PROJECT

TRIMM

Tomorrow's Road Infrastructure Monitoring and Management

**Funding:** European (7th RTD Framework Programme)
**Duration:** Dec 2011 - Nov 2014
**Status:** Complete with results
**Total project cost:** €3,268,903
**EU contribution:** €2,499,503

**Call for proposal:** FP7-SST-2011-RTD-1
CORDIS RCN : 101292

**Background & policy context:**

Effective, fair and sustainable road management require streamlined objective and up to date information. Advances in a range of sensing technologies and information processing have built up a potential for implementing new monitoring techniques that deliver key information for road management.

The traditional monitoring techniques suffer for example in cost efficiency, time and spatial coverage, extent of traffic disruptions, indicator reliability, interpretation of physical processes, reflection of needs regarding functionality and safety, versatility and multi-purpose usage, etc. Due to these deficiencies, road management lacks widespread objective materials and condition data and hence be an effective and proactive tool for the improvement of physical and wider economic performance of the road network.

**Objectives:**

Means of feedback of data into road management systems for future decision making should be integrated. Barriers to implementation of new monitoring techniques range from insufficient knowledge on actual measurements to ways of utilising information in decision making on strategic, network or object levels, as well as costs.

**Methodology:**

The overall idea is to map needs for monitoring data and develop means of cost-benefit analysis of monitoring techniques and utilisation in asset management (WP2). Then, identified key technologies for monitoring pavements and bridges are investigated to improve data processing, interpretation and indicators (WP3 and WP4). Finally, aspects of implementation of indicators in road asset management are investigated to provide information on application areas, added values, and procedures (WP2).

**Parent Programmes:**
FP7-TRANSPORT - Transport (Including Aeronautics) - Horizontal activities for implementation of the transport programme (TPT)

**Institute type:** Public institution
**Institute name:** The European Commission

**Funding type:** Public (EU)

**Lead Organisation:**

Statens Geotekniska Institut

**Address:**
### Partner Organisations:

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<tr>
<th>Organisation</th>
<th>Address</th>
<th>Organisation Website</th>
<th>EU Contribution</th>
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<tr>
<td><strong>Olaus Magnus Vag</strong></td>
<td>Olaus Magnus Vag 35 58193 Linkoping Sweden</td>
<td>Organisation Website: <a href="http://www.vti.se">http://www.vti.se</a></td>
<td><a href="http://www.vti.se">€534,555</a></td>
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<tr>
<td><strong>Trl Limited</strong></td>
<td>Crowthorne House Nine Mile Ride 0 Wokingham RG40 3GA United Kingdom</td>
<td>Organisation Website: <a href="http://www.trl.co.uk">http://www.trl.co.uk</a></td>
<td><a href="http://www.trl.co.uk">€299,388</a></td>
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<tr>
<td><strong>Ait- Austrian Institute Of Technology Gmbh</strong></td>
<td>Donau-City-Strasse 1 1210 WIEN Austria</td>
<td>Organisation Website: <a href="http://www.arcs.ac.at">http://www.arcs.ac.at</a></td>
<td><a href="http://www.arcs.ac.at">€461,605</a></td>
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<tr>
<td><strong>Österreichisches Forschungs- Und Prüfzentrum Arsenal Ges.m.b.h</strong></td>
<td>Giefinggasse 2 1210 VIENNA Austria</td>
<td>Organisation Website: <a href="http://www.arsenal.ac.at">http://www.arsenal.ac.at</a></td>
<td><a href="http://www.arsenal.ac.at">€0</a></td>
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<td><strong>Nederlands Organisation For Applied Scientific Research</strong></td>
<td>Schoemakerstraat 97 6060 DELFT Netherlands</td>
<td>Organisation Website: <a href="http://www.tno.nl">http://www.tno.nl</a></td>
<td><a href="http://www.tno.nl">€235,962</a></td>
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<td>Denmark</td>
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<th>Yotta Limited</th>
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<th>Institut Igh Dd</th>
<th>Janka Rakuse 1, 10 000 Zagreb, Croatia</th>
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<th>Laboratorio Nacional De Engenharia Civil</th>
<th>AV DO BRASIL 101, 1700 066 LISBOA, Portugal</th>
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<td>Organisation Website: <a href="http://www.lnec.pt">http://www.lnec.pt</a></td>
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<th>Nordbahnstrasse 36, 1020 Wien, Austria</th>
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<th>Roadscanners Oy</th>
<th>Varastotie 2, 96100 Rovaniemi, Finland</th>
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<td>EU Contribution: €73,368</td>
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<th>Forum Des Laboratoires Nationaux Europeens De Recherche Routiere</th>
<th>Boulevard de la Woluwe 42, 1200 Brussels, Belgium</th>
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<td>Organisation Website: <a href="http://www.fehrl.org">http://www.fehrl.org</a></td>
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EU Contribution: €88,091

Zavod Za Gradbenistvo Slovenije

Address:  
DIMICEVA ULICA 12  
1000 LJUBLJANA  
Slovenia

Organisation Website:  
http://www.zag.si

EU Contribution: €108,618

Institut Francais Des Sciences Et Technologies Des Transports, De L'aménagement Et Des Réseaux

Address:  
2, Avenue Du General Malleret-Joinville  
94114 Arcueil  
France

EU Contribution: €183,386

Cestel Cestni Inzeniring Doo

Address:  
Spruha 32  
1236 Trzin  
Slovenia

EU Contribution: €27,576

Centre De Recherches Routieres - Opzoekingscentrum Voor De Wegenbouw

Address:  
BOULEVARD DE LA WOLUWE 42  
1200 BRUXELLES  
Belgium

Organisation Website:  
http://www.brrc.be

EU Contribution: €58,200

Technologies:

Road and traffic management systems  
Transport Management and Control System (TMCS)

Development phase:  Research/Invention

Key Results:

New tools for road assessment

An EU project developed improved road sensors that can be used with current systems. Outcomes include tools that monitor bridge parts, detect damage early and suggest maintenance options, and vehicle-mounted sensors that continually monitor pavement conditions.

Effective road management requires real-time information, which road sensors provide. Yet, current technologies suffer certain limitations, meaning that performance of the road network suffers.

The EU-funded http://trimm.fehrl.org (TRIMM) (Tomorrow's road infrastructure monitoring and
Researchers developed monitoring tools for assessing bridge conditions. The tools helped with assessing the state of bridge components and the early detection of structural damage. Furthermore, the tools suggested optimal maintenance action.

Certain road sensors were installed on vehicles, providing continuous low-quality ride measurement data. The group also evaluated existing methods for monitoring pavement surface and structural conditions, resulting in new applications. Project work has also helped to improve road assessment, plus the ability to inventory road features such as signs, markings and barriers.

Researchers considered how the measurement innovations might be integrated into existing systems and using accepted performance indices. Work included new methods for making business cases, enabling quick and effective assessment of the project's monitoring innovations.

The TRIMM project's new road sensors, plus new methods of implementation and assessment, have resulted in more effective and economical road monitoring and maintenance.

Documents:
- Final Report Summary - TRIMM (Tomorrow's Road Infrastructure Monitoring and Management)

**STRIA Roadmaps:** Infrastructure

**Transport mode:** Road transport

**Transport sectors:** Passenger transport, Freight transport

**Geo-spatial type:** Other