02| DECEMBER 2017

ISWIM
International Society for Weigh in Motion

ISWIM NEWSLETTER

Message from the ISWIM president

Dear Readers,

Welcome to the second edition of our Newsletter.

Our Newsletter aims to keep stakeholders abreast of developments in Weigh in Motion. In this edition, we have scoured the corners of the earth to bring you important messages and advancements that have been made. We recognise that it is difficult for any one particular stakeholder to be across the advancements and uses of Weigh in Motion, so we aim to bring these to you, our ISWIM members and readers.

The newsletter provides information and the latest showcases from the ISWIM Promotional Team. We have case studies and practical information from Hungary and Ireland. We have also included a summary of events of which ISWIM has been integral in partnering, in particular the successful ISWIM Session at the ITS World Congress in Canada and the Transport Certification Australia event in Australia. Finally the Newsletter articulates a new approach to calculating WIM accuracy being implemented by one vendor. Events on the international calendar are significant and are also detailed for members and readers to book into their calendars.

I invite you to enjoy the latest edition of our Newsletter, and wishing you our ISWIM members and readers and your families a Merry Christmas and a prosperous 2018.

Thank you,

Chris Koniditsiotis
President – ISWIM

Chris Koniditsiotis | ChrisK@tca.gov.au

In this issue

News from the ISWIM promotion team

The ISWIM has produced a number of promotional materials, a PowerPoint presentation showcases the advantages of WIM systems and vendors' applications. A first of two promotional brochures explains the purpose and activities of our society, the benefits for its members and lists all current members of the Vendors-College This brochure has also been published in poster version to be used at exhibitions. The second brochure lists the different applications and explains advantages of WIM. The team has also generated a list of conferences and exhibitions over the next few years where we aim to raise the presence of the society with special interest sessions, posters etc. These are listed on the last page of this newsletter. All promotional material are available through the ISWIM website. We encourage all ISWIM members – and especially the Vendors – to use the promotional materials at exhibitions and conferences. For any comments or suggestions feel free to contact the team through ISWIM website or at andrew.lees@q-free.com.

Andy Lees | andrew.lees@q-free.com

The Nation WIM Data Applications: Practical Examples from Ireland

Transport Infrastructure Ireland (TII), the body with responsibility for the management of the national road network in Ireland, recently upgraded their traffic monitoring system. This included the installation of six permanent WIM sites along the national primary network, with accurate data collection beginning in 2014. A number of projects have been commissioned by TII and undertaken by Roughan & O'Donovan (ROD), whereby WIM data was utilised to assist TII in decision making related to the regulation of vehicles on the Irish road network.

ROD were commissioned to undertake a detailed study which aimed to improve procedures for granting permits to abnormal vehicles wishing to travel along the Irish Major Inter-Urban road network, by considering the effects of these vehicles on bridges. In another study, ROD used WIM data to identify critical loading scenarios for bridges and to calculate expected pavement damage likely to arise from proposed amendments to Irish vehicle weight regulations. It was shown that increasing the allowable weight limit for 6-axle trucks to promote a shift in freight from 5-axle trucks had few implications for bridges and resulted in significant savings in pavement wear.

ISWIM Workshop at SATC, Pretoria

The 37th annual Southern African Transport Conference (SATC 2018) will take place from Monday 9 July to Thursday 12 July 2018 at the CSIR International Convention Centre in Pretoria, South Africa.

The conference a forum for discussion and information exchange on the implementation of transport policy, strategy and technology applications.

The objective of the ISWIM workshop is to offer an overview of the latest developments in the applications of WIM technology. The programme consists of a mix of presentations on general developments in the use of weigh in motion system and concrete examples of successful implementations of WIM systems in South Africa and around the world.

Participation in the workshop will be free of charge for all delegates of the South African Transport Conference. More information on the conference can be found at: www.satc.org.za

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These studies represent practical applications of how WIM data has been used to allow road authorities to better understand how their network is being impacted by vehicle loading, demonstrating the value which WIM technologies can bring to the management of a transport network.

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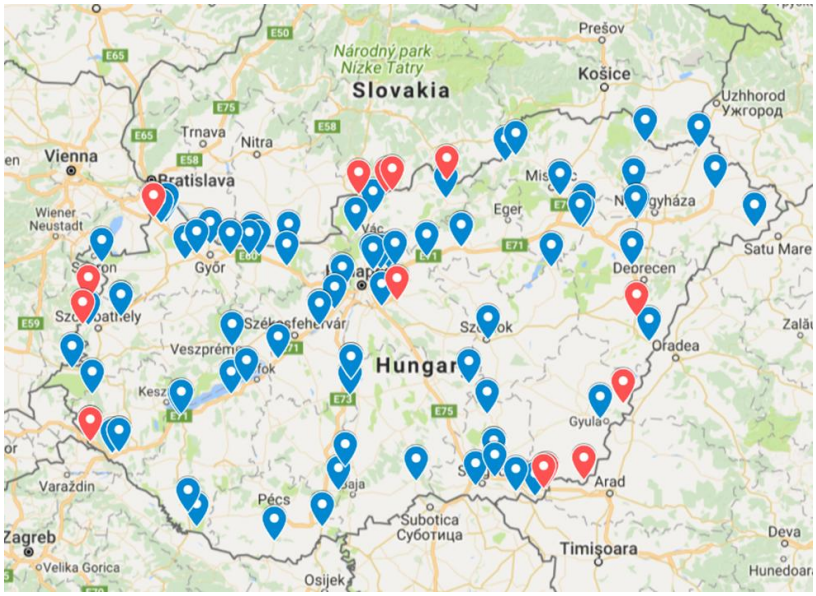
High Hungary; a nationwide WIM enforcement project completed

Probably one of the largest WIM projects ever accomplished in Europe has been sussessfuly put into operation in September 2017 in Hungary. Total 89 weigh-in-motion sites, using more than 1500 Kistler quartz sensors Lineas 9195GC form the National Axle Weighing System (TSM). 74 measurements sites are based on the existing structures of Electronic Toll system, the rest were built in new locations. Due to tight project schedule under strict govermental supervision and observing favorable climatic conditions for the installation, the majority of the sensors for this project had to be shipped and installed within just 4 months (April through July 2017).



Location of WIM sites with Lineas sensors in Hungary

In September 2017 the ambitious project was put into full operation. The WIM stations work under two scenarios: In the event of detecting overloaded vehicle, the system automatically sends an alert to road inspectors working near the weighing point who can stop the vehicle (pre-selection operation). If no on-the-spot check is carried out, the system sends automatically a fine to the operator of the overloaded vehicle. The main goal of the system is not to generate revenues but more to promote legitimate conduct of the transport companies.

Thanks to the TSM system, the effectiveness of the control of overweight vehicles has considerably increased. It is expected that the effectiveness of weight control in Hungary (control coverage) will increase from 2% to over 51%.

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Call for abstracts

In 2018 there will be two conferences that are closely related to ISWIM. NATMEC and HVTT cover topics that include or are associated to the development and application of WIM sensors and systems. Historically, these events have seen the participation of a good number of ISWIM members and both have been organized together with International Conference on WIM.

The National Travel Monitoring Exposition and Conference (NATMEC) will be held from June 10 to 13, 2018 in Irvine, California, USA, more information can be found at www.natmec.org.

The 15th International Symposium on Heavy Vehicle Transport Technology (HVTT15) will be held from October 2 to 5, 2018, in Rotterdam, The Netherlands. More information is available at www.road-transport-technology.org.

Both conferences have published their call for abstracts; we encourage you to submit abstracts for WIM related papers at the websites mentioned before.

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Successful ISWIM Session at ITS World Congress

From October 29th to November 2nd the annual ITS World Congress was held in the city of Montreal in Canada. During the congress ISWIM has organized a Special Interest Session on the implementation of Weigh-In-Motion systems for direct weight enforcement. The session was moderated by ISWIM president Chris Koniditsiotis (TCA), the around 50 participants from all around the world saw presentations on different aspects connected to the topic and a brief panel discussion at the end.

Randy Hanson (IRD) presented an overview of the main negative influences on the accuracy of WIM measurements and how the latest developments in technology and system implementation can reduce these influences. Hans van Loo (Corner Stone Int.) gave a combined presentation with Cock Oosterman (NMi) on the three parts for a successful implementation of WIM systems for direct enforcement using new NMi international WIM standard; system approval, legal acceptance and data quality controls.

Libor Sušil (CROSS) and Lukáš Valenta (CAMEA) presented the practical experiences from the Czech Republic with the implementation of WIM systems for direct enforcement. Finally Valter Tani (UFSC/Labtrans) presented an overview of the use of WIM systems for weight enforcement in Brazil and the country's future plans for the application of WIM direct enforcement. All presentations are available on request.

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New Approach to Improving WIM Accuracy

IRD is implementing a new way of improving WIM accuracy through the use of multiple sensors, i.e. use of a combination of WIM sensors and complementary sensors. This approach is different than the use of multiple sensor thresholds or the use of staggered sensor arrays involving the same sensor technology providing for multiple measurements to reduce weight measurement error.

IRD's VectorSense tire sensor suite has the capability of determining lane position and tire footprint location. When used in conjunction with a WIM sensor it is possible to measure and compensate for vehicle/tire location on the

ISWIM Workshop at Intertraffic, Amsterdam

From March 20th to 23rd the bi-annual Intertraffic exhibition will be held in Amsterdam, The Netherlands. During the exhibition ISWIM will organise a workshop on 'WIM for Enforcement'. The workshop is scheduled for Thursday, March 22nd, 2017, from 13:30 to 17:30, in Room D407. Participation in the workshop will be free of charge, for more information on the exhibition go to: www.intertraffic.com/amsterdam.

This workshop will present different aspects of the application of WIM for weight enforcement. What are the experiences of different end-users and policy makers with the European control of the loading regulations and what are their expectations for the future?

The workshop will have presentations from the EU-Commission DG Move on the new loading regulations, Euro Controle Route with a vision on future European control of international road transport, NMi on the new international WIM standard, TCA on the experiences with the use of On-Board weighing and CEDR with the EU road owners perspective on overloading.

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WIM sensor and calibrate WIM measurements to reduce sensitivity errors. Additionally, the VectorSense tire sensor suite identifies anomalous or underinflated tires that impact WIM measurement accuracy. To compensate, WIM measurements are adjusted considering the higher loading at specific points on each sensor array.

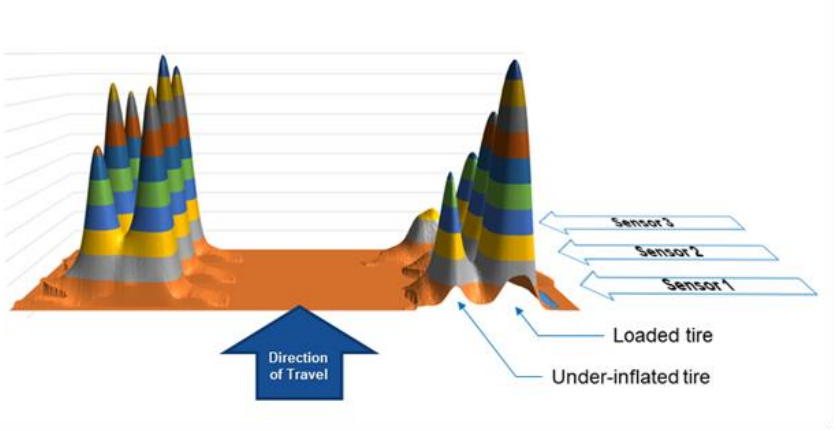

Fig. 1 – Variance in loading caused by an under-inflated tire

In addition to using the lane position information to improve WIM accuracy, IRD expects two additional benefits. Firstly, the cost per WIM lane using multiple sensor types will be lower than the use of multiple WIM sensor thresholds for equivalent accuracy. Secondly, such an implementation will result in a greater than 25% reduction in false positives in commercial vehicle enforcement applications.

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TCA Weigh-In-Motion and On-Board Mass Forum

On 11 and 12 September Transport Certification Australia (TCA) hosted the Weigh-In-Motion (WIM) Forum in Brisbane. The forum attracted over 70 delegates from Australia and overseas." Attendees included road managers, policy makers, regulators, researchers, transport operators, WIM suppliers, On-Board (OBM) suppliers and telematics providers.

The common theme from the Forum was that mass data has multiple sources, and multiple uses, and how a standardised approach for the collection and exchange of data can further optimise road infrastructure utilisation and planning. For example the bridge design standard recognises how the use of OBM Systems, when used with the Intelligent Access Program (IAP), allows infrastructure managers to reduce load factors for bridges. By having a better understanding of vehicle loads and the number of vehicle movements, bridges are now effectively being 're-engineered' for higher mass loads, without capital investment or maintenance expenditure.

Another strong theme from the Forum was the need to have national standardisation of data and interoperability of mass data, to support the growing use of data for the compliance management functions by regulators and road managers, but also road planners, pavements and bridge engineers, policy analysts, and transport operators – and more beyond.

A full overview of the outcomes of the Forum can be found on the TCA website: https://tca.gov.au/tca/events/wim.

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Coming Events

97th Transportation Research Board
Washington DC, USA
Jan 7-11, 2018
www.trb.org

Intertraffic Amsterdam
Amsterdam, the Netherlands
Mar. 20-23, 2018
www.intertraffic.com

7th Transport Research Arena
Vienna, Austria
Apr. 16-19, 2018
www.traconference.eu

National Travel Monitoring Exposition and Conference
Irvine, CA, USA
Jun. 10-13, 2018
www.natmec.org

Southern African Transport Conference
Pretoria, South-Africa
Jul. 9-12 2018
www.satc.org.za

ITS World Congress
Copenhagen, Denmark
Sep. 17-21, 2018
www.itsworldcongress.com

15th International Symposium on Heavy Vehicle Transport Technology
Rotterdam, the Netherlands
Oct. 2-5, 2018
www.road-transport-technology.org

Gulf Traffic
Dubai, UAE
Dec. 3-5, 2018
www.gulftraffic.com

8th International Conference on WIM
Prague, Czech Republic
May 2019
www.is-wim.org

PIARC, 26th World Road Congress
Abu Dhabi, UAE
Oct. 6-10, 2019
www.piarc.org

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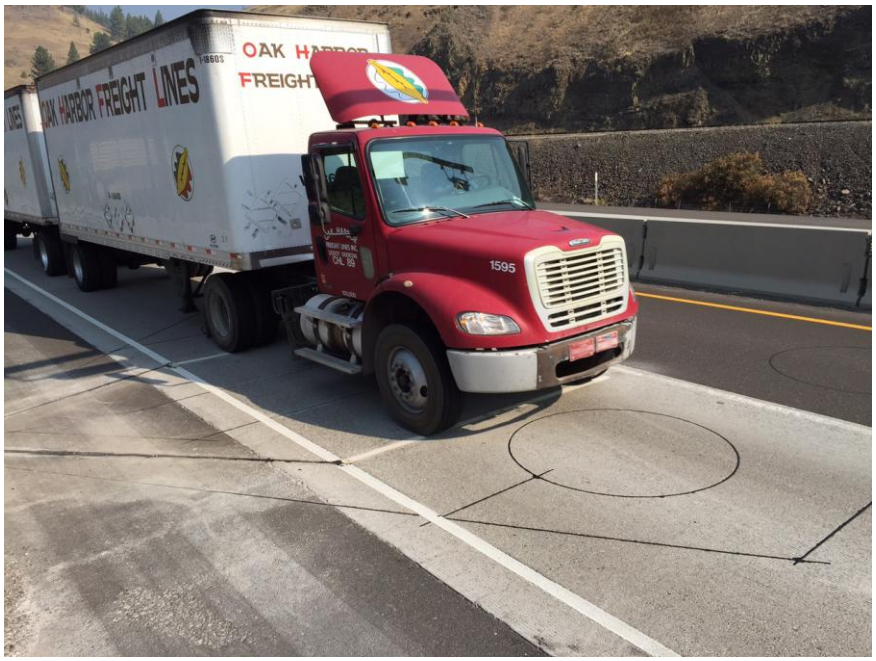
Oregon High Speed WIM screening with Intercomp Sensors

Since the United States is lacking a process for certification of WIM systems and legislation allowing for WIM use in direct enforcement, states instead use high-speed WIM for screening and identification of suspect overweight vehicles, while allowing compliant vehicles to bypass the static weigh stations to alleviate congestion.

Oregon DOT (ODOT) has been employing WIM sites for this purpose since 1997. Their initial investment involved single load cell (SLC) technology, and though pleased with the accuracy of the sites, costs associated with installation, maintenance, and replacement led the state to look for alternative WIM sensors. Several years ago, ODOT began evaluation of Intercomp Strain Gauge Strip Sensors (SGSS) for their WIM program.



Striving to meet ASTM Type III performance (6% GVW error), ODOT instead documents GVW errors with Intercomp SGSS in the 3% range across multiple test sites up to 75mph (120kmh). Also of interest were the temperature extremes of environmental conditions these sites experience across seasons of the year, and ODOT's ability to efficiently compare WIM vehicle data with static scales just downstream of the WIM sites. As a result, Oregon has committed to incorporate Strain Gauge Strip Sensors in all new or converted WIM sites in the future.

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