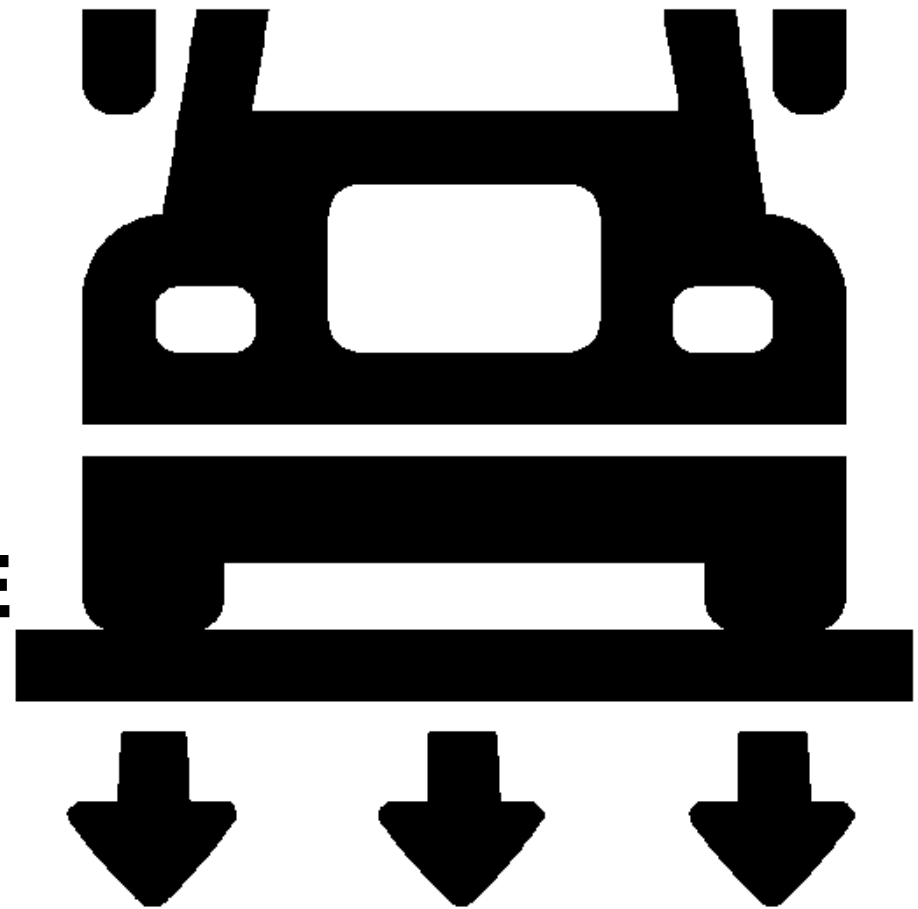




**metricí**  
accurate recognition

# WEIGHING MODULE WITH LPR



# Metrici Weighing Module

- **LPR based solution** for industrial parks, factories, production facilities, storage units, transportation companies, traffic monitoring etc
- Weighing stations checkpoint along the highways in LPR free flow mode to inspect compliance
- Access control tool in production units, when barriers are installed before weighing stations
- Free flow LPR or at trigger: inductive loops, laser, another Metrici engine etc.
- Integration with any type of industrial weighing scale
- The license plate is linked to the weight of the vehicle- both saved in database
- Tax collector tool for authorities
- Integration with other external systems and hardware devices to communicate when a weight and a LPR were successfully done



The screenshot displays the Metrici Weighing Module interface, which includes two data tables and corresponding vehicle images. The first table, titled "Entrance event", shows the following data:

Plate number	Weight	Date
B910MYG	5420	2018-12-04 08:26:49

The second table, titled "Exit event", shows the following data:

Plate number	Weight	Date	After notifications
B910MYG	7920	2018-12-04 09:49:59	

Two images of a white Mercedes-Benz truck with license plate B-910 MYG are shown. The top image shows the truck's front view, and the bottom image shows the truck's side view. The truck has "DSD SIM TRANSPORT" written on the front and "Atego" on the side.

# Metrici Weighing Module

## Where to use

Useful in every weighing scenario linked to LPR, such as authorities for taxation, factories, transportation companies, delivery companies, ports etc

## How

- Metrici takes makes a LPR reading of the front and (if set) back of the vehicles, as the some trucks have different license plates on the front and on the back, for the trailer.
- Interrogates the weighing scale about the weight in the moment of the LPR reading
- The data -license plate, time, weight, direction, direction, time stamp and other info are saved in database and visible in the Metrici Interface



# Metrci Weighing Module

## Key Features

### **License Plate Recognition:**

Automatically identifies and logs the license plates of vehicles as they pass over weighbridges.

### **Weight Measurement:**

Communicates with weight station and records the weight of vehicles dynamically (without requiring them to stop, for efficient throughput) or stationary

### **Overload Detection:**

Identifies and flags overweight vehicles for enforcement and compliance purposes

### **Data Logging:**

Stores detailed records of weight data and corresponding vehicle information for reporting and auditing

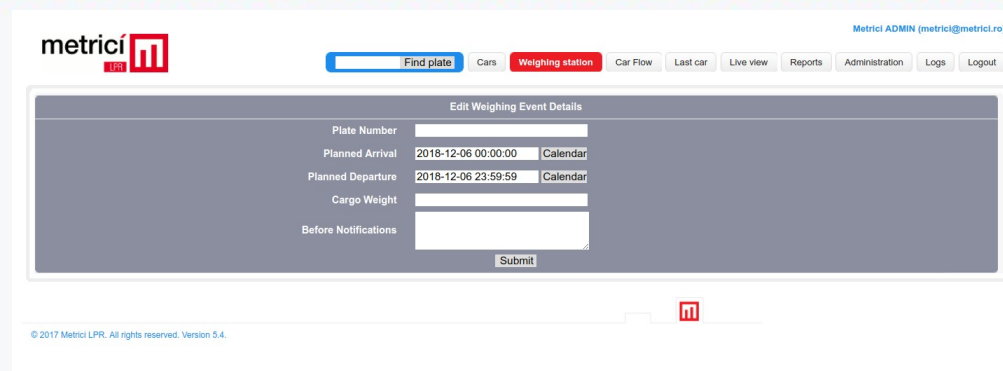
### **Integration Capabilities:**

Integrates with traffic management and enforcement systems to streamline operations.



# Metrici Weighing Module- Features for access control

- Metrici grants access on location (when barriers are installed) based on LPR
- Grants access on the weighing scale (when barriers are installed)
- Records number plate and the weight of the vehicle in database and Interface
- Can be crossed with a second camera who records the plate number from the back of the vehicle
- Metrici LPR camera can be crossed with companion cameras to have alternative views of the vehicle from the moment of the weighing
- All the events are to be later consulted in database
- Reports and statistics for the entire activity on days/weeks/months



The screenshot displays the Metrici web interface. At the top, there is a navigation bar with the Metrici logo, a search bar labeled 'Find plate', and several menu items: 'Cars', 'Weighing station' (highlighted in red), 'Car Flow', 'Last car', 'Live view', 'Reports', 'Administration', 'Logs', and 'Logout'. The user is logged in as 'Metrici ADMIN (metrici@metrici.ro)'. Below the navigation bar is a form titled 'Edit Weighing Event Details'. The form contains the following fields: 'Plate Number' (empty), 'Planned Arrival' (2018-12-06 00:00:00) with a 'Calendar' button, 'Planned Departure' (2018-12-06 23:59:59) with a 'Calendar' button, 'Cargo Weight' (empty), and 'Before Notifications' (empty). A 'Submit' button is located at the bottom right of the form. At the bottom of the page, there is a copyright notice: '© 2017 Metrici LPR. All rights reserved. Version 5.4.' and a small Metrici logo.



# Metrici Weighing Module- Features

- It can automatically command a **barrier** to open when the weight is stable and the number plate was recognized
- It can command a barrier when a plate number from a **whitelist** is recognized and grants access to the weighing station
- It can automatically command a **traffic light** when the weight is stable and recorded along LPR
- It can send **alarms if a weight varies by more than x percent** than a pre-established value for that particular plate number or that event or **exceeds a weight limit**

The screenshot displays the Metrici LPR software interface. At the top, there is a navigation bar with the Metrici logo and a search bar labeled "Find plate". Below the search bar are several menu items: "Cars", "Weighing station", "Car Flow", "Last car", "Live view" (highlighted in red), "Reports", "Administration", and "Logs".

The main area contains three monitoring windows, each with a camera feed and associated data:

- Window 1:** "Văzământ / Iesire cantar" (Exit scale). Shows a white van with license plate "IF 05 GEL". Data: Last plate number: IF 05 GEL, Direction: UNKNOWN, Time inside: -, Weight: 3480 kg, 2018-12-04 13:54:36.
- Window 2:** "Văzământ / Intrare cantar" (Entrance scale). Shows a truck with license plate "B 745 BLE". Data: Last plate number: B 745 BLE, Direction: LEAVING, Time inside: -, Weight: 3480 kg, 2018-12-04 13:54:35.
- Window 3:** "Văzământ / Intrare" (Entrance). Shows a road view. Data: Last plate number: UNKNOWN, Direction: UNKNOWN, Time inside: -, Unknown/unstable weight, 2018-12-04 13:54:35.

# Metrici Weighing Module- Features

---

## **COMPANION CAMERAS**

Companion cameras can be installed along the detection ones so that every detection can be **linked** also to an image captured from the companion: for example with a wider lens, or another angle, with the load of a truck, the other side of the vehicle etc.

## **CONTINUOUS OR DETECTION AT TRIGGER**

The system can search for a license plate in continuous mode, at trigger or a **combination** of the two: laser, inductive loop, another Metrici engine. In the moment of the license plate detection it can automatically record the weight registered by the weighing station. The event is recorded even if the number plate is missing- saves a photo and other data and weight

## **EXTERNAL SYSTEM INTEGRATION**

Integration with external management or hardware systems or **external databases**.

## **LOG FILES**

Metrici **saves all the data** referring to the processes or communication with external systems. In case of a malfunction, one can instantly see where the problem is and fix it.

# Weighing Module Management

## INTERACTIONS AND ALERTS

### LIVE VIEW

- You can see live the weighing process from as many LPR cameras as you want

### OPEN BARRIER

- An operator can “manually” open a barrier from live view menu, if the number plate is not visible or is damaged.
- The event is recorded in database

### ALERTS

- Alerts when a certain license plate is detected
- Alerts when a weight limit is met
- Alerts when a weight has a x percent deviation from what was declared or supposed to be



The screenshot displays the metricí LPR software interface. At the top, the logo 'metricí LPR' is visible. Below it, a window titled 'Vizualizare / Iesire cantar' (View / Exit scale) shows a live camera feed of a white Mercedes-Benz van on a scale. The license plate 'IF-05 GEL' is clearly visible. Below the video feed, the interface shows the following data:

Last plate number:	IF 05 GEL
Direction:	UNKNOWN
Time inside:	-
Weight:	3480 kg
2018-12-04 13:54:36	



# Weighing Module Management

- Unlimited number of locations, cameras and weighing stations that can be monitored from same interface;
- LED Display information: number plate, weight, direction, other info from Metrici Interface
- Possibility to display indications for the driver on LED Displays e.g. Go to ramp 7, Turn right, Stop etc
- Log file for each user with the actions made in interface
- Database with the vehicles that have passed on the station and and what was their weight
- In case of trigger detection, photo witness even if a number plate is not visible/present on the vehicle



# Weighing Module Management

---

## Applications

- Freight and logistics hubs
- Border checkpoints
- Industrial sites
- Agricultural processing plants
- Waste management facilities
- Production units

# Case Study - Balast pit

- **Metrici Parking Place Detector engines** are used to watch some virtual parking places strategically placed on the station.
- So when a **parking place is "occupied"** in fact the vehicle is moving and is approaching the station - Metrici detects and sends a command to **open the barrier** for the truck to be placed on the weighing station.
- The vehicles moves on and will occupy another virtual parking place, this time when it stops on the weighing station.

PPD\_lesire - Metrici Parking Place Detector v1.5

Parking stream view

Parking spaces list

ID	Status	Last change	Elapsed time	Placement
1	Free	13:15:26	00:00:44	Loose
2	Free	13:15:26	00:00:44	Loose
3	Free	13:15:26	00:00:44	Strict
4	Busy	13:16:07	00:00:03	Strict

Add space Edit space Delete space

Connected AXIS H264 RTSP 1 fps 1920 x 1080

Total 4 Busy 1 Free 3

SP-5 AXIS Q6215-LE

SP-16 SP-17 SP-18 SP-9 SP-11

# Case Study - Balast pit

- This second detection of a busy parking place means the vehicle/truck is properly aligned on the station and sends a trigger toward a Metrici LPR engine to start detecting the number plate.
- When the number plate is read, Metrici records also the weight from the weighing station.
- Usually, each line (coming and going) of a weighing station has two virtually parking spots, so depending on which one is busy, Metrici knows what to do and where to do the reading what Metrici LPR engine to trigger. This setting is done in Metrici Interface, when installing the system in Parking Place Detector menu

The screenshot displays the Metrici software interface in a Mozilla Firefox browser window. The main area shows a table of vehicle detections with columns for Plate, Country, Date, Time, Location, Camera, Direction, Class, Time Inside, Action, and Info. A detailed view on the right shows a truck with plate B 176 PTR and a weight of 56100 kg, which is circled in red. The interface also includes a sidebar with navigation options like LPR, Vehicles, and Reports, and a top navigation bar with filters and export options.

Plate	Country	Date	Time	Location	Camera	Direction	Class	Time Inside	Action	Info
B 176 PTR	RO	2021-03-19	13:02:17	Stones Salcioara	lesire drum	←	Unknown	-	-	-
B 801 PTR	RO	2021-03-19	13:02:16	Stones Salcioara	Intrare drum	??	Unknown	-	-	-
BZ 43 MOL	RO	2021-03-19	12:51:42	Stones Salcioara	Intrare drum	??	Unknown	-	-	-
BZ 18 MOL	RO	2021-03-19	12:51:41	Stones Salcioara	lesire drum	??	Unknown	-	-	-
BZ 13 MOL	RO	2021-03-19	12:51:40	Stones Salcioara	Intrare drum	??	Unknown	-	-	-
UNKNOWN	??	2021-03-19	12:51:36	Stones Salcioara	Intrare drum	??	Unknown	-	-	-
AG 04 TCX	RO	2021-03-19	12:46:51	Stones Salcioara	lesire drum	→	Unknown	-	-	-
IF 05 HUD	RO	2021-03-19	12:46:48	Stones Salcioara	Intrare drum	←	Unknown	-	-	-
UNKNOWN	??	2021-03-19	12:46:47	Stones Salcioara	lesire drum	??	Unknown	-	-	-
UNKNOWN	??	2021-03-19	12:42:49	Stones Salcioara	lesire drum	??	Unknown	-	-	-
DB 84 TIM	RO	2021-03-19	12:42:45	Stones Salcioara	lesire drum	←	Unknown	-	-	-
DB 86 TYM	RO	2021-03-19	12:42:41	Stones Salcioara	Intrare drum	→	Unknown	-	-	-
DB 68 TCG	RO	2021-03-19	10:43:19	Stones Salcioara	lesire drum	←	Unknown	-	-	-
DB 67 TCG	RO	2021-03-19	10:43:17	Stones Salcioara	Intrare drum	??	Unknown	-	-	-
DB 42 GOP	RO	2021-03-19	10:31:02	Stones Salcioara	lesire drum	→	Unknown	-	-	-
DB 98 TIM	RO	2021-03-19	10:27:41	Stones Salcioara	lesire drum	??	Unknown	-	-	-
DB 31 GOP	RO	2021-03-19	09:55:22	Stones Salcioara	lesire drum	→	Unknown	-	-	-

# Metrici Hardware - LED Display

- Direct communication with Metrici Interface
- Can show all information that is to be found in Metrici Database: speed, license plate, owner, weight
- Can show indications for the driver:
- Can display weight and license plate number
- Aluminum case
- Water resistant coating for LED lights
- Displays can be custom configured



# About Metrici

- 14 years of experience in advanced license plate recognition and management applications;
- Developments of deep neuronal networks software solutions on a large scale
- Metrici's License Plate Recognition (LPR) solution encompasses a comprehensive **suite of products** designed to address various needs in transportation, parking management, and logistics.
- Large area of utilization, from paid parking to access control, retail and security, from a residential area to industrial parks or traffic monitoring and weighing or toll applications;
- Technical support;
- Reports and statistics;
- Management tool;
- Complex database;
- Dedicated interface;
- Dedicated modules for Parking Lots, Toll Stations, Traffic Management, Weighing Stations, People Counter and many others

