



OIZOM[™]
REDEFINING RESOURCES

Road Safety

Environmental Safety solutions for Roadways



Concept

Roadside monitoring of weather parameters from strategic locations can address the problem of accidents due to poor weather conditions. Weather monitoring solutions capturing the target parameters should be installed at specific intervals on the roadways to gather data. The data can be used to derive dynamic top-speed-limit which should be enforced using a speed-control system.

Air pollution monitoring at crossroads, tunnels and multi-level parking facilities is critically important for ensuring health and safety within the transportation networks. Actions like adjusting tunnel ventilation intensity, traffic lights regulation, etc. can greatly limit the exposure to high levels of emissions and restricting access to basement parking when needed.



Target Parameters



Visibility



Road surface temperature



Rainfall



Noise



Pollution
(Dust and Harmful Gases)

Data Use-case

-  Dynamic speed limit control for accident prevention
-  Tunnel and parking operations based on air quality
-  Traffic regulation based on air quality

Problem

Reckless driving and poor weather conditions are one of the major reasons for most of the road accidents. Annually more than 6 million car accidents happen due to poor weather conditions and rainfall in the US. The problem is 10 times more critical on a global scale.

Adverse weather situations reduce road visibility and in particular weather conditions, the roads are slippery, which further increase the chances of accidents.

Exposure to critical air quality levels in tunnels, parking lots and crowded streets leads to serious health hazards. It is necessary to take preventive actions and avoid vehicular congestion, which are the hot-spots of heavy emissions.



Proposed Solution

- Oizom Weathercom™ is proposed to be installed at accident-prone zones on the highway. The intelligent road sensors monitor critical parameters like road visibility, road surface temperature, and rainfall in real-time.
- Oizom Polludrone™ needs to be installed at crossroads, tunnels and multi-level parking facilities to monitor vehicular emission.
- Weathercom™ and Polludrone™ push the real-time data obtained to the Oizom cloud.
- The top-speed limit is calculated based on weather speed index. The dynamic speed limit is then served to the drivers in the form of push notifications through maps, and Visual Messaging Displays.
- Effective vehicular route management is performed in case of higher pollution levels. Tunnel and parking ventilation are automated based on the pollution level.

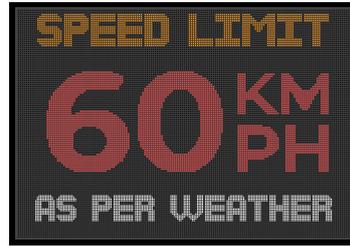
“ In India, according to PRS Legislative Research, more than 1.7% of all the accidents occur due to poor weather conditions. ”



Ventilation Intensity



Traffic Signal Automation For Traffic Management



High Pollution. Avoid parking and prolonged stay in basement II



Weather Monitoring

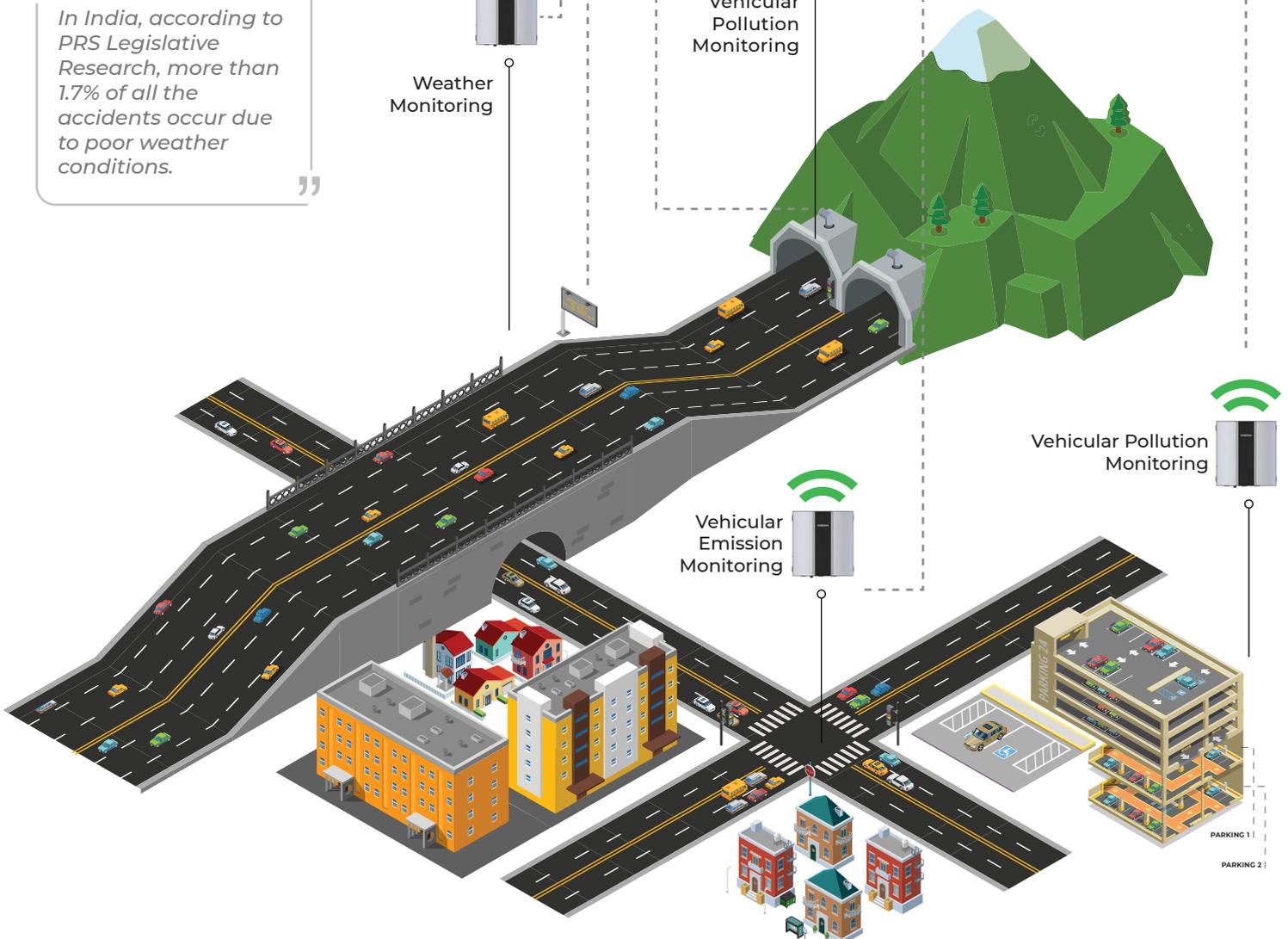
Vehicular Pollution Monitoring



Vehicular Emission Monitoring



Vehicular Pollution Monitoring



Impact

Integrating weather and road condition monitoring into Intelligent Transport Systems (ITS) helps in reducing road accidents by 12-16%. Air quality monitoring on the roadways and tunnels ensures human exposure to vehicular emission is within the permissible limits. Automation of the ventilation manages the air circulation and improves the air quality inside tunnels and multi-level parking facilities.

Case Studies



King Abdul Aziz Tunnel, Mecca - Air Quality Monitoring

With the massive influx of Pilgrims to Mecca every year, the Abdul Aziz Tunnel in Jeddah faces excessive pollution during the holy month of Ramadan. The authorities thus had to equip the tunnel with air monitoring devices to monitor the pollution level. Oizom stationed Polludrone™ throughout the tunnel to observe the vehicular emission. The analyzed data helped the authorities to identify the peak pollution hours and deploy data-driven solutions for bringing down the emission levels in real-time.

 Aug 2018  5 km²  Polludrone  Oizom Terminal

Air Quality Assessment at Shahjahanpur Toll Booth, Alwar, Rajasthan

To demonstrate the efficiency of automated toll booths, Oizom installed Polludrone™ and helped Quantela monitor the Air Quality at Shahjahanpur Toll Plaza, Alwar. The pollution levels increase by up to 8 times in congested traffic, which can be avoided by implementing automated toll booths. Polludrone™ monitored the real-time air quality at the Toll Plaza and studied the increase in vehicular emissions due to frequent braking. Quantela used the data from Shahjahanpur Toll Plaza to quantify the environmental benefits of Automated Toll Booths.



 Feb 2018  1 km²  Polludrone  Oizom Terminal, API Integration



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