20/03| DECEMBER 2020

ISWIM
International Society for Weigh in Motion

ISWIM NEWSLETTER

Message from the ISWIM president

Dear ISWIM Members and Friends,

Welcome to the last edition of our Newsletter for 2020. This edition has a wide breadth of information covering research initiatives and projects across the globe. I invite you all to contribute to the Newsletter. The ISWIM Newsletter is your newsletter and we welcome articles, research initiatives, programs and learnings across the World to be shared. So please do not hesitate to submit an article!

ISWIM recently made a submission (in its liaison capacity) to the International Organization of Legal Metrology (OIML). OIML is undertaking a revision of R134: 2006 Automatic instruments for weighing road vehicles in motion and measuring axle loads. ISWIM collected responses from its wide member base comprising end-users, vendors/consultants, and academics/researchers.

The directions from OIML were that they required a collective consensus response from ISWIM, that is one view/position. Hence the formal response to OIML comprised the areas/responses to which ISWIM responders generally agreed, that is, noting its diverse nature, had consensus. The submission is available on the ISWIM website.

The responses also indicated diverse views and opinions, in particular, the Vendor and Consultant College. To ensure ISWIM's integrity in expressing its members' views, a second document was produced in which all comments from the Vendor and Consultant College responders were captured and disseminated to OIML. This document is not publicly available because several of the responders advised that their comments would be confidential. Importantly their comments were transposed against each of the questions and forwarded to OIML.

Keep well, take care of your families and friends and enjoy the festive season which is upon us and let us all hope and pray that 2021 will be safe and healthy for the World.

Chris Koniditsiotis
President – ISWIM

Chris Koniditsiotis | ChrisK2.0@bigpond.com

In this issue

Young Researcher Award – Deadline Extended!

Every year, ISWIM offers scholarships to bachelor, master and PhD students, or post docs up to five years after graduation working on WIM-related research projects. Participants must demonstrate a passion for WIM through either their studies or early professional life and show "substantial evidence" of their research. "Substantial evidence" could be an original contribution in the form of a journal or conference paper; a report; or a series of presentations that clearly defines the scope of the project, technical approach, and anticipated or final conclusion(s).

ISWIM will fully sponsor the travel and registration expenses for recipients to present their work at an ISWIM event worldwide, such as ICWIM, an ISWIM seminar, or a sponsored session by ISWIM at another conference. Sponsorship from ISWIM will not exceed 2500 Euro. Applicants should send their CV, two reference letters, and an abstract up to 1000 words with supporting "substantial evidence" of their work. Submissions should be emailed to Lily Poulikakos at lily.poulikakos@empa.ch. This year's deadline is extended to December 31st and the award winners will be announced early 2021.

Lily Poulikakos | Lili.Poulikakos@empa.ch

ISWIM Webinar: Benefitting from WIM Data

After the success of a TRB webinar on WIM data applications, ISWIM has decided to organise a similar webinar on Monday, December 14, 2020, at 8:00 am EST (14:00 CET). The webinar will be moderated by Olga Selezneva (ISWIM Board Director) from Applied Research Associates Inc. and will include the following presentations:

- Darren Hazlett (University of Texas): Use of WIM Data for Improving Pavement, Bridge, Weight Enforcement, and Freight Logistics Practices
- Steven Jessberger (US-DOT, FHWA): Value of WIM Data for DOT Programs
- Bernard Jacob (University Gustave Eiffel): Use of WIM Data in Europe

Join this ISWIM webinar to learn how many agencies in Europe and U.S. use WIM data in such applications as bridge and pavement design and management, load ratings, weight enforcement support, and freight planning and logistics. Learn about many uses and benefits of WIM data for highway programs and projects, hear summary findings about what other agencies are using WIM data for, and gain knowledge to advocate WIM data usage to support your agency's programs.

The webinar is FREE of charge to all ISWIM members but pre-registration is required on line: https://univ-eiffel.zoom.us/meeting/register/ tZMl-cuGqqTgsGdWa6D7eEh_yM2Wp-degKLk2

Olga Selezneva, Ph.D. | oselezneva@ara.com

Disclaimer

ISWIM LinkedIn Group

Besides the periodical Newsletter there is another way of keeping up to date with the latest developments in Weigh-In-Motion: the ISWIM LinkedIn Group. In this group, researchers, end-users and vendors can find AND post short articles on new projects, test result, or other developments related to WIM-technology and applications.

As with the Newsletter, the aim is to find a balance between research and application and between public and commercial items. The ISWIM LinkedIn Group has currently more than 200 members.

If you want to join, please visit: linkedin.com/groups/13400438

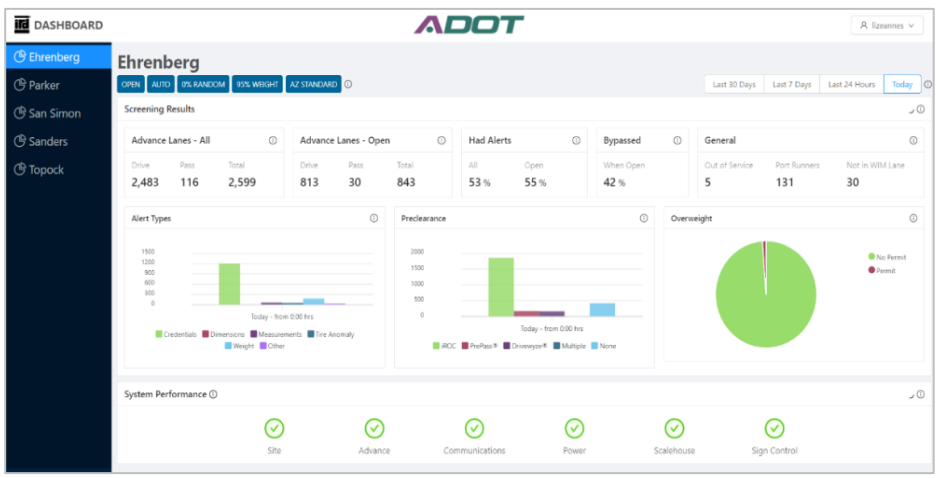
Arizona selects IRD's Central Data Management System

International Road Dynamics (IRD) has carried out a significant upgrade of commercial vehicle operations for the Arizona Department of Transportation (ADOT). The new system screens for weight and vehicle identification at port-of-entry weigh stations. This E-screening allows ADOT to make better use of resources as compliant trucks bypass inspection. IRD supplied weigh-in-motion sensors, USDOT and license plate reader cameras, and message signs. In addition, IRD's TACS™ tyre safety screening systems are installed to identify commercial vehicles with unsafe tyre conditions.

IRD's iSINC® Electronics and Roadside Screening Technolog

IRD's Single Load Cell (SLC) scales are used at four sites and Kistler Lineas® Quartz sensors were installed at one site. The SLC sites see between 2600 and 5000 truck per day, while the Quartz site has a lower volume of 400 trucks per day.

Both types of WIM sensors integrated with IRD's iSINC® electronics which enabled WIM systems at all sites to meet the ASTM E1318-09 Type III standard of ±6% of Gross Vehicle Weight (GVW) with 95% confidence. All five sites are connected to Central Data Management System (CDMS), a modern dashboard-oriented, cloud-hosted solution that integrates monitoring capabilities with system-wide and station-level historical reporting and data analysis, data quality checks, and E-Screening data management.



CDMS Dashboard

Coming Events
(subject to changes)

ISWIM Webinar
Virtual Event
14th December 2020
www.is-wim.org

TRB Annual Meeting
Washington DC, USA
24-28 January 2021
www.trb.org

Intertraffic Amsterdam
Amsterdam, the Netherlands
23-26 March 2021 (To be confirmed)
www.intertraffic.com

NaTMEC 2021
All Virtual Event
21-25 June 2021
www.natmec.org

South African Transport Conference
Pretoria, South Africa
5-8 July 2021
www.satc.org.za

HVTT16
Qingdao, China
7-9 September 2021
www.hvttforum.org

ITS World Congress 2021
Hamburg, Germany
11-15 October 2021
www. hamburg.com/business/its

ISWIM 3rd Regional Seminar
Pretoria, South Africa
7-9 November 2021
www.is-wim.org

ANTT WIM Workshop
Brasilia, Brazil
December 2021
www.is-wim.org

ICWIM-9
Melbourne, Australia
2023 (To be decided)
www.is-wim.org

For other WIM-related events contact:
■ Hans van Loo | hans.vanloo.int@gmail.com

CDMS provides a means of understanding, at a glance, the current operational status of the state-wide screening system, and the ability to drill down into deeper levels of details, such as the status of individual weigh stations. Implementing a CDMS ensures that all E-Screening systems can be easily monitored for optimization across multiple stations to achieve agency objectives.

Michael Wieck | michael.wieck@irdinc.com

Portable WIM Testing in Manitoba, Canada.

Canada has an extensive highway system with limited coverage from WIM systems. In order to improve spatial representation for axle load data, the Province of Manitoba has partnered with the University of Manitoba Transport Information Group to develop and test a portable WIM system. These systems have not been formally investigated in Canada before.

The portable WIM system, which uses piezoelectric WIM sensors attached to the road with pocket tape and metal strapping, was installed three times in 2019 for one to three weeks each. All three installations were near existing load data sources (high-speed WIM, static weigh scale) to allow for a comparative analysis.

Portable WIM system Installed in Manitoba, Canada

The analysis revealed that the portable WIM system was unable to achieve the Type II standard set in the ASTM standard for WIM accuracy, which requires 95% of loads to meet its requirements. However, a combination of initial calibration, proper installation, and post-processing procedures improved accuracy for gross vehicle weights, axle group loads, and axle loads, though not enough to meet Type II standards.

Furthermore, a separate analysis of data aggregated into vehicles that are unloaded, partially loaded, and fully loaded revealed higher accuracies for fully loaded vehicles when using temperature correction and autocalibration procedures, indicating possibilities for targeted use of the portable WIM in freight planning studies in the future.

ISWIM Guide for Users of Weigh-In-Motion

The ISWIM Guide for Users of Weigh-In-Motion was launched last year during the 8th International Conference on WIM in Prague, Czech Republic. All delegates of the conference received a free hard copy of the guide.

It serves as a basic, yet comprehensive introduction to Weigh-In-Motion. The Guide covers different aspects related to the working, specifying, buying, installing, testing, maintaining and using of WIM systems and data. To enhance accessibility for users starting with WIM, these topics are described in easy-to-understand language.

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The guide was well received at the conference both by vendors of WIM systems and end users of WIM data. As one of the vendors said: “This is exactly what we needed. We are definitely going to use the guide in our contacts with customers especially the ones that are new to WIM”.

For those of you that were not able to participate at ICWIM8 a PDF version of the WIM User Guide can be downloaded at the ISWIM website: https://lnkd.in/euW9KuZ.

Hans van Loo | hans.vanloo.int@gmail.com

Further research into the capabilities of portable WIM to provide valid axle load data may allow development of a formalized portable WIM data collection program and improved processing methods to maximize the WIM system's accuracy. Once implemented, this program could improve spatial coverage of axle load data in Canada.

The results of this research will be published as a forthcoming master's thesis entitled "Feasibility of a Portable Weigh-in-Motion Technology for Axle Load Data Collection on Secondary Highways", Department of Civil Engineering, University of Manitoba.

Portable WIM sensor installation

Michael Olfert | olfertm@myumanitoba.ca

Call for Abstracts for the 3rd ISWIM Regional Seminar

ISWIM has published the call for abstracts for the 3rd Regional ISWIM Seminar 'Optimising Road Freight Transport using WIM Data'. The seminar will be held from the 7th to the 9th of November 2021 in the CSIR Convention Centre in Pretoria, South Africa. This is a key ISWIM event between two International Conferences (namely ICWIM8 and 9) with a specific focus on Sub-Saharan Africa.

The CSIR Convention Centre in Pretoria, South Africa.

3rd Regional ISWIM Seminar in South Africa

In 2021 ISWIM will be hosting its 3rd Regional WIM-Seminar in Pretoria, South Africa with a specific focus on Sub-Saharan Africa. Several countries in this region have been using WIM systems for many years, while others have only recently started implementation. By bringing all these users together ISWIM wants to support the development of WIM in Southern Africa.

The seminar will be held from 7-9 November 2021 at the CSIR Convention Centre in Pretoria, South Africa. The hosts of the seminar are ISWIM, PIARC Technical Committee TC2.3 'Freight' and Mikros, with the support of the ASANRA, CSIR, HVTT, SARF, SANRAL, and ITS South Africa.

During the seminar there will also be an exhibition where ISWIM Vendors will have the opportunity to present their systems and solutions.

The seminar offers different levels of sponsorship; each level includes a booth at the exhibition, a 15-minute presentation at an end-user session, and a number of free registrations depending on the sponsorship level.

For details on the possibilities and conditions for sponsoring please visit our website: www.is-wim.org or contact:

Andy Lees | Andrew.Lees@q-free.com
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The seminar will cover the following topics concerning in-road and on-board WIM:

- Recent advances in WIM systems, sensors, applications, implementation, operation and testing;
- Practical experiences with the implementation and operation of WIM systems and use of vehicle mass data in Sub-Saharan Africa for different applications;
- Use of WIM data for pavement and bridge engineering, preselection for weight enforcement, direct enforcement and tolling by weight;
- Use of mass information in innovations in road transport logistics, Performance Based Standard (PBS), Road Transport Management System (RTMS) and on-board vehicle approaches.

Abstracts must be submitted in English and on-line at www.is-wim.com. The authors of abstracts selected for presentation will be notified early 2021. All abstracts presented at the symposium will be made available to the delegates in electronic form and via the ISWIM web-site. The timetable for submission of abstracts and registrations is as follows:

- 1 March 2021: Closure of submission for extended abstracts
- 30 April 2021: Notification of successful authors/presenters
- 1 September 2021: Final date for registration of presenters
- 7-9 November 2021: 3rd Regional ISWIM Seminar.

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Portable LS788-WIM™ Scale by Intercomp

The US manufacturer of portable and in-ground scales and sensors has now released the low-profile LS788-WIM™ scale for Weigh-In-Motion (WIM) and static use. This product joins a portfolio of products for static and WIM use, including LS-WIM™ Axle scales, WIM strip sensors, and LS630-WIM™ and LP788™ portable scales which are all OIML certified.

Portable LS788-WIM™ Scale by Intercomp

ISWIM Vendors & Consultants

Axtec	www.axtec.co.uk
Betamont	www.betamont.sk
Camea	www.cameatechnology.com
Captels	www.pesage-captels.com
Cestel	www.cestel.eu
Ciemsa	www.ciemsa.com.uy
Corner Stone	www.corner-stone-int.com
Cross	www.cross.cz
ECM	www.ecm-france.com
Intercomp	www.intercompcompany.com
IRD / PAT Traffic	www.irdinc.com
Kapsch	www.kapsch.net
Kistler	www.kistler.com
Mettler Toledo	www.mt.com
Mikros	www.mikros.co.za
Osmos Group	www.osmos-group.com
NMi	www.nmi.nl
Q-free/TDC	www.q-free.com/products
RTS GmbH	doupal@hispeed.ch
Sterela	www.sterela.fr
TE Connectivity	www.te.com
TDS	www.traffic-data-systems.net
Tramanco	www.tramanco.com.au
VanJee Technology	www.wanji.net.cn
Wheelright	www.wheelright.co.uk

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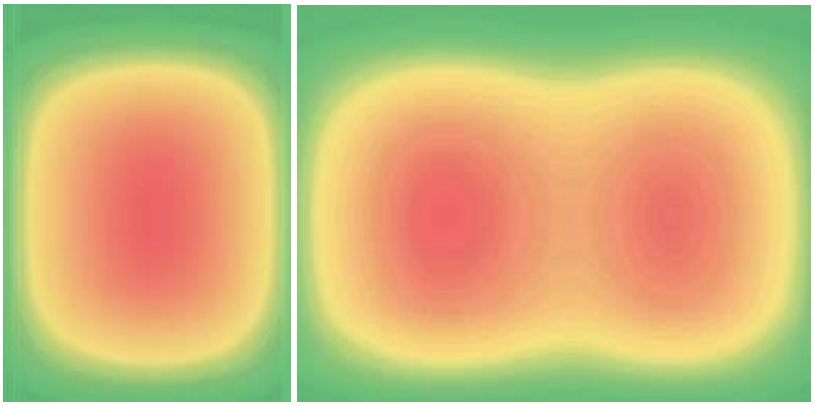
As with all their vehicle weighing products, Intercomp's newest scales incorporate strain-gauge load cell technology. Due to the inherent nature of strain gauges, loading is only measured along one axis to mitigate side loads and dynamics. Incorporating temperature compensation is standard which allows for linear measurements throughout the temperature range without additional sensors. In standalone devices the user simply reads the scale output, and for strain-gauge scales and sensors connected to electronics, the sensor output includes the compensation without additional requirements placed upon the integrator.

In providing both in-motion and static weighing, the LS788-WIM™ delivers accuracy of 2% to 3% dynamically at speeds of up to 10 mph (16 km/h) and ± 0.5% static weighing accuracy. The 35 inch (89 cm) wide low-profile scale platforms allow the LS788-WIM™ to easily handle dual-tyred vehicles. Used along with roll-up portable ramps, the system measures 0.87 inches (22 mm) in height and can easily weigh vehicles either statically or in motion.

Jon Arnold |jona@intercompcompany.com

New CAMEA WIM – Tyre Pressure Measurement

Serious accidents of trucks are often caused by incorrectly inflated tyres (both underinflated and overinflated). For this reason, the possibility of automatic measurement of tyre pressure of passing vehicles has been a topic arousing interest of WIM users and manufacturers for a long time. A common method already introduced by a number of manufacturers is the one of constructing a tyre footprint by segmenting the sensors. CAMEA's solution is different – the segmented sensors are not required as the tyre-pressure measurement is software-defined.



Reconstructed footprint for single and dual-tyre wheel.

The method is simple, low-cost and achievable with common sensing technology. The footprint is calculated under a precondition of using high-quality position sensors and is yet another output that these sensors can bring, next to dual-tyre detection and position-in-lane detection. Data show the pressure can be calculated with a 15 to 20% error. The footprint is an extension of functionalities, reconstructed even for dual tyres, as shown in the picture.

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Certified WIM-system for Direct Enforcement in Czech Republic

The CrossWIM precisely weighs and measures vehicles at high speed. It is certified to provide legal evidence for overloading offenses and will automatically create documentation for fines. The system helps the Czech Road and Motorway Directorate to monitor and control overloaded vehicles. The system is capable to accurately weigh all traffic in both directions and in case an overloaded truck is detected, a traffic fine is automatically generated.

Weighing takes place on two series of weighing sensors, which complement the sensors for the detection of double axles, and also includes a camera system for front and rear reading of registration plates. Cross has installed WIM systems on the Czech highways D2, D5 and recently on the D8 motorway near the village Lovosice (47th km). The system was tested with different types of vehicles passing at different speeds in cooperation with the Czech Metrology Institute. Based on the test the system was certified to perform automatic fines with an accuracy of 5% for GVW at a confidence level of >95%.

CrossWIM installed on a highway in Czech Republic

The same CrossWIM system for direct enforcement now helps to weigh overloaded trucks on 1st class roads in the Central Bohemian Region (more specifically Říčany, Ovčáry, Neratovice, Kolín). Part of this project was the complete replacement of existing sensors, the modification of the road surface and the installation of the CrossWIM system for direct enforcement. In September and October of this year, the sensors were calibrated and certified on all newly installed sections.

"The CrossWIM system is used for weighing in motion, thanks to which it is possible to protect newly repaired surfaces of motorways and roads from damage by overloaded trucks," says Vladimír Kašík, product manager, from CROSS. "Municipalities are thus succeeding not only in saving on maintenance, but also in obtaining finance for municipal budgets by fining overloaded vehicles that have nothing to do on the roads."

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