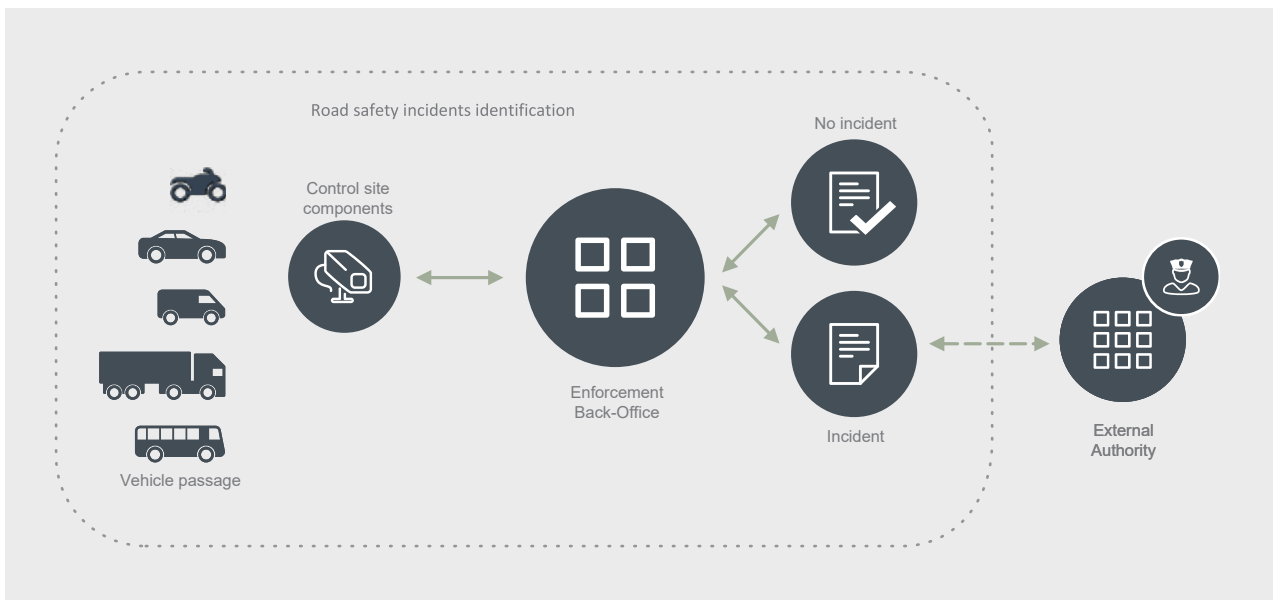


Platform

Law Enforcement (SAFE)



Road safety as a global concern with countless accidents occurring every day worldwide was the main motivation in developing a comprehensive solution for identifying and preventing road safety incidents. Safety platform results from successful operation of all related technologies across the various implementations for an extensive period.



The platform for road safety incidents identification and prevention is based on an innovative approach that combines various, by operation, proven enforcement technologies such as intelligent cameras equipped with artificial intelligence (AI) and automatic number plate recognition (ANPR) capabilities, speed measuring and dynamic weighing mechanisms all seamlessly integrated with advanced vehicle passage analysis algorithms, to effectively identify and mitigate a wide, diverse range of road safety incidents.



More information:
qrfy.com/p/2023_safe

From the processing perspective, every incident commences with the capture of the vehicle passage by a network of strategically positioned and calibrated individual components installed on the control site. The subsequent step in the process is when all raw vehicle passage data are automatically matched together (the data harmonization is one of the most critical moments of the process) and as a result, the complex enforcement event is created.

Each enforcement event is evaluated (either centrally or locally), and depending on the outcome of this processing, the detection of a road safety incident proceeds, possibly leading to the eventual confirmation of a violation.

For the purposes of any official (usually external) authorities, it shall serve as indisputable evidence and therefore each enforcement event includes data that undeniably establishes its authenticity and integrity, among other crucial details.

Unique data proving incident unambiguity

- Where the event has been captured (location – GPS coordinates)
- When the event has been captured (precise UTC timestamp synchronized from back office)
- Which component has generated the data (exact identification)

Furthermore, additional data attached to the evidence documentation contain the context picture and visible LPN.

Road safety incidents

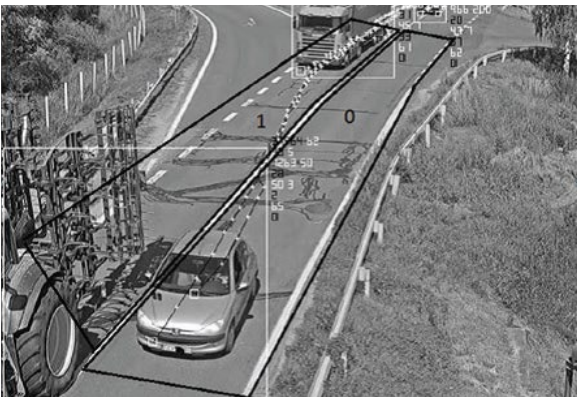
- Speed measurement (on the spot and/or sectional)
- Unauthorized driving in dedicated (e.g. BUS) lane (specific vehicle category in particular lane)
- Unauthorized driving in the fast lane (e.g. if the vehicle is occupied by only one person (prerequisite it to count the number of people in the vehicle))

- Red light violation
- Solid line crossing
- Wrong way (direction) detection
- U Turn and forbidden turn crossing
- Stop sign crossing without stopping
- Forbidden heavy weight vehicles sign crossing

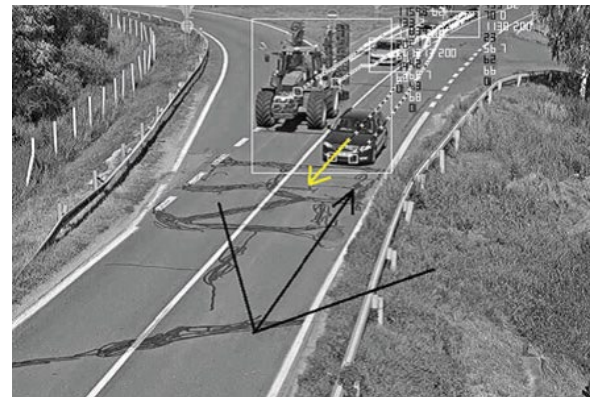
- Overweight
- Detection of not keeping the safe distance from the vehicle
- Detection of unfastened seat belts
- Detection of the mobile phone usage by the driver
- Detection of railroad crossing

Examples of selected incidents

Solid Line Crossing:



Wrong way (direction) detection:



Red Light violation:



Stop sign crossing:



The prerequisite to the incident detection is the hardware and software installation on the control site and subsequent site configuration that involves motion tracking and analysis. The analysis is focussed on definition of polygons, so called region of interests (ROIs) within this focused area where the potential incidents are to be detected, that consists of static scene (background and other geographically fixed objects like traffic signs, semaphores etc.) and moving objects (typically vehicles). The motion analysis software recognizes several types of ROIs: tracking (intensive video processing required for moving object tracking), presence monitoring (only presence of the object is evaluated over time) and other (i.e. brightness is evaluated within this specified area).

Motion tracking analysis examples:

