germany

16.10–16.30 Coffee Break
PROGRAMME OF THE CONFERENCE

Thursday, 6th September 2012

16.30–17.45
Closing of the conference
Chairman: Günter Breyer

16.30–17.30
The World Road Association and Management of Road Assets
Thomas Linder, Ministerialrat, Oberste Baubehörde im Bayerischen Staatsministerium des Innern, Germany

Conclusions from the 4th EPAM conference
Sigurdur Erlingsson, VTI, Chairman of the EPAM4 scientific committee

17.30–17.45
Closing Ceremony

20.00–24.00 BANQUET
TECHNICAL TOUR
Friday, 7th September 2012

HALLANDSÅS RIDGE RAILWAY TUNNEL | The construction of the two-lane tunnel for rail transport through the Hallandsås Ridge began already 1992. Due to construction as well as environmental problems that has delayed the project, 83 per cent of the parallel tunnels are completed today.

The rail traffic through the tunnel will begin in 2015. The construction site is situated some 100 kilometres north of Malmö.
The design, construction, management and maintenance of roads and associated infrastructure call for information and specialist advice. Fugro provides the data, technology and expertise required to mitigate and manage risks, protecting people, the environment and commercial investment. From initial feasibility studies, through to long-term asset management, we assist government agencies, consulting engineers, construction and commercial developers to extend, improve and preserve the world’s highways.

Fugro has the unique capability to survey, investigate and characterise transport infrastructure located above ground as well as at and below the surface. We can provide the information you need on the bridges and structures above the ground, the pavements on the surface, right down to pavement sub-layers and deeper geology. All this with minimal damage to the infrastructure or disruption to its users.

Ramboll is a leading consultancy company with close to 10,000 experts in 19 countries. Ramboll RST is a division of Ramboll Sweden and is one of Europe’s leading consultants for road surveys. Ramboll RST can provide:

- Systems and surveys for both roads and road markings (e.g. Laser RST, PAVUE, AIES, RMT)
- Advanced analysis methods for survey data
- Bearing capacity studies (incl. FWD, GPR and core testing)
- Visual road condition surveys
- Maintenance planning

Ramboll RST has performed road survey projects since the mid 1980s. Every year, Ramboll RST carries out surveys on some 70,000 kilometres of roads in countries like Sweden, Finland, Norway, Denmark, Germany, Belgium, Poland, Hungary and the Netherlands. Systems provided by Ramboll RST are used in, among others, Spain, Hungary, Russia, Lithuania, UK, Saudi Arabia, the Netherlands and USA.
EXHIBITORS

**AgileAssets Inc.** is the leading global provider of infrastructure asset management software solutions and services for public agencies.

AgileAssets’ advanced technologies help public agencies to more effectively and efficiently manage and invest in their infrastructure assets, while enabling them to deliver better levels of service to their customers.

Offered products includes solutions for pavement, bridges, maintenance, networks, fleets, facilities, utilities, safety, asset trade-off and more. For additional information, please visit www.agileassets.com.

**Dynatest** is the world’s leading manufacturer of pavement evaluation equipment including the Heavy & Falling Weight Deflectometers, Light Weight Deflectometers, Road Surface Profilers, and Friction testers for surveying of Roads, Airports and Ports.

Dynatest also develops engineering analysis and management software to facilitate the preservation, design, and management of pavement networks for Roads and Airports.

Our International Pavement Engineering Consultants are located in offices worldwide, offering the highest level of pavement engineering services for roads, airports and ports, dealing with site specific project analysis to country-wide pavement management systems.
EXHIBITORS

GEOVAP

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Geovap is a company with more than 20 years of experience in the field of geodesy and development of graphical information software solutions.

Since 2004 the company garnered experience with laser-scanning technology and in 2010 we came up with the Quantum 3D Mapping laserscanning project. Utilizing the latest static and mobile laserscanning technologies the company focuses on a wide range of advanced post-processing services based on surveyed data as spatial analysis and elevation analysis, 3D models and visualization, 3D CAD vector maps and monitoring of time-related changes such as frost-heave analysis (temperature related elevations and depressions) or vertical deviation of the actual road surface from the ideal, usable in many different branches. Unlike traditional methods and technologies these methods are faster and consequently more cost-effective, as clients can save up to 40 per cent of costs.

LASTRADA is the standard software for construction materials laboratories. Our clients are independent test houses and public authorities as well as materials producers and contractors. LASTRADA offers advanced laboratory management modules and quality control modules for concrete, concrete products, cement, asphalt, aggregates, soil/geotechnical, geotextiles, drilling cores, and sealing products. LASTRADA can be deployed as a fully-integrated solution which contains all quality data from the first stone crushed until the final product.

Dr. Jung & Partner AG is a software house specializing in quality control software for the construction industry. The company is headquartered in Berlin, Germany. Many thousand users in more than 200 companies in 19 countries work with our solutions. LASTRADA improves the quality, efficiency and productivity of the materials laboratory.
Pavemetrics is a world leader in supplying digital vision systems for the inspection of transportation infrastructures. This unique technology, designed for day and night operation, produces high-resolution (1 mm) 2-D images and 3D profiles of road surfaces and concrete structures. Our 3D laser sensors and analysis software can automatically detect, inspect and assess road surface features to optimize repairs, improve safety and help infrastructures last longer through better road maintenance.

Pavemetrics systems operate on all the continents and have been used to inspect millions of kilometres of roadways. Pavemetrics laser vision systems consistently deliver unequalled speed, resolution and data quality.

Roadscanners Oy is a consulting company specialized in developing tools and services for traffic infrastructure condition monitoring and management. Roadscanners works globally in all of its product fields which are consulting, software and instruments.

The main focus of the company’s activities has been structural and functional condition monitoring and analysis and problem diagnosis of roads, streets, bridges, airports and railways as well as the precise rehabilitation and strengthening design of these objects based on the results of monitoring and analysis. Roadscanners has special expertise, for which it is internationally recognized, in ground penetrating radar (GPR) technology and in the use of NDT methods to survey the mechanical properties of road construction. The company also has both expertise and products for laser scanner technology and thermal cameras.
Viagroup is a civil engineering consultancy with offices in Switzerland and Austria, and with projects that span across Europe. Our main focus is on the management of road-assets, especially on pavements. We are the European distributor of the maintenance decision support system dTIMS 9 and the associated software for maintenance activities, work flows and management dashboard.

Viagroup is highly active across Europe. Most recently we implemented dTIMS installations in Austria, Belgium, Croatia and Ireland. Our clients vary from national to regional and local road authorities. We collaborate with a growing number of asset management consulting experts, have long-term relationships with universities and provide strategic planning for concessionaires, both during the bidding process as well as the operation phase.

Viagroup is your partner for sustainable road asset management.

Yotta DCL is an innovation led technology business that aims to bring the very best products and services to the infrastructure and highways sector. Historically a traditional highway surveying business, we have utilised our core technology capability to transform into a company at the forefront of the industry. We provide a range of services from highways surveying, to software with a range of consultancy services to back this up.

Our latest technology centres on our new Tempest survey vehicles, the most technological machine survey vehicles available and our Horizons Visualised Asset Management software both of which are taking the industry forwards.

We can offer a complete end-to-end range of highway services from small Local Government through to National level delivering all or just a small part of what is required to effectively manage highways infrastructure. Drop by our stand at EPAM to find out more.
Ramboll RST has the unique combination of being both a service and a system provider, which enables a constant feedback from the survey specialists to the system designers. The unique know-how and analysis methods allow us to be flexible in meeting the individual needs from our clients.

It's all about using the latest techniques.

Meet us at EPAM 2012.

www.rambollrst.se
ROAD MAINTENANCE

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For more information, visit www.vti.se/epam4.