



camea

Unique Customer Solutions
for **ROAD SAFETY** and **INFRASTRUCTURE PROTECTION**

Weigh-In-Motion • Dimension-In-Motion • Speed Enforcement • Traffic Counters • Smart Cameras

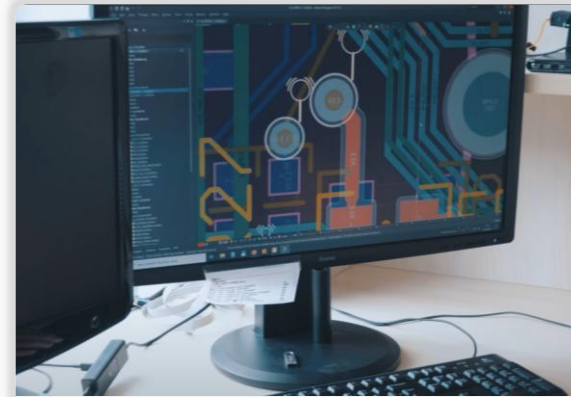
CAMEA Culture



IN **#BRNOREGION**
SINCE 1995



**R&D ORIENTATION
COOPERATION WITH
UNIVERSITIES**



**CONTINUOUS
IMPROVEMENT AND
CUSTOMIZATION**



**MINIMUM
OUTSOURCING & FULL
CONTROL**

CAMEA Company Building

Founded in 1995 by a group of researchers from Brno Technical University.
Currently 100+ employees in a new building since 2019.



Karásek 1 Pharma Park

Our building is located in an industrial park currently being revitalized into a new complex of high-tech companies.



Partnership with **COGNITECHNA**

Together with AI experts from BUT we formed a start-up company specializing in hardware design, computer vision algorithms, and deep-learning AI using convolutional neural networks.

The CAMEA logo is centered within a white circle that has a soft drop shadow. The logo itself consists of the word "camea" in a bold, lowercase, blue, sans-serif font.

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The COGNITECHNA logo is centered within a white circle that has a soft drop shadow. It features a stylized graphic of horizontal lines of varying lengths, resembling a brain or a signal, above the text "COGNITECHNA" and "EMBEDDED INTELLIGENCE" in a blue, sans-serif font.

COGNITECHNA
EMBEDDED INTELLIGENCE

We Are Experts in Direct Enforcement



We Produce the Key Components



MEASUREMENT UNIT



SMART CAMERA

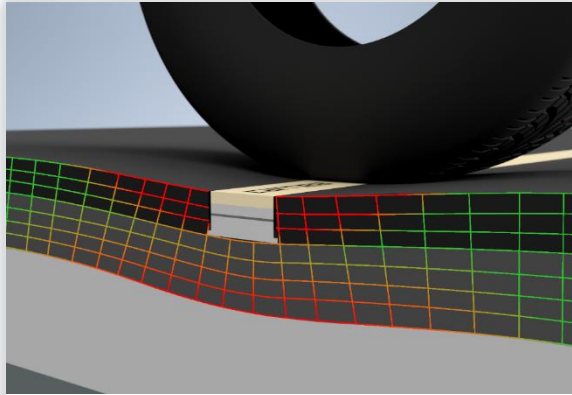


WEIGHING SENSOR

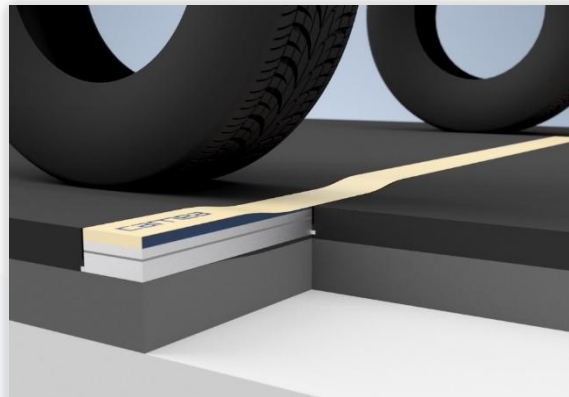


CAMEA SOFTWARE

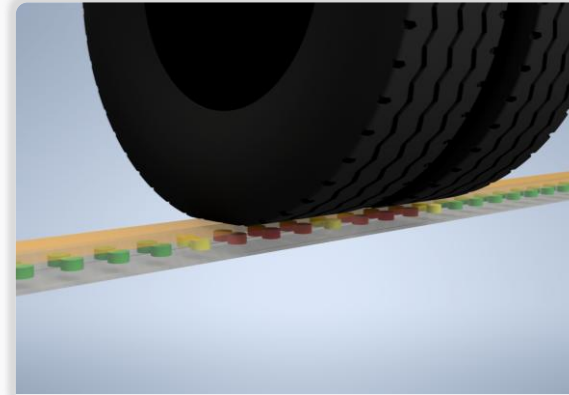
We Keep Innovating - CAMEA Digital Sensor



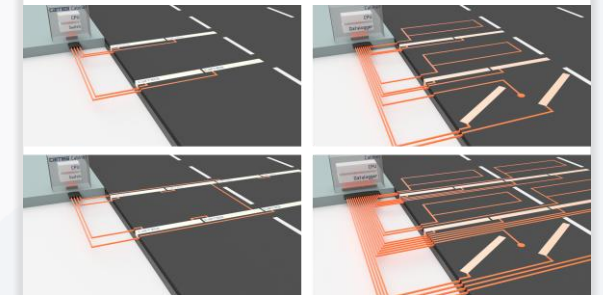
Low Height
Less Road Damage



High Abrasive Layer
Long Lifetime



Tire Position
Dual Tires &
Wheelbase



Cheap & Easy Cabling
Less Cutting

We Train Local Teams

We are making sure our systems have local and regional support.



SERVICE LEVEL TRAINING FOR LOCAL EXPERTIZE



INSTALLATION AND MAINTENANCE



WORKSHOPS FOR PARTNERS AND END USERS



**TOP QUALITY
PRODUCTS**



**EXPERT
INSTALLATION**



**COMPLEX
DATA**

**CAMEA
Environment**



**CONTINUOUS
SUPPORT**

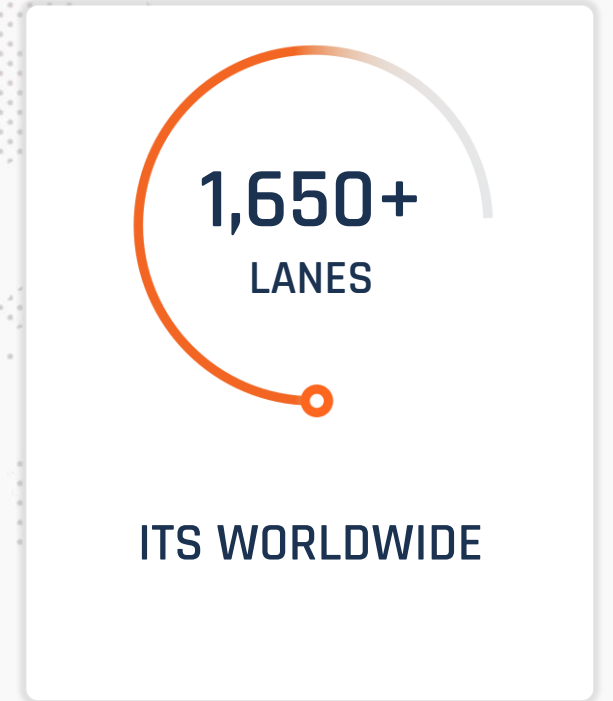
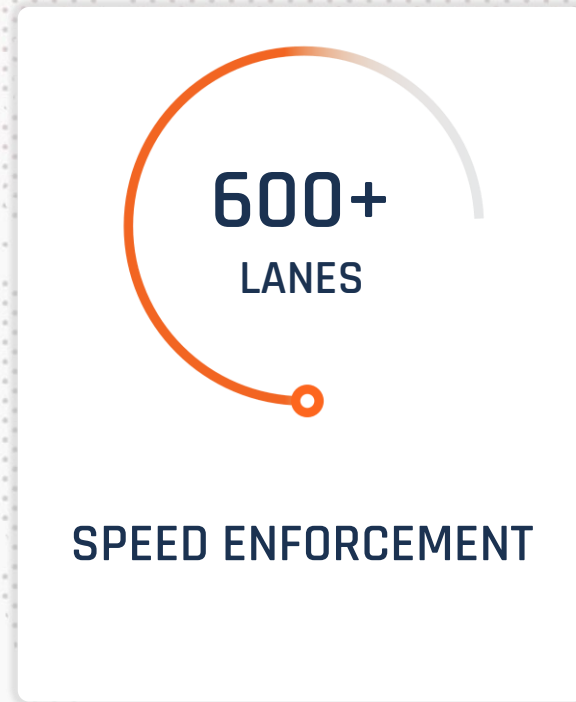
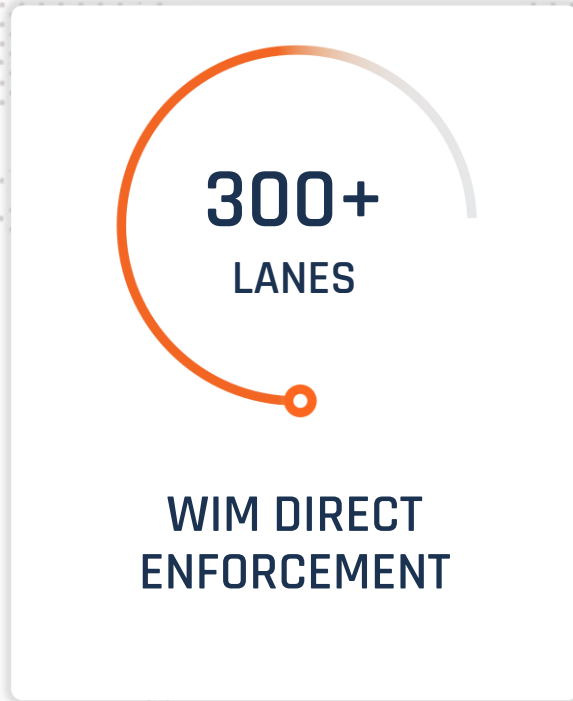
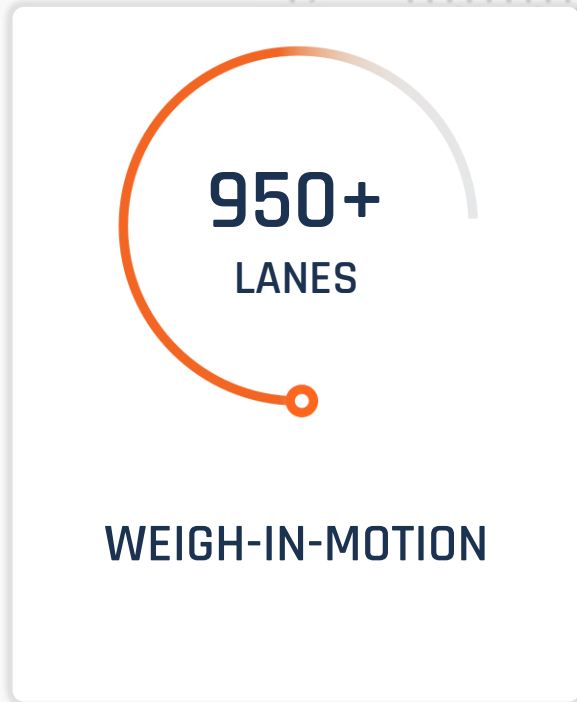


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Overview of Our Solutions for **INTELLIGENT TRANSPORTATION SYSTEMS (ITS)**

Weigh-In-Motion • Dimension-In-Motion • Speed Enforcement • Traffic Counters • Smart Cameras

We Have Extensive Experience Worldwide



CAMEA ITS - Road Safety and Protection



**Ports,
Logistics**



**Highways,
Roads**



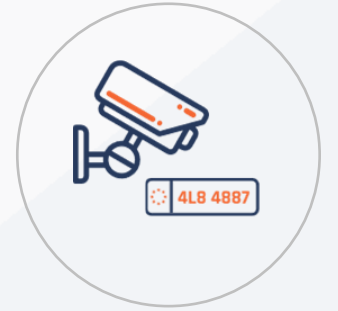
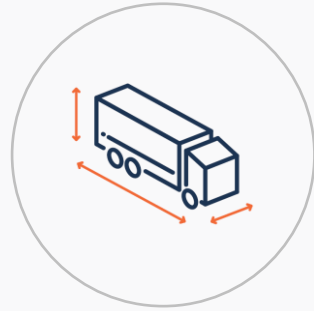
**Cities, Towns,
Villages**



**Infrastructure
(Bridges, Tunnels)**



We Have a Wide Portfolio of Traffic Systems

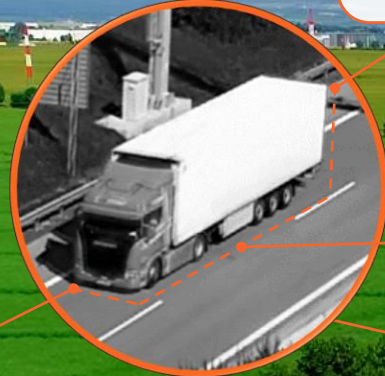


SCALABLE PLATFORM

- Various sensor technologies, counts and combinations
- Upgradeable from simple to the most complex solutions

SYNERGISTIC EFFECT

- Improving performance by combining output data of multiple ITS
- Sharing components for high cost-efficiency



3.85 m

16.48 m

2.59 m

OVERWEIGHT VEHICLE

CLASS: VAN

CZ: ABC 1234

39.5 t

DRIVING BETWEEN LANES

92 km/h

DANGEROUS GOODS



CAMEA Prague City ITS (CZ)

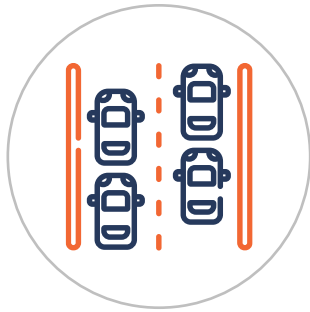
- City WIM
- Speed Enforcement
- Red Light Enforcement
- Other ITS

CAMEA Weigh-In-Motion

World's leading solution to road damage by getting rid of overloading.



Preserving
Road Quality



Keeping
Traffic Fluent



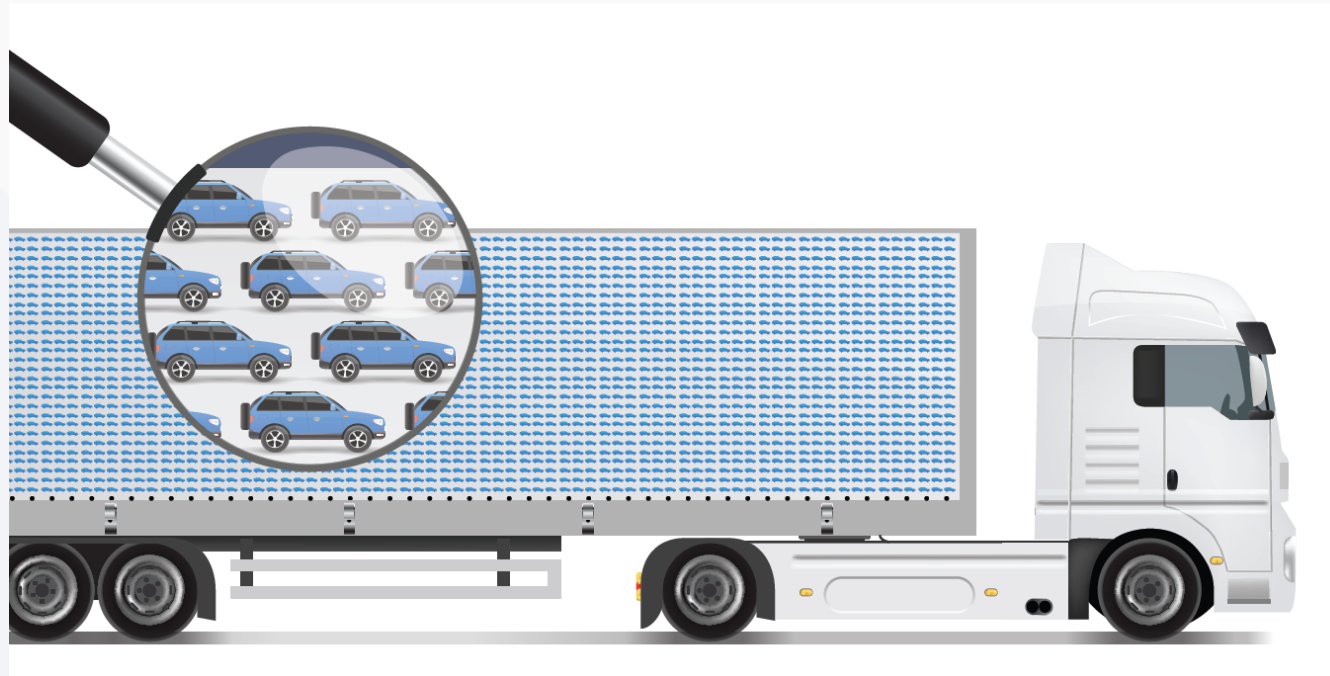
Improving
Road Safety

CAMEA WIM Exceptional Features

- ✔ Most enforcement stations worldwide
- ✔ Sensor independence
- ✔ Low-speed and high-speed package
- ✔ Speed and dimension enforcement
- ✔ Measuring between lanes and road shoulders
- ✔ Measuring in both directions
- ✔ SW-defined free-flow weighing
- ✔ Dual tire detection
- ✔ Wide range of classes and schemes
- ✔ Full control and minimal outsourcing
- ✔ Fine-tuning of the functionality
- ✔ Advanced validation process
- ✔ Centralized remote diagnostics
- ✔ Central data server support

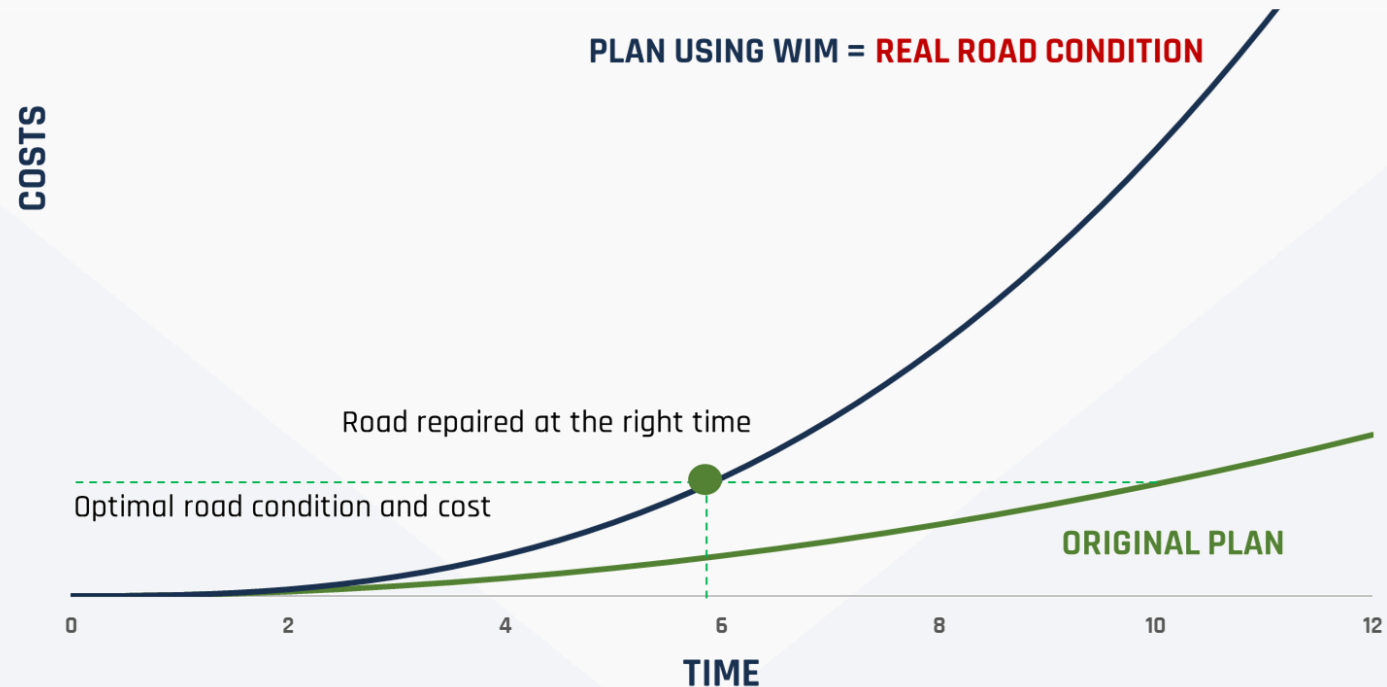
Why Implement WIM?

One overloaded truck causes as much damage to the roads as almost
30,000 PASSENGER CARS.



Why Implement WIM?

Detecting and controlling overloaded vehicles is key for **ROAD PROTECTION** by using statistics to precisely estimate the **OPTIMAL REPAIR TIME**.

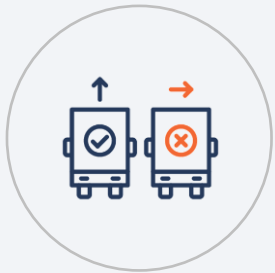


WIM Applications



Statistics

- Source of valuable traffic data (e.g., road stress)
- Good information base for infrastructure planning



Pre-Selection

- Weighing at full speed and diverting only overloaded vehicles
- Avoiding time-wasting queues at static scales



Enforcement

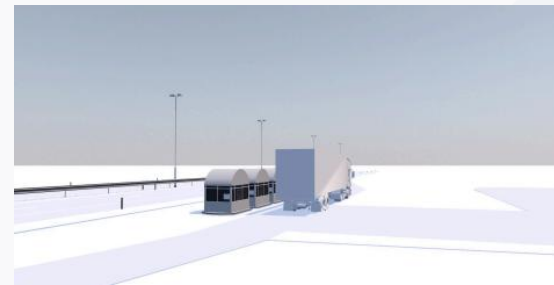
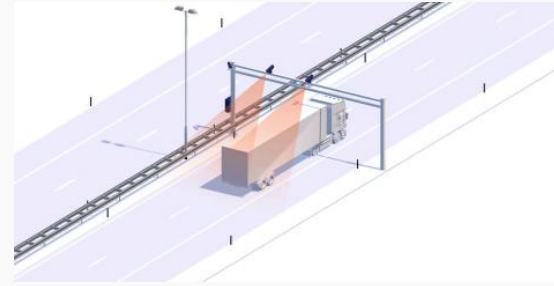
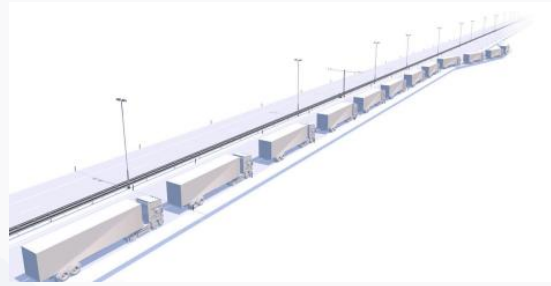
- Most efficient tool for road protection
- Violators fined directly without affecting traffic fluency

Our Virtual Weighbridge Solution in Kenya



WIM Pre-Selection

A means to tackle **LONG QUEUES** at static weighbridges by **DIVERTING ONLY OVERLOADED** vehicles.



WIM Pre-Selection

Getting rid of overweight vehicles helps **REACH THE ORIGINAL PLAN** of repairs or even **EXTEND** the road lifespan.



Our Pre-Screening Weighbridge Solution in Kenya



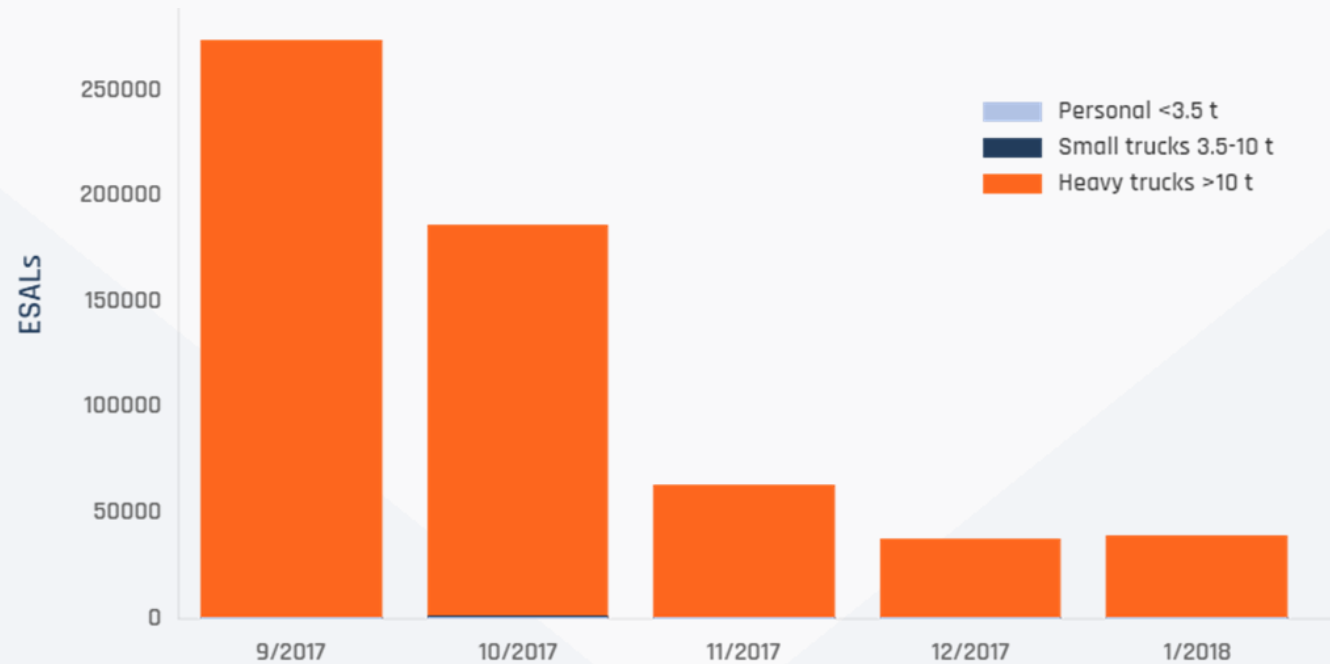
WIM Enforcement

HIGHLY PRECISE weighing with complete **FREE TRAFFIC FLOW**, **DIRECT FINING** of offenders helps **CUT DOWN** weigh station **COSTS**.

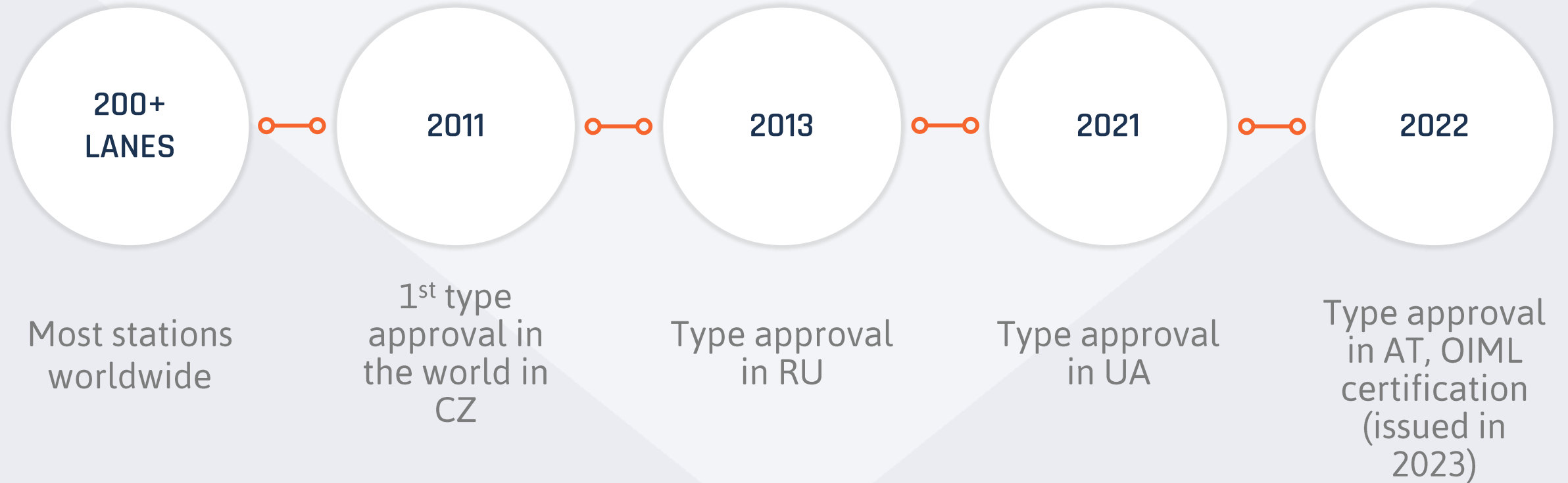


CAMEA WIM Enforcement Impact

The number of violations in RF dropped by **80 %** in the **FIRST MONTHS** after the installation.



CAMEA WIM Direct Enforcement



CAMEA Traffic Counters

Cost-efficient data collection for improved infrastructure construction and maintenance.



**Reliable and
Verified Technology**



**Collecting
Valuable Statistics**



**Reasonable
Investment Costs**

CAMEA Traffic Counters



Standard Classification (Magnetic Profile)

- Inductive loops installed in the pavement.
- Recognition of 9+1 vehicle classes.



Advanced Classification (Magnetic Profile + Axle Detection)

- Inductive loops and pressure sensors.
- 200+ vehicle classes can be recognized.



Weighing

- Upgradeable to WIM by adding weighing sensors.
- Various setup and accuracy possibilities.

Speed Enforcement

Field-proven systems for safer roads and calmer environment.



Lower
Speed



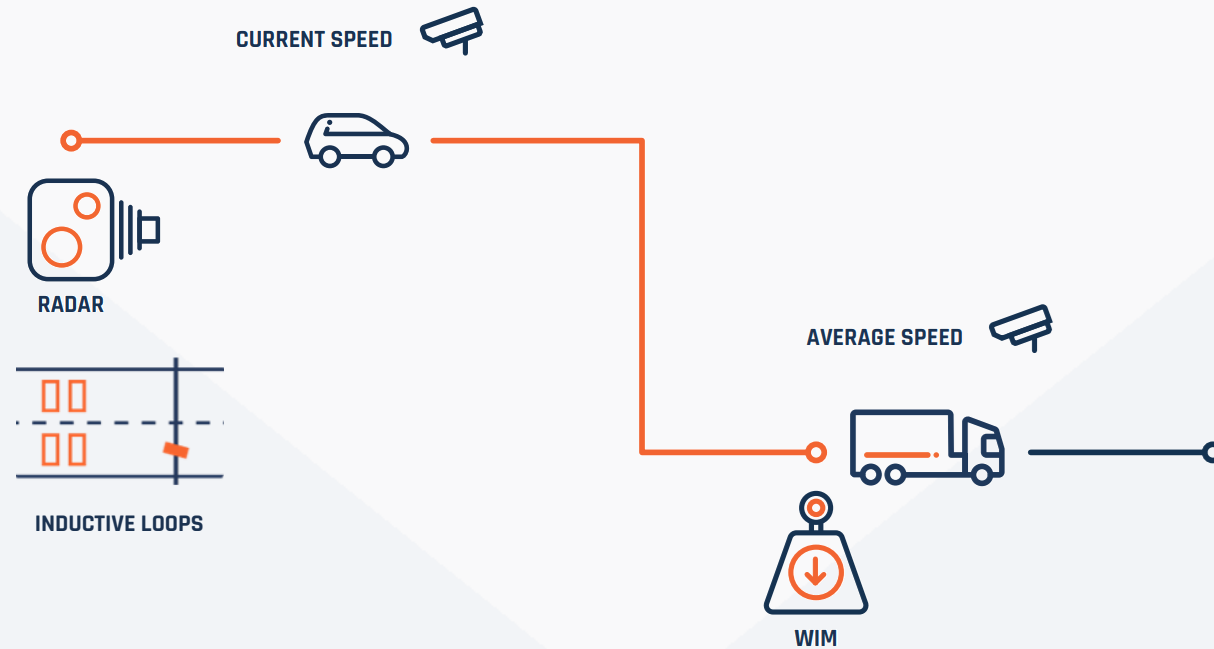
Less
Noise



Cleaner
Air

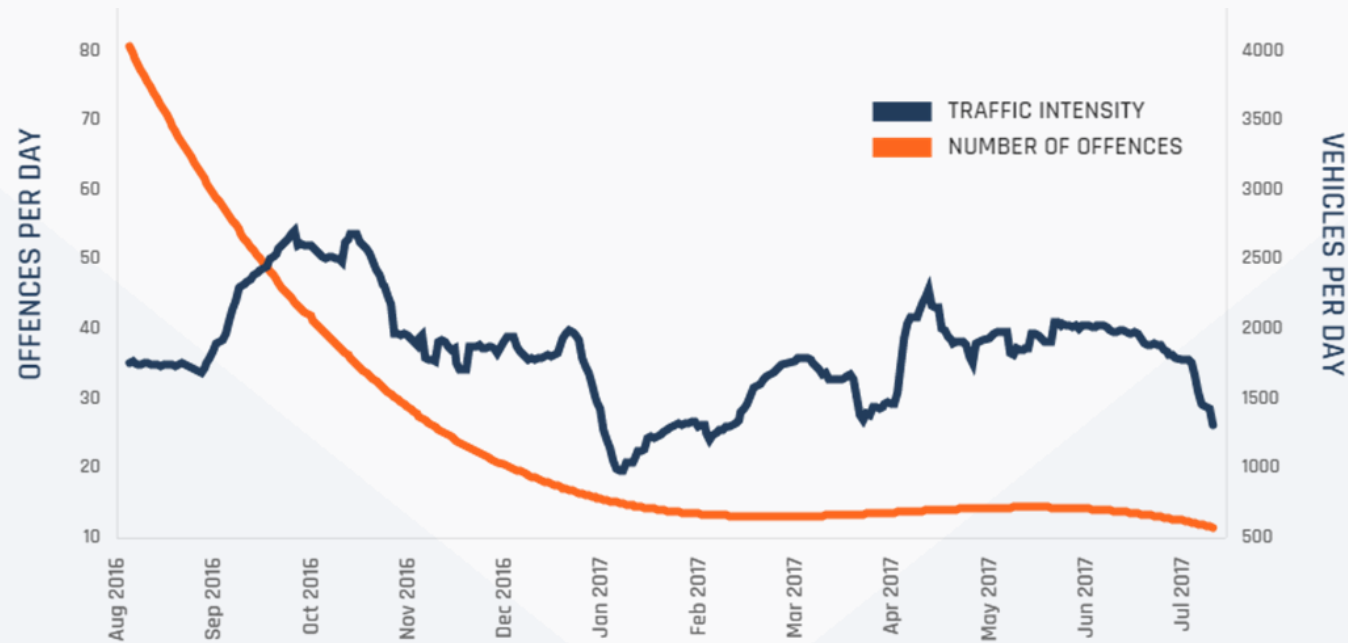
Speed Enforcement Principle

Measurement of current or average speed for **SAFE AND FLUENT TRAFFIC.**



Speed Enforcement Impact

The number of speeding drivers is typically reduced by around **80 %** within a **FEW MONTHS** after the installation.



CAMEA Speed Enforcement Installation



Dimension-In-Motion

Controlling oversized vehicles with no impact on traffic flow.



Infrastructure
Protection

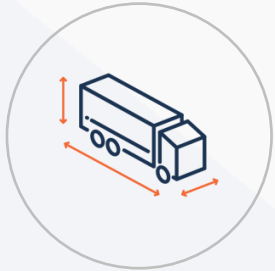


Precise Classification
and 3D Models



Protecting
Other Drivers

Dimension-In-Motion Features



Vehicle Outline and Dimension Measurement

- Precise vehicle dimension measurement to prevent infrastructure damage
- Vehicle outline including mirrors, antennas etc.



Separating Closely Driving Vehicles

- Separation by inductive loops is difficult (magnetic profile)
- 3D laser scanners can be used as a non-intrusive replacement



Vehicle Classification

- 3D profile used to classify vehicles based on shape
- Specific vehicle type recognition (cisterns, truck body types)

CAMEA Smart Camera System

Top video detection built on 25+ years of enforcement experience.



**Trainable for
Superb Accuracy**



**Versatile Use
for Multifunctionality**



**Compact Design
to Save Costs**

CAMEA Smart Camera System



Automatic Number Plate Recognition (ANPR)

- High recognition accuracy even under challenging conditions
- Country, state, province and plate type recognition with support of vanity plates



Transportation of Dangerous Goods (ADR Labels)

- Recognizing specifications of dangerous substances
- Particularly useful for the fire department in tunnels



Make and Model Recognition (MMR)

- Advanced vehicle classification
- Suitable for bus lanes or stolen vehicles and license plate search

CAMEA Smart Camera System



Traffic Sign Mapping

- Surveys and inventories of traffic signs and their state (broken, missing, etc.)
- Sign recognition, classification and exact location



Road Condition Surveys

- Mapping of road conditions (potholes, cracks, etc.) and markings
- Cost-effective and low effort usage for efficient maintenance



Vehicle Tracking, Traffic Surveys

- Tracing vehicle movement, stolen/wanted vehicle search
- Journey time estimations, origin-destination studies

CAMEA Vehicle-Mounted Camera System



Ports and Logistics Centers



Ports



Logistics Centers



Industrial Zones



Mines

Our Solutions for Ports and Logistics Centers



Automatic Number Plate Recognition (ANPR)

- Country, state, province and plate type recognition with support of vanity plates.
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Transportation of Dangerous Goods (ADR Labels)

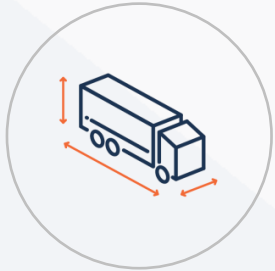
- Recognizing specifications of dangerous substances.
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Vehicle Classification

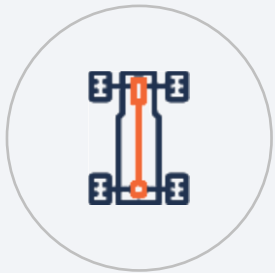
- Advanced vehicle classification.
- Useful for various access rates or statistics.

Our Solutions for Ports and Logistics Centers



Vehicle Dimension Measurement

- Precise vehicle dimension measurement to prevent infrastructure damage.
- Detection of uneven load distribution.



Vehicle Chassis Scanning

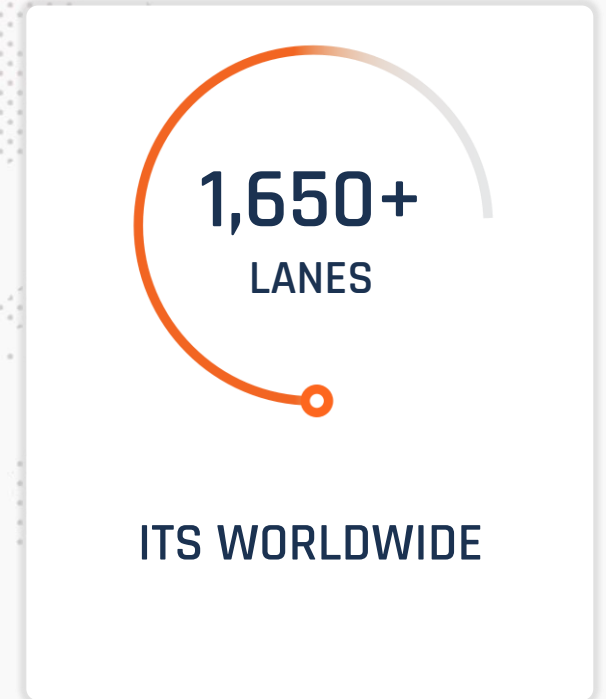
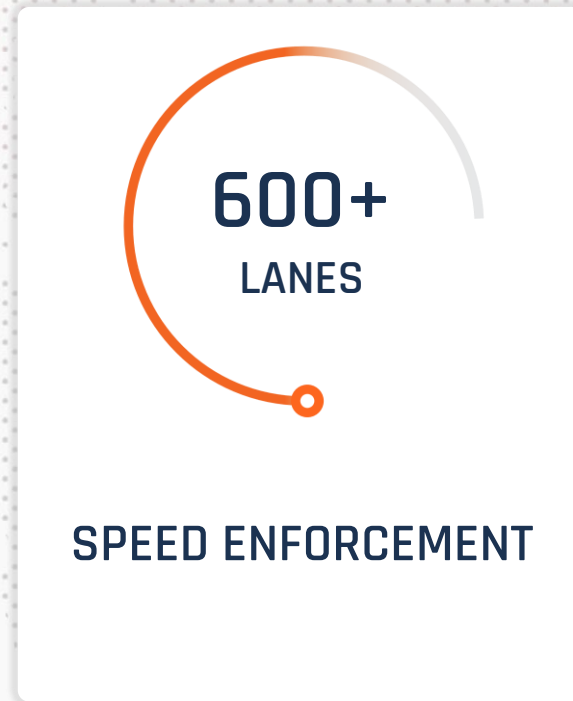
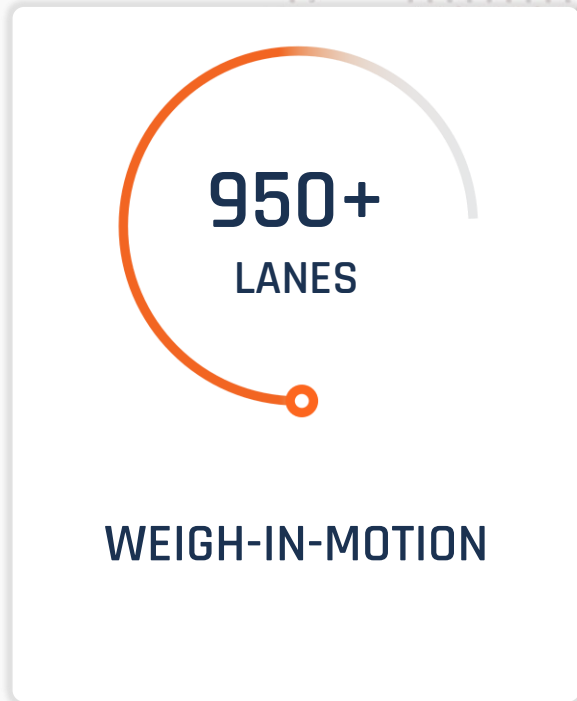
- Detection of unusual objects on the vehicle chassis.
- Restricted area access control (embassies, military).



Vehicle Weighing

- Only correctly loaded vehicles can leave (not overloaded, evenly loaded).
- Checking of correct cargo weight declarations.

CAMEA References



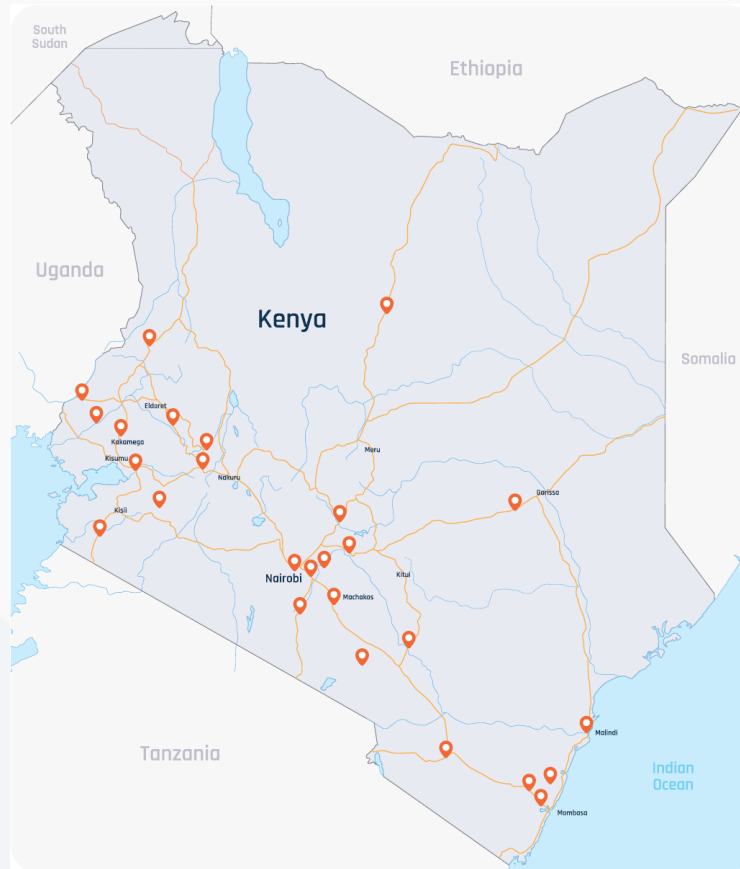
We Have References in East Africa

- More than 30 stations used for various purposes:
 - Data collection for WIM statistics
 - Pre-selection for static scales
 - Enforcement soon to be deployed
- Monitoring in a single data center
- More stations to be installed in 2023/2024

“We are pleased to report the observed reality on Kenyan National roads. Queues at the static weigh stations are significantly shorter, compared to before implementing the Weigh-In-Motion. The Weigh-In-Motion solution, both at the static and virtual weigh stations, helps reduce overloading, facilitate trade, and protects both infrastructure and people in the long run.”

ENG. MUITA NGATIA, DEPUTY DIRECTOR,
ROAD ASSET MANAGEMENT, 2020
Kenya National Highway Authority (KeNHA)

We Have 30+ Stations in Kenya



Pilot WIM Station in South Africa

- Pre-selection for the Mantsole Weighbridge on the N1 near Pretoria
 - WIM in the slow lane
 - Detection of avoiding drivers in the fast lane and road shoulders
- CAMEA provided consultancy for the planned law documentation for direct enforcement

