International Road Dynamics Inc. (IRD) is a multi-disciplinary technology company with the expertise to integrate complementary technologies into systems designed to solve unique and challenging transportation problems.

Virtual Weigh Stations (VWS) are weigh-in-motion systems that provide real-time and historical vehicle records for enforcement, traffic surveillance and/or data collection “in real time” over a computer network connection to a laptop, tablet, mobile device or workstation computer. IRD’s Virtual Weigh Station (VWS) provides a way to unobtrusively monitor commercial vehicle traffic with 24/7 virtual monitoring, scalability, intuitive user interface and powerful search capabilities.
Virtual Weigh Station Benefits
An IRD Virtual Weigh Station (VWS) benefits the transportation agency, the trucking industry and the general public.

- Improved commercial vehicle safety
- Protection of pavement and bridge structures against premature damage due to overweight vehicles
- Policing of trucks on secondary roads attempting to bypass main weighing/inspection stations
- Improved identification of potential violators, leading to more efficient enforcement
- Increased capacity to focus on safety issues
- Enhanced data collection to improve road design

Protect Infrastructure
Increased volumes of commercial vehicle traffic is shortening the life of non-primary infrastructure:

- High visibility enforcement on primary roads results in overweight violation rates less than 2%
- Rural and secondary highways typically have low levels of enforcement. Low enforcement results in overweight violation rates often exceeding 25%
- Some trucks will avoid enforcement on primary roads by using alternate routes
- Thinner surfaces on secondary roads are more susceptible to overload damage
- Overloading is common in resource extractive industries such as mining, energy, and forestry - industries which utilize rural infrastructure
- Overloaded trucks damage bridges and roadways, costing between $0.08 to $2.50 per ton-mile, depending on vehicle weight

"Overloaded vehicles increase pavement damage and life cycle costs by about 30% compared to the cost of the same vehicles with legal loads."

Jorge C. Pais
Pavement Cost Due to Traffic Overloads, International Journal of Pavement Engineering (IJPE)
“Trucks will continue to dominate the overall freight transportation landscape, accounting for 66% of total primary tonnage by 2029.”

Freight Transportation Forecast 2018-2029, American Transportation Association
INTEGRATED TECHNOLOGIES
Customized Solutions Utilizing Proven and Leading Edge Technology

CORE FEATURES

WIM (Weigh-in-Motion) Sensors/Scales
- Automatically weigh and classify based on weight, length, and axle spacing
- Perform compliance on all commercial vehicles and flag those in violation to weight regulations
- Screen vehicles at highways speeds (up to 100 mph) and ramp speeds (down to 1 mph)

VWS Software
- Display real-time or historical vehicles and whether they are overweight or violate other screening criteria
- Ability to search and filter the display to the vehicles of interest
- Summary display for vehicle occupancy speed and count for each lane

Sideview Camera
- Capable of both day (color) and night (black and white) operation
- Captures a side view image of the vehicle
- Per vehicle record stores and displays images of each vehicle on the operator workstation

iROC (Intelligent Roadside Operations Computer)
- The iROC Database System receives regular updates of the credential information from CVIEW/SAFER and performs the screening operations of commercial vehicles
- Identified vehicles are screened on CVIEW/SAFER data and compared to the set of credential screening rules to determine the credential status of the vehicle
- For historical purposes shows snapshot of the credential and safety data that was used to screen the vehicle at that day/time

iAnalyze®
- Desktop software that facilitates management, analysis and report generation of traffic data collected by IRD Virtual Weigh Station Systems
- Logical user-friendly interface with built-in guides for standard tasks
- Creates traffic data (including WIM) input files for AASHTO’s Mechanistic Empirical Pavement Design (MEPDG) software, Pavement ME Design
**OPTIONS**

**TACS™ · Tire Anomaly & Classification System**
- Detects, screens, and notifies of vehicles with unsafe tires – flat, missing, and mismatched tires
- Detects single, dual, and super-single tire configurations
- Supports screening of vehicles at highway speeds (up to 100 mph) and ramp speeds (down to 1 mph)

**Over-Height/Over-Dimension Detection**
- Laser scanners and over-height detectors determine the dimensions of commercial vehicles
- Determine if vehicles are in compliant with width and height requirements
- Reduce collisions with structures (bridges, overpasses, and tunnels)

**LPR (License Plate Reader) & USDOT Reader**
- Capture images of license plates - OCR (Optical Character Recognition) technology decodes plate image and jurisdiction for vehicle identification and screening
- Capture images of USDOT Numbers - USDOT numbers are decoded for vehicle/carrier identification. Day or night capture.

**AVI (Automatic Vehicle Identification)**
- Reliable vehicle identification using transponders for pre-screening and weigh station bypass
- In-cab notification of weigh station bypass

**HAZMAT Placard Reader**
- Capture images of hazardous material placards and OCR technology automates placard identification
- Detect diamond-shaped placard, HAZMAT class and 4-digit ID (UN/NA number)

**Vi²M™ (Vehicle Information in Motion) · iMMS**
- Web-based Central Repository System combines data from multiple Virtual Weigh Station sites to provide complete picture
- Generation of reports and dashboards
- Access to historical information from numerous sites
- iMMS provides system health information
REAL-TIME DISPLAY

Vehicle Records

- In real-time display mode, the most recent vehicles through the system are displayed
- Each vehicle record displayed will include a thumbnail image of the vehicle and, if equipped with an LPR camera, a license plate image
- Vehicle records include the number of axles, classification, length, speed, gross vehicle weight, maximum allowable gross vehicle weight, a pictogram of the vehicle, and potential violation warnings
- If the lane is equipped with an LPR camera, AVI Tag Reader or USDOT Number Reader, the numbers associated with the vehicle will also be displayed

Sorting/Signing Decision

- Vehicle records display the sorting decision made by the system. A green arrow with the word "pass" indicates the vehicle is compliant with all regulations and should be allowed to bypass inspection. A red octagon (stop icon with the word "fail") indicates the vehicle may be in violation of one or more screening criteria and should report for inspection
- The VWS system can be configured to control a sign directing vehicles to report for inspection or bypass inspection, similar to conventional weigh station sorter systems
- If a vehicle has a potential violation, the warnings that caused the report decision will be listed at the bottom of the vehicle record

DETAILED VEHICLE RECORD

WIM Compliance

- The WIM Compliance tab displays a table of detailed information for individual axles. Information for each axle includes the number of axles, left and right wheel weights, total axle weight, allowable weight, group type, group weight, and group allowable weight
- Weight violations are flagged if any allowable weight limit is exceeded

Vehicle Information

- If the system is equipped with LPR and/or AVI, and is connected with a regional or national vehicle database, the Vehicle Information panel displays vehicle information from the database and screening results
Smart City Solutions with Environmental Benefits

Smart Cities have the ability to sense and the intelligence to react appropriately. This includes all modes of transportation, in a connected approach. IRD provides Smart City solutions to fit within a multi-service architecture.

IRD technologies reduce fuel consumption and emissions, and increase mobility and safety by keeping vehicles moving smoothly and efficiently.

Contact Us: info@irdinc.com

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Corporate Office
IRD Inc.
702 - 43rd Street East
Saskatoon, SK
Canada S7K 3T9
Phone: +1 (306) 653.6600
Toll Free: 1-877-444-4IRD (4473)